Source Test Report for 2024 & 2024 ICR Testing
CEMEX Construction Materials Florida, LLC
In-Line Kiln 1 (EU 020) Baghouse Stack &
In-Line Kiln 2 (EU 044) Baghouse Stack
Brooksville South Cement Plant, Facility ID No. 0530021
In-Line Kiln (EU 018) Baghouse Stack
Miami Cement Plant, Facility ID No. 0250014

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MONTROSE AIR QUALITY SERVICES

STAC STACK TESTING ACCREDITATION COUNCIL

ACCREDITED TO ASTM D7036 ONLY CERT #3925.01

Review and Certification

All work, calculations, and other activities and tasks performed and presented in this document were carried out by me or under my direction and supervision. I hereby certify that, to the best of my knowledge, Montrose operated in conformance with the requirements of the Montrose Quality Management System and ASTM D7036-04 during this test project.

Signature:	Todd Gregg	**Date:**	06 / 26 / 2024
Name:	Todd Gregg	**Title:**	Senior Account Manager

I have reviewed, technically and editorially, details, calculations, results, conclusions, and other appropriate written materials contained herein. I hereby certify that, to the best of my knowledge, the presented material is authentic, accurate, and conforms to the requirements of the Montrose Quality Management System and ASTM D7036-04.

Signature:		**Date:**	06 / 26 / 2024
Name:	Neal Hendricks	**Title:**	Reporting Hub Manager

Table of Contents

Section			Page
1.0	Introduction		6
	1.1	Summary of Test Program	6
	1.2	Key Personnel	14
2.0	Plant and Sampling Location Descriptions		16
	2.1	Process Description, Operation, and Control Equipment	16
		2.1.1 Brooksville, FL Facility	16
		2.1.2 Miami, FL Facility	18
	2.2	Flue Gas Sampling Locations	20
	2.3	Operating Conditions and Process Data	20
3.0	Sampling and Analytical Procedures		21
	3.1	Test Methods	21
		3.1.1 EPA Method 1	21
		3.1.2 EPA Method 2	21
		3.1.3 EPA Method 3A	21
		3.1.4 EPA Method 4	23
		3.1.5 EPA Method 26A	24
		3.1.6 ASTM D6348-12 & EPA Method 320	26
	3.2	Process Test Methods	29
4.0	Test Discussion and Results		30
	4.1	Field Test Deviations and Exceptions	30
	4.2	Presentation of Results	30
5.0	Internal QA/QC Activities		49
	5.1	QA/QC Audits	49
	5.2	QA/QC Discussion	49
	5.3	Quality Statement	49

List of Appendices

A Field Data and Calculations 50
A.1 Sampling Locations 51
A.2 Field Data Sheets - Brooksville Kiln 1 Stack Raw Mill On 55
A.3 Field Data Sheets - Brooksville Kiln 1 Stack Raw Mill Off 66
A.4 Field Data Sheets - Brooksville Kiln 2 Stack Raw Mill On 73
A.5 Field Data Sheets - Brooksville Kiln 2 Stack Raw Mill Off 80
A.6 Field Data Sheets - Miami Kiln Stack Raw Mill On 87
A.7 Field Data Sheets - Miami Kiln Stack Raw Mill Off 94
A.8 Instrumental Test Method Data - Brooksville Kiln 1 Stack, Raw Mill On 101
A.9 Instrumental Test Method Data - Brooksville Kiln 1 Stack, Raw Mill Off 111
A.10 Instrumental Test Method Data - Brooksville Kiln 2 Stack, Raw Mill On 121
A.11 Instrumental Test Method Data - Brooksville Kiln 2 Stack, Raw Mill Off 131
A.12 Instrumental Test Method Data - Miami Kiln Stack, Raw Mill On 141
A.13 Instrumental Test Method Data - Miami Kiln Stack, Raw Mill Off 151
A.14 Calculations/Results - Brooksville Kiln 1 Stack Raw Mill On 161
A.15 Calculations/Results - Brooksville Kiln 1 Stack Raw Mill Off 178
A.16 Calculations/Results - Brooksville Kiln 2 Stack Raw Mill On 195
A.17 Calculations/Results - Brooksville Kiln 2 Stack Raw Mill Off 212
A.18 Calculations/Results - Miami Kiln Stack Raw Mill On 229
A.19 Calculations/Results - Miami Kiln Stack Raw Mill Off 246
A.20 Cl_2 Paired Train Agreement 263
A.21 Example Calculations - Brooksville Kiln 1 Raw Mill Off Train A Run 1 265
A.22 General Equations 270
B Facility Process Data 274
B.1 Brooksville, FL 275
B.2 Miami, FL 311
C Laboratory Analysis Data 348
C.1 EPA 26A Analyses 349
C.2 EPA 320 (FTIR) Analyses 953
D Quality Assurance/Quality Control 1068
D.1 Units and Abbreviations 1069
D.2 Manual Test Method QA/QC Data 1077
D.3 Instrumental Test Method QA/QC Data 1082
D.4 Accreditation Information/Certifications 1089
E Regulatory Information 1094
E.1 Brooksville Test Plan 1095
E.2 Miami Test Plan 1169

List of Tables

1-1 Summary of Test Program 6
1-2 Summary of Average ICR Results – Brooksville Kiln 1 Stack, Raw Mill On 8
1-3 Summary of Average ICR Results – Brooksville Kiln 1 Stack, Raw Mill Off 9
1-4 Summary of Average ICR Results – Brooksville Kiln 2 Stack, Raw Mill On 10
1-5 Summary of Average ICR Results – Brooksville Kiln 2 Stack, Raw Mill Off 11
1-6 Summary of Average ICR Results – Miami Kiln Stack, Raw Mill On 12
1-7 Summary of Average ICR Results – Miami Kiln Stack, Raw Mill Off 13
1-8 Test Personnel and Observers 15
2-1 Sampling Locations 20
4-1 Cement ICR Results - Brooksville Kiln 1 Stack, Raw Mill On (Sampling Train A) 31
4-2 Cement ICR Results - Brooksville Kiln 1 Stack, Raw Mill On (Sampling Train B) 33
4-3 Cement ICR Results - Brooksville Kiln 1 Stack, Raw Mill Off (Sampling Train A) 34
4-4 Cement ICR Results - Brooksville Kiln 1 Stack, Raw Mill Off (Sampling Train B) 36
4-5 Cement ICR Results - Brooksville Kiln 2 Stack, Raw Mill On (Sampling Train A) 37
4-6 Cement ICR Results - Brooksville Kiln 2 Stack, Raw Mill On (Sampling Train B) 39
4-7 Cement ICR Results - Brooksville Kiln 2 Stack, Raw Mill Off (Sampling Train A) 40
4-8 Cement ICR Results - Brooksville Kiln 2 Stack, Raw Mill Off (Sampling Train B) 42
4-9 Cement ICR Results - Miami Kiln Stack, Raw Mill On (Sampling Train A) 43
4-10 Cement ICR Results - Miami Kiln Stack, Raw Mill On (Sampling Train B) 45
4-11 Cement ICR Results - Miami Kiln Stack, Raw Mill Off (Sampling Train A) 46
4-12 Cement ICR Results - Miami Kiln Stack, Raw Mill Off (Sampling Train B) 48
A-1 Method 26A Cl2 Paired Train Agreement 74

List of Figures

3-1 EPA Method 3A Sampling Train 23
3-2 EPA Method 26A Sampling Train 26
3-3 EPA Method 320 Sampling Train 29
A-1 Stack Drawing & Traverse Point Location – Kiln 1 Stack 52
A-2 Stack Drawing & Traverse Point Location – Kiln 2 Stack 53
A-3 Stack Drawing & Traverse Point Location – Kiln Stack 54

1.0 Introduction

1.1 Summary of Test Program

CEMEX Construction Materials Florida, LLC (Cemex) contracted Montrose Air Quality Services, LLC (Montrose) to perform air emissions source testing in accordance with the Clean Air Act section 114 information collection request Phase 2 requirements. Testing was performed on the In-Line Cement Kiln 1 (EU 020) Baghouse Stack, and on the In-Line Cement Kiln 2 (EU 044) Baghouse Stack. Additionally, testing was performed on the In-Line Kiln (EU 018) Baghouse Stack at the Miami Plant facility located in Miami, Florida.

The test program has been designed based on the USEPA Clean Air Act Section 114 Request Letter and attachments, local rules, and regulations, as well as related testing procedures set forth in EPA 40 CFR, Part 60.

This information collection request (ICR) source test report follows the test procedures outlined in the PCA general test plan.

The specific objectives were to:

- To acquire data of known accuracy and precision for each of the target analytes using specific EPA methodology combined with standardized quality assurance and quality control procedures that are stricter than those contained in the EPA methods.
- To determine the emissions, if any, of HCN, HF and Cl_2 under representative process and control system operating conditions
- To provide a standardized data set to the EPA so that reliable facility inter-comparisons of emissions can be made

Montrose performed the tests to measure the emission parameters listed in Table 1-1.

Table 1-1
Summary of Test Program

Test Dates	Unit ID/ Source Name	Activity/Parameters	Test Methods	No. of Runs[2]	Duration (Minutes)
11/29/23	Brooksville Kiln 1 Stack, Raw Mill On	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	60
		O_2	EPA 3A	3	60
		H_2O	EPA 4	3	60
		HF & Cl_2	EPA 26A	3 paired	60
		CO_2, HCN, HF	ASTM D6348-12/ EPA 320	3	60

Test Dates	Unit ID/ Source Name	Activity/Parameters	Test Methods	No. of Runs2	Duration (Minutes)
6/5/24	Brooksville Kiln 1 Stack, Raw Mill Off	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	60
		O_2	EPA 3A	3	60
		H_2O	EPA 4	3	60
		HF & Cl_2	EPA 26A	3 paired	60
		CO_2, HCN, HF	ASTM D6348-12/ EPA 320	3	60
11/30/23-12/1/23	Brooksville Kiln 2 Stack, Raw Mill On	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	60
		O_2	EPA 3A	3	60
		H_2O	EPA 4	3	60
		HF & Cl_2	EPA 26A	3 paired	60
		CO_2, HCN, HF	ASTM D6348-12/ EPA 320	3	60
11/30/23	Brooksville Kiln 2 Stack, Raw Mill Off	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	60
		O_2	EPA 3A	3	60
		H_2O	EPA 4	3	60
		HF & Cl_2	EPA 26A	3 paired	60
		CO_2, HCN, HF	ASTM D6348-12/ EPA 320	3	60
12/5/23	Miami Kiln Stack, Raw Mill On	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	60
		O_2	EPA 3A	3	60
		H_2O	EPA 4	3	60
		HF & Cl_2	EPA 26A	3 paired	60
		CO_2, HCN, HF	ASTM D6348-12/ EPA 320	3	60
12/5/23-12/6/23	Miami Kiln Stack, Raw Mill Off	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	60
		O_2	EPA 3A	3	60
		H_2O	EPA 4	3	60
		HF & Cl_2	EPA 26A	3 paired	60
		CO_2, HCN, HF	ASTM D6348-12/ EPA 320	3	60

To simplify this report, a list of Units and Abbreviations is included in Appendix D.1. Throughout this report, chemical nomenclature, acronyms, and reporting units are not defined. Please refer to the list for specific details.

This report presents the test results and supporting data, descriptions of the testing procedures, descriptions of the facility and sampling locations, and a summary of the quality assurance procedures used by Montrose. The average emission test results are summarized in Tables 1-2 through 1-7. Detailed results for individual test runs can be found in Section 4.0. All supporting data can be found in the appendices.

The testing was conducted by the Montrose personnel listed in Table 1-8. The tests were conducted according to the test plans (protocols) dated October 20, 2023, that was submitted to the U.S. EPA, Office of Air Quality Planning and Standards.

Table 1-2
Summary of Average ICR Results – Brooksville Kiln 1 Stack, Raw Mill On

Parameter/Units	Kiln 1 EPA 26A Sampling Train A Average Results	Kiln 1 EPA 26A (Duplicate) Sampling Train B Average Results	Kiln 1 FTIR Average Results
Process Data			
Clinker Production, ton/hr	65.0		
Chlorine (Cl_2)			
ppmvd	1.3E-02	4.4E-02	--
ppm @ 7% O_2	4.7E-02	1.6E-01	--
lb/hr	3.5E-02	1.3E-01	--
lb/ton clinker	5.3E-04	1.9E-03	--
Hydrogen Fluoride (HF)			
ppmvd	2.6E-02 DLL	5.4E-02	1.1E-01 BDL
ppm @ 7% O_2	9.0E-02 DLL	1.9E-01	3.7E-01 BDL
lb/hr	1.9E-02 DLL	4.1E-02	7.8E-02 BDL
lb/ton clinker	2.9E-04 DLL	6.3E-04	1.2E-03 BDL
Hydrogen Cyanide (HCN)			
ppmvd	--	--	7.1E-01
ppm @ 7% O_2	--	--	2.5E+00
lb/hr	--	--	7.0E-01
lb/ton clinker	--	--	1.1E-02

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Table 1-3
Summary of Average ICR Results – Brooksville Kiln 1 Stack, Raw Mill Off

Parameter/Units	Kiln 1 EPA 26A Sampling Train A Average Results	Kiln 1 EPA 26A (Duplicate) Sampling Train B Average Results	Kiln 1 FTIR Average Results
Process Data			
Clinker Production, ton/hr	56.9		
Chlorine (Cl_2)			
ppmvd	1.9E-02	2.0E-02	--
ppm @ 7% O_2	7.3E-02	7.4E-02	--
lb/hr	4.9E-02	5.1E-02	--
lb/ton clinker	8.5E-04	8.9E-04	--
Hydrogen Fluoride (HF)			
ppmvd	2.9E-02	5.5E-02	1.1E-01 BDL
ppm @ 7% O_2	1.1E-01	2.1E-01	4.0E-01 BDL
lb/hr	2.1E-02	4.0E-02	7.5E-02 BDL
lb/ton clinker	3.6E-04	7.0E-04	1.3E-03 BDL
Hydrogen Cyanide (HCN)			
ppmvd	--	--	1.3E+00
ppm @ 7% O_2	--	--	4.9E+00
lb/hr	--	--	1.2E+00
lb/ton clinker	--	--	2.2E-02

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level
[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Table 1-4
Summary of Average ICR Results – Brooksville Kiln 2 Stack, Raw Mill On

Parameter/Units	Kiln 1 EPA 26A Sampling Train A Average Results	Kiln 1 EPA 26A (Duplicate) Sampling Train B Average Results	Kiln 1 FTIR Average Results
Process Data			
Clinker Production, ton/hr	126.6		
Chlorine (Cl_2)			
ppmvd	3.3E-03	5.4E-03	--
ppm @ 7% O_2	6.4E-03	1.1E-02	--
lb/hr	9.2E-03	1.4E-02	--
lb/ton clinker	7.3E-05	1.1E-04	--
Hydrogen Fluoride (HF)			
ppmvd	1.7E-02 BDL	1.8E-02 BDL	1.2E-01 BDL
ppm @ 7% O_2	3.2E-02 BDL	3.4E-02 BDL	2.2E-01 BDL
lb/hr	1.3E-02 BDL	1.3E-02 BDL	9.0E-02 BDL
lb/ton clinker	1.0E-04 BDL	1.0E-04 BDL	7.1E-04 BDL
Hydrogen Cyanide (HCN)			
ppmvd	--	--	4.5E+00
ppm @ 7% O_2	--	--	8.6E+00
lb/hr	--	--	4.7E+00
lb/ton clinker	--	--	3.7E-02

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level
[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Table 1-5
Summary of Average ICR Results – Brooksville Kiln 2 Stack, Raw Mill Off

Parameter/Units	Kiln 1 EPA 26A Sampling Train A Average Results	Kiln 1 EPA 26A (Duplicate) Sampling Train B Average Results	Kiln 1 FTIR Average Results
Process Data			
Clinker Production, ton/hr	118.9		
Chlorine (Cl_2)			
ppmvd	6.0E-03	5.9E-03	--
ppm @ 7% O_2	9.7E-03	9.6E-03	--
lb/hr	1.3E-02	1.2E-02	--
lb/ton clinker	1.2E-04	1.0E-04	--
Hydrogen Fluoride (HF)			
ppmvd	2.7E-02 DLL	2.5E-02 DLL	1.2E-01 BDL
ppm @ 7% O_2	4.5E-02 DLL	4.1E-02 DLL	1.9E-01 BDL
lb/hr	1.8E-02 DLL	1.5E-02 DLL	7.3E-02 BDL
lb/ton clinker	1.5E-04 DLL	1.2E-04 DLL	6.2E-04 BDL
Hydrogen Cyanide (HCN)			
ppmvd	--	--	5.3E+00
ppm @ 7% O_2	--	--	8.6E+00
lb/hr	--	--	4.6E+00
lb/ton clinker	--	--	3.8E-02

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level
[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Table 1-6
Summary of Average ICR Results – Miami Kiln Stack, Raw Mill On

Parameter/Units	Kiln 1 EPA 26A Sampling Train A Average Results	Kiln 1 EPA 26A (Duplicate) Sampling Train B Average Results	Kiln 1 FTIR Average Results
Process Data			
Clinker Production, ton/hr	126.9		
Chlorine (Cl_2)			
ppmvd	4.1E-03 DLL	7.8E-03	--
ppm @ 7% O_2	8.3E-03 DLL	1.6E-02	--
lb/hr	9.7E-03 DLL	1.9E-02	--
lb/ton clinker	7.7E-05 DLL	1.5E-04	--
Hydrogen Fluoride (HF)			
ppmvd	2.1E-02 BDL	2.9E-02 DLL	1.2E-01 BDL
ppm @ 7% O_2	4.1E-02 BDL	5.9E-02 DLL	2.3E-01 BDL
lb/hr	1.4E-02 BDL	2.0E-02 DLL	7.7E-02 BDL
lb/ton clinker	1.1E-04 BDL	1.6E-04 DLL	6.0E-04 BDL
Hydrogen Cyanide (HCN)			
ppmvd	--	--	2.4E+00
ppm @ 7% O_2	--	--	4.8E+00
lb/hr	--	--	2.1E+00
lb/ton clinker	--	--	1.7E-02

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level
[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Table 1-7
Summary of Average ICR Results – Miami Kiln Stack, Raw Mill Off

Parameter/Units	Kiln 1 EPA 26A Sampling Train A Average Results	Kiln 1 EPA 26A (Duplicate) Sampling Train B Average Results	Kiln 1 FTIR Average Results
Process Data			
Clinker Production, ton/hr	126.9		
Chlorine (Cl_2)			
ppmvd	4.5E-03 DLL	4.7E-03 DLL	--
ppm @ 7% O_2	7.7E-03 DLL	8.0E-03 DLL	--
lb/hr	9.1E-03 DLL	9.7E-03 DLL	--
lb/ton clinker	7.1E-05 DLL	7.7E-05 DLL	--
Hydrogen Fluoride (HF)			
ppmvd	2.1E-02 BDL	2.2E-02 BDL	1.1E-01 BDL
ppm @ 7% O_2	3.5E-02 BDL	3.7E-02 BDL	1.9E-01 BDL
lb/hr	1.2E-02 BDL	1.2E-02 BDL	6.4E-02 BDL
lb/ton clinker	9.2E-05 BDL	9.8E-05 BDL	5.0E-04 BDL
Hydrogen Cyanide (HCN)			
ppmvd	--	--	2.9E+00
ppm @ 7% O_2	--	--	5.0E+00
lb/hr	--	--	2.2E+00
lb/ton clinker	--	--	1.8E-02

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level
[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

1.2 Key Personnel

A list of project participants is included below:

Facility Information

Source Location:	CEMEX Construction Materials Florida, LLC Brooksville South Cement Plant 10311 Cement Plant Road Brooksville, FL 34601 Miami Cement Plant 1200 NW 137th Ave Miami, FL 33182	
Project Contact:	Greg Bridge	Lillian DePrimo
Role:	Corporate Environmental Manager	Vice President, Environmental
Company:	CEMEX	CEMEX
Telephone:	352-442-5375	--
Email:	gregm.bridge@cemex.com	lillianf.deprimo@cemex.com

Agency Information

Regulatory Agency:	U.S. EPA
Agency Contact:	Brian Storey
Telephone:	(919) 541-1103
Email:	storey.brian@epa.gov

Testing Company Information

Testing Firm:	Montrose Air Quality Services, LLC	
Contact:	Neal Hendricks	Todd Gregg
Title:	Reporting Hub Manager	Senior Account Manager
Telephone:	205-358-1011 ext 11006	865-250-9067
Email:	nhendricks@montrose-env.com	togregg@montrose-env.com

Laboratory Information

Laboratory:	Montrose Environmental	Enthalpy Analytical
City, State:	Mount Pleasant, Michigan	Raleigh, North Carolina
Method:	EPA 320	EPA 26A

Test personnel and observers are summarized in Table 1-8.

Table 1-8
Test Personnel and Observers

Name	Affiliation	Role/Responsibility
Todd Gregg	Montrose	Project Manager
David Capers	Montrose	Instrument Technician/Qualified Individual
Jose Medina	Montrose	Instrument Technician/Qualified Individual
Steven Metosh	Montrose	Sample Train Operator
Joshua Fuller	Montrose	Sample Train Operator
JT Satterfield	Montrose	Sample Train Operator
Jordan Young	Montrose	Sample Train Operator
Amanda Niles	Montrose	FTIR Operator
Neal Hendricks	Montrose	Calculations and Report Preparation
Greg Bridge	CEMEX	Client Liaison

2.0 Plant and Sampling Location Descriptions

2.1 Process Description, Operation, and Control Equipment

2.1.1 Brooksville, FL Facility

The CEMEX plant comprises two Portland cement manufacturing lines, associated raw and product material handling activities, coal handling activities and auxiliary equipment, as well as all of the land designated as the South Brooksville facility.

Portland Cement Line 1 includes an in-line kiln/raw mill, coal mill, clinker cooler and associated process equipment. Waste heat from the kiln is used to provide heat to the raw mill, coal mill, and the kiln preheater, and is used to drive off moisture from the materials used for making clinker. All materials handling activities are controlled by fabric filter baghouse control systems, except for the Clinker Receiving/Handling System and the coal yard activities. For the Clinker Receiving/Handling System, the fugitive particulate matter emissions generated from the transfer of clinker from the receiving hopper to the belt conveyor are controlled using an atomized water dust suppression system. Water sprays or chemical wetting agents and stabilizers are used at the coal receiving area, the coal storage area, and the coal transfer system to control fugitive particulate matter emissions and minimize visible emissions. All fly ash handling systems (including transfer and silo storage) are totally enclosed and vented (including pneumatic system exhaust) through fabric filters. Continuous monitors are operated for particulate matter (PM), total hydrocarbons (THC), mercury (Hg), nitrogen oxides (NO_X), sulfur dioxide (SO_2), carbon dioxide (CO_2) and oxygen (O_2); however, the NO_X and SO_2 continuous monitors are not used to demonstrate compliance with NO_X and SO_2 emissions standards. SO_2 is used for surrogate monitoring for HCl.

For the Portland Cement Line 1, the maximum clinker production rate is 83.0 tons per hour (TPH) on a 24-hour average basis and 727,800 tons in any consecutive 12-month period. Fuels fired in the pyroprocessing system consist only of coal, petcoke, natural gas, No. 2 distillate fuel oil, residual fuel oil, "on-specification" used oil, and tire derived fuel (TDF), including shredded and whole tires. No. 2 fuel oil is used for the cement kiln No. 1's startup/preheating operation. “On-specification” used oil is allowed to be fired as a blend with purchased fuel oil as a startup fuel only. The TDF may be introduced at the base of the preheater (i.e., Kiln No. 1's inlet) or at the hot end of the kiln with a Tire Injection Mechanism (TIM). The firing of the TDF does not commence unless the Kiln No. 1 has reached an operating temperature (at least 1,400 ºF), which is measured at the cement kiln No. 1's inlet.

Portland Cement Line 2 includes a raw mill system, a dry process preheater/precalciner kiln system, clinker handling system, finish grinding operations, three cement loadout silos, and coal handling and grinding operations. NO_X emissions are controlled by the use of Selective Non-catalytic Reduction (SNCR) technology. SO_2 emissions are controlled by use of low

sulfur raw materials and inherent scrubbing by finely divided lime in the calciner and limestone in the raw mill. Carbon monoxide (CO) and volatile organic compounds (VOC) emissions are controlled by promoting complete combustion in the kiln and calciner and minimizing carbon and the oil/grease content of raw materials. Particulate matter (PM/PM_{10}) from the pyroprocessing system and the clinker cooler are controlled by fabric filter baghouses. Mercury emissions are controlled by material balance with a minimum of quarterly analyses of raw material samples and making and maintaining records of monthly and rolling 12-month mercury throughput. All of the materials handling activity particulate matter emissions are controlled by fabric filters. Water sprays or chemical wetting agents and stabilizers are used at the coal receiving area, the coal storage area, and the coal transfer system to control fugitive particulate matter emissions and minimize visible emissions. Continuous monitors are operated for PM, Hg, NO_X, SO_2, CO, THC, CO_2 and O_2.

Portland Cement Line 2 has a capacity of 156 TPH of clinker production and 240 TPH of Portland cement production. Daily and annual rates are 1,277,500 tons per year (3,500 tons/day, 24-hour average) of clinker production, and 1,800,000 tons per year (5,760 760 tons/day or 240 ton/hr) of cement production. Fuels allowed to be used in the pyroprocessing system are natural gas, distillate fuel oil, on specification used oil, coal, petroleum coke, propane, flyash, tire derived fuels and certain categories of alternative fuels. Line 2 also includes a coal processing operation that crushes coal and petroleum coke and has an annual processing capacity of 175,200 tons of coal and petroleum coke and may also utilize alternative fuels as specified in the facility permit.

In-Line Cement Kiln 1

Portland Cement Line 1 is designed for 83 TPH of cement clinker product. The cement kiln, in-line raw mill, coal mill and clinker cooler of Portland Cement Line 1 prior to 2012 exhausted to a common baghouse and exhaust stack with Florida Power Development, LLC (FPD) power plant. On June 30, 2018, the FPD power plant has been permanently shut down and currently is in the process of being dismantled. Kiln 1 continues to operate as a stand-alone cement kiln.

Waste heat from the kiln is used to provide heat to the raw mill, coal mill and the kiln preheater, which is used to drive off moisture from the materials used for making clinker. The movement of raw materials, recycled materials, and product are through enclosed transfer systems. All gas streams from the various transfer systems vent through a single baghouse system into the ambient air. The existing site is zoned for mining, so limestone and clay used in the production of cement are supplied on site. The kiln is allowed to fire coal, petcoke, natural gas, distillate and residual fuel oil, on-specification used oil, and shredded and whole tires.

Key pollutants from the Kiln 1 system include PM of various size categories, CO, NO_X, THC, SO_2, Hg, HCl, dioxin/furans (D/F) and greenhouse gases (GHGs) – primarily CO_2. PM emissions from the kiln system are controlled by the main baghouse. Emissions of CO and THC are controlled by good combustion practices, and NO_X emissions are controlled by best management practices and through a Selective Non-Catalytic Reduction (SNCR) system.

Gas conditioning tower is used to control the baghouse inlet temperature and D/F formation by injecting water to cool preheater exhaust gases. Continuous monitors are operated for PM, THC, Hg, NO_X, SO_2, CO_2 and O_2; however, the NO_X and SO_2 continuous monitors are not used to demonstration compliance with NO_X and SO_2 emissions standards specified in this emissions unit. SO_2 is used for surrogate monitoring for HCl. The stack height is 322 feet, with an exit diameter of 18.65 feet and a nominal exit temperature of 250ºF. The nominal volumetric flow rate is 363,000 acfm (250,000 dscfm).

In-Line Cement Kiln 2

Portland Cement Line 2 is designed for 156 TPH of cement clinker production. This clinker is ground with calcium sulfate (gypsum) to produce Portland cement at the rate of 240 TPH. The in-line kiln/raw mill and clinker cooler vent through a single baghouse system into the ambient air. Waste heat from the kiln is used to provide heat to the raw mill and the kiln preheater, which is used to drive off moisture from the materials used for making clinker. The kiln is allowed to fire coal, petroleum coke, natural gas, flyash, propane, distillate fuel oil, on-specification oil, whole tires and alternative fuels. NO_X emissions are controlled by the use of Selective Non-Catalytic Reduction (SNCR) technology. SO_2 emissions are controlled by use of low sulfur raw materials and inherent scrubbing by finely divided lime in the calciner and limestone in the raw mill. CO and VOC emissions are controlled by promoting complete combustion in the kiln and calciner and minimizing carbon and oily content of raw materials. PM/PM_{10} from the pyroprocessing system and the clinker cooler is controlled by a large fabric filter baghouse. Mercury emissions are controlled by material balance, dust transfer, and/or activated carbon injection. Continuous emissions monitors are operated for PM (via CPMS), Hg, NO_X, SO_2, CO_2, THC and O_2. Line 2 commenced operation on November 29, 2008. The stack characteristics for this unit are: Stack Height = 318 feet, Exit Diameter = 10.1 feet, Volumetric Flow Rate = 330,000 acfm and Exit Temperature = 250° F.

2.1.2 Miami, FL Facility

The Miami Cement Plant is a Portland cement manufacturing plant that primarily consists of the following emission units (EU): a dry process preheater/precalciner (PH/C) kiln with an in-line raw mill, a limestone quarry and crushing system, facilities for receiving materials by rail and truck, storage piles for short term material storage, a storage building for intermediate raw material and clinker storage, a stone dryer and soil thermal treatment plant, 6 finish mills, 2 packhouses, 32 cement silos, a rail and truck bulk loadout facility, a liquid fuel tank farm and the Sweetwater Ready Mix Concrete Batch Facility and Concrete Block Plant, a concrete batching plant and concrete block plant owned by CEMEX located on an adjacent facility. This facility is also supported by a portable diesel engine-powered crusher.

Limestone is extracted from the quarry, processed and combined with various other materials (including, but not limited to, bauxite, ash, shale and gypsum) in the raw mill and mixed to achieve the desired chemical composition of calcium, silica, alumina, iron and

other constituents. The mixture of raw materials, known as raw meal, is fed into a vertical roller mill to be ground into fine particulates. The raw meal is then fed into a rotary kiln.

The kiln fires mixes of permitted fuels to heat the raw meal, which chemically transforms the raw meal into clinker. After passing through the kiln, the clinker enters the clinker cooler. After being cooled, the clinker is discharged into storage silos. The kiln exhaust is partially vented to the raw mill to preheat the raw meal prior to being fed into the kiln preheater and partially vented to the coal mill to dry coal. Coal from the coal mill is processed and stored prior to combustion in the kiln and calciner burners.

Clinker is transported to the six horizontal, cylindrical finish mills (Finish Mill Nos. 1-6), which are filled with grinding media. Clinker and additives such as gypsum are ground into fine, powdered cement by the rotating mills.

Cement from the finish mills is pneumatically to a system of 32 bulk cement storage silos. Cement is withdrawn from these silos for distribution via trucks, railroad cars and bags. Cement is also transported to a packhouse with two bagging lines.

The adjacent Sweetwater Ready Mix Concrete Batch Facility and Concrete Block Plant consists of 2 twin-compartment cement silos, an aggregate handling system, a loadout system, and the concrete block plant. Aggregates, including various sizes of gravel, natural sand, and screenings, are mixed with finished cement, water, and liquid admixtures in varying compositions to produce read-mix concrete or concrete blocks. Read-mix concrete is then loaded into mixing trucks, where it is mixed in transit to job sites. Concrete used to make blocks is loaded into a mixer machine which then feeds into block molds. The blocks are cured in unheated kilns before being transported to a paved yard for storage.

In-Line Kiln

This emissions unit consists of a dry process PH/C kiln, in-line raw mill and clinker cooler. The raw meal is fed into the kiln system where it passes through or bypasses a 5-stage preheater before entering the rotary kiln. The kiln burns fuels to heat the raw meal to a temperature where it chemically transforms into clinker before being cooled and transported to clinker storage units. The kiln is permitted to produce up to 4,050 tons of clinker per day and 1,300,000 tons of clinker per consecutive 12-month period. The kiln is permitted to burn coal, petroleum coke, propane, No. 2 fuel oil, residual fuel oil, limited amounts of on-specification and off-specification used oil and limited amounts of alternative fuels. Alternative fuels are fed into the kiln using mechanical and pneumatic handling and feeding systems. The tire injection mechanism system (TIMS) uses an automated pitching device to launch one tire at a time into the front of the kiln.

Kiln exhaust gas and waste heat vents into the preheater, raw mill, and coal mill before exiting partially out of the main kiln stack and the coal mill stack. The main kiln stack is equipped with a baghouse for PM control and is shared by the kiln, some raw mill operations, and the clinker cooler. The main kiln stack is 359 feet (ft) tall with an exit diameter of 11 ft. According to recent application data, exhaust gas exits the stack at

volumetric flow rates of 348,377 actual cubic feet per minute (acfm) and 212,492 dry standard cubic feet per minute (dscfm) and an exit temperature of 282°F.

Mercury (Hg) emissions from coal combustion and raw meal heating are controlled by dust shuttling and activated carbon injection (ACI). The kiln uses dry sorbent injection (DSI) as needed to control acid gas emissions. Gas temperature inside the kiln system baghouse inlet is controlled to minimize dioxin/furan (d/f) emissions. The main kiln stack is equipped with continuous monitoring systems (CMS) for nitrogen oxide (NO_X) emissions, carbon monoxide (CO), total hydrocarbons (THC), sulfur dioxide (SO_2) used as a surrogate for hydrogen chloride (HCl) emissions compliance, Hg, and carbon dioxide (CO_2).

2.2 Flue Gas Sampling Locations

Information regarding the sampling locations is presented in Table 2-1.

Table 2-1
Sampling Locations

Sampling Location	Stack Inside Diameter (in.)	Distance from Nearest Disturbance		Traverse Points / Flow details
		Downstream EPA "B" (in./dia.)	Upstream EPA "A" (in./dia.)	
Brooksville Kiln 1 Stack	223.8	1860/8.3	1512/6.8	Isokinetic: 12 (3/port) Gaseous: 1 (1)
Brooksville Kiln 2 Stack	120.84	2136/17.7	768/6.4	Isokinetic: 12 (3/port) Gaseous: 1 (1)
Miami Kiln 1 Stack	132.4	950/7.2	1220/9.2	Isokinetic: 12 (3/port) Gaseous: 1 (1)

The sample locations were verified in the field to conform to EPA Method 1. Acceptable cyclonic flow conditions were confirmed prior to testing using EPA Method 1, Section 11.4. See Appendix A.1 for more information.

2.3 Operating Conditions and Process Data

The facilities operate continuously for 24 hours per day and 365 days per year. Emission tests are performed while the units and air pollution control devices are operating at the conditions required by the permit. The unit is tested when operating in accordance with the Clean Air Act section 114 information collection request Phase 2 requirements:

- Normal representative operation with the in-line raw mill both on and off
- Duplicate trains are required for each test run for Method 26A.

Plant personnel were responsible for establishing the test conditions and collecting all applicable unit-operating data. The process data that was provided is presented in Appendix B. Data collected includes the following parameters:

- clinker production rate (ton/hr).

3.0 Sampling and Analytical Procedures

3.1 Test Methods

The test methods for this test program have been presented in Table 1-1. Additional information regarding specific applications or modifications to standard procedures is presented below.

3.1.1 EPA Method 1, Sample and Velocity Traverses for Stationary Sources

EPA Method 1 is used to assure that representative samples or measurements of volumetric flow rate are obtained by dividing the cross-section of the stack or duct into equal areas, and then locating a traverse point within each of the equal areas. Acceptable sample locations must be located at least two stack or duct equivalent diameters downstream from a flow disturbance and one-half equivalent diameter upstream from a flow disturbance.

3.1.2 EPA Method 2, Determination of Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)

EPA Method 2 is used to measure the gas velocity using an S-type pitot tube connected to a pressure measurement device, and to measure the gas temperature using a calibrated thermocouple connected to a thermocouple indicator. Typically, Type S (Stausscheibe) pitot tubes conforming to the geometric specifications in the test method are used, along with an inclined manometer. The measurements are made at traverse points specified by EPA Method 1. The molecular weight of the gas stream is determined from independent measurements of O_2, CO_2, and moisture. The stack gas volumetric flow rate is calculated using the measured average velocity head, the area of the duct at the measurement plane, the measured average temperature, the measured duct static pressure, the molecular weight of the gas stream, and the measured moisture.

Pertinent information regarding the performance of the method is presented below:

- Method Options:
  - S-type pitot tube coefficient is 0.84

3.1.3 EPA Method 3A, Determination of Oxygen and Carbon Dioxide in Emissions from Stationary Sources (Instrumental Analyzer Procedure)

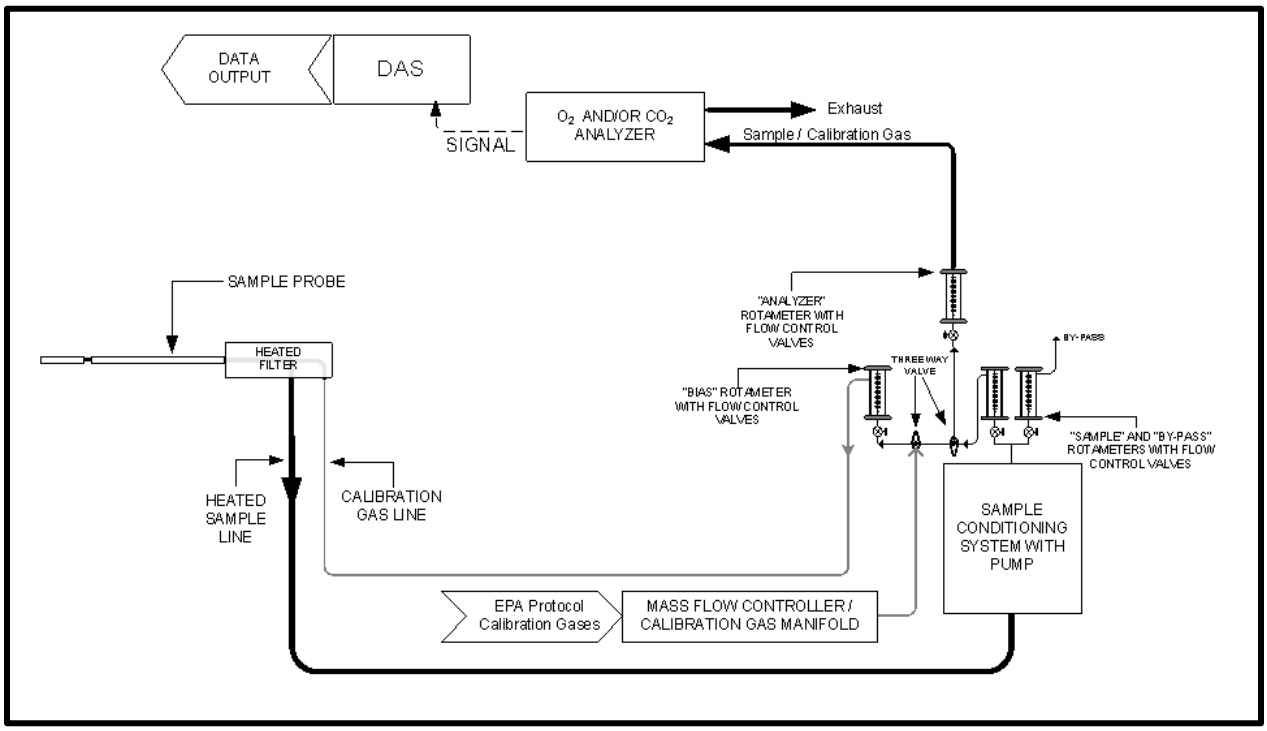
EPA Method 3A is an instrumental test method used to measure the concentration of O_2 and CO_2 in stack gas. The effluent gas is continuously or intermittently sampled and conveyed to analyzers that measure the concentrations of O_2 and CO_2. The performance requirements of the method must be met to validate data. An O_2 stratification check was performed prior to or during Run 1 following the procedures in Section 8.1.2 of EPA Method 7E.

Pertinent information regarding the performance of the method is presented below:

- Method Options:
  - EPA Method 3A is used to measure O_2 to normalize target analyte concentrations to 7% O_2
  - A paramagnetic analyzer is used to measure O_2
- Method Exceptions:
  - Method 3A calibration acceptance criteria are reduced to 0.2% O_2 difference for analyzer calibration error, and 0.3% O_2 for zero and upscale system bias checks, and zero and upscale drift checks because normalizing data to 7% O_2 requires accurate measurement.
- Target and/or Minimum Required Sample Duration: 60 minutes
- Target Analytes: O_2

The sampling system is detailed in Figure 3-1.

Figure 3-1
EPA Method 3A Sampling Train



3.1.4 EPA Method 4, Determination of Moisture Content in Stack Gas

EPA Method 4 is a manual, non-isokinetic method used to measure the moisture content of gas streams. Gas is sampled at a constant sampling rate through a probe and impinger train. Moisture is removed using a series of pre-weighed impingers containing methodology-specific liquids and silica gel immersed in an ice water bath. The impingers are weighed after each run to determine the percent moisture.

Pertinent information regarding the performance of the method is presented below:

- Method Options:
  - The reference method is used to measure moisture
  - Since it is theoretically impossible for measured moisture to be higher than psychrometric moisture, the psychrometric moisture is also calculated, and the lower moisture value is used in the calculations
- Target and/or Minimum Required Sample Duration: 60 minutes
- Target and/or Minimum Required Sample Volume: 35 dscf or 1 dscm

3.1.5 EPA Method 26A, Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources Isokinetic Method

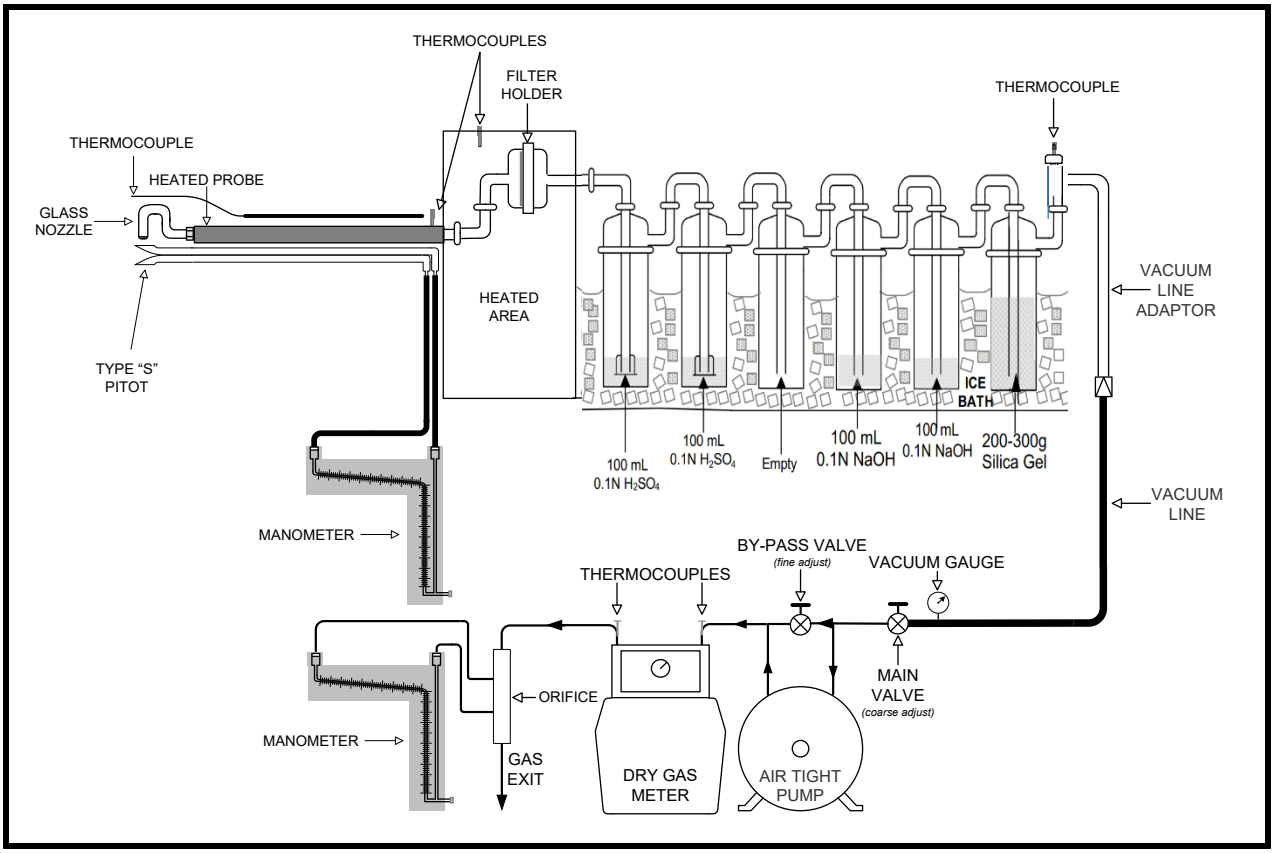
EPA Method 26A is a manual, isokinetic method used to measure hydrogen halide and halogen emissions from stationary sources. Gaseous and particulate pollutants are withdrawn isokinetically from the source and collected in an optional cyclone, on a filter, and in absorbing solutions. The cyclone collects any liquid droplets and is not necessary if the source emissions do not contain them; however, it is preferable to include the cyclone in the sampling train to protect the filter from any liquid present. The filter collects particulate matter including halide salts but is not routinely recovered or analyzed. Acidic and alkaline absorbing solutions collect the gaseous hydrogen halides and halogens, respectively. Following sampling of emissions containing liquid droplets, any halides/halogens dissolved in the liquid in the cyclone and on the filter are vaporized to gas and collected in the impingers by pulling conditioned ambient air through the sampling train. The hydrogen halides are solubilized in the acidic solution and form chloride (Cl^-), bromide (Br^-), and fluoride (F^-) ions. The halogens have a very low solubility in the acidic solution and pass through to the alkaline solution where they are hydrolyzed to form a proton (H^+), the halide ion, and the hypohalous acid (HClO or HBrO). Sodium thiosulfate is added to the alkaline solution to assure reaction with the hypohalous acid to form a second halide ion such that two halide ions are formed for each molecule of halogen gas. The halide ions in the separate solutions are measured by ion chromatography (IC).

Pertinent information regarding the performance of the method is presented below:

- Method Options:
  - EPA Method 26A is used primarily to quantify Cl_2 concentrations. (Method 26A also provided results for HF and were compared to FTIR measurement results, as requested by EPA).
  - Duplicate simultaneous trains (aka, "paired trains") for each test run were used to determine precision. The relative deviation (RD) is calculated (same as Method 30B) between the Cl_2 concentrations with the paired trains.
  - A 10% relative deviation or 0.2 ppm absolute difference in Cl_2 results is required. Accuracy was determined using the standard analytical procedures from Method 26A.
  - Quality control consists of adding a dry impinger being in between the first two acidic impingers for HF concentration determination and the last two basic impingers for Cl_2 determination. The contents of the dry impinger were combined with the contents of the first two acid impingers and analyzed for fluoride ions attributable to HF. The contents of the last two basic impingers were analyzed for chloride ions attributable to Cl_2.
  - Additional quality control consists of collecting and analyzing a blank train for every three test runs. The blank train were assembled from a used train, leak checked and sit for a period equal to the sampling time (i.e, 1-hr). The blank train data was used to determine the method detection limit for the test program target analytes, i.e., the lowest number that could be detected, and compared to stack emissions.
- Target Analytes: HF, Cl_2
- Target and/or Minimum Required Sample Duration: 60 minutes
- Target and/or Minimum Required Sample Volume: 35 dscf or 1 dscm
- Analytical Laboratory: Enthalpy Analytical, Raleigh, North Carolina

The sampling system is detailed in Figure 3-2.

Figure 3-2
EPA Method 26A Sampling Train



3.1.6 ASTM D6348-12 & EPA Method 320, Determination of Gaseous Compounds by Extractive Direct Interface FTIR Spectroscopy & Measurement of Vapor Phase Organic and Inorganic Emissions by Extractive FTIR Spectroscopy

ASTM Method D-6348-12 & EPA Method 320 are instrumental test methods used to measure specific analyte concentrations for which EPA reference spectra have been developed or prepared. Extractive emission measurements are performed using FTIR spectroscopy. The FTIR analyzer is composed of a spectrometer and detector, a high optical throughput sampling cell, analysis software, and a quantitative spectral library. The analyzer collects high resolution spectra in the mid infrared spectral region (400 to 4,000 cm^{-1}), which are analyzed using the quantitative spectral library. This provides an accurate, highly sensitive measurement of gases and vapors.

ASTM D 6348-12 specifically, and EPA Method 320 generally, was used to measure HCN and HF concentrations with the following additional requirements. Detection limit requirements are 0.5 ppm, or lower, for both compounds.

Pertinent information regarding the performance of the method is presented below:

Method Options:
Detection limits, Instrument Health and Specific Operation

- Laboratory Tests Before Field Test Program
  - Before testing, acquire 7 consecutive samples of dry nitrogen through the sampling system and calculate the standard deviation for each of the test program target analytes multiplied by a factor of 3. These data are the representative of detection limits for this test program and are compared to the 0.5 ppm required DL.
  - The results for the SNR @ 2500 should be >2500, at 64 scans.
  - The results for S Beam @ 2500 should be >0.9.
  - Perform Direct Analysis of HCN calibration gases and verify FTIR response agrees with tag value within 5%.
- During Field Test Program
  - Conduct an instrument background on each test day prior to any testing using dry nitrogen directed to the gas cell. Conduct the background for at least 128 scans.
  - Maintain the probe, filter, sample line and all sample system components in contact with effluent above 375ºF or 191ºC (consistent with FTIR calibration temperature) to avoid any possible "cold spots."
  - Heated sample lines should be ≤100 feet wherever possible, and not longer than 200 feet, without prior approval for unusual test circumstances.
  - Perform system zero with all sampling system components at operating temperature by injecting nitrogen at the sample probe and through sample filter and entire measurement system. After equilibration has been achieved, quantify all measurement components for at least 128 scans.
  - Sample ambient until equilibration of the measurement system has been achieved. Quantify all measurement components for at least 128 scans.
  - Position sample probe at effluent measurement point and sample until equilibration of the measurement system has been achieved. Quantify effluent concentrations for initial dynamic spike.

- Analyte spiking is conducted for HCN before the first test run, and after each successive test run for a minimum of 4 spikes per test condition. (Additional spikes are required before and after corrective action for the sampling or analysis system and/or before and after removing the sampling system from the stack.) These results determine accuracy.
    - Maintain spike gas injections at 10% or less of total sample volume.
    - Select spike gas concentration and flow rate to approximately double the native effluent concentration, or conduct spike to add 3-4 ppm to native concentration, whichever results in greater spiked concentration.
    - Spike recovery results shall be within ±20% of the expected value or ±0.5 ppm, whichever is least restrictive.
    - Specific HCN gases were manufactured for this test program in the range of 50-100 ppm to provide spikes in the 5-10 ppm range, or lower[1]. An SF_6 or appropriate tracer was used to calculate the exact spike gas dilution ratio of 10% or less.
- Direct nitrogen through the sampling system until all traces of spike gas are removed and lines are proven below DL for target analytes.
- Conduct sample Run 1
- Residual results for HCN and HF should be less than 0.2-0.3 ppm for data acceptance, or less than 5% of the measured value, whichever is least restrictive.
- Calculate the standard deviation for each of the test program target analytes for seven consecutive sample spectra from Run 1, multiplied by a factor of 3. These data shall be compared to the pre-test system nitrogen standard deviation results and also included in the facility test report.
    i. The SNR and S Beam need also to meet the criteria of >2500 and >0.9 respectively.
- Repeat Analyte Spiking for HCN and subsequent system nitrogen injection before proceeding to Run 2.
- Continue sequence until at least three valid runs per test condition are completed.

- Reporting
    - a. All effluent and measurement components required to perform quantitative analyses (i.e., target analytes, co-absorbing components, tracers, etc.) shall be reported as an Excel exported .PRN file along with their residual results, and SNR and S Beam at 2500 cm.

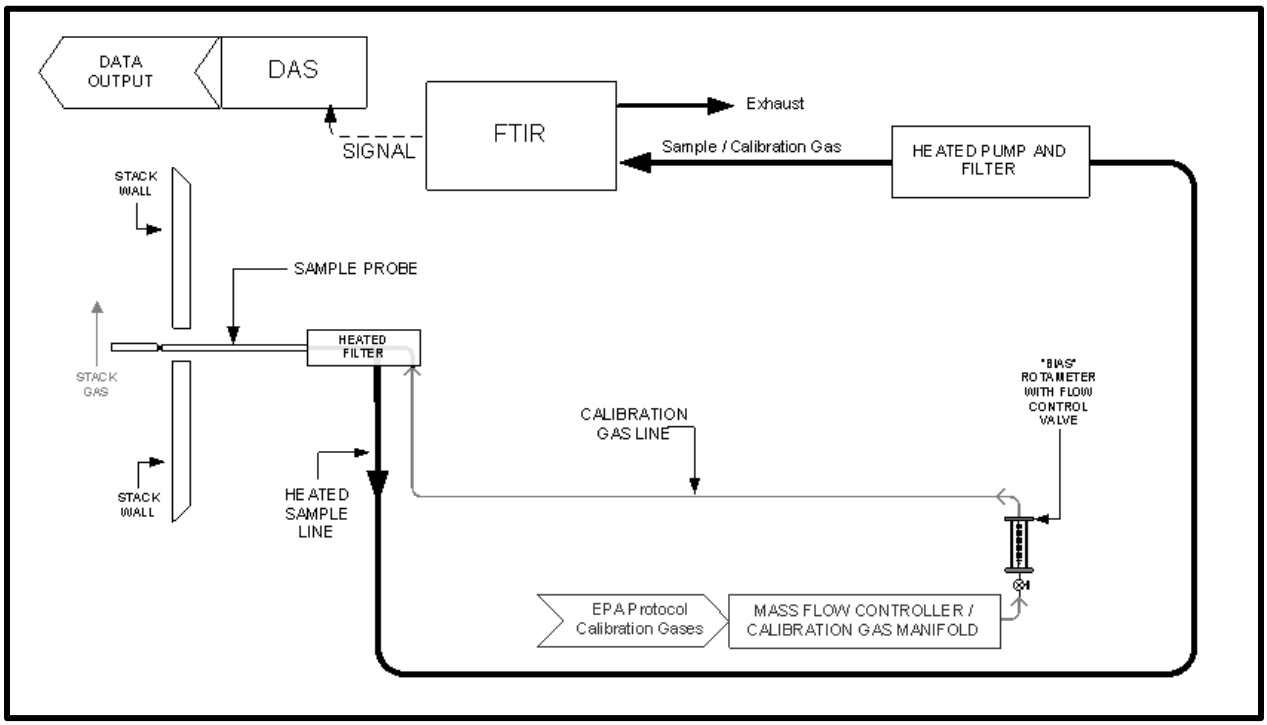
[1] HCN calibrations gases are manufactured by Airgas Exploratory Products under the EPA Alt 114 "Gas Manufacturer Alternate Certification" procedures.

- b. All results of CTS, and analyte spiking
- c. All results from standard deviation calculations; direct and system zero nitrogen injections, ambient air samples and all effluent samples.

- Target Analytes: CO_2, H_2O, HCN, HF
- Target and/or Minimum Required Sample Duration: 60 minutes
- Analytical Laboratory: Montrose Air Quality Services, Mt Pleasant, Michigan

The sampling system is detailed in Figure 3-3.

Figure 3-3
EPA Method 320 Sampling Train



3.2 Process Test Methods

The test plan did not require that process samples be collected during this test program; therefore, no process sample data are presented in this test report.

4.0 Test Discussion and Results

4.1 Field Test Deviations and Exceptions

The post-test leak checks for several test runs were conducted at a vacuum less than observed during sampling. The following summarizes the (11) runs exhibiting a post-test leak check vacuum less than maximum observed during the test run.

Brooksville Kiln 1 Raw Mill On Train A	Run 2: Conducted at 3 in. H_2O; 5 in. H_2O observed
Brooksville Kiln 1 Raw Mill On Train A	Run 3: Conducted at 3 in. H_2O; 4 in. H_2O observed
Brooksville Kiln 2 Raw Mill On Train A	Run 1: Conducted at 9 in. H_2O; 10.5 in. H_2O observed
Brooksville Kiln 2 Raw Mill On Train A	Run 2: Conducted at 8 in. H_2O; 10 in. H_2O observed
Brooksville Kiln 2 Raw Mill On Train A	Run 3: Conducted at 9 in. H_2O; 10 in. H_2O observed
Miami Kiln Raw Mill Off Train B	Run 1: Conducted at 6 in. H_2O; 7 in. H_2O observed
Miami Kiln Raw Mill Off Train B	Run 2: Conducted at 3 in. H_2O; 4 in. H_2O observed
Miami Kiln Raw Mill Off Train B	Run 3: Conducted at 3 in. H_2O; 4 in. H_2O observed
Miami Kiln Raw Mill On Train B	Run 1: Conducted at 4 in. H_2O; 6 in. H_2O observed
Miami Kiln Raw Mill On Train B	Run 2: Conducted at 3 in. H_2O; 5 in. H_2O observed
Miami Kiln Raw Mill On Train B	Run 3: Conducted at 5 in. H_2O; 6 in. H_2O observed

No other field deviations or exceptions from the test plan or test methods occurred during this test program.

4.2 Presentation of Results

The average results are summarized in Tables 1-2 through 1-7. The results of individual test runs performed are presented in Tables 4-1 through 4-12. Emissions are reported in units consistent with those in the applicable regulations or requirements. Additional information is included in the appendices as presented in the Table of Contents.

Calculation of Method 26A chlorine (Cl_2) paired train agreement is provided as Appendix A.20 to this report. The result was that all sampling train pairs met the less than 0.2 ppmvd difference specification.

Table 4-1
Cement ICR Results -
Brooksville Kiln 1 Stack, Raw Mill On (Sampling Train A)

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	11/29/2023	11/29/2023	11/29/2023	-
Time	10:10-11:12	12:45-13:50	14:39-15:41	-
Process Data				
Clinker processed rate, short ton/hr	64.8	64.9	65.3	65.0
Sampling & Flue Gas Parameters				
sample duration, minutes	60	60	60	60
O_2, % volume dry	17.01	17.03	16.74	16.93
CO_2, % volume dry	6.26	6.36	6.87	6.50
flue gas temperature, °F	223.3	221.5	233.8	226.2
moisture content, % volume	5.72	5.42	6.34	5.83
velocity, ft/s	20.85	19.17	19.21	19.74
volumetric flow rate, acfm	341,701	314,264	314,851	323,605
volumetric flow rate, scfm	264,736	244,134	239,760	249,544
volumetric flow rate, dscfm	249,580	230,909	224,552	235,014
Hydrogen Fluoride (HF)				
µg	41.1	17.4 BDL	18.4 BDL	25.6 DLL
ppmvd	4.0E-02	1.7E-02 BDL	2.0E-02 BDL	2.6E-02 DLL
ppmvd @ 7 %O_2	1.4E-01	6.2E-02 BDL	6.6E-02 BDL	9.0E-02 DLL
gr/dscf	1.5E-05	6.3E-06 BDL	7.2E-06 BDL	9.3E-06 DLL
lb/hr	3.1E-02	1.2E-02 BDL	1.4E-02 BDL	1.9E-02 DLL
lb/ton	4.8E-04	1.9E-04 BDL	2.1E-04 BDL	2.9E-04 DLL
Chlorine (Cl_2)				
µg	59.3	52.1	29.5	47.0
ppmvd	1.6E-02	1.5E-02	8.9E-03	1.3E-02
ppmvd @ 7 %O_2	5.8E-02	5.2E-02	3.0E-02	4.7E-02
gr/dscf	2.1E-05	1.9E-05	1.1E-05	1.7E-05
lb/hr	4.5E-02	3.7E-02	2.2E-02	3.5E-02
lb/ton	6.9E-04	5.7E-04	3.4E-04	5.3E-04
Hydrogen Cyanide (HCN)				
ppmvw	0.7	0.7	0.7	0.7
ppmvd	7.3E-01	6.9E-01	7.0E-01	7.1E-01
ppmvd @ 7 %O_2	2.6E+00	2.5E+00	2.4E+00	2.5E+00
gr/dscf	3.6E-04	3.4E-04	3.5E-04	3.5E-04
lb/hr	7.7E-01	6.7E-01	6.7E-01	7.0E-01

Parameter/Units	Run 1	Run 2	Run 3	Average
lb/ton	1.2E-02	1.0E-02	1.0E-02	1.1E-02
Hydrogen Fluoride (HF) - Method 320				
ppmvw	1.0E-01 BDL	1.0E-01 BDL	1.0E-01 BDL	1.0E-01 BDL
ppmvd	1.1E-01 BDL	1.1E-01 BDL	1.1E-01 BDL	1.1E-01 BDL
ppmvd @ 7 %O_2	3.8E-01 BDL	3.8E-01 BDL	3.6E-01 BDL	3.7E-01 BDL
gr/dscf	3.9E-05 BDL	3.8E-05 BDL	3.9E-05 BDL	3.9E-05 BDL
lb/hr	8.2E-02 BDL	7.6E-02 BDL	7.5E-02 BDL	7.8E-02 BDL
lb/ton	1.3E-03 BDL	1.2E-03 BDL	1.1E-03 BDL	1.2E-03 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Table 4-2
Cement ICR Results -
Brooksville Kiln 1 Stack, Raw Mill On (Sampling Train B)

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	11/29/2023	11/29/2023	11/29/2023	-
Time	10:10-11:12	12:45-13:50	14:39-15:41	-
Process Data				
Clinker processed rate, short ton/hr	64.8	64.9	65.3	65.0
Sampling & Flue Gas Parameters				
sample duration, minutes	60	60	60	60
O_2, % volume dry	17.01	17.03	16.74	16.93
CO_2, % volume dry	6.27	6.39	6.83	6.50
flue gas temperature, °F	224.0	222.0	235.1	227.0
moisture content, % volume	5.88	5.79	5.86	5.84
velocity, ft/s	19.59	22.04	22.51	21.38
volumetric flow rate, acfm	321,056	361,266	368,925	350,415
volumetric flow rate, scfm	248,333	280,255	280,245	269,611
volumetric flow rate, dscfm	233,738	264,027	263,816	253,860
Hydrogen Fluoride (HF)				
µg	105.0	39.1	24.2	56.1
ppmvd	1.0E-01	3.5E-02	2.2E-02	5.4E-02
ppmvd @ 7 %O_2	3.8E-01	1.3E-01	7.2E-02	1.9E-01
gr/dscf	3.8E-05	1.3E-05	7.8E-06	2.0E-05
lb/hr	7.6E-02	2.9E-02	1.8E-02	4.1E-02
lb/ton	1.2E-03	4.5E-04	2.7E-04	6.3E-04
Chlorine (Cl_2)				
µg	74.0	405.0	33.6	170.9
ppmvd	2.1E-02	1.0E-01	8.4E-03	4.4E-02
ppmvd @ 7 %O_2	7.5E-02	3.7E-01	2.8E-02	1.6E-01
gr/dscf	2.7E-05	1.3E-04	1.1E-05	5.7E-05
lb/hr	5.4E-02	3.0E-01	2.5E-02	1.3E-01
lb/ton	8.3E-04	4.6E-03	3.8E-04	1.9E-03

Table 4-3
Cement ICR Results -
Brooksville Kiln 1 Stack, Raw Mill Off (Sampling Train A)

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	6/5/2024	6/5/2024	6/5/2024	-
Time	8:00-9:10	9:25-10:35	10:50-12:00	-
Process Data				
Clinker processed rate, short ton/hr	56.9	56.9	56.9	56.9
Sampling & Flue Gas Parameters				
sample duration, minutes	60	60	60	60
O_2, % volume dry	17.19	17.23	17.27	17.23
CO_2, % volume dry	6.37	6.36	6.31	6.35
flue gas temperature, °F	296.9	325.2	320.3	314.1
moisture content, % volume	5.94	5.28	5.14	5.45
velocity, ft/s	21.30	22.30	21.57	21.72
volumetric flow rate, acfm	349,153	365,513	353,475	356,047
volumetric flow rate, scfm	241,473	243,853	237,283	240,870
volumetric flow rate, dscfm	227,127	230,972	225,095	227,732
Hydrogen Fluoride (HF)				
µg	42.2	28.8	19.9	30.3
ppmvd	4.1E-02	2.7E-02	1.9E-02	2.9E-02
ppmvd @ 7 %O_2	1.5E-01	1.0E-01	7.4E-02	1.1E-01
gr/dscf	1.5E-05	1.0E-05	7.0E-06	1.1E-05
lb/hr	2.9E-02	2.0E-02	1.4E-02	2.1E-02
lb/ton	5.0E-04	3.5E-04	2.4E-04	3.6E-04
Chlorine (Cl_2)				
µg	110.0	59.6	44.0	71.2
ppmvd	3.0E-02	1.6E-02	1.2E-02	1.9E-02
ppmvd @ 7 %O_2	1.1E-01	6.1E-02	4.6E-02	7.3E-02
gr/dscf	3.8E-05	2.1E-05	1.6E-05	2.5E-05
lb/hr	7.5E-02	4.1E-02	3.0E-02	4.9E-02
lb/ton	1.3E-03	7.2E-04	5.3E-04	8.5E-04
Hydrogen Cyanide (HCN)				
ppmvw	1.2	1.2	1.3	1.2
ppmvd	1.3E+00	1.3E+00	1.3E+00	1.3E+00
ppmvd @ 7 %O_2	4.7E+00	5.0E+00	5.1E+00	4.9E+00
gr/dscf	6.2E-04	6.4E-04	6.6E-04	6.4E-04
lb/hr	1.2E+00	1.3E+00	1.3E+00	1.2E+00

Parameter/Units	Run 1	Run 2	Run 3	Average
lb/ton	2.1E-02	2.2E-02	2.2E-02	2.2E-02
Hydrogen Fluoride (HF) - Method 320				
ppmvw	1.0E-01 BDL	1.0E-01 BDL	1.0E-01 BDL	1.0E-01 BDL
ppmvd	1.1E-01 BDL	1.1E-01 BDL	1.1E-01 BDL	1.1E-01 BDL
ppmvd @ 7 %O_2	4.0E-01 BDL	4.0E-01 BDL	4.0E-01 BDL	4.0E-01 BDL
gr/dscf	3.9E-05 BDL	3.8E-05 BDL	3.8E-05 BDL	3.8E-05 BDL
lb/hr	7.5E-02 BDL	7.6E-02 BDL	7.4E-02 BDL	7.5E-02 BDL
lb/ton	1.3E-03 BDL	1.3E-03 BDL	1.3E-03 BDL	1.3E-03 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Table 4-4
Cement ICR Results -
Brooksville Kiln 1 Stack, Raw Mill Off (Sampling Train B)

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	6/5/2024	6/5/2024	6/5/2024	-
Time	8:00-9:10	9:25-10:25	14:39-15:41	-
Process Data				
Clinker processed rate, short ton/hr	56.9	56.9	56.9	56.9
Sampling & Flue Gas Parameters				
sample duration, minutes	60	60	60	60
O_2, % volume dry	17.19	17.23	17.27	17.23
CO_2, % volume dry	6.37	6.40	6.36	6.37
flue gas temperature, °F	301.4	301.1	301.1	301.2
moisture content, % volume	5.94	5.90	5.75	5.87
velocity, ft/s	22.41	21.91	21.73	22.02
volumetric flow rate, acfm	367,383	359,202	356,117	360,901
volumetric flow rate, scfm	252,664	247,158	245,047	248,290
volumetric flow rate, dscfm	237,651	232,563	230,958	233,724
Hydrogen Fluoride (HF)				
µg	40.4	56.7	56.7	51.3
ppmvd	4.2E-02	6.0E-02	6.2E-02	5.5E-02
ppmvd @ 7 $\%O_2$	1.6E-01	2.3E-01	2.4E-01	2.1E-01
gr/dscf	1.5E-05	2.2E-05	2.2E-05	2.0E-05
lb/hr	3.1E-02	4.4E-02	4.4E-02	4.0E-02
lb/ton	5.5E-04	7.7E-04	7.8E-04	7.0E-04
Chlorine (Cl_2)				
µg	53.5	81.6	60.9	65.3
ppmvd	1.6E-02	2.4E-02	1.9E-02	2.0E-02
ppmvd @ 7 $\%O_2$	5.9E-02	9.3E-02	7.1E-02	7.4E-02
gr/dscf	2.0E-05	3.1E-05	2.4E-05	2.5E-05
lb/hr	4.1E-02	6.3E-02	4.8E-02	5.1E-02
lb/ton	7.3E-04	1.1E-03	8.4E-04	8.9E-04

Table 4-5
Cement ICR Results -
Brooksville Kiln 2 Stack, Raw Mill On (Sampling Train A)

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	11/30/2023	12/1/2023	12/1/2023	-
Time	17:09-18:14	10:37-11:42	12:20-13:26	-
Process Data				
Clinker processed rate, short ton/hr	120.9	129.7	129.3	126.6
Sampling & Flue Gas Parameters				
sample duration, minutes	60	60	60	60
O_2, % volume dry	14.11	13.38	13.46	13.65
CO_2, % volume dry	11.72	13.22	13.00	12.64
flue gas temperature, °F	229.8	239.2	240.5	236.5
moisture content, % volume	12.35	13.68	13.74	13.26
velocity, ft/s	81.80	76.77	79.82	79.46
volumetric flow rate, acfm	390,891	366,822	381,408	379,707
volumetric flow rate, scfm	298,419	276,615	287,067	287,367
volumetric flow rate, dscfm	261,550	238,769	247,619	249,313
Hydrogen Fluoride (HF)				
µg	26.4 BDL	25.8 BDL	26.1 BDL	26.1 BDL
ppmvd	1.6E-02 BDL	1.7E-02 BDL	1.7E-02 BDL	1.7E-02 BDL
ppmvd @ 7 %O_2	3.3E-02 BDL	3.2E-02 BDL	3.2E-02 BDL	3.2E-02 BDL
gr/dscf	5.8E-06 BDL	6.3E-06 BDL	6.2E-06 BDL	6.1E-06 BDL
lb/hr	1.3E-02 BDL	1.3E-02 BDL	1.3E-02 BDL	1.3E-02 BDL
lb/ton	1.1E-04 BDL	9.9E-05 BDL	1.0E-04 BDL	1.0E-04 BDL
Chlorine (Cl_2)				
µg	18.9	18.1	18.2	18.4
ppmvd	3.2E-03	3.4E-03	3.4E-03	3.3E-03
ppmvd @ 7 %O_2	6.6E-03	6.4E-03	6.3E-03	6.4E-03
gr/dscf	4.2E-06	4.4E-06	4.3E-06	4.3E-06
lb/hr	9.3E-03	9.1E-03	9.2E-03	9.2E-03
lb/ton	7.7E-05	7.0E-05	7.1E-05	7.3E-05
Hydrogen Cyanide (HCN)				
ppmvw	3.5	4.2	4.1	3.9
ppmvd	4.0E+00	4.8E+00	4.8E+00	4.5E+00
ppmvd @ 7 %O_2	8.1E+00	8.9E+00	8.9E+00	8.6E+00
gr/dscf	1.9E-03	2.4E-03	2.3E-03	2.2E-03
lb/hr	4.4E+00	4.8E+00	5.0E+00	4.7E+00

Parameter/Units	Run 1	Run 2	Run 3	Average
lb/ton	3.6E-02	3.7E-02	3.8E-02	3.7E-02
Hydrogen Fluoride (HF) - Method 320				
ppmvw	1.0E-01 BDL	1.0E-01 BDL	1.0E-01 BDL	1.0E-01 BDL
ppmvd	1.1E-01 BDL	1.2E-01 BDL	1.2E-01 BDL	1.2E-01 BDL
ppmvd @ 7 %O_2	2.3E-01 BDL	2.1E-01 BDL	2.2E-01 BDL	2.2E-01 BDL
gr/dscf	4.1E-05 BDL	4.2E-05 BDL	4.2E-05 BDL	4.2E-05 BDL
lb/hr	9.3E-02 BDL	8.6E-02 BDL	8.9E-02 BDL	9.0E-02 BDL
lb/ton	7.7E-04 BDL	6.6E-04 BDL	6.9E-04 BDL	7.1E-04 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Table 4-6
Cement ICR Results -
Brooksville Kiln 2 Stack, Raw Mill On (Sampling Train B)

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	11/30/2023	12/1/2023	12/1/2023	-
Time	17:09-18:14	10:37-11:42	12:20-13:26	-
Process Data				
Clinker processed rate, short ton/hr	120.9	129.7	129.3	126.6
Sampling & Flue Gas Parameters				
sample duration, minutes	60	60	60	60
O_2, % volume dry	14.11	13.38	13.46	13.65
CO_2, % volume dry	11.74	13.19	12.97	12.64
flue gas temperature, °F	231.6	239.9	240.6	237.4
moisture content, % volume	12.54	13.50	13.58	13.21
velocity, ft/s	73.88	71.72	72.73	72.78
volumetric flow rate, acfm	353,022	342,707	347,546	347,759
volumetric flow rate, scfm	268,736	258,240	261,462	262,813
volumetric flow rate, dscfm	235,028	223,367	225,962	228,119
Hydrogen Fluoride (HF)				
µg	26.2 BDL	25.2 BDL	25.3 BDL	25.6 BDL
ppmvd	1.7E-02 BDL	1.8E-02 BDL	1.8E-02 BDL	1.8E-02 BDL
ppmvd @ 7 %O_2	3.5E-02 BDL	3.4E-02 BDL	3.4E-02 BDL	3.4E-02 BDL
gr/dscf	6.2E-06 BDL	6.6E-06 BDL	6.6E-06 BDL	6.5E-06 BDL
lb/hr	1.3E-02 BDL	1.3E-02 BDL	1.3E-02 BDL	1.3E-02 BDL
lb/ton	1.0E-04 BDL	9.8E-05 BDL	9.9E-05 BDL	1.0E-04 BDL
Chlorine (Cl_2)				
µg	43.7	19.4	21.2	28.1
ppmvd	8.1E-03	4.0E-03	4.3E-03	5.4E-03
ppmvd @ 7 %O_2	1.6E-02	7.3E-03	8.0E-03	1.1E-02
gr/dscf	1.0E-05	5.1E-06	5.5E-06	7.0E-06
lb/hr	2.1E-02	9.8E-03	1.1E-02	1.4E-02
lb/ton	1.7E-04	7.5E-05	8.3E-05	1.1E-04

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Table 4-7
Cement ICR Results -
Brooksville Kiln 2 Stack, Raw Mill Off (Sampling Train A)

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	11/30/2023	11/30/2023	11/30/2023	-
Time	10:25-11:30	12:10-13:14	13:55-15:01	-
Process Data				
Clinker processed rate, short ton/hr	127.6	129.1	100.0	118.9
Sampling & Flue Gas Parameters				
sample duration, minutes	60	60	60	60
O_2, % volume dry	12.95	11.62	12.31	12.29
CO_2, % volume dry	13.92	16.24	14.90	15.02
flue gas temperature, °F	334.4	339.1	322.8	332.1
moisture content, % volume	12.02	13.59	14.12	13.24
velocity, ft/s	81.84	72.06	67.42	73.78
volumetric flow rate, acfm	391,088	344,323	322,183	352,531
volumetric flow rate, scfm	260,100	227,508	217,033	234,880
volumetric flow rate, dscfm	228,849	196,585	186,397	203,944
Hydrogen Fluoride (HF)				
µg	49.4	31.2	23.7 BDL	34.8 DLL
ppmvd	3.5E-02	2.6E-02	2.1E-02 BDL	2.7E-02 DLL
ppmvd @ 7 %O_2	6.2E-02	3.9E-02	3.4E-02 BDL	4.5E-02 DLL
gr/dscf	1.3E-05	9.4E-06	7.6E-06 BDL	9.9E-06 DLL
lb/hr	2.5E-02	1.6E-02	1.2E-02 BDL	1.8E-02 DLL
lb/ton	2.0E-04	1.2E-04	1.2E-04 BDL	1.5E-04 DLL
Chlorine (Cl_2)				
µg	23.7	18.9	35.1	25.9
ppmvd	4.8E-03	4.4E-03	8.7E-03	6.0E-03
ppmvd @ 7 %O_2	8.3E-03	6.6E-03	1.4E-02	9.7E-03
gr/dscf	6.1E-06	5.7E-06	1.1E-05	7.7E-06
lb/hr	1.2E-02	9.6E-03	1.8E-02	1.3E-02
lb/ton	9.4E-05	7.4E-05	1.8E-04	1.2E-04
Hydrogen Cyanide (HCN)				
ppmvw	4.5	5.0	4.3	4.6
ppmvd	5.2E+00	5.8E+00	5.0E+00	5.3E+00
ppmvd @ 7 %O_2	9.0E+00	8.6E+00	8.1E+00	8.6E+00
gr/dscf	2.5E-03	2.8E-03	2.5E-03	2.6E-03
lb/hr	5.0E+00	4.8E+00	3.9E+00	4.6E+00

Parameter/Units	Run 1	Run 2	Run 3	Average
lb/ton	3.9E-02	3.7E-02	3.9E-02	3.8E-02
Hydrogen Fluoride (HF) - Method 320				
ppmvw	1.0E-01 BDL	1.0E-01 BDL	1.0E-01 BDL	1.0E-01 BDL
ppmvd	1.1E-01 BDL	1.2E-01 BDL	1.2E-01 BDL	1.2E-01 BDL
ppmvd @ 7 $\%O_2$	2.0E-01 BDL	1.7E-01 BDL	1.9E-01 BDL	1.9E-01 BDL
gr/dscf	4.1E-05 BDL	4.2E-05 BDL	4.2E-05 BDL	4.2E-05 BDL
lb/hr	8.1E-02 BDL	7.1E-02 BDL	6.8E-02 BDL	7.3E-02 BDL
lb/ton	6.4E-04 BDL	5.5E-04 BDL	6.8E-04 BDL	6.2E-04 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Table 4-8
Cement ICR Results -
Brooksville Kiln 2 Stack, Raw Mill Off (Sampling Train B)

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	11/30/2023	11/30/2023	11/30/2023	-
Time	10:25-11:30	12:10-13:14	13:55-15:01	-
Process Data				
Clinker processed rate, short ton/hr	127.6	129.1	100.0	118.9
Sampling & Flue Gas Parameters				
sample duration, minutes	60	60	60	60
O_2, % volume dry	12.95	11.62	12.31	12.29
CO_2, % volume dry	13.92	16.22	14.97	15.04
flue gas temperature, °F	335.3	340.3	322.1	332.6
moisture content, % volume	12.02	13.49	14.50	13.33
velocity, ft/s	72.53	66.39	64.40	67.77
volumetric flow rate, acfm	346,567	317,220	307,718	323,835
volumetric flow rate, scfm	230,172	209,133	207,188	215,498
volumetric flow rate, dscfm	202,511	180,930	177,150	186,864
Hydrogen Fluoride (HF)				
µg	37.8	24.0 BDL	24.4 BDL	28.7 DLL
ppmvd	3.1E-02	2.1E-02 BDL	2.2E-02 BDL	2.5E-02 DLL
ppmvd @ 7 %O_2	5.4E-02	3.2E-02 BDL	3.6E-02 BDL	4.1E-02 DLL
gr/dscf	1.1E-05	7.7E-06 BDL	8.1E-06 BDL	9.0E-06 DLL
lb/hr	1.9E-02	1.2E-02 BDL	1.2E-02 BDL	1.5E-02 DLL
lb/ton	1.5E-04	9.3E-05 BDL	1.2E-04 BDL	1.2E-04 DLL
Chlorine (Cl_2)				
µg	33.6	21.7	17.3	24.2
ppmvd	7.7E-03	5.4E-03	4.4E-03	5.9E-03
ppmvd @ 7 %O_2	1.3E-02	8.1E-03	7.2E-03	9.6E-03
gr/dscf	9.9E-06	7.0E-06	5.7E-06	7.6E-06
lb/hr	1.7E-02	1.1E-02	8.7E-03	1.2E-02
lb/ton	1.4E-04	8.4E-05	8.7E-05	1.0E-04

Table 4-9
Cement ICR Results -
Miami Kiln Stack, Raw Mill On (Sampling Train A)

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	12/5/2023	12/5/2023	12/5/2023	-
Time	8:30-9:34	10:10-11:16	12:00-13:03	-
Process Data				
Clinker processed rate, short ton/hr	126.9	126.9	127.0	126.9
Sampling & Flue Gas Parameters				
sample duration, minutes	60	60	60	60
O_2, % volume dry	13.98	13.99	13.99	13.99
CO_2, % volume dry	11.91	12.08	12.12	12.04
flue gas temperature, °F	263.8	248.3	243.3	251.8
moisture content, % volume	13.20	13.76	14.27	13.74
velocity, ft/s	59.88	57.80	57.47	58.38
volumetric flow rate, acfm	343,485	331,567	329,683	334,912
volumetric flow rate, scfm	249,353	246,172	246,378	247,301
volumetric flow rate, dscfm	216,441	212,301	211,227	213,323
Hydrogen Fluoride (HF)				
µg	22.7 BDL	22.4 BDL	22.4 BDL	22.5 BDL
ppmvd	2.0E-02 BDL	2.0E-02 BDL	2.1E-02 BDL	2.1E-02 BDL
ppmvd @ 7 %O_2	4.1E-02 BDL	4.1E-02 BDL	4.2E-02 BDL	4.1E-02 BDL
gr/dscf	7.3E-06 BDL	7.4E-06 BDL	7.6E-06 BDL	7.5E-06 BDL
lb/hr	1.4E-02 BDL	1.4E-02 BDL	1.4E-02 BDL	1.4E-02 BDL
lb/ton	1.1E-04 BDL	1.1E-04 BDL	1.1E-04 BDL	1.1E-04 BDL
Chlorine (Cl_2)				
µg	15.2 BDL	17.5	15.5 BDL	16.1 DLL
ppmvd	3.8E-03 BDL	4.5E-03	4.1E-03 BDL	4.1E-03 DLL
ppmvd @ 7 %O_2	7.7E-03 BDL	9.1E-03	8.2E-03 BDL	8.3E-03 DLL
gr/dscf	4.9E-06 BDL	5.8E-06	5.2E-06 BDL	5.3E-06 DLL
lb/hr	9.1E-03 BDL	1.1E-02	9.5E-03 BDL	9.7E-03 DLL
lb/ton	7.2E-05 BDL	8.3E-05	7.5E-05 BDL	7.7E-05 DLL
Hydrogen Cyanide (HCN)				
ppmvw	2.1	2.1	2.0	2.1
ppmvd	2.4E+00	2.4E+00	2.3E+00	2.4E+00
ppmvd @ 7 %O_2	4.9E+00	4.8E+00	4.7E+00	4.8E+00
gr/dscf	1.2E-03	1.2E-03	1.2E-03	1.2E-03
lb/hr	2.2E+00	2.1E+00	2.1E+00	2.1E+00

Parameter/Units	Run 1	Run 2	Run 3	Average
lb/ton	1.7E-02	1.7E-02	1.6E-02	1.7E-02
Hydrogen Fluoride (HF) - Method 320				
ppmvw	1.0E-01 BDL	1.0E-01 BDL	1.0E-01 BDL	1.0E-01 BDL
ppmvd	1.2E-01 BDL	1.2E-01 BDL	1.2E-01 BDL	1.2E-01 BDL
ppmvd @ 7 %O_2	2.3E-01 BDL	2.3E-01 BDL	2.3E-01 BDL	2.3E-01 BDL
gr/dscf	4.2E-05 BDL	4.2E-05 BDL	4.2E-05 BDL	4.2E-05 BDL
lb/hr	7.8E-02 BDL	7.7E-02 BDL	7.7E-02 BDL	7.7E-02 BDL
lb/ton	6.1E-04 BDL	6.0E-04 BDL	6.0E-04 BDL	6.1E-04 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Table 4-10
Cement ICR Results -
Miami Kiln Stack, Raw Mill On (Sampling Train B)

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	12/5/2023	12/5/2023	12/5/2023	-
Time	8:30-9:34	10:10-11:16	12:00-13:03	-
Process Data				
Clinker processed rate, short ton/hr	126.9	126.9	127.0	126.9
Sampling & Flue Gas Parameters				
sample duration, minutes	60	60	60	60
O_2, % volume dry	13.98	13.99	13.99	13.99
CO_2, % volume dry	11.84	12.24	12.19	12.09
flue gas temperature, °F	261.3	245.9	243.4	250.2
moisture content, % volume	12.68	14.84	14.78	14.10
velocity, ft/s	63.47	56.96	58.42	59.62
volumetric flow rate, acfm	364,109	326,746	335,108	341,988
volumetric flow rate, scfm	265,241	243,424	250,541	253,069
volumetric flow rate, dscfm	231,610	207,310	213,522	217,481
Hydrogen Fluoride (HF)				
µg	21.9 DLL	22.7 DLL	49.7	31.4 DLL
ppmvd	1.9E-02 DLL	2.2E-02 DLL	4.7E-02	2.9E-02 DLL
ppmvd @ 7 %O_2	3.9E-02 DLL	4.4E-02 DLL	9.4E-02	5.9E-02 DLL
gr/dscf	7.1E-06 DLL	8.0E-06 DLL	1.7E-05	1.1E-05 DLL
lb/hr	1.4E-02 DLL	1.4E-02 DLL	3.1E-02	2.0E-02 DLL
lb/ton	1.1E-04 DLL	1.1E-04 DLL	2.4E-04	1.6E-04 DLL
Chlorine (Cl_2)				
µg	58.9	15.2	16.6	30.2
ppmvd	1.5E-02	4.2E-03	4.4E-03	7.8E-03
ppmvd @ 7 %O_2	3.0E-02	8.4E-03	8.9E-03	1.6E-02
gr/dscf	1.9E-05	5.4E-06	5.7E-06	1.0E-05
lb/hr	3.8E-02	9.5E-03	1.0E-02	1.9E-02
lb/ton	3.0E-04	7.5E-05	8.2E-05	1.5E-04

Table 4-11
Cement ICR Results -
Miami Kiln Stack, Raw Mill Off (Sampling Train A)

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	12/5/2023	12/6/2023	12/6/2023	-
Time	14:40-15:45	8:20-9:23	10:10-11:14	-
Process Data				
Clinker processed rate, short ton/hr	127.0	126.9	126.9	126.9
Sampling & Flue Gas Parameters				
sample duration, minutes	60	60	60	60
O_2, % volume dry	13.58	12.26	12.25	12.70
CO_2, % volume dry	12.25	14.91	14.71	13.95
flue gas temperature, °F	402.9	410.3	411.8	408.3
moisture content, % volume	9.22	11.32	11.01	10.51
velocity, ft/s	63.82	56.49	56.06	58.79
volumetric flow rate, acfm	366,097	324,064	321,570	337,244
volumetric flow rate, scfm	222,500	195,740	194,113	204,118
volumetric flow rate, dscfm	201,990	173,592	172,749	182,777
Hydrogen Fluoride (HF)				
µg	20.0 BDL	20.5 BDL	21.0 BDL	20.5 BDL
ppmvd	1.8E-02 BDL	2.2E-02 BDL	2.2E-02 BDL	2.1E-02 BDL
ppmvd @ 7 %O_2	3.5E-02 BDL	3.5E-02 BDL	3.6E-02 BDL	3.5E-02 BDL
gr/dscf	6.7E-06 BDL	7.8E-06 BDL	8.1E-06 BDL	7.5E-06 BDL
lb/hr	1.2E-02 BDL	1.2E-02 BDL	1.2E-02 BDL	1.2E-02 BDL
lb/ton	9.1E-05 BDL	9.2E-05 BDL	9.4E-05 BDL	9.2E-05 BDL
Chlorine (Cl_2)				
µg	17.2	15.0 BDL	15.3 BDL	15.8 DLL
ppmvd	4.5E-03	4.5E-03 BDL	4.6E-03 BDL	4.5E-03 DLL
ppmvd @ 7 %O_2	8.5E-03	7.2E-03 BDL	7.3E-03 BDL	7.7E-03 DLL
gr/dscf	5.8E-06	5.7E-06 BDL	5.9E-06 BDL	5.8E-06 DLL
lb/hr	1.0E-02	8.5E-03 BDL	8.7E-03 BDL	9.1E-03 DLL
lb/ton	7.9E-05	6.7E-05 BDL	6.8E-05 BDL	7.1E-05 DLL
Hydrogen Cyanide (HCN)				
ppmvw	2.5	2.7	2.6	2.6
ppmvd	2.7E+00	3.1E+00	3.0E+00	2.9E+00
ppmvd @ 7 %O_2	5.1E+00	5.0E+00	4.7E+00	5.0E+00
gr/dscf	1.3E-03	1.5E-03	1.5E-03	1.4E-03
lb/hr	2.3E+00	2.2E+00	2.1E+00	2.2E+00

Parameter/Units	Run 1	Run 2	Run 3	Average
lb/ton	1.8E-02	1.8E-02	1.7E-02	1.8E-02
Hydrogen Fluoride (HF) - Method 320				
ppmvw	1.0E-01 BDL	1.0E-01 BDL	1.0E-01 BDL	1.0E-01 BDL
ppmvd	1.1E-01 BDL	1.1E-01 BDL	1.1E-01 BDL	1.1E-01 BDL
ppmvd @ 7 %O_2	2.1E-01 BDL	1.8E-01 BDL	1.8E-01 BDL	1.9E-01 BDL
gr/dscf	4.0E-05 BDL	4.1E-05 BDL	4.1E-05 BDL	4.1E-05 BDL
lb/hr	6.9E-02 BDL	6.1E-02 BDL	6.0E-02 BDL	6.4E-02 BDL
lb/ton	5.5E-04 BDL	4.8E-04 BDL	4.8E-04 BDL	5.0E-04 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Table 4-12
Cement ICR Results -
Miami Kiln Stack, Raw Mill Off (Sampling Train B)

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	12/5/2023	12/6/2023	12/6/2023	-
Time	14:40-15:45	8:20-9:23	10:10-11:14	-
Process Data				
Clinker processed rate, short ton/hr	127.0	126.9	126.9	126.9
Sampling & Flue Gas Parameters				
sample duration, minutes	60	60	60	60
O_2, % volume dry	13.58	12.26	12.25	12.70
CO_2, % volume dry	12.27	15.05	14.78	14.03
flue gas temperature, °F	401.8	406.9	408.2	405.6
moisture content, % volume	9.38	12.15	11.44	10.99
velocity, ft/s	65.37	58.38	57.39	60.38
volumetric flow rate, acfm	374,992	334,874	329,230	346,366
volumetric flow rate, scfm	228,192	203,067	199,558	210,272
volumetric flow rate, dscfm	206,778	178,402	176,727	187,302
Hydrogen Fluoride (HF)				
µg	20.3 BDL	20.7 BDL	22.0 BDL	21.0 BDL
ppmvd	1.9E-02 BDL	2.2E-02 BDL	2.3E-02 BDL	2.2E-02 BDL
ppmvd @ 7 %O_2	3.6E-02 BDL	3.6E-02 BDL	3.8E-02 BDL	3.7E-02 BDL
gr/dscf	6.9E-06 BDL	8.0E-06 BDL	8.5E-06 BDL	7.8E-06 BDL
lb/hr	1.2E-02 BDL	1.2E-02 BDL	1.3E-02 BDL	1.2E-02 BDL
lb/ton	9.7E-05 BDL	9.7E-05 BDL	1.0E-04 BDL	9.8E-05 BDL
Chlorine (Cl_2)				
µg	16.5	16.7	15.8 BDL	16.3 DLL
ppmvd	4.4E-03	5.0E-03	4.8E-03 BDL	4.7E-03 DLL
ppmvd @ 7 %O_2	8.3E-03	8.1E-03	7.6E-03 BDL	8.0E-03 DLL
gr/dscf	5.6E-06	6.5E-06	6.1E-06 BDL	6.1E-06 DLL
lb/hr	1.0E-02	9.9E-03	9.3E-03 BDL	9.7E-03 DLL
lb/ton	7.8E-05	7.8E-05	7.3E-05 BDL	7.7E-05 DLL

5.0 Internal QA/QC Activities

5.1 QA/QC Audits

The meter boxes and sampling trains used during sampling performed within the requirements of their respective methods. All post-test leak checks, minimum metered volumes, minimum sample durations, and percent isokinetics met the applicable QA/QC criteria.

EPA Method 3A calibration audits were all within the measurement system performance specifications for the calibration drift checks, system calibration bias checks, and calibration error checks.

The EPA Method 320 performance parameters measured included signal to noise tests, noise equivalent absorbance (NEA), detector linearity, background spectra, potential interferents, and cell and system leakage. Quality assurance procedures included baseline measurement with ultra-high purity nitrogen, measurement of a calibration transfer standard, direct analyte calibration measurements, and measurements to determine baseline shift. SF_6 was also used as a tracer gas in the calibration gases to evaluate dilution ratios and verify the sample delivery system integrity. A dynamic matrix spike was performed using SF_6 as a tracer gas. The method QA/QC criteria were met.

EPA Method 26A analytical QA/QC results are included in the laboratory report. The method QA/QC criteria were met.

5.2 QA/QC Discussion

All QA/QC criteria were met during this test program.

5.3 Quality Statement

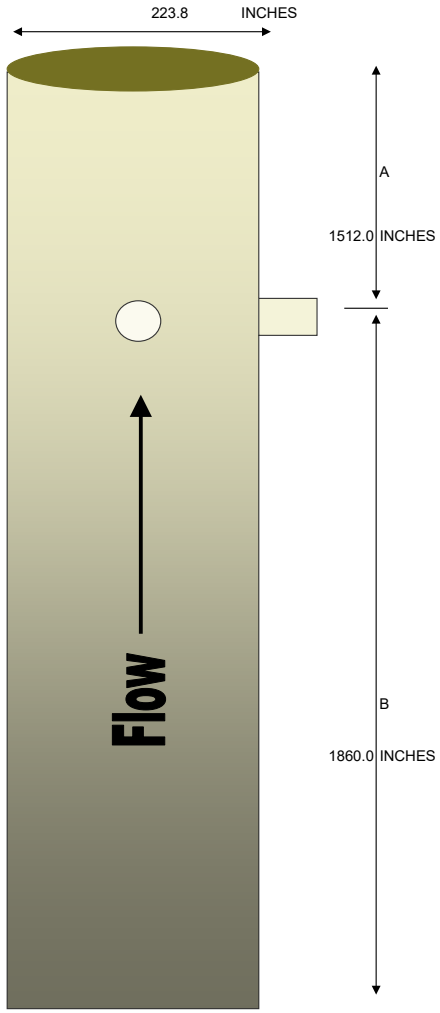
Montrose is qualified to conduct this test program and has established a quality management system that led to accreditation with ASTM Standard D7036-04 (Standard Practice for Competence of Air Emission Testing Bodies). Montrose participates in annual functional assessments for conformance with D7036-04 which are conducted by the American Association for Laboratory Accreditation (A2LA). All testing performed by Montrose is supervised on site by at least one Qualified Individual (QI) as defined in D7036-04 Section 8.3.2. Data quality objectives for estimating measurement uncertainty within the documented limits in the test methods are met by using approved test protocols for each project as defined in D7036-04 Sections 7.2.1 and 12.10. Additional quality assurance information is included in the report appendices. The content of this report is modeled after the EPA Emission Measurement Center Guideline Document (GD-043).

Appendix A
Field Data and Calculations

Appendix A.1
Sampling Locations

Figure A-1
Stack Drawing & Traverse Point Location – Kiln 1 Stack

Type of Traverse: Velocity or Particulate:			Particulate	Port Diameter	
Stack Diameter, inches:	223.8		Stack Area, Ft^2:		273.18
Stack Height, feet:	322		Number of Ports:		4
Stack Properties:	Inches	Duct Diameters	Length of Port, inches:		
Upstream From Flow Disturbance (A):	1512	6.8	Total Number of Traverse Points:		12
Downstream From Flow Disturbance (B):	1860	8.3	Number of Points per port / traverse:	3	6



Point No.	Inside Stack Inches	Outside Nipple Inches
1	9.8	9.8
2	32.7	32.7
3	66.2	66.2
4	157.6	157.6
5	191.1	191.1
6	214.0	214.0

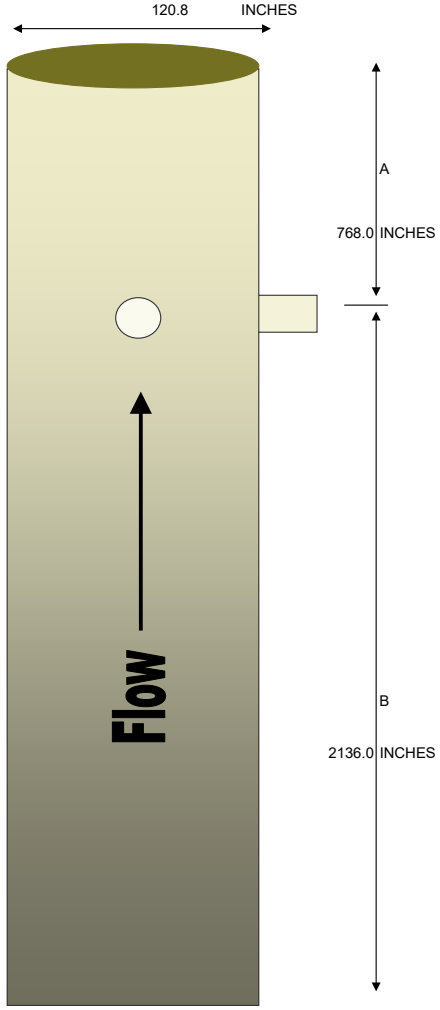
* Adjusted points diameter > 24" no point closer than 1.0 inch

* Adjusted points diameter ≤ 24" no point closer than 0.5 inch

Stack Diameters between 12-24 inches minimum points are 8 ;
4 points per port if the 8 / 2 diameters downstream and
upstream criteria is met.

Figure A-2
Stack Drawing & Traverse Point Location – Kiln 2 Stack

Type of Traverse: Velocity or Particulate:			Particulate	Port Diameter	
Stack Diameter, inches:	120.84		Stack Area, Ft^2:		79.64
Stack Height, feet:	318		Number of Ports:		4
Stack Properties:	Inches	Duct Diameters	Length of Port, inches:		
Upstream From Flow Disturbance (A):	768	6.4	Total Number of Traverse Points:		12
Downstream From Flow Disturbance (B):	2136	17.7	Number of Points per port / traverse:	3	6



Point No.	Inside Stack Inches	Outside Nipple Inches
1	5.3	5.3
2	17.6	17.6
3	35.8	35.8
4	85.1	85.1
5	103.2	103.2
6	115.5	115.5

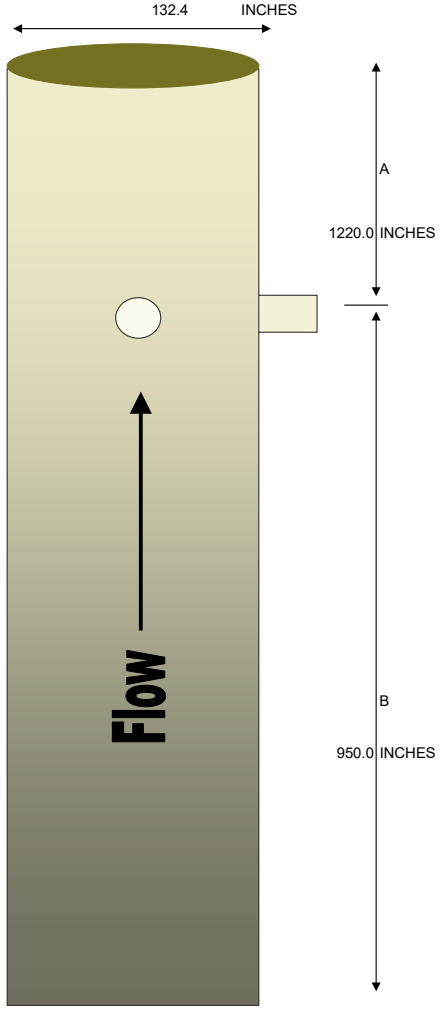
* Adjusted points diameter > 24" no point closer than 1.0 inch

* Adjusted points diameter ≤ 24" no point closer than 0.5 inch

Stack Diameters between 12-24 inches minimum points are 8 ;
4 points per port if the 8 / 2 diameters downstream and
upstream criteria is met.

Figure A-3
Stack Drawing & Traverse Point Location – Kiln Stack

Type of Traverse: Velocity or Particulate:			Particulate	Port Diameter	
Stack Diameter, inches:	132.4		Stack Area, Ft^2:		95.61
Stack Height, feet:	359		Number of Ports:		4
Stack Properties:	Inches	Duct Diameters	Length of Port, inches:		
Upstream From Flow Disturbance (A):	1220	9.2	Total Number of Traverse Points:		12
Downstream From Flow Disturbance (B):	950	7.2	Number of Points per port / traverse:	3	6



Point No.	Inside Stack Inches	Outside Nipple Inches
1	5.8	5.8
2	19.3	19.3
3	39.2	39.2
4	93.2	93.2
5	113.1	113.1
6	126.6	126.6

* Adjusted points diameter > 24" no point closer than 1.0 inch

* Adjusted points diameter ≤ 24" no point closer than 0.5 inch

Stack Diameters between 12-24 inches minimum points are 8 ;
4 points per port if the 8 / 2 diameters downstream and
upstream criteria is met.

Preliminary Traverse & Cyclonic Flow Verification

Client: Cemex Construction Materials Florida Test Date: 11/29/23

Source: In-Line Kiln 1 (EU 020) Stack Run No.: Preliminary Test

Traverse Point	Delta P	Sq. Rt. Delta P	Null Reading (Angle)	Stack Temp. (°F)
A-1	0.10	0.3162	0.0	230
A-2	0.09	0.3000	0.0	230
A-3	0.07	0.2646	0.0	230
B-1	0.11	0.3317	0.0	230
B-2	0.08	0.2828	0.0	230
B-3	0.07	0.2646	0.0	230
C-1	0.11	0.3317	0.0	230
C-2	0.10	0.3162	0.0	230
C-3	0.08	0.2828	0.0	230
D-1	0.10	0.3162	0.0	230
D-2	0.09	0.3000	0.0	230
D-3	0.06	0.2449	0.0	230
Average	0.09	0.2960	0.00	230.0

Preliminary Traverse & Cyclonic Flow Verification

Client: Cemex Construction Materials Florida Test Date: 06/05/24

Source: In-Line Kiln 1 (EU 020) Stack Run No.: Preliminary Test

Traverse Point	Delta P	Sq. Rt. Delta P	Null Reading (Angle)	Stack Temp. (°F)
A-1	0.15	0.3873	4	320
A-2	0.13	0.3606	5	320
A-3	0.09	0.3000	4	320
B-1	0.13	0.3606	3	320
B-2	0.09	0.3000	2	320
B-3	0.06	0.2449	1	320
C-1	0.14	0.3742	4	320
C-2	0.09	0.3000	3	320
C-3	0.06	0.2449	5	320
D-1	0.15	0.3873	6	320
D-2	0.10	0.3162	8	320
D-3	0.09	0.3000	7	320
Average	0.11	0.3230	4.3	320.0

Preliminary Traverse & Cyclonic Flow Verification

Client: Cemex Construction Materials Florida Test Date: 11/30/23

Source: In-Line Kiln 2 (EU 044) Stack Run No.: Preliminary Test

Traverse Point	Delta P	Sq. Rt. Delta P	Null Reading (Angle)	Stack Temp. (°F)
A-1	1.4	1.1832	0.0	340
A-2	1.5	1.2247	0.0	340
A-3	1.4	1.1832	0.0	340
B-1	1.5	1.2247	0.0	340
B-2	1.5	1.2247	0.0	340
B-3	1.3	1.1402	0.0	350
C-1	1.5	1.2247	0.0	350
C-2	1.5	1.2247	0.0	350
C-3	1.2	1.0954	0.0	350
D-1	1.6	1.2649	0.0	350
D-2	1.5	1.2247	0.0	350
D-3	1.3	1.1402	0.0	350
Average	1.43	1.1963	0.00	345.8

Preliminary Traverse & Cyclonic Flow Verification

Client: Cemex Construction Materials Florida Test Date: 12/05/23

Source: In-Line Kiln (EU 018) Stack Run No.: Preliminary Test

Traverse Point	Delta P	Sq. Rt. Delta P	Null Reading (Angle)	Stack Temp. (°F)
A-1	1.00	1.0000	0.0	250
A-2	0.89	0.9434	0.0	250
A-3	0.65	0.8062	0.0	250
B-1	0.97	0.9849	0.0	250
B-2	0.92	0.9592	0.0	250
B-3	0.60	0.7746	0.0	250
C-1	0.94	0.9695	0.0	250
C-2	0.84	0.9165	0.0	250
C-3	0.67	0.8185	0.0	250
D-1	0.94	0.9695	0.0	250
D-2	0.89	0.9434	0.0	250
D-3	0.66	0.8124	0.0	250
Average	0.83	0.9082	0.00	250.0

Appendix A.2
Field Data Sheets - Brooksville Kiln 1 Stack Raw Mill On

MONTROSE AIR QUALITY SERVICES

26A Method _____ Field Datasheet (Isokinetic)

Page 1 of 1

Project Information

Date 11/29/23 Project # PROJ-031486

Customer/Facility Cemex Mill On

Unit ID/Sample Location Brownsville / Line 1 Train A

Run # 1 Operator Josh. F

Sampling Conditions

Static Pressure, in. H_2O -0.48 Ambient Temp, °F 63

Barometric Pressure, in. Hg 30.24 Ref. Barometer ID ~~NWS~~

Wind Speed / Direction 9 NW Precipitation, Y (N) type ____

Probe / Filter Temp Range, °F 250 - 270

ALT 011	TC ID:	Ambient °F	Ref. °F
Stack			
Probe			
Filter Box			
Filter Exit			
Meter outlet			
Impinger Exit			
Other			

Ref. Thermometer ID 230441736

Continuity Check ☐ Continuity w/ Proper Polarity

Notes: _____

Sampling Equipment IDs

Meterbox ID PCMB5

Umbilical ID PC 100A

Nozzle ID 396-4

Pitot / Probe ID PCP6A

Manometer ID PCMB5

Sensitivity 0.10

Calibration

Meterbox Y 0.998

Meterbox ΔH@, in. H_2O 1.972

Nozzle diameter, Dn, in. .390

Pitot coefficient, Cp 0.84

Manometer zero and level ☑ yes

K-Factor ~~13.66~~ 16.86

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.1	☐ @	☑ @ 3.5
Pitot (-), pass @ in. H_2O	☑ @ 7.7	☐ @	☑ @ 7.7
Pitot visual inspection	☑ pass	☐ pass	☐ pass
Nozzle visual inspection	☑ pass	☐ pass	☐ pass
Meter, cfm @ in. Hg	0.000 @ 10	@	.000 @ 6
Intermediate leak check volume, ft^3	/	/	/

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet	Pump Vacuum, in. Hg
	0	10:10	973.829											
A1	5		977.33	.10	~~1.7~~ 1.7	1.7	727	~~260~~ 259	756					
2	10		980.87	.12	2.0	2.0	722	~~260~~ 259	760		55		71	2.5
3	15		984.66	.11	1.8	1.8	724	259	759		58		69	2.5
B1	20		988.43	.10	1.7	1.7	724	261	760		61		69	2.5
2	25		992.04	.11	1.8	1.8	725	261	759		61		69	2.5
3	30		995.65	.11	1.8	1.8	724	259	760		62		71	2.5
C1	35		999.26	.11	1.8	1.9	724	264	761		62		71	2.5
2	40		1002.92	.11	1.8	1.8	723	254	762		63		71	2.5
3	45		1006.57	.11	1.8	1.8	722	255	762		63		70	2.5
D1	50		~~1010~~ 1010.19	~~.11~~ .11	1.9	1.9	723	260	757		64		72	2.5
2	55		~~1013~~ 1013.95	.10	1.7	1.7	722	258	762		64		75	2.5
3	60	~~11:10~~ 11:12	~~1017.498~~ 1017.498	.10	1.7	1.7	727	261	762		64		75	2.5
			~~1017.4~~ 1017.498											
Averages														

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

264 Method _____ Field Datasheet (Isokinetic)

Page 1 of 1

Project Information

Date 11/29/23 Project # PROS-031486

Customer/Facility Cemex Mil Dn

Unit ID/Sample Location Line 1 Trn-nA Brownsville

Run # 2 Operator Josh. F

Sampling Conditions

Static Pressure, in. H_2O -0.49 Ambient Temp, °F 63

Barometric Pressure, in. Hg 30.24 Ref. Barometer ID NWS

Wind Speed / Direction 9 kt ~ Precipitation, Y / N type ____

Probe / Filter Temp Range, °F 250 - 270

ALT 011 TC ID:

	Ambient °F	Ref. °F
Stack		
Probe		
Filter Box		
Filter Exit		
Meter outlet		
Impinger Exit		
Other		

Ref. Thermometer ID

Continuity Check ☐ Continuity w/ Proper Polarity

Notes:

Sampling Equipment IDs

Meterbox ID PCMB5

Umbilical ID PC100A

Nozzle ID 3964

Pitot / Probe ID PCP64

Manometer ID PCMB5

Sensitivity 0.010

Calibration

Meterbox Y 0.998

Meterbox ΔH@, in. H_2O 1.972

Nozzle diameter, Dn, in. .396

Pitot coefficient, Cp 0.84

Manometer zero and level ☑ yes

K-Factor 16.86

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.2	☐ @	☑ @ 3.2
Pitot (-), pass @ in. H_2O	☑ @ 3.5	☐ @	☑ @ 3.5
Pitot visual inspection	☑ pass	☐ pass	☑ pass
Nozzle visual inspection	☑ pass	☐ pass	☑ pass
Meter, cfm @ in. Hg	0.000 @ 10	@	0.000 @ 3
Intermediate leak check volume, ft^3	/	/	/

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	12:45	17.672												
A 1	5	+	22.69	.10	1.69	1.7	220	265	261		60		76		~~2.5~~ 4
2	10		25.64	.10	1.69	1.7	219	261	255		62		75		~~2.5~~ 4
3	15		29.29	.09	1.35	1.4	219	264	259		63		76		4
B 1	20		32.58	.08	1.35	1.4	216	261	260		63		76		3
2	25		35.92	.11	1.85	1.9	217	267	260		64		76		3
3	30		39.42	.10	1.69	1.7	219	261	261		63		77		5
C 1	35		43.06	.09	1.35	1.4	220	262	263		64		77		5
2	40		46.70	.10	1.69	1.7	222	261	264		63		77		4
3	45		50.31	.09	1.35	1.4	222	260	260		63		77		4
D 1	50		53.96	.08	1.35	1.4	220	264	260		63		77		3
2	55		57.05	.11	1.95	1.9	220	267	264		64		78		5
3	60	13:30	60.8657	~~.11~~ .08	~~1.69~~ 1.35	~~1.7~~ 1.4	229	266	265		64		79		4
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

264 Method _____ Field Datasheet (Isokinetic)

Page 1 of 1

Project Information

Date 11/29/23 Project # PR05-031486

Customer/Facility Cemex Mi1 On

Unit ID/Sample Location Line 1 Train A Brooksville

Run # 3 Operator JOSH. F

Sampling Conditions

Static Pressure, in. H_2O -0.48 Ambient Temp, °F 65

Barometric Pressure, in. Hg 30.19 Ref. Barometer ID NWS

Wind Speed / Direction ~7MPH N Precipitation, Y / (N) type —

Probe / Filter Temp Range, °F 250 - 270

Sampling Equipment IDs

Meterbox ID PCMB5

Umbilical ID PC100A

Nozzle ID 3964

Pitot / Probe ID PCP6A

Manometer ID PCMB5

Sensitivity 0.010

Calibration

Meterbox Y 0.998

Meterbox ΔH@, in. H_2O 1.871

Nozzle diameter, Dn, in. .390

Pitot coefficient, Cp 0.84

Manometer zero and level ☑ yes

K-Factor 16.86

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.5	☐ @	☑ @ 3.2
Pitot (-), pass @ in. H_2O	☑ @ 3.4	☐ @	☑ @ 3.3
Pitot visual inspection	☑ pass	☐ pass	☑ pass
Nozzle visual inspection	☑ pass	☐ pass	☑ pass
Meter, cfm @ in. Hg	0.00 @ 10	@	0.00 @ 3
Intermediate leak check volume, ft^3	/	/	/

ALT 011	TC ID:	Ambient °F	Ref. °F
Stack	PCP6A	74	74
Probe	PCP6A	74	74
Filter Box	PCHB4	74	74
Filter Exit			
Meter outlet	PCMB5	74	74
Impinger Exit	PCIV8	74	74
Other			

Ref. Thermometer ID 230441739

Continuity Check ☐ Continuity w/ Proper Polarity

Notes: _____

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	14:39	61.997												
A1	5		64.61	0.10	1.69	1.7	240	266	267		62		76		3
2	10		68.25	0.10	1.69	1.7	239	266	266		62		77		4
3	15		71.59	0.08	1.35	1.4	224	260	262		62		79		3
B1	20		75.17	0.10	1.69	1.7	237	261	263		63		83		4
2	25		78.62	0.09	1.52	1.5	237	266	260		63		84		4
3	30		81.77	0.07	1.19	1.2	232	261	255		62		85		3
C1	35		85.36	0.10	1.69	1.7	233	264	260		63		85		4
2	40		88.95	0.10	1.69	1.7	234	266	261		63		85		4
3	45		92.34	0.08	1.35	1.4	229	268	259		63		84		3
D1	50		95.95	0.10	1.69	1.7	232	267	268		62		85		4
2	55		99.31	0.08	1.35	1.4	233	265	266		62		86		4
3	60	15:41	102.653	0.08	1.35	1.4	237	265	267		63		86		4
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

EPA Method _____ Field Datasheet (Isokinetic)

Page 1 of 1

Project Information
Date 11/29/23 Project # 031486
Customer/Facility CEMEX Brooksville
Unit ID/Sample Location Line 1 B Mill On
Run # C1 Operator Steven Metsch

Sampling Conditions
Static Pressure, in. H_2O -0.48 Ambient Temp, °F 50°
Barometric Pressure, in. Hg 30.27 Ref. Barometer ID NWS
Wind Speed / Direction 7-13 NNE Precipitation, Y (N), type _____
Probe / Filter Temp Range, °F

ALT 011 TC ID: Ambient °F Ref. °F
Stack
Probe
Filter Box
Filter Exit
Meter outlet
Impinger Exit
Other
Ref. Thermometer ID TC ID 3
Continuity Check ☐ Continuity w/ Proper Polarity
Notes: SM 11/28/23

Sampling Equipment IDs
Meterbox ID PCMB007
Umbilical ID PCISCA
Nozzle ID 39E1
Pitot / Probe ID PCP6B
Manometer ID PCMB007
Sensitivity 0.010

Calibration
Meterbox Y 0.985
Meterbox ΔH@, in. H_2O 1.833
Nozzle diameter, Dn, in. .390
Pitot coefficient, Cp 0.84
Manometer zero and level ☒ yes
K-Factor ~~16.58~~ 16.79

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 4.3	☐ @	☑ @ 3.8
Pitot (-), pass @ in. H_2O	☑ @ 4.2	☐ @	☑ @ 4.5
Pitot visual inspection	☐ pass	☐ pass	☐ pass
Nozzle visual inspection	☐ pass	☐ pass	☐ pass
Meter, cfm @ in. Hg	0.0 cfm @ 11 in	@	0.0 cfm @ 4 in
Intermediate leak check volume, ft^3	/	/	/

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	1010	878.188												
A1	5		881.91	0.11	1.9	1.9	224	264	254		54		52		3
2	10		885.95	0.1	1.7	1.7	224	264	252		54		53		3
3	15		888.82	0.08	1.3	1.3	223	267	252		53		55		3
B1	20		892.28	0.1	1.7	1.7	225	268	253		54		55		3
2	25		895.63	0.09	1.5	1.5	225	266	253		55		56		3
3	30		898.72	0.08	1.3	1.3	224	266	254		55		57		3
C1	35		902.46	0.11	1.9	1.9	225	263	252		55		58		3
2	40		906.04	0.1	1.7	1.7	226	266	252		56		59		3
3	45		909.65	0.08	1.3	1.3	222	264	254		56		59		3
D1	50		913.28	0.11	1.9	1.9	223	263	255		56		60		3
2	55		916.94	0.1	1.7	1.7	224	268	253		57		60		3
3	60	~~1116~~ 1112	920.160	0.08	1.3	1.3	223	268	253		57		61		3
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

EPA Method _____ Field Datasheet (Isokinetic)

Page 1 of 1

Project Information
Date 11/29/23 Project # 031486
Customer/Facility CEMEX Brooksville
Unit ID/Sample Location Line 1 B Mill On
Run # C2 Operator Steven Metoxen

Sampling Conditions
Static Pressure, in. H_2O -0.48 Ambient Temp, °F 61°
Barometric Pressure, in. Hg 30.22 Ref. Barometer ID NWS
Wind Speed / Direction 6-11mph NNE Precipitation, Y (N) type
Probe / Filter Temp Range, °F

ALT 011 TC ID: Ambient °F Ref. °F
Stack
Probe
Filter Box
Filter Exit
Meter outlet
Impinger Exit
Other
Ref. Thermometer ID VC VM3
Continuity Check ☐ Continuity w/ Proper Polarity
Notes:

Sampling Equipment IDs
Meterbox ID PCMB007
Umbilical ID PC150A
Nozzle ID 3961
Pitot / Probe ID PCPBB
Manometer ID PCMB007
Sensitivity 0-010

Calibration
Meterbox Y 0.985
Meterbox ΔH@, in. H_2O 1.8333
Nozzle diameter, Dn, in. .390
Pitot coefficient, Cp 0.84
Manometer zero and level ☒ yes
K-Factor 16.74

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.8	☐ @	☑ @ 3.7
Pitot (-), pass @ in. H_2O	☑ @ 4.5	☐ @	☑ @ 3.9
Pitot visual inspection	☐ pass	☐ pass	☐ pass
Nozzle visual inspection	☐ pass	☐ pass	☐ pass
Meter, cfm @ in. Hg	0.000 @ 10 in	@	0.000 @ 6 in
Intermediate leak check volume, ft^3			

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	1245	920.296												
A1	5		924.15	0.12	2.01	2.01	223	266	255		58		66		4
2	10		928.24	0.13	2.18	2.18	222	266	252		59		67		5
3	15		932.03	0.11	1.85	1.85	219	262	251		51		67		5
B1	20		936.32	0.13	2.18	2.18	221	264	250		55		68		5
2	25		940.17	0.13	2.18	2.18	221	266	252		56		69		5
3	30		944.09	0.11	1.85	1.85	218	270	251		57		70		5
C1	35		948.17	0.13	2.18	2.18	221	263	251		57		70		5
2	40		952.27	0.13	2.18	2.18	223	262	253		57		70		5
3	45		956.11	0.11	1.85	1.85	221	268	255		57		71		5
D1	50		960.35	0.14	2.35	2.35	224	263	250		58		71		5
2	55		964.52	0.13	2.18	2.18	228	269	251		58		72		5
3	60	1350	967.945	0.08	1.34	1.34	223	269	253		58		73		4
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

EPA Method _____ Field Datasheet (Isokinetic)

Page 1 of 1

Project Information
Date 11/29/23 Project # 031486
Customer/Facility CEMEX Brooksville
Unit ID/Sample Location Line 1 B Mill On
Run # C3 Operator Steven Matson

Sampling Conditions
Static Pressure, in. H_2O -0.48 Ambient Temp, °F 64°
Barometric Pressure, in. Hg 30.16 Ref. Barometer ID NWS
Wind Speed / Direction 5-10mph N Precipitation, Y (N) type
Probe / Filter Temp Range, °F

ALT 011	TC ID:	Ambient °F	Ref. °F
Stack	PCP6B	74°	74°
Probe	PCP6B	74°	74°
Filter Box	PCHB1	74°	74°
Filter Exit			
Meter outlet	PCMB007	74°	74°
Impinger Exit	PCON11	74°	75°
Other			

Ref. Thermometer ID 230441739
Continuity Check ☐ Continuity w/ Proper Polarity
Notes: * SM 11/29/23

Sampling Equipment IDs
Meterbox ID PCMB007
Umbilical ID PC150A
Nozzle ID 396i
Pitot / Probe ID PCP6B
Manometer ID PCMB007
Sensitivity 0.010

Calibration
Meterbox Y 0.985
Meterbox ΔH@, in. H_2O 1.833
Nozzle diameter, Dn, in. .390
Pitot coefficient, Cp 0.84
Manometer zero and level ☒ yes
K-Factor 16.79

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.7	☐ @	☑ @ 4.2
Pitot (-), pass @ in. H_2O	☑ @ 3.9	☐ @	☑ @ 3.8
Pitot visual inspection	☐ pass	☐ pass	☐ pass
Nozzle visual inspection	☐ pass	☐ pass	☐ pass
Meter, cfm @ in. Hg	0.0002 @ 11in	@	0.0000 @ 6.5

Intermediate leak check volume, ft^3 / /

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	1439	968.094												
A1	5		972.21	0.13	2.10	2.18	241	264	254		59		67		4
2	10		976.05	0.11	1.85	1.85	238	270	255		53		67		4
3	15		979.73	0.08	1.34	1.34	234	267	258		56		68		3
B1	20		983.40	0.14	2.35	2.35	239	264	255		57		66		5
2	23		987.81	0.14	2.35	2.35	238	265	256		59		69		5
3	30		991.29	0.09	1.51	1.51	233	268	254		59		64		4
C1	35		995.57	0.14	2.35	2.35	234	265	253		58		70		5
2	40		999.91	0.15	2.52	2.52	233	267	255		54		71		5
3	45		1004.28	0.14	2.35	2.35	231	270	255		58		72		5
D1	50		1008.69	0.15	2.52	2.52	233	268	257		60		73		5
2	55		1012.71	0.12	2.01	2.01	234	269	252		64		73		5
3	60	1541	1016.409	0.1	1.68	~~1.68~~ 1.68	233	270	254		61		74		4
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

Appendix A.3
Field Data Sheets - Brooksville Kiln 1 Stack Raw Mill Off

MONTROSE AIR QUALITY SERVICES

EPA Method 26A Field Datasheet (Isokinetic)

Page 1 of 1

Project Information
Date 6-4-25 Project # 031486
Customer/Facility Cemex
Unit ID/Sample Location Kiln #1
Run # 1 Operator Jordan

Sampling Conditions
Static Pressure, in. H_2O -0.55 Ambient Temp, °F 92° 75°
Barometric Pressure, in. Hg 29.91 Ref. Barometer ID NWS
Wind Speed / Direction 5MPH SW Precipitation, Y / N, type —
Probe / Filter Temp Range, °F 248 ± 25

Sampling Equipment IDs
Meterbox ID CM-1
Umbilical ID —
Nozzle ID G-120
Pilot / Probe ID A289 / 73A
Manometer ID CM-1
Sensitivity 0.01

Calibration
Meterbox Y 0.989
Meterbox ΔH@, in. H_2O 1.824
Nozzle diameter, Dn, in. .40
Pilot coefficient, Cp 0.84
Manometer zero and level ☐ yes
K-Factor 15 17.49

Equipment Checks

	Pre	Mid	Post
Pilot (+), pass @ in. H_2O	✓ @ 5	☐ @	☐ @ 5.0
Pilot (-), pass @ in. H_2O	✓ @ 5	☐ @	☐ @ 5.0
Pilot visual inspection	✓ pass	☐ pass	☐ pass
Nozzle visual inspection	✓ pass	☐ pass	☐ pass
Meter, cfm @ in. Hg	0.005 @ 15	@	0.00 @ 15
Intermediate leak check volume, ft^3	/	/	/

ALT 011 TC ID:

	Ambient °F	Ref. °F
Stack 73A		
Probe 73A		
Filter Box HB1		
Filter Exit		
Meter outlet CM-1		
Impinger Exit 7785		
Other		

Ref. Thermometer ID
Continuity Check ✓ Continuity w/ Proper Polarity
Notes: Train A

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
A1	—	0800	686.67	.13	2.27	2.3	304	—	—	—	—		80		7
2	5		691.72	.13	2.27	2.3	293	250	250	258	60		80		7
3	10		695.37	.05	0.87	0.9	238	244	249	252	59		80		3.5
B1	15		698.76	.13	2.27	2.3	290	249	249	251	50		80		7
2	20		703.16	.11	1.92	1.9	302	250	250	253	51		83		6
3	25		706.87	.07	1.22	1.2	290	252	250	251	51		84		4
C1	30		710.99	.12	2.09	2.1	306	252	249	250	52		85		6
2	35		714.07	.10	1.75	1.8	309	251	251	249	54		85		5.5
3	40		717.97	~~0.5~~ .05	0.87	0.9	300	250	252	252	55		86		3.5
D1	45		720.72	.12	2.09	2.1	301	252	250	253	55		86		6.5
2	50		724.81	.12	2.09	2.1	315	253	250	254	57		87		6.5
3	55		728.91	.10	1.94	1.7	315	252	250	255	59		88		5.5
	60	0910	732.81	—	—	—	314	253	251	251	60		—		—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Averages															

QA/QC Check: Completeness ✓ Legibility ✓ Accuracy ✓ Specifications ✓ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

EPA Method 26A Field Datasheet (Isokinetic)

Page 1 of 1

Project Information
Date 6.5.24 Project # 031486
Customer/Facility CEMEX
Unit ID/Sample Location Kiln #1
Run # 2 Operator Jordan

Sampling Conditions
Static Pressure, in. H_2O -0.55 Ambient Temp, °F 81°
Barometric Pressure, in. Hg 29.93 Ref. Barometer ID NWS
Wind Speed / Direction 6MPH SE Precipitation, Y / N, type —
Probe / Filter Temp Range, °F 248 ± 25

Sampling Equipment IDs
Meterbox ID CM-1
Umbilical ID —
Nozzle ID G-120
Pilot / Probe ID A289 / 73A
Manometer ID CM-1
Sensitivity 0.01

Calibration
Meterbox Y 0.989
Meterbox ΔH@, in. H_2O 1.824
Nozzle diameter, Dn, in. .40
Pitot coefficient, Cp 0.84
Manometer zero and level ☑ yes
K-Factor 17.49

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 6	☐ @	☑ @ 6
Pitot (-), pass @ in. H_2O	☑ @ 6	☐ @	☑ @ 6
Pitot visual inspection	☑ pass	☐ pass	☑ pass
Nozzle visual inspection	☑ pass	☐ pass	☑ pass
Meter, cfm @ in. Hg	0.005 @ 15	@	0.005 @ 15
Intermediate leak check volume, ft^3	/	/	/

ALT 011	TC ID:	Ambient °F	Ref. °F
Stack			
Probe	SE		
Filter Box			
Filter Exit	RUN 1		
Meter outlet			
Impinger Exit			
Other			

Ref. Thermometer ID
Continuity Check ☐ Continuity w/ Proper Polarity
Notes:

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
A1	0	0925	732.91	.13	2.27	2.3	320	250	250	250	59		89		10
2	5		736.75	.13	2.27	2.3	326	248	248	250	56		89		10
3	10		741.52	.07	1.22	1.2	325	249	250	251	52		89		6
B1	15		744.83	.13	2.27	2.3	327	250	252	254	50		90		10
2	20		749.13	.12	2.09	2.1	330	248	264	256	52		91		10
3	25		753.36	.07	1.22	1.2	322	249	256	256	52		91		6
C1	30		756.52	.13	2.27	2.3	327	248	250	252	53		92		10
2	35		760.94	.13	2.27	2.3	330	248	250	250	54		93		10
3	40		765.38	.06	1.04	1.0	328	250	254	255	54		94		5.5
D1	45		768.33	.13	2.27	2.3	325	250	254	253	56		95		10
2	50		772.46	.13	2.27	2.3	322	249	255	255	57		96		10
3	55		776.65	.07	1.22	1.2	320	248	250	249	59		96		5.5
	60	10:35	780.11	—	—	—	—	—	—	—	—	—	—	—	—
Averages															

QA/QC Check: Completeness ___ Legibility ___ Accuracy ___ Specifications ___ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

EPA Method 26A Field Datasheet (Isokinetic)

Page 1 of 1

Project Information
Date 6.5.24 Project # 031486
Customer/Facility Cemex
Unit ID/Sample Location Kiln #1
Run # 3 Operator Jorda

Sampling Conditions
Static Pressure, in. H_2O -0.55 Ambient Temp, °F 86°
Barometric Pressure, in. Hg 29.93 Ref. Barometer ID NWS
Wind Speed / Direction 3MPH SE Precipitation, Y/N, type 0
Probe / Filter Temp Range, °F 248 ± 25

Sampling Equipment IDs
Meterbox ID CM-1
Umbilical ID –
Nozzle ID G-12D
Pilot / Probe ID A289 / 73A
Manometer ID CM-1
Sensitivity 0.01

Calibration
Meterbox Y 0.989
Meterbox ΔH@, in. H_2O 1.824
Nozzle diameter, Dn, in. .40
Pilot coefficient, Cp 0.84
Manometer zero and level ☑ yes
K-Factor 17.49

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 1	☐ @	☑ @ 1
Pitot (-), pass @ in. H_2O	☑ @ 1	☐ @	☑ @ 1
Pitot visual inspection	☑ pass	☐ pass	☑ pass
Nozzle visual inspection	☑ pass	☐ pass	☑ pass
Meter, cfm @ in. Hg	0.009 @ 13.5	@	0.011 @

Intermediate leak check volume, ft³ / /

ALT 011 TC ID:

	Ambient °F	Ref. °F
Stack		
Probe	SE	
Filter Box		
Filter Exit		
Meter outlet		
Impinger Exit		
Other		

Ref. Thermometer ID
Continuity Check ☐ Continuity w/ Proper Polarity
Notes:

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft³	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
A1	0	10:50	780.39	.14	2.44	2.4	330	250	250	250	59		96		7.5
2	5		784.85	.12	2.1	2.1	330	248	255	254	54		96		7
3	10		789.06	.05	.87	.90	291	249	256	255	56		97		3.5
B1	15		791.93	.12	2.1	2.1	315	250	251	250	50		99		7.5
2	20		796.19	.12	2.1	2.13*	327	249	253	255	51		97		7
3	25		800.51	.05	.87	.90	330	251	256	254	52		97		3.5
C1	30		803.66	.13	2.24	2.3	314	252	254	250	53		97		7.5
2	35		807.88	.12	2.1	2.1	328	248	255	252	54		96		7.5
3	40		812.13	.06	1.04	1.0	320	249	257	255	55		96		4
D1	45		815.03	.13	2.27	2.3	312	252	249	250	56		96		7.5
2	50		819.36	.13	2.24	2.3	320	250	251	250	57		96		7.5
3	55		823.89	.06	1.04	1.0	327	253	250	250	59		96		4
	60	-1200	827.07	–	–	–	–	–	–	–	–	–	–	–	–
Averages															

QA/QC Check: Completeness ___ Legibility ___ Accuracy ___ Specifications ___ Checked By ___ Team Leader ___

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* JH 6.5.24

MONTROSE ENVIRONMENTAL

EPA Method 26A Field Data Sheet

Page 1 of 1

Project Information

Date 06/05/24 Project # PROJ-031486
Customer/Facility CEMEX BROOKSVILLE
Unit ID/Sample Location KILN NO. 1
Run # 1 Operator JTS

Sampling Conditions

Static Pressure, in. H_2O -0.55 Ambient Temp, °F 85°
Barometric Pressure, in. Hg 29.92 Ref. Barometer ID NWS
Wind Speed / Direction Ø Precipitation, Y (N) type
Probe / Filter Temp Range, °F ~~247~~ 248 to 273

Sampling Equipment IDs

Meterbox ID 2602
Umbilical ID UMB-89
Pitot / Probe ID P-876
Nozzle ID .380-1
Manometer ID 2602
Sensitivity 0.00 - 00.0

Calibration

Meterbox Y 0.997
Meterbox ΔH@, in. H_2O 1.874
Pitot coefficient, Cp 0.84
Nozzle diameter, Dn, in. .380
Manometer zero and level ✓ yes
K-Factor 14.45

Equipment Checks

	Pre	Mid	Post
Pitot (+), in. @ 0/15sec.	5.0 / ✓	—	5.0 / ✓
Pitot (-), in. @ 0/15sec.	5.0 / ✓	—	5.0 / ✓
Pitot visual inspection	✓ pass	☐ pass	✓ pass
Nozzle visual inspection	✓ pass	☐ pass	✓ pass
Meter, cfm @ in. Hg	0.010 @ 15	@	0.008 @ 17
Intermediate leak check volume, ft^3		/	/

ALT 011 TC ID:

	Ambient °F	Ref. °F
Stack		
Probe		
Filter Box		
Filter Exit		
Meter Outlet		
Impinger Exit	SEE	
Other	RUN 3	

Ref. Thermometer ID
Continuity w/ Proper Polarity ☐

Notes: TRAIN B

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temp, °F Inlet	Dry Gas Meter Temp, °F Outlet		Pump Vacuum, in. Hg
A 1	-	08:60	976.102	0.14	2.02	2.00	300	—	—	—	—		—		—
2	5		980.476	0.11	1.58	1.60	301	251	251	250	60		80		4
3	10		983.982	0.10	1.44	1.40	302	250	252	251	54		81		4
B 1	15		987.011	0.13	1.87	1.90	301	251	251	250	51		81		4
2	20		991.302	0.11	1.58	1.60	300	252	252	252	50		82		4
3	25		994.976	0.09	1.30	1.30	303	253	250	253	51		83		4
C 1	30		998.206	0.12	1.73	1.70	301	254	251	254	51		84		4
2	35		001.274	0.13	1.87	1.90	303	252	252	251	54		85		4
3	40		005.321	0.09	1.30	1.30	302	251	251	252	55		86		4
D 1	45		008.295	0.12	1.73	1.70	301	250	252	251	57		86		5
2	50		011.725	0.10	1.44	1.40	301	251	251	250	58		87		5
3	55		015.125	0.09	1.30	1.30	302	252	250	251	59		87		5
	60	09:10	018.250	—	—	—	—	—	—	—	—		—		—
			—												
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Data Custodian _____

001AS-QMS-FM-225R1

JTS 06/5/24

MONTROSE ENVIRONMENTAL

EPA Method 26A Field Data Sheet

Project Information
Date 06/05/24 Project # PROJ-031486
Customer/Facility Brooksville CEMEX
Unit ID/Sample Location Kiln No. 1
Run # 2 Operator JJS

Sampling Conditions
Static Pressure, in. H_2O -0.53 Ambient Temp, °F 80°
Barometric Pressure, in. Hg 29.92 Ref. Barometer ID NWS
Wind Speed / Direction 0 Precipitation, Y / N type
Probe / Filter Temp Range, °F 248 to 273

Sampling Equipment IDs
Meterbox ID
Umbilical ID
Pitot / Probe ID SEE
Nozzle ID RUN 1
Manometer ID
Sensitivity

Calibration
Meterbox Y
Meterbox ΔH@, in. H_2O SEE
Pitot coefficient, Cp RUN 1
Nozzle diameter, Dn, in.
Manometer zero and level ✓ yes
K-Factor 14.45

Equipment Checks	Pre	Mid	Post
Pitot (+), in. @ 0/15sec.	5.0 / ✓	—	5.0 / ✓
Pitot (-), in. @ 0/15sec.	5.0 / ✓	—	5.0 / ✓
Pitot visual inspection	✓ pass	☐ pass	✓ pass
Nozzle visual inspection	✓ pass	☐ pass	✓ pass
Meter, cfm @ in. Hg	0.005@17	@	0.001@15
Intermediate leak check volume, ft^3	/		/

ALT 011 TC ID:	Ambient °F	Ref. °F
Stack		
Probe		
Filter Box		
Filter Exit		SEE
Meter Outlet		LAST
Impinger Exit		RUN
Other		

Ref. Thermometer ID
Continuity w/ Proper Polarity ☐
Notes: TRAIN B

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temp, °F Inlet	Dry Gas Meter Temp, °F Outlet		Pump Vacuum, in. Hg
A 1	-	09:25	018.440	0.14	2.02	2.00	300	—	—	—	—		—		—
2	5		022.751	0.12	1.73	1.70	301	250	251	252	60		89		4
3	10		026.512	0.08	1.15	1.20	302	251	250	250	54		89		4
B 1	15		029.470	0.13	1.87	1.90	302	250	251	251	52		90		4
2	20		033.295	0.11	1.58	1.60	301	250	250	255	50		91		4
3	25		036.998	0.08	1.15	1.20	300	251	252	257	49		91		4
C 1	30		039.902	0.12	1.73	1.70	301	252	252	252	50		91		4
2	35		043.642	0.11	1.58	1.60	302	252	253	253	52		92		4
3	40		047.021	0.07	1.01	1.00	300	253	251	251	54		92		4
D 1	45		050.010	0.12	1.73	1.70	301	251	250	252	57		93		4
2	50		053.390	0.12	1.73	1.70	301	252	251	253	59		93		5
3	55		057.650	0.08	1.15	1.20	302	253	252	251	60		93		5
	60	10:35	060.430	—	—	—	—	—	—	—	—		—		—
			—												
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By ____ Data Custodian ____

001AS-QMS-FM-225R1

MONTROSE ENVIRONMENTAL

EPA Method 26A Field Data Sheet

Project Information
Date 06/05/24 Project # Proj-031486
Customer/Facility CEMEX Brooksville
Unit ID/Sample Location Kiln No. 1
Run # 3 Operator JTS

Sampling Conditions
Static Pressure, in. H_2O -0.51 Ambient Temp, °F 82°
Barometric Pressure, in. Hg 29.92 Ref. Barometer ID NWS
Wind Speed / Direction — Precipitation, Y (N) type
Probe / Filter Temp Range, °F 248 to 273

ALT 01	TC ID:	Ambient °F	Ref. °F
Stack	TC:01	85	85
Probe	TC:02	85	84
Filter Box	TC:03	85	85
Filter Exit	TC:05	85	84
Meter Outlet	TC:06	85	86
Impinger Exit	TC:04	85	85
Other	—	—	—

Ref. Thermometer ID —
Continuity w/ Proper Polarity ✓
Notes: Train B

Sampling Equipment IDs
Meterbox ID —
Umbilical ID —
Pitot / Probe ID SEG
Nozzle ID RUN 1
Manometer ID —
Sensitivity —

Calibration
Meterbox Y —
Meterbox ΔH@, in. H_2O SEG
Pitot coefficient, Cp RUN 1
Nozzle diameter, Dn, in. —
Manometer zero and level ✓ yes
K-Factor 14.45

Equipment Checks

	Pre	Mid	Post
Pitot (+), in. @ 0/15sec.	5.0 / ✓	— / —	5.0 / ✓
Pitot (-), in. @ 0/15sec.	5.0 / ✓	— / —	5.0 / ✓
Pitot visual inspection	✓ pass	☐ pass	✓ pass
Nozzle visual inspection	✓ pass	☐ pass	✓ pass
Meter, cfm @ in. Hg	0.004@15	—@—	0.005@17
Intermediate leak check volume, ft^3	/	/	/

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temp, °F Inlet	Dry Gas Meter Temp, °F Outlet		Pump Vacuum, in. Hg
A 1	—	10:50	060.651	0.13	1.87	1.90	301	—	—	—	—		—		—
2	5		064.921	0.11	1.58	1.60	302	258	251	251	60		96		3
3	10		068.021	0.08	1.15	1.20	300	254	250	252	57		97		3
B 1	15		071.624	0.~~12~~ 12 *	1.73	1.70	301	251	251	253	52		97		3
2	20		074.301	0.12	1.73	1.70	302	252	252	254	50		97		3
3	25		078.142	0.07	1.01	1.00	301	251	250	252	51		97		3
C 1	30		081.290	0.13	1.87	1.90	300	252	251	252	52		98		4
2	35		085.420	0.11	1.58	1.60	301	252	255	251	54		98		4
3	40		088.590	0.08	1.15	1.20	302	253	250	252	55		98		4
D 1	45		091.782	0.13	1.87	1.90	302	251	251	253	56		99		4
2	50		094.972	0.11	1.58	1.60	301	253	252	253	58		99		4
3	55		098.701	0.07	1.01	1.00	300	254	253	251	59		99		4
	60	12:00	102.220	—	—	—	—	—	—	—	—		—		—
			—												
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Data Custodian _____

001AS-QMS-FM-225R1

* JTS 06/05/24

Appendix A.4
Field Data Sheets - Brooksville Kiln 2 Stack Raw Mill On

MONTROSE AIR QUALITY SERVICES

26A Method _____ Field Datasheet (Isokinetic)

Page 1 of 1

Project Information

Date 11/30/23 Project # PROJ-031486

Customer/Facility Cemex

Unit ID/Sample Location Line 2 Train A Brookville

Run # 1 on Operator Josh. F

Sampling Conditions

Static Pressure, in. H_2O ~~-0.79~~ -0.58 Ambient Temp, °F 76

Barometric Pressure, in. Hg 30.09 Ref. Barometer ID NWS

Wind Speed / Direction 12 MPH SE Precipitation, Y / (N) type —

Probe / Filter Temp Range, °F 250 - 270

Sampling Equipment IDs

Meterbox ID PCMBS

Umbilical ID 100A

Nozzle ID 62 0.25

Pitot / Probe ID PCP61A

Manometer ID PCMB5

Sensitivity 0.010

Calibration

Meterbox Y 0.998

Meterbox ΔH@, in. H_2O 1.972

Nozzle diameter, Dn, in. 0.25

Pitot coefficient, Cp 0.84

Manometer zero and level ☑ yes

K-Factor ~~2.15~~ 2.30

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.5	☐ @	☑ @ 4.0
Pitot (-), pass @ in. H_2O	☑ @ 3.6	☐ @	☑ @ 3.6
Pitot visual inspection	☑ pass	☐ pass	☑ pass
Nozzle visual inspection	☑ pass	☐ pass	☑ pass
Meter, cfm @ in. Hg	0.000 @10	@	0.008 @ 4
Intermediate leak check volume, ft^3	/	/	/

ALT 011 TC ID:

	Ambient °F	Ref. °F
Stack		
Probe		
Filter Box		
Filter Exit		
Meter outlet		
Impinger Exit		
Other		

Ref. Thermometer ID

Continuity Check ☐ Continuity w/ Proper Polarity

Notes:

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	17:09	262.430												
A1	5		267.73	1.7	4.76	4.8	228	260	255		54		72		9
2	10		273.52	1.6	4.48	4.5	228	260	254		49		72		9.5
3	15		279.20	1.5	4.20	4.2	229	259	260		53		73		9.5
B1	20		285.16	1.7	4.76	4.8	227	265	255		53		73		9.5
2	25		291.18	1.7	4.76	4.8	226	259	265		54		74		10.5
3	30		297.09	1.6	4.48	4.5	230	263	267		54		74		10.5
C1	35		303.09	1.7	4.76	4.8	229	262	255		55		74		10.5
2	40		309.12	1.7	4.76	4.8	229	261	265		55		74		10.5
3	45		314.75	1.4	3.92	3.9	230	260	264		56		75		9.5
D1	50		320.74	1.7	4.76	4.8	231	265	254		56		75		10.5
2	55		326.64	1.6	4.48	4.5	234	260	267		56		75		10
3	60	18:14	332.356	~~1.7~~ 1.6	~~4.76~~ 4.49	~~4.8~~ 4.5	237	262	255		55		75		10.5
					4.49										
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

26A Method _____ Field Datasheet (Isokinetic)

Page 1 of 1

Project Information

Date 12/01/23 Project # PR05-031486

Customer/Facility Cemex

Unit ID/Sample Location Line 2 Train A Brooksville

Run # 2 ON Operator JOSH. F

Sampling Conditions

Static Pressure, in. H_2O -0.53 Ambient Temp, °F 70

Barometric Pressure, in. Hg 30.12 Ref. Barometer ID NWS

Wind Speed / Direction 5 SE ~ Precipitation, Y / (N) type —

Probe / Filter Temp Range, °F 250- 270

Sampling Equipment IDs

Meterbox ID PCMB5

Umbilical ID 100A

Nozzle ID G2 0.25

Pitot / Probe ID PL96A

Manometer ID PCMB5

Sensitivity 0.010

Calibration

Meterbox Y 0.998

Meterbox ΔH@, in. H_2O 1.872

Nozzle diameter, Dn, in. 0.25

Pitot coefficient, Cp 0.84

Manometer zero and level ☑ yes

K-Factor ~~2.66~~ 2.65

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.4	☐ @	☑ @ 4.0
Pitot (-), pass @ in. H_2O	☑ @ 3.6	☐ @	☑ @ 3.9
Pitot visual inspection	☑ pass	☐ pass	☑ pass
Nozzle visual inspection	☑ pass	☐ pass	☑ pass
Meter, cfm @ in. Hg	0.000 @ 10	@	0.000 @ 5
Intermediate leak check volume, ft^3	/	/	

ALT 011 TC ID:

	Ambient °F	Ref. °F
Stack		
Probe		
Filter Box		
Filter Exit		
Meter outlet		
Impinger Exit		
Other		

Ref. Thermometer ID

Continuity Check ☐ Continuity w/ Proper Polarity

Notes:

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	10:37	333.998												
A1	5		339.32	1.6	4.24	4.2	741	760	761		59		80		9
2	10		343.91	1.5	3.98	4.0	739	760	755		53		80		9
3	15		348.88	1.2	3.18	3.2	739	761	755		61		81		8
B1	20		354.48	1.6	4.24	4.2	739	763	763		62		82		10
2	25		360.08	1.5	3.98	4.0	739	759	763		60		84		9
3	30		365.41	1.3	3.45	3.5	739	762	761		58		85		9
C1	35		371.06	1.6	4.24	4.2	739	761	762		56		86		10
2	40		376.67	1.5	3.98	4.0	739	759	757		56		86		9
3	45		382.48	1.3	3.45	3.5	739	761	758		57		87		9
D1	50		387.62	1.6	4.24	4.2	739	767	766		58		87		10
2	55		393.30	1.6	4.24	4.2	739	758	755		59		87		10
3	60	11:47	398.622	1.3	3.45	3.5	740	760	757		60		87		9
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

264 Method _____ Field Datasheet (Isokinetic)

Page 1 of 1

Project Information

Date 12/01/23 Project # Proj-031496

Customer/Facility Cemex

Unit ID/Sample Location Line 2 Train A Brooksville

Run # 3 on Operator JDS, JF

Sampling Conditions

Static Pressure, in. H_2O -0.53 Ambient Temp, °F 81

Barometric Pressure, in. Hg 30.12 Ref. Barometer ID iWS

Wind Speed / Direction 5 13MPH Precipitation, Y / (N) Type —

Probe / Filter Temp Range, °F 250 - 270

Sampling Equipment IDs

Meterbox ID PCMB5

Umbilical ID 100A

Nozzle ID G2 0.25

Pitot / Probe ID PCPG6A

Manometer ID PCMB5

Sensitivity 0.010

Calibration

Meterbox Y 0.999

Meterbox ΔH@, in. H_2O 1.572

Nozzle diameter, Dn, in. 0.25

Pitot coefficient, Cp 0.84

Manometer zero and level ☑ yes

K-Factor 2.65

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.5	☐ @	☑ @ 3.4
Pitot (-), pass @ in. H_2O	☑ @ 3.6	☐ @	☑ @ 3.5
Pitot visual inspection	☑ pass	☐ pass	☑ pass
Nozzle visual inspection	☑ pass	☐ pass	☑ pass
Meter, cfm @ in. Hg	0.000 @ 20	@	0.000 @ 9
Intermediate leak check volume, ft^3	/	/	/

ALT 011	TC ID:	Ambient °F	Ref. °F
Stack	PCPG6A	74	74
Probe	PCPG6A	74	74
Filter Box	PCHB11	74	74
Filter Exit			
Meter outlet	PCMB5	74	74
Impinger Exit	PCIMP3	74	74
Other			

Ref. Thermometer ID

Continuity Check ☐ Continuity w/ Proper Polarity

Notes:

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	12:20	398.755												
A1	5		403.49	1.6	4.24	4.2	239	260	252		57		82		9.5
2	10		409.56	1.5	3.98	4.0	239	262	252		57		83		10
3	15		414.85	1.7	3.45	3.5	239	259	254		56		83		9
B1	20		420.51	1.6	4.24	4.2	239	262	255		59		85		10
2	25		426.12	1.5	3.98	4.0	239	262	253		62		85		10
3	30		431.49	1.3	3.98	3.5	240	261	261		67		86		9
C1	35		437.04	1.6	4.24	4.2	241	262	262		63		86		10
2	40		442.89	1.6	4.24	4.2	242	259	262		64		87		10
3	45		449.21	1.4	3.71	3.7	244	261	255		64		87		10
D1	50		454.06	1.7	4.51	4.5	243	265	257		64		88		11
2	55		459.81	1.6	4.24	4.2	241	264	262		65		88		10.5
3	60	13:26	465.321	1.4	3.71	3.7	240	262	266		66		88		10
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

EPA Method _____ Field Datasheet (Isokinetic)

Page 1 of 1

Project Information
Date 11/30/23 Project # 031486
Customer/Facility CEMEX Brooksville
Unit ID/Sample Location Line 2 B Mill ~~EA~~ On
Run # C1 Operator Steven Mefish

Sampling Conditions
Static Pressure, in. H_2O -0.51 Ambient Temp, °F 74°
Barometric Pressure, in. Hg 30.08 Ref. Barometer ID NWS
Wind Speed / Direction 7-12 mph SE Precipitation, Y (N), type _____
Probe / Filter Temp Range, °F

ALT 011 TC ID: Ambient °F Ref. °F
Stack
Probe
Filter Box
Filter Exit
Meter outlet
Impinger Exit
Other
Ref. Thermometer ID SE run 3
Continuity Check ☐ Continuity w/ Proper Polarity
Notes: *5M 11/30/23

Sampling Equipment IDs
Meterbox ID PCMB007
Umbilical ID PC150A
Nozzle ID 0.250 G1
Pitot / Probe ID PCP66
Manometer ID PCMB007
Sensitivity 0.010

Calibration
Meterbox Y 0.985
Meterbox ΔH@, in. H_2O 1.833
Nozzle diameter, Dn, in. 0.250
Pitot coefficient, Cp 0.84
Manometer zero and level ☒ yes
K-Factor ~~2.45~~ 2.80

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 4.1	☐ @	☑ @ 3.8
Pitot (-), pass @ in. H_2O	☑ @ 5.2	☐ @	☑ @ 5.3
Pitot visual inspection	☐ pass	☐ pass	☐ pass
Nozzle visual inspection	☐ pass	☐ pass	☐ pass
Meter, cfm @ in. Hg	0.006 @ 13 in	@	0.003 @ 14 in
Intermediate leak check volume, ft^3	/	/	/

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet	Pump Vacuum, in. Hg
	0	1709	166.334											
A1	5		172.05	1.5	4.20	4.20	230	269	254		60		73	9
2	10		177.52	1.3	3.64	*3.64	230	267	252		54		72	8
3	15		182.58	1.1	3.08	3.08	231	265	251		55		73	7
B1	20		188.41	1.5	4.20	4.20	229	268	255		55		74	9
2	25		193.94	1.3	3.64	3.64	229	268	254		56		75	9
3	30		199.36	1.2	3.36	3.36	232	264	250		56		76	8
C1	35		205.32	1.6	4.48	4.48	231	265	252		56		75	10
2	40		210.79	1.3	3.64	3.64	230	267	253		59		76	8
3	45		216.10	1.1	3.08	3.08	230	266	251		58		77	8
D1	50		221.86	1.5	4.20	4.20	233	268	254		59		77	9
2	55		227.55	1.4	3.92	3.92	236	268	255		60		78	9
3	60	1814	232.710	1.1	3.08	3.08	228	264	251		61		79	7
Averages														

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

EPA Method _____ Field Datasheet (Isokinetic)

Page 1 of 1

Project Information

Date 12/1/23 Project # 031486

Customer/Facility CEMEX Brooksville

Unit ID/Sample Location Line 2 train B Mill On

Run # C2 Operator Steven Mefash

Sampling Conditions

Static Pressure, in. H_2O -0.53 Ambient Temp, °F 69°

Barometric Pressure, in. Hg 30.13 Ref. Barometer ID NWS

Wind Speed / Direction 7-13mph SE Precipitation, Y (N) type _____

Probe / Filter Temp Range, °F

ALT 011 TC ID: Ambient °F Ref. °F

Stack

Probe

Filter Box

Filter Exit

Meter outlet

Impinger Exit

Other

Ref. Thermometer ID See run 3

Continuity Check ☐ Continuity w/ Proper Polarity

Notes: _____

Sampling Equipment IDs

Meterbox ID PCMB007

Umbilical ID PC150A

Nozzle ID 0.250 G1

Pitot / Probe ID PCP66

Manometer ID PCMB007

Sensitivity 0.010

Calibration

Meterbox Y 0.985

Meterbox ΔH@, in. H_2O 1.933

Nozzle diameter, Dn, in. 0.250

Pitot coefficient, Cp 0.84

Manometer zero and level ☒ yes

K-Factor ~~2.66~~ 2.51

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 4.4	☐ @	☑ @ 3.5
Pitot (-), pass @ in. H_2O	☑ @ 3.7	☐ @	☑ @ 4.1
Pitot visual inspection	☐ pass	☐ pass	☐ pass
Nozzle visual inspection	☐ pass	☐ pass	☐ pass
Meter, cfm @ in. Hg	0.004 @ 1.6in	@	0.001 @ 9in

Intermediate leak check volume, ft^3 / /

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	1037	233.178												
A1	5		237.67	1.5	~~3.77~~ 3.46	~~3.77~~ 3.46	243	264	257		66		77		7
2	10		243.06	1.3	3.26	3.26	241	268	260		58		78		7
3	15		248.45	0.99	2.49	2.49	239	266	255		63		78		6
B1	20		253.77	1.4	3.56	3.56	240	265	259		64		79		7
2	25		259.01	1.3	3.26	3.26	240	268	254		63		80		7
3	30		263.56	1.0	2.51	2.51	240	266	255		66		82		6
C1	35		268.08	1.4	3.56	3.56	240	269	258		66		83		8
2	40		273.91	1.2	3.01	3.01	239	265	250		65		83		7
3	45		278.41	1.0	2.51	2.51	238	265	253		65		83		6
D1	50		284.02	1.5	3.77	3.77	239	264	251		64		82		8
2	55		289.14	1.3	3.26	3.26	240	269	252		65		82		7
3	60	1142	293.741	1.0	2.51	2.51	240	269	253		65		81		6
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

EPA Method _____ Field Datasheet (Isokinetic)

Page 1 of 1

Project Information
Date 12/1/23 Project # 031486
Customer/Facility CEMEX Brooksville
Unit ID/Sample Location Line 2 Train B Mill On
Run # C3 Operator Steve McKeon

Sampling Conditions
Static Pressure, in. H_2O -0.53 Ambient Temp, °F 80°
Barometric Pressure, in. Hg 30.11 Ref. Barometer ID NWS
Wind Speed / Direction 7-15mph SSE Precipitation, Y (N), type _____
Probe / Filter Temp Range, °F

ALT 011	TC ID:	Ambient °F	Ref. °F
Stack	PCP6B	74°	74°
Probe	PCP6B	74°	74°
Filter Box	PCHB1	74°	74°
Filter Exit			
Meter outlet	PCMB007	74°	74°
Impinger Exit	PCH11	74°	73°
Other			

Ref. Thermometer ID 230441739
Continuity Check ☐ Continuity w/ Proper Polarity
Notes: _____

Sampling Equipment IDs
Meterbox ID PCMB007
Umbilical ID PC150A
Nozzle ID 0.250 G1
Pitot / Probe ID PCP6B
Manometer ID PCMB007
Sensitivity 0.010

Calibration
Meterbox Y 0.985
Meterbox ΔH@, in. H_2O 1.833
Nozzle diameter, Dn, in. 0.250
Pitot coefficient, Cp 0.84
Manometer zero and level ☒ yes
K-Factor 2.51

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.5	☒ @	☑ @ 3.8
Pitot (-), pass @ in. H_2O	☑ @ 4.1	☐ @	☑ @ 3.3
Pitot visual inspection	☐ pass	☐ pass	☐ pass
Nozzle visual inspection	☐ pass	☐ pass	☐ pass
Meter, cfm @ in. Hg	0.000 @ 10:0	@	0.005 @ 11:0
Intermediate leak check volume, ft^3	/	/	

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	1220	293.910												
A1	5		299.43	1.5	3.77	3.77	240	268	254		66		79		5
2	10		304.46	1.2	3.01	3.01	234	267	251		60		80		7
3	15		308.98	1.0	2.51	2.51	239	268	252		65		81		6
B1	20		314.52	1.5	3.77	3.77	240	265	250		62		81		8
2	25		319.76	1.3	3.26	3.26	239	261	251		63		81		5
3	30		324.37	0.99	2.49	2.49	238	265	253		64		82		6
C1	35		329.61	1.4	3.51	3.51	241	266	251		64		83		8
2	40		334.97	1.4	3.51	3.51	242	269	250		64		85		8
3	45		339.86	1.1	2.76	2.76	243	267	253		66		86		7
D1	50		345.47	1.6	4.02	4.02	243	267	255		64		85		9
2	55		350.75	1.3	3.26	3.26	242	265	257		65		85		8
3	60	1326	355.391	0.99	2.49	2.49	241	268	251		66		86		6
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

Appendix A.5
Field Data Sheets - Brooksville Kiln 2 Stack Raw Mill Off

MONTROSE AIR QUALITY SERVICES

26A Method _____ Field Datasheet (Isokinetic)

Page 1 of 1

Project Information

Date 11/30/23 Project# PROJ-031486

Customer/Facility Cemex

Unit ID/Sample Location Line 2 Train A Brooksville

Run # 1 1:14 Operator Josh. F

Sampling Conditions

Static Pressure, in. H_2O -0.74 Ambient Temp, °F 62

Barometric Pressure, in. Hg 30.20 Ref. Barometer ID NWS

Wind Speed / Direction 6 mph E Precipitation, Y (N) type —

Probe / Filter Temp Range, °F 250-270

ALT 011 TC ID:

	Ambient °F	Ref. °F
Stack		
Probe		
Filter Box		
Filter Exit		
Meter outlet		
Impinger Exit		
Other		

Ref. Thermometer ID

Continuity Check ☐ Continuity w/ Proper Polarity

Notes:

Sampling Equipment IDs

Meterbox ID PCMB5

Umbilical ID 100A

Nozzle ID 62 0.25

Pitot / Probe ID PCP61A

Manometer ID PCMB5

Sensitivity 0.010

Calibration

Meterbox Y .998

Meterbox ΔH@, in. H_2O 1.872

Nozzle diameter, Dn, in. 0.25

Pitot coefficient, Cp .84

Manometer zero and level ☑ yes

K-Factor 2.25

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.3	☐ @	☑ @ 24
Pitot (-), pass @ in. H_2O	☑ @ 3.4	☐ @	☑ @ 3.5
Pitot visual inspection	☑ pass	☐ pass	☑ pass
Nozzle visual inspection	☑ pass	☐ pass	☑ pass
Meter, cfm @ in. Hg	0.000 @ 10	@	0.000 @ 6
Intermediate leak check volume, ft^3	/	/	

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	10:25	102.795												
A 1	5		107.49	1.4	3.15	3.2	335	261	268		59		60		7
2	10		112.56	1.5	3.38	3.4	335	260	268		56		63		7
3	15		117.37	1.4	3.15	3.2	332	262	264		58		62		7
B 1	20		122.41	1.5	3.38	3.4	337	264	263		62		64		7
2	25		127.33	1.5	3.38	3.4	336	259	261		63		64		7
3	30		132.11	1.3	2.93	2.9	335	260	254		64		65		6
C 1	35		137.03	1.5	3.38	3.4	335	266	263		63		65		6
2	40		142.06	1.5	3.38	3.4	334	263	259		61		66		7
3	45		146.72	1.2	2.70	2.7	335	260	263		59		67		6
D 1	50		151.73	1.6	3.60	3.6	335	264	266		58		67		7
2	55		156.61	1.5	3.38	3.4	337	266	263		60		69		7
3	60	11:30	161.559	1.3	2.93	2.9	331	263	266		54		69		7
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

26A Method _____ Field Datasheet (Isokinetic)

Project Information
Date 11/30/23 Project # PROJ-031486
Customer/Facility Cemex
Unit ID/Sample Location Line 2 Train A Brownsville
Run # 2 off Operator Josh. F

Sampling Conditions
Static Pressure, in. H_2O -0.74 Ambient Temp, °F 67
Barometric Pressure, in. Hg 30.18 Ref. Barometer ID NWS
Wind Speed / Direction 9 MPH E Precipitation, Y / (N) type ——
Probe / Filter Temp Range, °F 250 – 270

ALT011 TC ID: | Ambient °F | Ref. °F
Stack
Probe
Filter Box
Filter Exit
Meter outlet
Impinger Exit
Other
Ref. Thermometer ID
Continuity Check ☐ Continuity w/ Proper Polarity
Notes:

Sampling Equipment IDs
Meterbox ID PCMBS
Umbilical ID 100A
Nozzle ID G2 0.25
Pitot / Probe ID PCP6A
Manometer ID PCMBS
Sensitivity 0.010

Calibration
Meterbox Y 0.998
Meterbox ΔH@, in. H_2O 1.972
Nozzle diameter, Dn, in. 0.25
Pitot coefficient, Cp 0.84
Manometer zero and level ☑ yes
K-Factor 2.25

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.6	☐ @	☑ @ 3.4
Pitot (-), pass @ in. H_2O	☑ @ 3.6	☐ @	☑ @ 3.3
Pitot visual inspection	☑ pass	☐ pass	☑ pass
Nozzle visual inspection	☑ pass	☐ pass	☑ pass
Meter, cfm @ in. Hg	0.000 @ 10	@	0.000 @ 6
Intermediate leak check volume, ft^3	/	/	

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	12:10	161.685												
A1	5		165.96	1.2	2.70	2.7	336	261	268		56		70		~~6~~
2	10		170.30	1.1	2.48	2.5	337	261	266		51		71		~~6~~
3	15		174.48	~~1.0~~	2.25	2.3	336	262	263		54		73		6
B1	20		178.85	1.2	2.70	2.7	337	264	263		54		73		6
2	25		183.18	1.1	2.48	2.5	333	260	256		55		74		6
3	30		187.29	1.0	2.25	2.3	339	262	259		57		74		6
C1	35		191.67	1.2	2.70	2.7	341	263	257		58		75		6
2	40		196.02	1.1	2.48	2.5	327	258	259		56		75		6
3	45		200.12	.98	2.21	2.2	345	262	558		58		77		6
D1	50		204.49	1.2	2.70	2.7	346	263	259		59		78		6
2	55		208.97	1.2	2.70	2.7	346	258	254		60		78		6
3	60	13:14	213.216	1.0	2.25	2.3	346	259	253		60		79		6
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

26A Method _____ Field Datasheet (Isokinetic)

Page 2 of 1

Project Information

Date 11/30/23 Project # PROJ-031486

Customer/Facility Cemex

Unit ID/Sample Location Line 2 M.I off T-A Brookville

Run # 3 OFF Operator Josh.F

Sampling Conditions

Static Pressure, in. H_2O -0.74 Ambient Temp, °F 74

Barometric Pressure, in. Hg 30.14 Ref. Barometer ID NWS

Wind Speed / Direction 10mph SE Precipitation, Y / (N) type —

Probe / Filter Temp Range, °F 250-270

ALT 011	TC ID:	Ambient °F	Ref. °F
Stack	PCP6A	74	74
Probe	PCP6A	74	74
Filter Box	PCMBS 41	74	74
Filter Exit			
Meter outlet	PCMBS	74	74
Impinger Exit	PCMBS	74	74
Other			

Ref. Thermometer ID 230441734

Continuity Check ☐ Continuity w/ Proper Polarity

Notes: _____

Sampling Equipment IDs

Meterbox ID PCMBS

Umbilical ID 100A

Nozzle ID G2 0.25

Pitot / Probe ID PCP6A

Manometer ID PCMBS

Sensitivity 0.010

Calibration

Meterbox Y 0.998

Meterbox ΔH@, in. H_2O 1.572

Nozzle diameter, Dn, in. 0.25

Pitot coefficient, Cp 0.84

Manometer zero and level ☑ yes

K-Factor 2.25

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.4	☐ @	☑ @ 3.3
Pitot (-), pass @ in. H_2O	☑ @ 3.1	☐ @	☑ @ 3.2
Pitot visual inspection	☑ pass	☐ pass	☑ pass
Nozzle visual inspection	☑ pass	☐ pass	☑ pass
Meter, cfm @ in. Hg	0.000 @ 10	@	0.000 @ 5
Intermediate leak check volume, ft^3	/	/	/

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	13:55	213.371												
A1	5		217.92	1.2	2.70	2.7	327	262	269		55		72		6
2	10		222.41	~~1.2~~ 1.1	2.48	2.5	325	264	267		57		74		6
3	15		~~226.32~~ 226.32	.94	~~4.4~~ 2.12	2.1	324	260	263		62		74		6
B1	20		230.59	1.2	2.70	2.7	324	265	268		67		75		6
2	25		234.88	1.1	2.48	2.5	325	264	267		64		76		6
3	30		239.02	.96	2.21	2.2	326	256	264		63		76		6
C1	35		243.42	1.2	2.70	2.7	327	261	263		62		77		6
2	40		247.50	.95	~~2.1~~ 2.14	2.1	320	262	263		63		78		5.5
3	45		251.06	.71	1.60	1.6	324	261	264		63		78		5.5
D1	50		254.74	.95	1.91	1.9	316	264	261		64		78		5.
2	55		258.43	.95	1.91	1.9	317	260	260		63		79		5
3	60	15:01	262.035	.75	1.69	1.7	318	256	255		63		77		5
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

EPA Method _____ Field Datasheet (Isokinetic)

Page 1 of 1

Project Information
Date 11/30/23 Project # 031486
Customer/Facility CEMEX Brooksville
Unit ID/Sample Location Line 2 B Mill off
Run # C1 Operator Steven Metosh

Sampling Conditions
Static Pressure, in. H_2O -0.74 Ambient Temp, °F 61°
Barometric Pressure, in. Hg 30.19 Ref. Barometer ID NCWS
Wind Speed / Direction 7-15mph ENE Precipitation, Y (N), type _____
Probe / Filter Temp Range, °F

ALT 011 TC ID: Ambient °F Ref. °F
Stack
Probe
Filter Box
Filter Exit
Meter outlet
Impinger Exit
Other
Ref. Thermometer ID See Run 3
Continuity Check ☐ Continuity w/ Proper Polarity
Notes:

Sampling Equipment IDs
Meterbox ID PCMB007
Umbilical ID PC150A
Nozzle ID 0.250G1
Pitot / Probe ID PCP6B
Manometer ID PCMB007
Sensitivity 0.010

Calibration
Meterbox Y 0.985
Meterbox ΔH@, in. H_2O 1.833
Nozzle diameter, Dn, in. 0.250
Pitot coefficient, Cp 0.84
Manometer zero and level ☒ yes
K-Factor 2.23

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.6	☐ @	☑ @ 4.2
Pitot (-), pass @ in. H_2O	☑ @ 4.8	☐ @	☑ @ 4.5
Pitot visual inspection	☐ pass	☐ pass	☐ pass
Nozzle visual inspection	☐ pass	☐ pass	☐ pass
Meter, cfm @ in. Hg	0.020 @ 11.0	@	0.004 @ 6.0
Intermediate leak check volume, ft^3		/	/

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	1025	16.912												
A1	5		21.36	1.2	2.68	2.68	337	265	255		64		65		5
2	10		25.89	1.1	2.45	2.45	336	264	252		62		65		5
3	15		30.09	0.98	2.19	2.19	334	267	251		63		65		5
B1	20		34.57	1.3	2.90	2.90	333	267	251		63		65		5
2	25		38.72	1.2	2.68	2.68	337	264	252		62		66		5
3	30		43.14	0.99	2.21	2.21	335	265	252		59		68		5
C1	35		47.73	1.3	2.90	2.90	335	266	254		58		68		5
2	40		52.24	1.1	2.45	2.45	336	268	252		59		68		5
3	45		56.47	0.97	2.16	2.16	334	269	255		59		69		5
D1	50		60.80	1.3	2.90	2.90	336	263	253		59		70		5
2	55		65.17	1.1	2.45	2.45	334	270	251		60		70		5
3	60	1130	69.406	0.97	2.16	2.16	331	266	251		59		70		5
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

EPA Method _____ Field Datasheet (Isokinetic)

Project Information
Date 11/30/23 Project # 031486
Customer/Facility CEMEX Brooksville
Unit ID/Sample Location Line 2 B Mill off
Run # C2 Operator Steven Metown

Sampling Conditions
Static Pressure, in. H_2O -0.74 Ambient Temp, °F 68°
Barometric Pressure, in. Hg 30.16 Ref. Barometer ID NWS
Wind Speed / Direction 7-16mph NE Precipitation, Y / (N) type _____
Probe / Filter Temp Range, °F

ALT 011 TC ID:

	Ambient °F	Ref. °F
Stack		
Probe		
Filter Box		
Filter Exit		
Meter outlet		
Impinger Exit		
Other		

Ref. Thermometer ID See VM 3
Continuity Check ☐ Continuity w/ Proper Polarity
Notes: * JM 11/30/23

Sampling Equipment IDs
Meterbox ID PCMB007
Umbilical ID PC150A
Nozzle ID 0.250G1
Pitot / Probe ID PEPB6B
Manometer ID PCMB007
Sensitivity 0.010

Calibration
Meterbox Y 0.985
Meterbox ΔH@, in. H_2O 1.833
Nozzle diameter, Dn, in. 0.250
Pitot coefficient, Cp 0.84
Manometer zero and level ☒ yes
K-Factor 2.23

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 4.2	☐ @	☑ @ 3.7
Pitot (-), pass @ in. H_2O	☑ @ 4.5	☐ @	☑ @ 3.4
Pitot visual inspection	☐ pass	☐ pass	☐ pass
Nozzle visual inspection	☐ pass	☐ pass	☐ pass
Meter, cfm @ in. Hg	0.0080 @ 12:1	@	0.0008 @ 7:1
Intermediate leak check volume, ft^3	- /	/	

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	12.10	69.558												
A1	5		73.69	1.0	2.23	2.23	337	268	250		66		70		5
2	10		77.82	0.98	2.19	2.19	336	267	252		57		70		5
3	15		81.67	0.84	1.87	1.87	334	268	255		58		71		5
B1	20		85.78	1.0	2.23	2.23	338	267	251		59		71		5
2	25		89.93	0.97	2.16	2.16	337	265	250		60		72		5
3	30		93.76	0.80	1.78	1.78	337	268	253		61		~~76~~ → 73		5
C1	35		97.91	0.99	2.21	2.21	343	260	257		61		74		6
2	40		102.09	0.98	2.19	2.19	343	261	257		61		75		6
3	45		106.01	0.85	1.90	1.90	343	264	260		62		75		5
D1	50		110.15	1.0	2.23	2.23	346	259	252		62		76		6
2	55		114.33	0.98	2.19	2.19	346	262	251		63		76		6
3	60	1314	118.255	0.86	1.92	1.92	344	265	252		63		76		5
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

EPA Method _____ Field Datasheet (Isokinetic)

Page 1 of 1

Project Information
Date 11/30/23 Project # 031486
Customer/Facility CEMEX Brooksville
Unit ID/Sample Location Line 2 B Mill off
Run # C3 Operator Steven Metosh

Sampling Conditions
Static Pressure, in. H_2O -0.74 Ambient Temp, °F 74°
Barometric Pressure, in. Hg 30.10 Ref. Barometer ID NWS
Wind Speed / Direction 8-14mph ESE Precipitation, Y (N) type _____
Probe / Filter Temp Range, °F

Sampling Equipment IDs
Meterbox ID PCMB007
Umbilical ID PC150A
Nozzle ID C.250 G1
Pitot / Probe ID PCP6B
Manometer ID PCMB007
Sensitivity 0.010

Calibration
Meterbox Y 0.985
Meterbox ΔH@, in. H_2O 1.833
Nozzle diameter, Dn, in. 0.250
Pitot coefficient, Cp 0.84
Manometer zero and level ☒ yes
K-Factor 2.23

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.7	☐ @	☑ @ 4.1
Pitot (-), pass @ in. H_2O	☑ @ 3.4	☐ @	☑ @ 5.2
Pitot visual inspection	☐ pass	☐ pass	☐ pass
Nozzle visual inspection	☐ pass	☐ pass	☐ pass
Meter, cfm @ in. Hg	0.0002 @ 13.1	@	0.0005 @ 7.1
Intermediate leak check volume, ft^3	/	/	/

ALT 011

	TC ID:	Ambient °F	Ref. °F
Stack	PCP6B	74°	74°
Probe	PCP6B	74°	74°
Filter Box	PCHB1	74°	74°
Filter Exit			
Meter outlet	PCMB007	74°	74°
Impinger Exit	PCON11	74°	75°
Other			

Ref. Thermometer ID 230441739
☐ Continuity Check ☐ Continuity w/ Proper Polarity
Notes: _____

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	1355	118.419												
A1	5		122.66	1.0	2.23	2.23	328	268	251		66		73		5
2	10		126.83	0.97	2.16	2.16	326	268	253		60		75		5
3	15		130.69	0.85	1.90	1.90	323	265	250		59		74		5
B1	20		134.83	0.99	2.21	2.21	325	264	251		59		73		5
2	25		138.97	0.97	2.16	2.16	326	263	250		60		74		5
3	30		142.76	0.80	1.78	1.78	325	265	250		61		74		5
C1	35		146.91	0.99	2.21	2.21	328	263	255		63		75		5
2	40		151.07	0.97	2.16	2.16	322	265	251		62		75		5
3	45		154.59	0.68	1.52	1.52	315	268	251		64		76		4
D1	50		158.49	0.91	2.03	2.03	314	268	250		63		76		5
2	55		162.45	0.86	1.92	1.92	316	269	253		63		76		5
3	60	1501	166.168	0.74	1.65	1.65	317	268	251		63		75		5
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

Appendix A.6
Field Data Sheets - Miami Kiln Stack Raw Mill On

MONTROSE AIR QUALITY SERVICES

EPA Method 26A Field Datasheet (Isokinetic)

Page 1 of 1

Project Information
Date 12/5/23 Project # Q31494
Customer/Facility CEMEX Miami
Unit ID/Sample Location Kiln line 1 M1 ~~Aft~~ On A
Run # C1 Operator Steven Metosh

Sampling Conditions
Static Pressure, in. H_2O -1.0 Ambient Temp, °F 70°
Barometric Pressure, in. Hg 30.08 Ref. Barometer ID MW5
Wind Speed / Direction 7-12 mph N Precipitation, Y / (N) type
Probe / Filter Temp Range, °F

ALT 011 TC ID: Ambient °F Ref. °F
Stack
Probe
Filter Box
Filter Exit
Meter outlet
Impinger Exit
Other
Ref. Thermometer ID See run 3
Continuity Check ☐ Continuity w/ Proper Polarity
Notes: *

Sampling Equipment IDs
Meterbox ID PCMB007
Umbilical ID PC150A
Nozzle ID 0.250 G1
Pitot / Probe ID PCP66
Manometer ID PCMB007
Sensitivity 0.010

Calibration
Meterbox Y 0.985
Meterbox ΔH@, in. H_2O 1.833
Nozzle diameter, Dn, in. 0.250
Pitot coefficient, Cp 0.84
Manometer zero and level ☒ yes
K-Factor ~~2.13~~* 2.35

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 4.2	☐ @	☑ @ 4.8
Pitot (-), pass @ in. H_2O	☑ @ 3.5	☐ @	☑ @ 5.7
Pitot visual inspection	☑ pass	☐ pass	☑ pass
Nozzle visual inspection	☑ pass	☑ pass	☐ pass
Meter, cfm @ in. Hg	0.005 @ 10in	@	0.001 @ 7in
Intermediate leak check volume, ft^3			

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	0830	356.237												
A1	5		360.79	1.0	2.35	2.35	293	263	251		58		78		7
2	10		365.08	~~0.84~~ 0.89	2.10	2.10	281	263	257		55		78		7
3	15		369.14	0.85	1.53	1.53	271	266	261		60		78		5
B1	20		373.94	0.97	2.28	2.28	267	266	260		59		78		7
2	25		377.33	0.72	2.16	2.16	267	267	254		59		78		7
3	30		380.87	0.80	1.41	1.41	258	265	259		60		78		5
C1	35		386.08	0.94	2.21	2.21	261	264	255		61		78		7
2	40		388.47	0.84	1.97	1.97	256	268	256		61		79		7
3	45		392.95	0.67	1.58	1.58	253	262	255		60		79		6
D1	50		397.30	0.94	2.21	2.21	255	266	256		62		79		7
2	55		401.37	0.84	2.10	2.10	254	264	261		61		79		7
3	60	0934	405.561	0.66	1.55	1.55	250	265	259		63		80		6
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By ____ Team Leader ____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

EPA Method 26A Field Datasheet (Isokinetic)

Project Information
Date 12/5/23 Project # 031494
Customer/Facility CEMEX Miami On
Unit ID/Sample Location Kiln Line 1 M.P. A
Run # C2 Operator Steven Mcfosh

Sampling Conditions
Static Pressure, in. H_2O -0.94 Ambient Temp, °F 75°
Barometric Pressure, in. Hg 30.10 Ref. Barometer ID NWS
Wind Speed / Direction 6-11mph N Precipitation, Y (N) type
Probe / Filter Temp Range, °F

Sampling Equipment IDs
Meterbox ID PCMBee07
Umbilical ID PCL50A
Nozzle ID 0.250 G1
Pitot / Probe ID PCP66
Manometer ID PCMB007
Sensitivity 0.010

Calibration
Meterbox Y 0.985
Meterbox ΔH@, in. H_2O 1.833
Nozzle diameter, Dn, in. 0.250
Pitot coefficient, Cp 0.84
Manometer zero and level ☑ yes
K-Factor 2.35

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 4.8	☐ @	☑ @ 4.2
Pitot (-), pass @ in. H_2O	☑ @ 3.7	☐ @	☑ @ 3.7
Pitot visual inspection	☑ pass	☐ pass	☐ pass
Nozzle visual inspection	☑ pass	☐ pass	☐ pass
Meter, cfm @ in. Hg	0.0002 @ 15.0	@	0.000 @ 5.0
Intermediate leak check volume, ft^3	/	/	/

ALT 011 TC ID: Ambient °F Ref. °F
Stack
Probe
Filter Box
Filter Exit
Meter outlet
Impinger Exit
Other
Ref. Thermometer ID See Vin 3
Continuity Check ☐ Continuity w/ Proper Polarity
Notes:

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	1010	405.705												
A1	5		410.06	0.92	2.16	2.16	254	265	257		66		76		6
2	10		414.41	0.93	1.95	1.95	254	266	256		58		77		6
3	15		417.96	0.67	1.58	1.58	249	268	256		61		78		5
B1	20		422.24	0.93	2.19	2.19	252	261	256		62		78		6
2	25		426.51	0.87	2.05	2.05	252	266	256		62		78		6
3	30		430.05	0.60	1.41	1.41	247	269	257		62		79		5
C1	35		434.23	0.91	2.14	2.14	251	267	260		61		80		6
2	40		438.35	0.82	1.93	1.93	249	266	258		62		81		6
3	45		441.96	0.64	1.50	1.50	245	263	264		62		81		5
D1	50		446.14	0.89	2.10	2.10	245	261	255		63		82		6
2	55		450.23	0.82	1.93	1.93	243	267	259		63		82		6
3	60	1116	453.731	0.58	1.36	1.36	239	269	257		64		82		5
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By ____ Team Leader ____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

EPA Method 26A Field Datasheet (Isokinetic)

Page 1 of 1

Project Information
Date 12/5/23 Project # Q31494
Customer/Facility CEMEX Miami On
Unit ID/Sample Location Kiln Line 1 M1 ~~EPA~~ A
Run # C3 Operator Steven McIntosh

Sampling Conditions
Static Pressure, in. H_2O -0.94 Ambient Temp, °F 80°
Barometric Pressure, in. Hg 30.08 Ref. Barometer ID NWS
Wind Speed / Direction 5-9mph N Precipitation, Y (N), type
Probe / Filter Temp Range, °F

Sampling Equipment IDs
Meterbox ID PCMB007
Umbilical ID PC150A
Nozzle ID 0.250G1
Pitot / Probe ID PCP6B
Manometer ID PCMB007
Sensitivity 0.010

Calibration
Meterbox Y 0.985
Meterbox ΔH@, in. H_2O 1.833
Nozzle diameter, Dn, in. 0.250
Pitot coefficient, Cp 0.84
Manometer zero and level ☒ yes
K-Factor 2.35

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 4.2	☐ @	☑ @ 3.4
Pitot (-), pass @ in. H_2O	☑ @ 3.7	☐ @	☑ @ 3.9
Pitot visual inspection	☐ pass	☐ pass	☐ pass
Nozzle visual inspection	☐ pass	☐ pass	☐ pass
Meter, cfm @ in. Hg	2.004 @ 2 in	@	0.000 @ 8 in
Intermediate leak check volume, ft^3			

ALT 011	TC ID:	Ambient °F	Ref. °F
Stack	PCP6B	74°	74°
Probe	PCP6B	74°	74°
Filter Box	PCHB1	74°	74°
Filter Exit			
Meter outlet	PCMB007	74°	74°
Impinger Exit	PCSN11	74°	75°
Other			

Ref. Thermometer ID 230441739
Continuity Check ☐ Continuity w/ Proper Polarity
Notes: * SM 12/5/23

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet	Pump Vacuum, in. Hg
	0	1200	453.924											
A1	5		458.04	0.91	2.14	2.14	245	265	261		64		82	7
2	10		462.18	0.84	1.97	1.97	244	266	259		63		83	7
3	15		465.84	*~~0.63~~ 0.63	1.43	1.48	242	266	257		63		83	6
B1	20		469.99	0.89	2.10	2.10	245	265	257		62		84	7
2	25		474.16	0.86	2.02	2.02	245	268	259		64		84	7
3	30		477.83	0.63	1.48	1.48	241	268	260		65		85	6
C1	35		482.17	0.90	2.12	2.12	244	267	259		64		85	7
2	40		486.23	0.83	1.95	1.95	243	269	256		64		85	7
3	45		489.77	0.61	1.43	1.43	240	267	257		59		84	6
D1	50		493.98	0.89	2.10	2.10	244	263	253		54		85	7
2	55		498.03	0.81	1.90	1.90	244	257	255		54		85	7
3	60	1303	501.522	0.61	1.43	1.43	242	268	257		55		85	6
Averages														

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By ____ Team Leader ____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

26A Method _____ Field Datasheet (Isokinetic)

Page 1 of 1

Project Information

Date 12/15/23 Project # P053-031496

Customer/Facility Cemex 3 Train

Unit ID/Sample Location K; in line 1 Micm.

Run # 1 ~~off~~ on Operator Josh. F

Sampling Conditions

Static Pressure, in. H_2O -1.0 Ambient Temp, °F 70

Barometric Pressure, in. Hg 30.03 Ref. Barometer ID Nist

Wind Speed / Direction 7-12 MPH Precipitation, Y / N, type —

Probe / Filter Temp Range, °F 250 - 270

Sampling Equipment IDs

Meterbox ID PCMB5

Umbilical ID PC100A

Nozzle ID G2 0.25

Pitot / Probe ID PCP6A

Manometer ID PCMB5

Sensitivity 0.010

Calibration

Meterbox Y 0.998

Meterbox ΔH@, in. H_2O 1.977

Nozzle diameter, Dn, in. 0.25

Pitot coefficient, Cp 0.84

Manometer zero and level ☑ yes

K-Factor ~~2.44~~ 2.34

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 6.2	☐ @	☑ @ 3.6
Pitot (-), pass @ in. H_2O	☑ @ 2.5	☐ @	☑ @ 3.4
Pitot visual inspection	☑ pass	☐ pass	☑ pass
Nozzle visual inspection	☑ pass	☐ pass	☑ pass
Meter, cfm @ in. Hg	0.000 @ 10	@	0.000 @ 4
Intermediate leak check volume, ft^3	/		/

ALT-011 TC ID:

	Ambient °F	Ref. °F
Stack		
Probe		
Filter Box		
Filter Exit		
Meter outlet		
Impinger Exit		
Other		

Ref. Thermometer ID

Continuity Check ☐ Continuity w/ Proper Polarity

Notes:

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	4:30	465.558	~~1.7~~	2.53	2.5									
A 1	5		470.46	1.2	~~2.53~~	~~2.5~~	241	253	256		64		55		6
2	10		474.70	1.0	2.34	2.3	277	254	257		58		55		5
3	15		479.44	.74	1.73	1.7	267	253	256		54		54		4
B 1	20		482.95	1.2	2.51	2.5	266	255	252		54		55		~~4~~ 6
2	25		486.93	1.0	2.34	2.3	265	254	257		54		56		5
3	30		491.08	.77	1.80	1.8	257	258	256		58		55		4
C 1	35		494.91	1.0	2.34	2.3	260	265	256		60		61		5
2	40		499.44	.96	2.25	2.3	255	267	261		59		55		5
3	45		502.79	.70	1.64	1.6	249	260	263		60		57		4
D 1	50		506.87	1.0	2.34	2.3	254	268	253		61		57		5
2	55		511.16	.98	2.29	2.3	253	265	262		62		56		5
3	60	5:34	514.957	.72	1.68	1.7	243	255	259		63		56		4
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

26A Method _____ Field Datasheet (Isokinetic)

Project Information

Date 12/5/23 Project # Pro5-031494

Customer/Facility Cemex B Train

Unit ID/Sample Location Kiln Line 2 Miami

Run # 2 ~~OFF~~ M Operator Josh. F

Sampling Conditions

Static Pressure, in. H_2O -0.94 Ambient Temp, °F 77

Barometric Pressure, in. Hg 30.10 Ref. Barometer ID NWS

Wind Speed / Direction NW 6mph ~ Precipitation, Y / N, type —

Probe / Filter Temp Range, °F 250 - 270

ALT 011 TC ID:

	Ambient °F	Ref. °F
Stack		
Probe		
Filter Box		
Filter Exit		
Meter outlet		
Impinger Exit		
Other		

Ref. Thermometer ID

Continuity Check ☐ Continuity w/ Proper Polarity

Notes:

Sampling Equipment IDs

Meterbox ID PCMB5

Umbilical ID PC100A

Nozzle ID 62 0.25

Pitot / Probe ID PCP6A

Manometer ID PCMB5

Sensitivity 0.010

Calibration

Meterbox Y 0.998

Meterbox ΔH@, in. H_2O 1.972

Nozzle diameter, Dn, in. 0.25

Pitot coefficient, Cp 0.84

Manometer zero and level ☑ yes

K-Factor 2.34

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.2	☒ @	☑ @ 3.6
Pitot (-), pass @ in. H_2O	☑ @ 3.4	☐ @	☑ @ 3.5
Pitot visual inspection	☑ pass	☐ pass	☑ pass
Nozzle visual inspection	☑ pass	☐ pass	☑ pass
Meter, cfm @ in. Hg	0.000 @ 10	@	0.000 @ 3
Intermediate leak check volume, ft^3	/	/	/

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	1010	515.196												
A1	5		519.55	1.0	2.34	2.3	257	266	265		62		79		5
2	10		522.91	.82	1.92	1.9	251	268	266		53		80		3
3	15		526.66	.57	1.33	1.3	242	266	267		56		80		5
B1	20		530.62	.93	2.18	2.2	250	267	261		56		80		5
2	25		534.55	.78	1.83	1.8	250	264	263		55		80		5
3	30		537.54	.54	1.50	1.5	246	266	268		55		81		4
C1	35		541.92	.94	2.70	2.2	250	265	264		58		81		5
2	40		545.95	.79	1.88	1.9	247	268	266		56		82		5
3	45		549.15	.60	1.40	1.4	242	268	261		57		83		4
D1	50		552.93	.85	1.99	2.0	243	267	264		57		83		5
2	55		556.62	.72	1.68	1.7	241	268	260		59		83		5
3	60	1115	~~560~~ 564.995	.58	1.36	1.4	236	267	267		58		83		~~5~~ 4
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

26A Method _____ Field Datasheet (Isokinetic)

Page 1 of 1

Project Information

Date 12/5/23 Project # PR05-031494

Customer/Facility Cemex B Train

Unit ID/Sample Location Kiln 1 Line #1 Main

Run # 3 ~~OFF~~ ON Operator Josh. F

Sampling Conditions

Static Pressure, in. H_2O -0.94 Ambient Temp, °F 74

Barometric Pressure, in. Hg 30.10 Ref. Barometer ID NWS

Wind Speed / Direction VRA 3 mph ~ Precipitation, Y / (N) type —

Probe / Filter Temp Range, °F 250 - 270

Sampling Equipment IDs

Meterbox ID PCMB5

Umbilical ID PC 10A

Nozzle ID G2 0.25

Pitot / Probe ID PCP6A

Manometer ID PCMB5

Sensitivity 0.000

Calibration

Meterbox Y 0.998

Meterbox ΔH@, in. H_2O 1.972

Nozzle diameter, Dn, in. 0.25

Pitot coefficient, Cp 0.84

Manometer zero and level ☑ yes

K-Factor 2.34

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.3	☐ @	☑ @ 3.4
Pitot (-), pass @ in. H_2O	☑ @ 3.4	☐ @	☑ @ 3.5
Pitot visual inspection	☑ pass	☐ pass	☐ pass
Nozzle visual inspection	☑ pass	☐ pass	☐ pass
Meter, cfm @ in. Hg	0.000 @ 10	@	0.000 @ 5
Intermediate leak check volume, ft^3	/		/

ALT 011

	TC ID:	Ambient °F	Ref. °F
Stack	PCP6A	74	74
Probe	PCP6A	74	74
Filter Box	PCMB5	74	74
Filter Exit			
Meter outlet	PCMB5	74	74
Impinger Exit	PCGM3	74	74
Other			

Ref. Thermometer ID 230441774

Continuity Check ☐ Continuity w/ Proper Polarity

Notes: _____

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	12:00	560.109												
A 1	5		564.54	.95	2.22	2.2	244	264	264		64		85		6
2	10		569.76	.94	1.97	2.0	244	269	266		62		85		6
3	15		572.15	.59	1.36	1.4	243	267	263		65		85		5
B 1	20		576.17	.94	2.20	2.2	245	265	260		64		85		6
2	25		580.16	.54	1.97	2.0	244	268	263		64		86		6
3	30		583.91	.64	1.50	1.5	241	268	260		65		86		5
C 1	35		587.73	.46	2.29	2.3	244	266	262		65		87		6
2	40		591.77	.92	1.92	1.9	243	269	262		66		87		6
3	45		595.32	.69	1.61	1.6	240	269	259		63		87		5
D 1	50		599.41	.98	2.29	2.3	246	269	263		60		87		6
2	55		603.29	.32	1.92	1.9	245	266	264		59		87		6
3	60	13:03	606.737	.64	1.50	1.5	242	268	266		59		87		5
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

Appendix A.7
Field Data Sheets - Miami Kiln Stack Raw Mill Off

MONTROSE AIR QUALITY SERVICES

EPA Method 26A Field Datasheet (Isokinetic)

Page 1 of 1

Project Information
Date 12/5/23 Project # 031494
Customer/Facility CEMEX Miami
Unit ID/Sample Location Kiln line 1 M.I Off A
Run # C1 Operator Steven Melson

Sampling Conditions
Static Pressure, in. H_2O -0.94 Ambient Temp, °F 83°
Barometric Pressure, in. Hg 30.02 Ref. Barometer ID NWS
Wind Speed / Direction 5-8mph NW Precipitation, Y (N) type
Probe / Filter Temp Range, °F

ALT 011 TC ID: Ambient °F Ref. °F
Stack
Probe
Filter Box
Filter Exit
Meter outlet
Impinger Exit
Other
Ref. Thermometer ID See run 3
Continuity Check ☐ Continuity w/ Proper Polarity
Notes:

Sampling Equipment IDs
Meterbox ID PCMB007
Umbilical ID PC150A
Nozzle ID 0.250 G1
Pitot / Probe ID PCP6B
Manometer ID PCMB007
Sensitivity 0.010

Calibration
Meterbox Y 0.985
Meterbox ΔH@, in. H_2O 1.853
Nozzle diameter, Dn, in. 0.250
Pitot coefficient, Cp 0.84
Manometer zero and level ☒ yes
K-Factor 2.35

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.4	☐ @	☑ @ 3.8
Pitot (-), pass @ in. H_2O	☑ @ 3.4	☐ @	☑ @ 3.2
Pitot visual inspection	☐ pass	☐ pass	☐ pass
Nozzle visual inspection	☐ pass	☐ pass	☐ pass
Meter, cfm @ in. Hg	0.003 @ 10 in	@	0.000 @ 9 in
Intermediate leak check volume, ft^3	/	/	/

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet	Pump Vacuum, in. Hg
	0	1440	501.666											
A1	5		505.92	0.90	2.12	2.12	405	260	258		58		89	7
2	10		510.06	0.84	1.97	1.97	404	265	261		56		91	7
3	15		513.84	0.66	1.55	1.55	399	264	261		57		92	7
B1	20		518.23	0.96	2.26	2.26	407	262	259		59		94	8
2	25		522.53	0.89	2.09	2.09	407	263	260		59		97	8
3	30		526.10	0.53	1.25	1.25	392	266	264		61		99	6
C1	35		530.47	0.93	2.19	2.19	407	269	261		61		101	8
2	40		534.71	0.84	1.97	1.97	405	265	263		62		101	7
3	45		538.50	0.66	1.55	1.55	400	264	260		63		101	7
D1	50		542.86	0.93	2.19	2.19	407	264	260		62		101	7
2	55		547.23	0.87	2.05	2.05	405	266	259		62		101	7
3	60	1545	550.913	0.65	1.53	1.53	397	264	262		63		100	6
Averages														

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By ____ Team Leader ____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

EPA Method 26A Field Datasheet (Isokinetic)

Page 1 of 1

Project Information
Date 12/6/23 Project # 031494
Customer/Facility CEMEX Miami
Unit ID/Sample Location Kiln Line 1 M-1, Off A
Run # C2 Operator Steven Matosh

Sampling Conditions
Static Pressure, in. H_2O -1.2 Ambient Temp, °F 60°
Barometric Pressure, in. Hg 30.18 Ref. Barometer ID NWS
Wind Speed / Direction 10-21 mph NNW Precipitation, Y (N) type
Probe / Filter Temp Range, °F

ALT 011 TC ID: | Ambient °F | Ref. °F
Stack
Probe
Filter Box
Filter Exit
Meter outlet
Impinger Exit
Other
Ref. Thermometer ID
Continuity Check ☐ Continuity w/ Proper Polarity
Notes: *SM 12/6/23

Sampling Equipment IDs
Meterbox ID PCMB007
Umbilical ID PC150A
Nozzle ID 0.256 GI
Pitot / Probe ID PCP6B
Manometer ID PCMB097
Sensitivity 0.010

Calibration
Meterbox Y 0.985
Meterbox ΔH@, in. H_2O 1.833
Nozzle diameter, Dn, in. 0.250
Pitot coefficient, Cp 0.84
Manometer zero and level ☒ yes
K-Factor ~~2.730~~ 2.23

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.7	☐ @	☑ @ 4.5
Pitot (-), pass @ in. H_2O	☑ @ 5.8	☐ @	☑ @ 3.6
Pitot visual inspection	☐ pass	☐ pass	☐ pass
Nozzle visual inspection	☐ pass	☐ pass	☐ pass
Meter, cfm @ in. Hg	0.0003 @ 12	@	0.0021 @ 7
Intermediate leak check volume, ft^3			

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet	Pump Vacuum, in. Hg
	0	0820	554.117											
A1	5		557.76	0.72	1.62	1.62	413	251	261		53		68	5
2	10		561.20	0.62	1.40	1.40	409	255	260		56		68	5
3	15		564.39	0.51	1.15	1.15	402	252	260		56		68	4
B1	20		567.98	0.73	1.64	1.64	415	252	264		55		69	5
2	25		571.51	0.68	1.53	1.53	413	255	251		54		69	5
3	30		574.55	0.47	1.06	1.06	403	250	255		55		70	4
C1	35		578.15	0.72	1.62	1.62	416	255	260		55		70	5
2	40		581.66	0.66	1.49	1.49	412	257	254		55		70	5
3	45		584.87	0.52	1.17	1.17	407	253	250		55		71	4
D1	50		588.47	0.73	1.64	1.64	416	254	252		55		71	5
2	55		592.02	0.68	1.53	1.53	415	255	250		56		71	5
3	60	0923	595.086	0.49	1.10	1.10	403	251	259		55		70	4
Averages														

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By ____ Team Leader ____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

EPA Method 26A Field Datasheet (Isokinetic)

Page 1 of 1

Project Information
Date 12/6/23 Project # 031494
Customer/Facility CEMEX Miami
Unit ID/Sample Location Kiln Line 1 M.I off A
Run # C3 Operator Steven Mateo

Sampling Conditions
Static Pressure, in. H_2O -1.2 Ambient Temp, °F 65°
Barometric Pressure, in. Hg 30.14 Ref. Barometer ID NWS
Wind Speed / Direction 12-23mph NW Precipitation, Y (N) type
Probe / Filter Temp Range, °F

Sampling Equipment IDs
Meterbox ID PCMB007
Umbilical ID PC150A
Nozzle ID 0.2561
Pitot / Probe ID PCP6B
Manometer ID PCMB007
Sensitivity 0.010

Calibration
Meterbox Y 0.985
Meterbox ΔH@, in. H_2O 1.533
Nozzle diameter, Dn, in. 0.250
Pitot coefficient, Cp 0.84
Manometer zero and level ☒ yes
K-Factor 2.75

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 4.5	☐ @	☑ @ 3.8
Pitot (-), pass @ in. H_2O	☑ @ 3.6	☐ @	☑ @ 5.4
Pitot visual inspection	☐ pass	☐ pass	☐ pass
Nozzle visual inspection	☐ pass	☐ pass	☐ pass
Meter, cfm @ in. Hg	0.0041@11.0	@	0.0003@6.0
Intermediate leak check volume, ft^3	/	/	/

ALT 011

	TC ID:	Ambient °F	Ref. °F
Stack	PCP6B	74°	74°
Probe	PCP6B	74°	74°
Filter Box	PCHB1	74°	74°
Filter Exit			
Meter outlet	PCMB007	74°	74°
Impinger Exit	PCGN11	74°	75°
Other			

Ref. Thermometer ID 230441739
Continuity Check ☐ Continuity w/ Proper Polarity
Notes:

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet	Pump Vacuum, in. Hg
	0	1010	595.743											
A1	5		599.40	0.72	1.62	1.62	417	253	252		49		68	4
2	10		602.82	0.62	1.40	1.40	413	253	250		47		68	4
3	15		605.91	0.49	1.10	1.10	405	254	253		47		69	3
B1	20		609.50	0.72	1.62	1.62	418	255	250		49		69	4
2	25		613.11	0.69	1.55	1.55	416	252	255		49		70	4
3	30		616.18	0.49	1.10	1.10	405	257	253		50		70	3
C1	35		619.81	0.70	1.58	1.58	417	259	256		51		71	4
2	40		623.26	0.63	1.42	1.42	413	251	264		51		70	4
3	45		626.31	0.48	1.08	1.08	405	256	268		52		71	3
D1	50		629.98	0.73	1.64	1.64	417	255	267		52		71	4
2	55		633.62	0.64	1.55	1.55	415	251	265		51		71	4
3	60	1114	636.609	0.46	1.04	1.04	401	253	260		52		72	3
Averages														

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By ____ Team Leader ____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

2614 Method _____ Field Datasheet (Isokinetic)

Project Information

Date 12/6/23 Project # Proj-031484

Customer/Facility Cemex B Train

Unit ID/Sample Location Kiln 2 Line 2 Main

Run # 1 Off Operator Josh. I

Sampling Conditions

Static Pressure, in. H_2O -0.94 Ambient Temp, °F 83

Barometric Pressure, in. Hg 30.02 Ref. Barometer ID NWS

Wind Speed / Direction NW 6mph Precipitation, Y / N / type —

Probe / Filter Temp Range, °F 250 - 270

ALT-011 TC ID:

	Ambient °F	Ref. °F
Stack		
Probe		
Filter Box		
Filter Exit		
Meter outlet		
Impinger Exit		
Other		

Ref. Thermometer ID

Continuity Check ☐ Continuity w/ Proper Polarity

Notes:

Sampling Equipment IDs

Meterbox ID PCMB5

Umbilical ID PC10A

Nozzle ID G2 0.25

Pitot / Probe ID PCP6A

Manometer ID PCMB5

Sensitivity 0.010

Calibration

Meterbox Y 0.995

Meterbox ΔH@, in. H_2O 1.577

Nozzle diameter, Dn, in. 0.25

Pitot coefficient, Cp 0.84

Manometer zero and level ☑ yes

K-Factor 2.34

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 4.0	☒ @	☑ @ 3.6
Pitot (-), pass @ in. H_2O	☑ @ 3.4	☐ @	☑ @ 3.3
Pitot visual inspection	☑ pass	☐ pass	☑ pass
Nozzle visual inspection	☑ pass	☐ pass	☑ pass
Meter, cfm @ in. Hg	0.000 @ 10	@	0.000 @ 6
Intermediate leak check volume, ft^3		/	/

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet	Pump Vacuum, in. Hg
	0	14:40	606.918											
A1	5		611.09	1.0	2.34	2.3	404	267	265		59		91	6
2	10		615.15	.95	1.99	2.0	402	268	260		57		93	6
3	15		619.37	.70	1.64	1.6	396	265	263		57		93	6
B1	20		622.36	.48	2.29	2.3	407	267	262		59		95	7
2	25		626.89	.87	2.04	2.0	403	267	263		59		97	7
3	30		630.86	.76	1.73	1.8	399	269	254		60		99	7
C1	35		634.97	1.0	2.34	2.3	405	267	260		60		100	7
2	40		639.89	.90	1.87	1.9	404	268	252		62		102	7
3	45		642.72	.61	1.43	1.4	397	265	265		61		102	7
D1	50		647.99	1.0	2.34	2.3	407	267	261		62		102	7
2	55		651.14	.90	2.11	2.1	402	265	261		63		102	7
3	60	15:45	654.735	.66	1.54	1.5	396	269	266		65		102	6
Averages														

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

264 Method _____ Field Datasheet (Isokinetic)

Page 1 of 1

Project Information

Date 12/6/23 Project # PR05-031494

Customer/Facility Cemex B Train

Unit ID/Sample Location Kiln 1 line 2 Miami

Run # 2 of F Operator Josh. F

Sampling Conditions

Static Pressure, in. H_2O -1.2 Ambient Temp, °F 63

Barometric Pressure, in. Hg 30.11 Ref. Barometer ID NWS

Wind Speed / Direction Var 13-16mph Precipitation, Y / (N) type —

Probe / Filter Temp Range, °F 250-270

Sampling Equipment IDs

Meterbox ID PCMB5

Umbilical ID PC100A

Nozzle ID G2 0.25

Pitot / Probe ID PCPG4

Manometer ID PCMB5

Sensitivity 0.010

Calibration

Meterbox Y 0.998

Meterbox ΔH@, in. H_2O 1.872

Nozzle diameter, Dn, in. 0.25

Pitot coefficient, Cp 0.84

Manometer zero and level ☑ yes

K-Factor 2.25

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.2	☐ @	☑ @ 3.5
Pitot (-), pass @ in. H_2O	☑ @ 3.5	☐ @	☑ @ 3.4
Pitot visual inspection	☑ pass	☐ pass	☑ pass
Nozzle visual inspection	☑ pass	☐ pass	☑ pass
Meter, cfm @ in. Hg	0.000 @ 10	@	0.000 @ 3
Intermediate leak check volume, ft^3	/	/	/

ALT 011 TC ID: | Ambient °F | Ref. °F

Stack | Probe | Filter Box | Filter Exit | Meter outlet | Impinger Exit | Other

Ref. Thermometer ID

Continuity Check ☐ Continuity w/ Proper Polarity

Notes:

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet		Pump Vacuum, in. Hg
	0	9:20	654.646												
A 1	5		655.75	.52	1.85	1.9	411	263	252		55		69		4
2	10		662.21	.68	1.53	1.5	407	267	253		51		70		4
3	15		665.16	.49	1.10	1.1	399	266	254		51		70		3
B 1	20		669.81	.82	1.85	1.4	412	264	255		52		70		4
2	25		672.31	.72	1.62	1.6	408	264	261		52		73		4
3	30		675.09	.45	1.01	1.0	399	263	260		53		71		3
C 1	35		678.51	.83	1.87	1.9	414	259	261		53		72		4
2	40		682.99	.73	1.64	1.6	403	262	265		51		72		4
3	45		694.96	.46	1.04	1.1	401	260	267		53		73		3
D 1	50		688.31	.30	1.80	1.8	413	255	264		54		72		4
2	55		692.95	.74	1.67	1.7	409	254	263		54		72		4
3	60	9:23	694.813	.44	1.10	1.1	402	258	261		55		72		3
Averages															

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

MONTROSE AIR QUALITY SERVICES

2611 Method _____ Field Datasheet (Isokinetic)

Page 1 of 1

Project Information

Date 12/6/23 Project # PROJ-031444

Customer/Facility Conex BTrain

Unit ID/Sample Location K.In 2 Line 2 Main

Run # 3 Off Operator JOSH. F

Sampling Conditions

Static Pressure, in. H_2O -1.2 Ambient Temp, °F 67

Barometric Pressure, in. Hg 30.14 Ref. Barometer ID NWS

Wind Speed / Direction NW 17 mph Precipitation, Y / N, type —

Probe / Filter Temp Range, °F 250 - 270

Sampling Equipment IDs

Meterbox ID PCMBS

Umbilical ID PCUMA

Nozzle ID G2 0.25

Pitot / Probe ID PCP6A

Manometer ID PCMNS

Sensitivity 0.010

Calibration

Meterbox Y 0.999

Meterbox ΔH@, in. H_2O 1.872

Nozzle diameter, Dn, in. 0.25

Pitot coefficient, Cp 0.84

Manometer zero and level ☑ yes

K-Factor 2.25

Equipment Checks

	Pre	Mid	Post
Pitot (+), pass @ in. H_2O	☑ @ 3.5	☑ @	☑ @ 3.4
Pitot (-), pass @ in. H_2O	☑ @ 3.6	☐ @	☑ @ 3.6
Pitot visual inspection	☑ pass	☐ pass	☑ pass
Nozzle visual inspection	☑ pass	☐ pass	☑ pass
Meter, cfm @ in. Hg	0.000 @ 10	@	0.000 @ 3
Intermediate leak check volume, ft^3	/	/	/

ALT 011

TC ID:	Ambient °F	Ref. °F
Stack PCP6A	74	74
Probe PCP6A	74	74
Filter Box PCHB4	74	74
Filter Exit	74	74
Meter outlet PCMBS	74	74
Impinger Exit PCIMB	74	74
Other	74	74

Ref. Thermometer ID 230441739

Continuity Check ☐ Continuity w/ Proper Polarity

Notes: _____

Traverse Point #	Elapsed Time	Clock Time 24hr	DGM Reading, Vm, ft^3	Velocity Head, ΔP in H_2O	Orifice Pressure Differential, ΔH Target	Orifice Pressure Differential, ΔH Actual	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F Box	Filter Temp, °F Exit	Impinger Exit Temp, °F	Dry Gas Meter Temperature, °F Inlet	Dry Gas Meter Temperature, °F Outlet	Pump Vacuum, in. Hg
	0	10:10	694.934											
A1	5		698.58	.81	1.52	1.8	413	268	265		57		69	4
2	10		702.06	.69	1.55	1.6	409	266	264		52		70	4
3	15		704.81	.46	1.04	1.0	401	263	261		53		70	3
B1	20		708.26	.80	1.80	1.6	414	260	260		53		71	4
2	25		711.74	.73	1.64	1.6	410	261	263		53		71	4
3	30		714.67	.48	1.08	1.1	402	258	264		53		71	3
C1	35		718.26	.80	1.80	1.6	414	261	262		53		74	4
2	40		721.93	.66	1.49	1.5	408	259	263		54		72	4
3	45		724.87	.44	~~1.04~~	1.0	400	254	260		54		72	3
D1	50		728.45	.78	1.76	1.8	413	260	261		55		72	4
2	55		731.95	.72	1.62	1.6	411	262	264		55		73	4
3	60	11:14	734.894	.47	1.06	1.1	403	259	267		55		73	3
Averages														

QA/QC Check: Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Checked By _____ Team Leader _____

001AS-QMS-FM-225

Appendix A.8
Instrumental Test Method Data - Brooksville Kiln 1 Stack, Raw Mill On

Facility ID:	Cemex Construction Materials Florida
Source ID:	In-Line Kiln 1 (EU 020) Stack
Process Condition:	Mill On
Date:	11/29/2023

Run 1

Calibration Error	
Analyte	O_2
Units	%(d)
CS	22.17
Zero Ref ID	CC65993
Zero Ref Cyl	0.00
Zero Avg	0.01
Zero Error%	0.05
Mid Ref ID	CC34630
Mid Ref Cyl	10.01
Mid Avg	10.03
Mid Error%	0.09
High Ref ID	XC023754B
High Ref Cyl	22.17
High Avg	22.15
High Error%	-0.09
Response Time, min	2.5
Initial Bias Check	
Zero Avg	0.03
Zero Bias%	0.09
Span Avg	10.03
Span Bias%	0.00
Final Bias Check	
Zero Avg	0.06
Zero Bias%	0.23
Zero Drift%	0.14
Span Avg	10.05
Span Bias%	0.09
Span Drift%	0.09
Run 1 Avg	17.03
Co	0.045
Cm	10.040
Cgas Run 1	17.01

Facility ID:	Cemex Construction Materials Florida
Source ID:	In-Line Kiln 1 (EU 020) Stack
Process Condition:	Mill On
Date:	11/29/2023

Run 2

Calibration Error	
Analyte	O_2
Units	%(d)
CS	22.17
Zero Ref ID	CC65993
Zero Ref Cyl	0.00
Zero Avg	0.01
Zero Error%	0.05
Mid Ref ID	CC34630
Mid Ref Cyl	10.01
Mid Avg	10.03
Mid Error%	0.09
High Ref ID	XC023754B
High Ref Cyl	22.17
High Avg	22.15
High Error%	-0.09
Response Time, min	2.5
Initial Bias Check	
Zero Avg	0.06
Zero Bias%	0.23
Span Avg	10.05
Span Bias%	0.09
Final Bias Check	
Zero Avg	0.00
Zero Bias%	-0.05
Zero Drift%	0.27
Span Avg	9.94
Span Bias%	-0.41
Span Drift%	0.50
Run 2 Avg	16.98
Co	0.030
Cm	9.995
Cgas Run 2	17.03

Facility ID:	Cemex Construction Materials Florida
Source ID:	In-Line Kiln 1 (EU 020) Stack
Process Condition:	Mill On
Date:	11/29/2023

Run 3

Calibration Error	
Analyte	O_2
Units	%(d)
CS	22.17
Zero Ref ID	CC65993
Zero Ref Cyl	0.00
Zero Avg	0.01
Zero Error%	0.05
Mid Ref ID	CC34630
Mid Ref Cyl	10.01
Mid Avg	10.03
Mid Error%	0.09
High Ref ID	XC023754B
High Ref Cyl	22.17
High Avg	22.15
High Error%	-0.09
Response Time, min	2.5
Initial Bias Check	
Zero Avg	0.00
Zero Bias%	-0.05
Span Avg	9.94
Span Bias%	-0.41
Final Bias Check	
Zero Avg	0.00
Zero Bias%	-0.05
Zero Drift%	0.00
Span Avg	10.00
Span Bias%	-0.14
Span Drift%	0.27
Run 3 Avg	16.67
Co	0.000
Cm	9.970
Cgas Run 3	16.74

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 1 (EU 020) Stack
EPA §114 ICR Testing
Mill On Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
1	11/29/2023	10:10	16.96
1	11/29/2023	10:11	16.92
1	11/29/2023	10:12	16.93
1	11/29/2023	10:13	16.90
1	11/29/2023	10:14	16.92
1	11/29/2023	10:15	16.92
1	11/29/2023	10:16	16.96
1	11/29/2023	10:17	17.03
1	11/29/2023	10:18	17.04
1	11/29/2023	10:19	17.02
1	11/29/2023	10:20	17.01
1	11/29/2023	10:21	17.01
1	11/29/2023	10:22	17.05
1	11/29/2023	10:23	17.04
1	11/29/2023	10:24	17.06
1	11/29/2023	10:25	17.04
1	11/29/2023	10:26	17.01
1	11/29/2023	10:27	16.96
1	11/29/2023	10:28	16.97
1	11/29/2023	10:29	17.03
1	11/29/2023	10:30	17.05
1	11/29/2023	10:31	17.00
1	11/29/2023	10:32	16.96
1	11/29/2023	10:33	16.99
1	11/29/2023	10:34	17.00
1	11/29/2023	10:35	16.97
1	11/29/2023	10:36	16.95
1	11/29/2023	10:37	17.03
1	11/29/2023	10:38	17.03
1	11/29/2023	10:39	17.00
1	11/29/2023	10:40	17.02
1	11/29/2023	10:41	17.07
1	11/29/2023	10:42	17.06
1	11/29/2023	10:43	17.02
1	11/29/2023	10:44	17.04
1	11/29/2023	10:45	17.06
1	11/29/2023	10:46	17.12
1	11/29/2023	10:47	17.05
1	11/29/2023	10:48	17.05
1	11/29/2023	10:49	17.09
1	11/29/2023	10:50	17.09
1	11/29/2023	10:51	17.10
1	11/29/2023	10:52	17.09
1	11/29/2023	10:53	17.11
1	11/29/2023	10:54	17.13

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 1 (EU 020) Stack
EPA §114 ICR Testing
Mill On Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
1	11/29/2023	10:55	17.07
1	11/29/2023	10:56	17.06
1	11/29/2023	10:57	17.10
1	11/29/2023	10:58	17.14
1	11/29/2023	10:59	17.09
1	11/29/2023	11:00	17.07
1	11/29/2023	11:01	17.05
1	11/29/2023	11:02	17.03
1	11/29/2023	11:03	17.05
1	11/29/2023	11:04	17.08
1	11/29/2023	11:05	17.13
1	11/29/2023	11:06	17.14
1	11/29/2023	11:07	17.06
1	11/29/2023	11:08	17.06
1	11/29/2023	11:09	17.07
		Averages:	17.03

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 1 (EU 020) Stack
EPA §114 ICR Testing
Mill On Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
2	11/29/2023	12:45	16.87
2	11/29/2023	12:46	16.95
2	11/29/2023	12:47	16.90
2	11/29/2023	12:48	16.95
2	11/29/2023	12:49	16.98
2	11/29/2023	12:50	16.94
2	11/29/2023	12:51	16.88
2	11/29/2023	12:52	17.00
2	11/29/2023	12:53	17.05
2	11/29/2023	12:54	17.07
2	11/29/2023	12:55	16.98
2	11/29/2023	12:56	16.99
2	11/29/2023	12:57	17.01
2	11/29/2023	12:58	16.99
2	11/29/2023	12:59	16.97
2	11/29/2023	13:00	17.02
2	11/29/2023	13:01	17.03
2	11/29/2023	13:02	17.03
2	11/29/2023	13:03	16.98
2	11/29/2023	13:04	17.00
2	11/29/2023	13:05	17.04
2	11/29/2023	13:06	17.02
2	11/29/2023	13:07	17.01
2	11/29/2023	13:08	17.04
2	11/29/2023	13:09	17.07
2	11/29/2023	13:10	17.08
2	11/29/2023	13:11	17.01
2	11/29/2023	13:12	17.02
2	11/29/2023	13:13	17.06
2	11/29/2023	13:14	17.03
2	11/29/2023	13:15	17.02
2	11/29/2023	13:16	17.03
2	11/29/2023	13:17	17.02
2	11/29/2023	13:18	17.00
2	11/29/2023	13:19	17.01
2	11/29/2023	13:20	17.02
2	11/29/2023	13:21	17.03
2	11/29/2023	13:22	17.02
2	11/29/2023	13:23	16.93
2	11/29/2023	13:24	16.91
2	11/29/2023	13:25	16.94
2	11/29/2023	13:26	16.90
2	11/29/2023	13:27	16.94
2	11/29/2023	13:28	17.01
2	11/29/2023	13:29	17.06

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 1 (EU 020) Stack
EPA §114 ICR Testing
Mill On Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
2	11/29/2023	13:30	17.05
2	11/29/2023	13:31	16.98
2	11/29/2023	13:32	16.96
2	11/29/2023	13:33	16.89
2	11/29/2023	13:34	16.86
2	11/29/2023	13:35	16.87
2	11/29/2023	13:36	16.92
2	11/29/2023	13:37	16.95
2	11/29/2023	13:38	16.92
2	11/29/2023	13:39	16.86
2	11/29/2023	13:40	16.88
2	11/29/2023	13:41	16.93
2	11/29/2023	13:42	16.93
2	11/29/2023	13:43	16.94
2	11/29/2023	13:44	16.97
		Averages:	16.98

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 1 (EU 020) Stack
EPA §114 ICR Testing
Mill On Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
3	11/29/2023	14:39	17.00
3	11/29/2023	14:40	17.00
3	11/29/2023	14:41	16.97
3	11/29/2023	14:42	16.94
3	11/29/2023	14:43	16.88
3	11/29/2023	14:44	16.91
3	11/29/2023	14:45	16.92
3	11/29/2023	14:46	16.87
3	11/29/2023	14:47	16.84
3	11/29/2023	14:48	16.88
3	11/29/2023	14:49	16.83
3	11/29/2023	14:50	16.56
3	11/29/2023	14:51	16.44
3	11/29/2023	14:52	16.46
3	11/29/2023	14:53	16.46
3	11/29/2023	14:54	16.45
3	11/29/2023	14:55	16.47
3	11/29/2023	14:56	16.52
3	11/29/2023	14:57	16.57
3	11/29/2023	14:58	16.56
3	11/29/2023	14:59	16.50
3	11/29/2023	15:00	16.49
3	11/29/2023	15:01	16.50
3	11/29/2023	15:02	16.52
3	11/29/2023	15:03	16.56
3	11/29/2023	15:04	16.60
3	11/29/2023	15:05	16.59
3	11/29/2023	15:06	16.54
3	11/29/2023	15:07	16.56
3	11/29/2023	15:08	16.63
3	11/29/2023	15:09	16.72
3	11/29/2023	15:10	16.71
3	11/29/2023	15:11	16.67
3	11/29/2023	15:12	16.70
3	11/29/2023	15:13	16.74
3	11/29/2023	15:14	16.70
3	11/29/2023	15:15	16.69
3	11/29/2023	15:16	16.77
3	11/29/2023	15:17	16.77
3	11/29/2023	15:18	16.74
3	11/29/2023	15:19	16.69
3	11/29/2023	15:20	16.64
3	11/29/2023	15:21	16.65
3	11/29/2023	15:22	16.66
3	11/29/2023	15:23	16.64

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 1 (EU 020) Stack
EPA §114 ICR Testing
Mill On Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
3	11/29/2023	15:24	16.67
3	11/29/2023	15:25	16.68
3	11/29/2023	15:26	16.60
3	11/29/2023	15:27	16.60
3	11/29/2023	15:28	16.63
3	11/29/2023	15:29	16.65
3	11/29/2023	15:30	16.63
3	11/29/2023	15:31	16.65
3	11/29/2023	15:32	16.68
3	11/29/2023	15:33	16.71
3	11/29/2023	15:34	16.69
3	11/29/2023	15:35	16.66
3	11/29/2023	15:36	16.67
3	11/29/2023	15:37	16.68
3	11/29/2023	15:38	16.69
		Averages:	16.67

Appendix A.9
Instrumental Test Method Data - Brooksville Kiln 1 Stack, Raw Mill Off

Facility ID:	Cemex Construction Materials Florida
Source ID:	In-Line Kiln 1 (EU 020) Stack
Process Condition:	Mill Off
Date:	6/5/2024

Run 1

Calibration Error	
Analyte	O_2
Units	%(d)
CS	22.83
Zero Ref ID	3000369
Zero Ref Cyl	0.00
Zero Avg	-0.01
Zero Error%	-0.04
Mid Ref ID	SG9164710BAL
Mid Ref Cyl	12.01
Mid Avg	11.98
Mid Error%	-0.13
High Ref ID	CC216635
High Ref Cyl	22.83
High Avg	22.85
High Error%	0.09
Response Time, min	2.5
Initial Bias Check	
Zero Avg	-0.03
Zero Bias%	-0.09
Span Avg	12.03
Span Bias%	0.22
Final Bias Check	
Zero Avg	0.02
Zero Bias%	0.13
Zero Drift%	0.22
Span Avg	12
Span Bias%	0.09
Span Drift%	0.13
Run 1 Avg	17.20
Co	-0.005
Cm	12.015
Cgas Run 1	17.19

Facility ID:	Cemex Construction Materials Florida
Source ID:	In-Line Kiln 1 (EU 020) Stack
Process Condition:	Mill Off
Date:	6/5/2024

Run 2

Calibration Error	
Analyte	O_2
Units	%(d)
CS	22.83
Zero Ref ID	3000369
Zero Ref Cyl	0.00
Zero Avg	-0.01
Zero Error%	-0.04
Mid Ref ID	SG9164710BAL
Mid Ref Cyl	12.01
Mid Avg	11.98
Mid Error%	-0.13
High Ref ID	CC216635
High Ref Cyl	22.83
High Avg	22.85
High Error%	0.09
Response Time, min	2.5
Initial Bias Check	
Zero Avg	0.02
Zero Bias%	0.13
Span Avg	12.00
Span Bias%	0.09
Final Bias Check	
Zero Avg	0.02
Zero Bias%	0.13
Zero Drift%	0.00
Span Avg	12
Span Bias%	0.09
Span Drift%	0.00
Run 2 Avg	17.21
Co	0.020
Cm	12.000
Cgas Run 2	17.23

Facility ID:	Cemex Construction Materials Florida
Source ID:	In-Line Kiln 1 (EU 020) Stack
Process Condition:	Mill Off
Date:	6/5/2024

Run 3

Calibration Error	
Analyte	O_2
Units	%(d)
CS	22.83
Zero Ref ID	3000369
Zero Ref Cyl	0.00
Zero Avg	-0.01
Zero Error%	-0.04
Mid Ref ID	SG9164710BAL
Mid Ref Cyl	12.01
Mid Avg	11.98
Mid Error%	-0.13
High Ref ID	CC216635
High Ref Cyl	22.83
High Avg	22.85
High Error%	0.09
Response Time, min	2.5
Initial Bias Check	
Zero Avg	0.02
Zero Bias%	0.13
Span Avg	12.00
Span Bias%	0.09
Final Bias Check	
Zero Avg	0.01
Zero Bias%	0.09
Zero Drift%	0.04
Span Avg	12.01
Span Bias%	0.13
Span Drift%	0.04
Run 3 Avg	17.26
Co	0.015
Cm	12.005
Cgas Run 3	17.27

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 1 (EU 020) Stack
EPA §114 ICR Testing
Mill Off Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
1	6/5/2024	8:04	17.26
1	6/5/2024	8:05	16.98
1	6/5/2024	8:06	17.04
1	6/5/2024	8:07	17.15
1	6/5/2024	8:08	17.31
1	6/5/2024	8:09	17.33
1	6/5/2024	8:10	17.31
1	6/5/2024	8:11	17.31
1	6/5/2024	8:12	17.28
1	6/5/2024	8:13	17.32
1	6/5/2024	8:14	17.38
1	6/5/2024	8:15	17.36
1	6/5/2024	8:16	17.30
1	6/5/2024	8:17	17.17
1	6/5/2024	8:18	17.06
1	6/5/2024	8:19	17.20
1	6/5/2024	8:20	17.47
1	6/5/2024	8:21	17.69
1	6/5/2024	8:22	17.28
1	6/5/2024	8:23	16.99
1	6/5/2024	8:24	16.97
1	6/5/2024	8:25	17.02
1	6/5/2024	8:26	17.23
1	6/5/2024	8:27	17.23
1	6/5/2024	8:28	17.21
1	6/5/2024	8:29	17.29
1	6/5/2024	8:30	17.29
1	6/5/2024	8:31	17.36
1	6/5/2024	8:32	17.20
1	6/5/2024	8:33	17.01
1	6/5/2024	8:34	17.04
1	6/5/2024	8:35	17.45
1	6/5/2024	8:36	17.48
1	6/5/2024	8:37	17.29
1	6/5/2024	8:38	17.28
1	6/5/2024	8:39	17.12
1	6/5/2024	8:40	16.93
1	6/5/2024	8:41	16.95
1	6/5/2024	8:42	17.14
1	6/5/2024	8:43	17.30
1	6/5/2024	8:44	17.42
1	6/5/2024	8:45	17.35
1	6/5/2024	8:46	17.07
1	6/5/2024	8:47	16.87
1	6/5/2024	8:48	16.92

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 1 (EU 020) Stack
EPA §114 ICR Testing
Mill Off Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
1	6/5/2024	8:49	17.19
1	6/5/2024	8:50	17.47
1	6/5/2024	8:51	17.42
1	6/5/2024	8:52	17.26
1	6/5/2024	8:53	17.18
1	6/5/2024	8:54	17.05
1	6/5/2024	8:55	16.88
1	6/5/2024	8:56	16.98
1	6/5/2024	8:57	17.10
1	6/5/2024	8:58	17.18
1	6/5/2024	8:59	17.29
1	6/5/2024	9:00	17.28
1	6/5/2024	9:01	17.13
1	6/5/2024	9:02	17.08
1	6/5/2024	9:03	17.06
		Averages:	17.20

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 1 (EU 020) Stack
EPA §114 ICR Testing
Mill Off Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
2	6/5/2024	9:29	16.99
2	6/5/2024	9:30	17.09
2	6/5/2024	9:31	17.22
2	6/5/2024	9:32	17.33
2	6/5/2024	9:33	17.42
2	6/5/2024	9:34	17.25
2	6/5/2024	9:35	16.96
2	6/5/2024	9:36	16.94
2	6/5/2024	9:37	17.06
2	6/5/2024	9:38	17.24
2	6/5/2024	9:39	17.53
2	6/5/2024	9:40	17.56
2	6/5/2024	9:41	17.32
2	6/5/2024	9:42	17.04
2	6/5/2024	9:43	16.98
2	6/5/2024	9:44	16.89
2	6/5/2024	9:45	16.88
2	6/5/2024	9:46	17.06
2	6/5/2024	9:47	17.34
2	6/5/2024	9:48	17.52
2	6/5/2024	9:49	17.39
2	6/5/2024	9:50	17.07
2	6/5/2024	9:51	17.02
2	6/5/2024	9:52	17.04
2	6/5/2024	9:53	17.13
2	6/5/2024	9:54	17.25
2	6/5/2024	9:55	17.50
2	6/5/2024	9:56	17.57
2	6/5/2024	9:57	17.29
2	6/5/2024	9:58	17.02
2	6/5/2024	9:59	17.02
2	6/5/2024	10:00	16.93
2	6/5/2024	10:01	17.01
2	6/5/2024	10:02	17.21
2	6/5/2024	10:03	17.46
2	6/5/2024	10:04	17.44
2	6/5/2024	10:05	17.10
2	6/5/2024	10:06	16.96
2	6/5/2024	10:07	17.10
2	6/5/2024	10:08	17.38
2	6/5/2024	10:09	17.50
2	6/5/2024	10:10	17.61
2	6/5/2024	10:11	17.44
2	6/5/2024	10:12	17.24
2	6/5/2024	10:13	17.09

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 1 (EU 020) Stack
EPA §114 ICR Testing
Mill Off Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
2	6/5/2024	10:14	16.93
2	6/5/2024	10:15	16.97
2	6/5/2024	10:16	17.17
2	6/5/2024	10:17	17.28
2	6/5/2024	10:18	17.42
2	6/5/2024	10:19	17.51
2	6/5/2024	10:20	17.37
2	6/5/2024	10:21	17.15
2	6/5/2024	10:22	17.12
2	6/5/2024	10:23	17.10
2	6/5/2024	10:24	16.99
2	6/5/2024	10:25	16.90
2	6/5/2024	10:26	17.07
2	6/5/2024	10:27	17.37
2	6/5/2024	10:28	17.66
		Averages:	17.21

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 1 (EU 020) Stack
EPA §114 ICR Testing
Mill Off Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
3	6/5/2024	10:54	17.11
3	6/5/2024	10:55	17.23
3	6/5/2024	10:56	17.28
3	6/5/2024	10:57	17.33
3	6/5/2024	10:58	17.31
3	6/5/2024	10:59	17.26
3	6/5/2024	11:00	17.08
3	6/5/2024	11:01	17.03
3	6/5/2024	11:02	17.12
3	6/5/2024	11:03	17.35
3	6/5/2024	11:04	17.47
3	6/5/2024	11:05	17.40
3	6/5/2024	11:06	17.15
3	6/5/2024	11:07	17.08
3	6/5/2024	11:08	17.15
3	6/5/2024	11:09	17.33
3	6/5/2024	11:10	17.51
3	6/5/2024	11:11	17.49
3	6/5/2024	11:12	17.25
3	6/5/2024	11:13	17.16
3	6/5/2024	11:14	17.14
3	6/5/2024	11:15	16.99
3	6/5/2024	11:16	17.00
3	6/5/2024	11:17	17.19
3	6/5/2024	11:18	17.27
3	6/5/2024	11:19	17.30
3	6/5/2024	11:20	17.42
3	6/5/2024	11:21	17.26
3	6/5/2024	11:22	17.21
3	6/5/2024	11:23	17.29
3	6/5/2024	11:24	17.36
3	6/5/2024	11:25	17.39
3	6/5/2024	11:26	17.28
3	6/5/2024	11:27	17.15
3	6/5/2024	11:28	17.17
3	6/5/2024	11:29	17.30
3	6/5/2024	11:30	17.41
3	6/5/2024	11:31	17.37
3	6/5/2024	11:32	17.30
3	6/5/2024	11:33	17.36
3	6/5/2024	11:34	17.32
3	6/5/2024	11:35	17.45
3	6/5/2024	11:36	17.36
3	6/5/2024	11:37	17.30
3	6/5/2024	11:38	17.38

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 1 (EU 020) Stack
EPA §114 ICR Testing
Mill Off Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
3	6/5/2024	11:39	17.40
3	6/5/2024	11:40	17.19
3	6/5/2024	11:41	16.98
3	6/5/2024	11:42	16.93
3	6/5/2024	11:43	17.01
3	6/5/2024	11:44	17.32
3	6/5/2024	11:45	17.55
3	6/5/2024	11:46	17.46
3	6/5/2024	11:47	17.29
3	6/5/2024	11:48	17.26
3	6/5/2024	11:49	17.40
3	6/5/2024	11:50	17.36
3	6/5/2024	11:51	17.19
3	6/5/2024	11:52	17.04
3	6/5/2024	11:53	17.07
		Averages:	17.26

Appendix A.10
Instrumental Test Method Data - Brooksville Kiln 2 Stack, Raw Mill On

Facility ID:	Cemex Construction Materials Florida
Source ID:	In-Line Kiln 2 (EU 044) Stack
Process Condition:	Mill On
Date:	11/30/2023

Run 1

Calibration Error	
Analyte	O_2
Units	%(d)
CS	22.17
Zero Ref ID	CC65993
Zero Ref Cyl	0.00
Zero Avg	0.00
Zero Error%	0.00
Mid Ref ID	CC34630
Mid Ref Cyl	10.01
Mid Avg	10.02
Mid Error%	0.05
High Ref ID	XC023754B
High Ref Cyl	22.17
High Avg	22.21
High Error%	0.18
Response Time, min	2.5
Initial Bias Check	
Zero Avg	0.00
Zero Bias%	0.00
Span Avg	10.03
Span Bias%	0.05
Final Bias Check	
Zero Avg	0.10
Zero Bias%	0.45
Zero Drift%	0.45
Span Avg	10.10
Span Bias%	0.36
Span Drift%	0.32
Run 1 Avg	14.17
Co	0.050
Cm	10.065
Cgas Run 1	14.11

Facility ID:	Cemex Construction Materials Florida
Source ID:	In-Line Kiln 2 (EU 044) Stack
Process Condition:	Mill On
Date:	12/1/2023

Run 2

Calibration Error	
Analyte	O_2
Units	%(d)
CS	22.17
Zero Ref ID	CC65993
Zero Ref Cyl	0.00
Zero Avg	0.00
Zero Error%	0.00
Mid Ref ID	CC34630
Mid Ref Cyl	10.01
Mid Avg	10.04
Mid Error%	0.14
High Ref ID	XC023754B
High Ref Cyl	22.17
High Avg	22.18
High Error%	0.05
Response Time, min	2.5
Initial Bias Check	
Zero Avg	0.05
Zero Bias%	0.23
Span Avg	10.04
Span Bias%	0.00
Final Bias Check	
Zero Avg	0.10
Zero Bias%	0.45
Zero Drift%	0.23
Span Avg	10.03
Span Bias%	-0.05
Span Drift%	0.05
Run 2 Avg	13.39
Co	0.075
Cm	10.035
Cgas Run 2	13.38

Facility ID:	Cemex Construction Materials Florida
Source ID:	In-Line Kiln 2 (EU 044) Stack
Process Condition:	Mill On
Date:	12/1/2023

Run 3

Calibration Error	
Analyte	O_2
Units	%(d)
CS	22.17
Zero Ref ID	CC65993
Zero Ref Cyl	0.00
Zero Avg	0.00
Zero Error%	0.00
Mid Ref ID	CC34630
Mid Ref Cyl	10.01
Mid Avg	10.04
Mid Error%	0.14
High Ref ID	XC023754B
High Ref Cyl	22.17
High Avg	22.18
High Error%	0.05
Response Time, min	2.5
Initial Bias Check	
Zero Avg	0.10
Zero Bias%	0.45
Span Avg	10.03
Span Bias%	-0.05
Final Bias Check	
Zero Avg	0.06
Zero Bias%	0.27
Zero Drift%	0.18
Span Avg	10.01
Span Bias%	-0.14
Span Drift%	0.09
Run 3 Avg	13.44
Co	0.080
Cm	10.020
Cgas Run 3	13.46

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 2 (EU 044) Stack
EPA §114 ICR Testing
Mill On Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
1	11/30/2023	17:09	14.58
1	11/30/2023	17:10	14.35
1	11/30/2023	17:11	14.48
1	11/30/2023	17:12	14.45
1	11/30/2023	17:13	14.40
1	11/30/2023	17:14	14.37
1	11/30/2023	17:15	14.38
1	11/30/2023	17:16	14.16
1	11/30/2023	17:17	14.09
1	11/30/2023	17:18	14.40
1	11/30/2023	17:19	14.68
1	11/30/2023	17:20	14.90
1	11/30/2023	17:21	14.92
1	11/30/2023	17:22	14.81
1	11/30/2023	17:23	14.70
1	11/30/2023	17:24	14.59
1	11/30/2023	17:25	14.38
1	11/30/2023	17:26	14.01
1	11/30/2023	17:27	14.02
1	11/30/2023	17:28	14.15
1	11/30/2023	17:29	14.21
1	11/30/2023	17:30	14.56
1	11/30/2023	17:31	14.71
1	11/30/2023	17:32	14.69
1	11/30/2023	17:33	14.71
1	11/30/2023	17:34	14.47
1	11/30/2023	17:35	13.98
1	11/30/2023	17:36	13.73
1	11/30/2023	17:37	13.69
1	11/30/2023	17:38	13.76
1	11/30/2023	17:39	13.74
1	11/30/2023	17:40	13.70
1	11/30/2023	17:41	13.81
1	11/30/2023	17:42	14.02
1	11/30/2023	17:43	14.08
1	11/30/2023	17:44	13.91
1	11/30/2023	17:45	13.83
1	11/30/2023	17:46	13.91
1	11/30/2023	17:47	14.06
1	11/30/2023	17:48	13.84
1	11/30/2023	17:49	13.91
1	11/30/2023	17:50	13.98
1	11/30/2023	17:51	13.81
1	11/30/2023	17:52	13.96
1	11/30/2023	17:53	13.98

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 2 (EU 044) Stack
EPA §114 ICR Testing
Mill On Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
1	11/30/2023	17:54	13.87
1	11/30/2023	17:55	13.96
1	11/30/2023	17:56	13.69
1	11/30/2023	17:57	13.75
1	11/30/2023	17:58	13.82
1	11/30/2023	17:59	13.97
1	11/30/2023	18:00	14.16
1	11/30/2023	18:01	14.10
1	11/30/2023	18:02	13.96
1	11/30/2023	18:03	14.43
1	11/30/2023	18:04	14.86
1	11/30/2023	18:05	13.95
1	11/30/2023	18:06	13.90
1	11/30/2023	18:07	13.91
1	11/30/2023	18:08	13.82
		Averages:	14.17

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 2 (EU 044) Stack
EPA §114 ICR Testing
Mill On Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
2	12/1/2023	10:37	13.70
2	12/1/2023	10:38	13.64
2	12/1/2023	10:39	13.58
2	12/1/2023	10:40	13.57
2	12/1/2023	10:41	13.70
2	12/1/2023	10:42	13.78
2	12/1/2023	10:43	13.68
2	12/1/2023	10:44	13.59
2	12/1/2023	10:45	13.51
2	12/1/2023	10:46	13.45
2	12/1/2023	10:47	13.27
2	12/1/2023	10:48	13.25
2	12/1/2023	10:49	13.30
2	12/1/2023	10:50	13.31
2	12/1/2023	10:51	13.31
2	12/1/2023	10:52	13.27
2	12/1/2023	10:53	13.30
2	12/1/2023	10:54	13.27
2	12/1/2023	10:55	13.27
2	12/1/2023	10:56	13.26
2	12/1/2023	10:57	13.31
2	12/1/2023	10:58	13.39
2	12/1/2023	10:59	13.73
2	12/1/2023	11:00	13.50
2	12/1/2023	11:01	13.38
2	12/1/2023	11:02	13.43
2	12/1/2023	11:03	13.37
2	12/1/2023	11:04	13.34
2	12/1/2023	11:05	13.41
2	12/1/2023	11:06	13.31
2	12/1/2023	11:07	13.25
2	12/1/2023	11:08	13.17
2	12/1/2023	11:09	13.12
2	12/1/2023	11:10	13.08
2	12/1/2023	11:11	13.18
2	12/1/2023	11:12	13.13
2	12/1/2023	11:13	13.14
2	12/1/2023	11:14	13.21
2	12/1/2023	11:15	13.27
2	12/1/2023	11:16	13.38
2	12/1/2023	11:17	13.65
2	12/1/2023	11:18	13.57
2	12/1/2023	11:19	13.40
2	12/1/2023	11:20	13.29
2	12/1/2023	11:21	13.26

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 2 (EU 044) Stack
EPA §114 ICR Testing
Mill On Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
2	12/1/2023	11:22	13.28
2	12/1/2023	11:23	13.32
2	12/1/2023	11:24	13.31
2	12/1/2023	11:25	13.33
2	12/1/2023	11:26	13.37
2	12/1/2023	11:27	13.28
2	12/1/2023	11:28	13.27
2	12/1/2023	11:29	13.28
2	12/1/2023	11:30	13.48
2	12/1/2023	11:31	13.76
2	12/1/2023	11:32	13.66
2	12/1/2023	11:33	13.51
2	12/1/2023	11:34	13.50
2	12/1/2023	11:35	13.46
2	12/1/2023	11:36	13.41
		Averages:	13.39

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 2 (EU 044) Stack
EPA §114 ICR Testing
Mill On Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
3	12/1/2023	12:20	13.18
3	12/1/2023	12:21	13.18
3	12/1/2023	12:22	13.26
3	12/1/2023	12:23	13.22
3	12/1/2023	12:24	13.15
3	12/1/2023	12:25	13.25
3	12/1/2023	12:26	13.29
3	12/1/2023	12:27	13.20
3	12/1/2023	12:28	13.18
3	12/1/2023	12:29	13.15
3	12/1/2023	12:30	13.41
3	12/1/2023	12:31	13.56
3	12/1/2023	12:32	13.54
3	12/1/2023	12:33	13.75
3	12/1/2023	12:34	13.99
3	12/1/2023	12:35	13.71
3	12/1/2023	12:36	13.47
3	12/1/2023	12:37	13.32
3	12/1/2023	12:38	13.28
3	12/1/2023	12:39	13.43
3	12/1/2023	12:40	13.45
3	12/1/2023	12:41	13.50
3	12/1/2023	12:42	13.46
3	12/1/2023	12:43	13.39
3	12/1/2023	12:44	13.34
3	12/1/2023	12:45	13.24
3	12/1/2023	12:46	13.14
3	12/1/2023	12:47	13.16
3	12/1/2023	12:48	13.26
3	12/1/2023	12:49	13.20
3	12/1/2023	12:50	13.16
3	12/1/2023	12:51	13.21
3	12/1/2023	12:52	13.30
3	12/1/2023	12:53	13.32
3	12/1/2023	12:54	13.28
3	12/1/2023	12:55	13.26
3	12/1/2023	12:56	13.18
3	12/1/2023	12:57	13.42
3	12/1/2023	12:58	13.43
3	12/1/2023	12:59	13.53
3	12/1/2023	13:00	13.60
3	12/1/2023	13:01	13.54
3	12/1/2023	13:02	13.55
3	12/1/2023	13:03	13.79
3	12/1/2023	13:04	13.95

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 2 (EU 044) Stack
EPA §114 ICR Testing
Mill On Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
3	12/1/2023	13:05	13.65
3	12/1/2023	13:06	13.63
3	12/1/2023	13:07	13.61
3	12/1/2023	13:08	13.55
3	12/1/2023	13:09	13.49
3	12/1/2023	13:10	13.52
3	12/1/2023	13:11	13.66
3	12/1/2023	13:12	13.66
3	12/1/2023	13:13	13.43
3	12/1/2023	13:14	13.59
3	12/1/2023	13:15	13.67
3	12/1/2023	13:16	13.80
3	12/1/2023	13:17	13.84
3	12/1/2023	13:18	13.74
3	12/1/2023	13:19	13.58
		Averages:	13.44

Appendix A.11
Instrumental Test Method Data - Brooksville Kiln 2 Stack, Raw Mill Off

Facility ID:	Cemex Construction Materials Florida
Source ID:	In-Line Kiln 2 (EU 044) Stack
Process Condition:	Mill Off
Date:	11/30/2023

Run 1

Calibration Error	
Analyte	O_2
Units	%(d)
CS	22.17
Zero Ref ID	CC65993
Zero Ref Cyl	0.00
Zero Avg	0.00
Zero Error%	0.00
Mid Ref ID	CC34630
Mid Ref Cyl	10.01
Mid Avg	10.02
Mid Error%	0.05
High Ref ID	XC023754B
High Ref Cyl	22.17
High Avg	22.21
High Error%	0.18
Response Time, min	2.5
Initial Bias Check	
Zero Avg	0.03
Zero Bias%	0.14
Span Avg	10.06
Span Bias%	0.18
Final Bias Check	
Zero Avg	0.14
Zero Bias%	0.63
Zero Drift%	0.50
Span Avg	10.14
Span Bias%	0.54
Span Drift%	0.36
Run 1 Avg	13.04
Co	0.085
Cm	10.100
Cgas Run 1	12.95

Facility ID:	Cemex Construction Materials Florida
Source ID:	In-Line Kiln 2 (EU 044) Stack
Process Condition:	Mill Off
Date:	11/30/2023

Run 2

Calibration Error	
Analyte	O_2
Units	%(d)
CS	22.17
Zero Ref ID	CC65993
Zero Ref Cyl	0.00
Zero Avg	0.00
Zero Error%	0.00
Mid Ref ID	CC34630
Mid Ref Cyl	10.01
Mid Avg	10.02
Mid Error%	0.05
High Ref ID	XC023754B
High Ref Cyl	22.17
High Avg	22.21
High Error%	0.18
Response Time, min	2.5
Initial Bias Check	
Zero Avg	0.14
Zero Bias%	0.63
Span Avg	10.14
Span Bias%	0.54
Final Bias Check	
Zero Avg	0.08
Zero Bias%	0.36
Zero Drift%	0.27
Span Avg	10.03
Span Bias%	0.05
Span Drift%	0.50
Run 2 Avg	11.69
Co	0.110
Cm	10.085
Cgas Run 2	11.62

Facility ID:	Cemex Construction Materials Florida
Source ID:	In-Line Kiln 2 (EU 044) Stack
Process Condition:	Mill Off
Date:	11/30/2023

Run 3

Calibration Error	
Analyte	O_2
Units	%(d)
CS	22.17
Zero Ref ID	CC65993
Zero Ref Cyl	0.00
Zero Avg	0
Zero Error%	0.00
Mid Ref ID	CC34630
Mid Ref Cyl	10.01
Mid Avg	10.02
Mid Error%	0.05
High Ref ID	XC023754B
High Ref Cyl	22.17
High Avg	22.21
High Error%	0.18
Response Time, min	2.5
Initial Bias Check	
Zero Avg	0.08
Zero Bias%	0.36
Span Avg	10.03
Span Bias%	0.05
Final Bias Check	
Zero Avg	0.00
Zero Bias%	0.00
Zero Drift%	0.36
Span Avg	10.03
Span Bias%	0.05
Span Drift%	0.00
Run 3 Avg	12.32
Co	0.040
Cm	10.030
Cgas Run 3	12.31

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 2 (EU 044) Stack
EPA §114 ICR Testing
Mill Off Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
1	11/30/2023	10:25	12.85
1	11/30/2023	10:26	12.91
1	11/30/2023	10:27	12.90
1	11/30/2023	10:28	12.80
1	11/30/2023	10:29	12.93
1	11/30/2023	10:30	12.97
1	11/30/2023	10:31	12.92
1	11/30/2023	10:32	12.94
1	11/30/2023	10:33	12.92
1	11/30/2023	10:34	12.64
1	11/30/2023	10:35	12.50
1	11/30/2023	10:36	12.45
1	11/30/2023	10:37	12.55
1	11/30/2023	10:38	12.85
1	11/30/2023	10:39	12.99
1	11/30/2023	10:40	13.22
1	11/30/2023	10:41	13.31
1	11/30/2023	10:42	13.40
1	11/30/2023	10:43	13.50
1	11/30/2023	10:44	13.32
1	11/30/2023	10:45	13.14
1	11/30/2023	10:46	12.99
1	11/30/2023	10:47	13.13
1	11/30/2023	10:48	13.21
1	11/30/2023	10:49	13.30
1	11/30/2023	10:50	13.28
1	11/30/2023	10:51	13.26
1	11/30/2023	10:52	13.41
1	11/30/2023	10:53	13.45
1	11/30/2023	10:54	13.48
1	11/30/2023	10:55	13.33
1	11/30/2023	10:56	13.25
1	11/30/2023	10:57	13.13
1	11/30/2023	10:58	12.97
1	11/30/2023	10:59	13.00
1	11/30/2023	11:00	12.86
1	11/30/2023	11:01	12.71
1	11/30/2023	11:02	12.77
1	11/30/2023	11:03	12.74
1	11/30/2023	11:04	12.89
1	11/30/2023	11:05	12.94
1	11/30/2023	11:06	12.87
1	11/30/2023	11:07	12.81
1	11/30/2023	11:08	12.75
1	11/30/2023	11:09	12.83

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 2 (EU 044) Stack
EPA §114 ICR Testing
Mill Off Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
1	11/30/2023	11:10	12.86
1	11/30/2023	11:11	12.87
1	11/30/2023	11:12	13.07
1	11/30/2023	11:13	13.19
1	11/30/2023	11:14	13.29
1	11/30/2023	11:15	13.39
1	11/30/2023	11:16	13.44
1	11/30/2023	11:17	13.39
1	11/30/2023	11:18	13.28
1	11/30/2023	11:19	13.17
1	11/30/2023	11:20	13.08
1	11/30/2023	11:21	12.95
1	11/30/2023	11:22	12.97
1	11/30/2023	11:23	12.98
1	11/30/2023	11:24	13.12
		Averages:	13.04

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 2 (EU 044) Stack
EPA §114 ICR Testing
Mill Off Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
2	11/30/2023	12:10	12.01
2	11/30/2023	12:11	11.99
2	11/30/2023	12:12	11.93
2	11/30/2023	12:13	11.95
2	11/30/2023	12:14	11.94
2	11/30/2023	12:15	11.95
2	11/30/2023	12:16	12.10
2	11/30/2023	12:17	12.23
2	11/30/2023	12:18	12.26
2	11/30/2023	12:19	11.81
2	11/30/2023	12:20	11.62
2	11/30/2023	12:21	11.73
2	11/30/2023	12:22	12.24
2	11/30/2023	12:23	12.13
2	11/30/2023	12:24	12.21
2	11/30/2023	12:25	12.28
2	11/30/2023	12:26	12.24
2	11/30/2023	12:27	12.29
2	11/30/2023	12:28	12.26
2	11/30/2023	12:29	11.94
2	11/30/2023	12:30	11.83
2	11/30/2023	12:31	11.43
2	11/30/2023	12:32	11.30
2	11/30/2023	12:33	11.34
2	11/30/2023	12:34	11.41
2	11/30/2023	12:35	11.48
2	11/30/2023	12:36	11.74
2	11/30/2023	12:37	11.71
2	11/30/2023	12:38	11.77
2	11/30/2023	12:39	11.71
2	11/30/2023	12:40	11.55
2	11/30/2023	12:41	11.45
2	11/30/2023	12:42	11.59
2	11/30/2023	12:43	11.62
2	11/30/2023	12:44	11.53
2	11/30/2023	12:45	11.48
2	11/30/2023	12:46	11.33
2	11/30/2023	12:47	11.35
2	11/30/2023	12:48	11.34
2	11/30/2023	12:49	11.34
2	11/30/2023	12:50	11.33
2	11/30/2023	12:51	11.32
2	11/30/2023	12:52	11.36
2	11/30/2023	12:53	11.41
2	11/30/2023	12:54	11.59

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 2 (EU 044) Stack
EPA §114 ICR Testing
Mill Off Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
2	11/30/2023	12:55	11.57
2	11/30/2023	12:56	11.48
2	11/30/2023	12:57	11.34
2	11/30/2023	12:58	11.28
2	11/30/2023	12:59	11.39
2	11/30/2023	13:00	11.53
2	11/30/2023	13:01	11.78
2	11/30/2023	13:02	11.88
2	11/30/2023	13:03	11.57
2	11/30/2023	13:04	11.65
2	11/30/2023	13:05	11.57
2	11/30/2023	13:06	11.49
2	11/30/2023	13:07	11.38
2	11/30/2023	13:08	11.43
2	11/30/2023	13:09	11.50
		Averages:	11.69

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 2 (EU 044) Stack
EPA §114 ICR Testing
Mill Off Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
3	11/30/2023	13:55	13.36
3	11/30/2023	13:56	13.38
3	11/30/2023	13:57	13.02
3	11/30/2023	13:58	12.64
3	11/30/2023	13:59	12.82
3	11/30/2023	14:00	12.56
3	11/30/2023	14:01	12.29
3	11/30/2023	14:02	11.87
3	11/30/2023	14:03	11.72
3	11/30/2023	14:04	11.66
3	11/30/2023	14:05	11.42
3	11/30/2023	14:06	11.41
3	11/30/2023	14:07	11.32
3	11/30/2023	14:08	11.32
3	11/30/2023	14:09	11.26
3	11/30/2023	14:10	11.26
3	11/30/2023	14:11	11.19
3	11/30/2023	14:12	11.07
3	11/30/2023	14:13	11.17
3	11/30/2023	14:14	11.10
3	11/30/2023	14:15	11.19
3	11/30/2023	14:16	11.16
3	11/30/2023	14:17	11.19
3	11/30/2023	14:18	11.25
3	11/30/2023	14:19	11.17
3	11/30/2023	14:20	11.24
3	11/30/2023	14:21	11.32
3	11/30/2023	14:22	11.51
3	11/30/2023	14:23	11.43
3	11/30/2023	14:24	11.30
3	11/30/2023	14:25	11.06
3	11/30/2023	14:26	11.12
3	11/30/2023	14:27	11.16
3	11/30/2023	14:28	11.24
3	11/30/2023	14:29	11.65
3	11/30/2023	14:30	12.38
3	11/30/2023	14:31	12.94
3	11/30/2023	14:32	13.28
3	11/30/2023	14:33	13.26
3	11/30/2023	14:34	13.28
3	11/30/2023	14:35	13.36
3	11/30/2023	14:36	13.48
3	11/30/2023	14:37	13.43
3	11/30/2023	14:38	13.42
3	11/30/2023	14:39	13.43

Montrose Air Quality Services

Cemex Construction Materials Florida
Brooksville, Florida Facility
In-Line Kiln 2 (EU 044) Stack
EPA §114 ICR Testing
Mill Off Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
3	11/30/2023	14:40	13.61
3	11/30/2023	14:41	13.56
3	11/30/2023	14:42	13.34
3	11/30/2023	14:43	13.44
3	11/30/2023	14:44	13.32
3	11/30/2023	14:45	13.41
3	11/30/2023	14:46	13.51
3	11/30/2023	14:47	13.58
3	11/30/2023	14:48	13.31
3	11/30/2023	14:49	12.92
3	11/30/2023	14:50	13.00
3	11/30/2023	14:51	13.60
3	11/30/2023	14:52	13.36
3	11/30/2023	14:53	13.29
3	11/30/2023	14:54	13.00
		Averages:	12.32

Appendix A.12
Instrumental Test Method Data - Miami Kiln Stack, Raw Mill On

Facility ID:	Cemex Construction Materials Florida
Source ID:	In-Line Kiln (EU 018) Stack
Process Condition:	Mill On
Date:	12/5/2023

Run 1

Calibration Error	
Analyte	O_2
Units	%(d)
CS	22.17
Zero Ref ID	CC65993
Zero Ref Cyl	0.00
Zero Avg	0.01
Zero Error%	0.05
Mid Ref ID	CC34630
Mid Ref Cyl	10.01
Mid Avg	10.03
Mid Error%	0.09
High Ref ID	XC023754B
High Ref Cyl	22.17
High Avg	22.17
High Error%	0.00
Response Time, min	2.5
Initial Bias Check	
Zero Avg	0.00
Zero Bias%	-0.05
Span Avg	10.01
Span Bias%	-0.09
Final Bias Check	
Zero Avg	0.00
Zero Bias%	-0.05
Zero Drift%	0.00
Span Avg	10.01
Span Bias%	-0.09
Span Drift%	0.00
Run 1 Avg	13.98
Co	0.000
Cm	10.010
Cgas Run 1	13.98

Facility ID:	Cemex Construction Materials Florida
Source ID:	In-Line Kiln (EU 018) Stack
Process Condition:	Mill On
Date:	12/5/2023

Run 2

Calibration Error	
Analyte	O_2
Units	%(d)
CS	22.17
Zero Ref ID	CC65993
Zero Ref Cyl	0.00
Zero Avg	0.01
Zero Error%	0.05
Mid Ref ID	CC34630
Mid Ref Cyl	10.01
Mid Avg	10.03
Mid Error%	0.09
High Ref ID	XC023754B
High Ref Cyl	22.17
High Avg	22.17
High Error%	0.00
Response Time, min	2.5
Initial Bias Check	
Zero Avg	0.00
Zero Bias%	-0.05
Span Avg	10.01
Span Bias%	-0.09
Final Bias Check	
Zero Avg	0.01
Zero Bias%	0.00
Zero Drift%	0.05
Span Avg	10.02
Span Bias%	-0.05
Span Drift%	0.05
Run 2 Avg	13.99
Co	0.005
Cm	10.015
Cgas Run 2	13.99

Facility ID:	Cemex Construction Materials Florida
Source ID:	In-Line Kiln (EU 018) Stack
Process Condition:	Mill On
Date:	12/5/2023

Run 3

Calibration Error	
Analyte	O_2
Units	%(d)
CS	22.17
Zero Ref ID	CC65993
Zero Ref Cyl	0.00
Zero Avg	0.01
Zero Error%	0.05
Mid Ref ID	CC34630
Mid Ref Cyl	10.01
Mid Avg	10.03
Mid Error%	0.09
High Ref ID	XC023754B
High Ref Cyl	22.17
High Avg	22.17
High Error%	0.00
Response Time, min	2.5
Initial Bias Check	
Zero Avg	0.01
Zero Bias%	0.00
Span Avg	10.02
Span Bias%	-0.05
Final Bias Check	
Zero Avg	0.02
Zero Bias%	0.05
Zero Drift%	0.05
Span Avg	10.02
Span Bias%	-0.05
Span Drift%	0.00
Run 3 Avg	13.99
Co	0.015
Cm	10.020
Cgas Run 3	13.99

Montrose Air Quality Services

Cemex Construction Materials Florida
Miami, Florida Facility
In-Line Kiln (EU 018) Stack
EPA §114 ICR Testing
Mill On Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
1	12/5/2023	8:30	14.15
1	12/5/2023	8:31	14.16
1	12/5/2023	8:32	14.14
1	12/5/2023	8:33	14.10
1	12/5/2023	8:34	14.05
1	12/5/2023	8:35	14.05
1	12/5/2023	8:36	14.07
1	12/5/2023	8:37	14.01
1	12/5/2023	8:38	14.06
1	12/5/2023	8:39	14.09
1	12/5/2023	8:40	14.00
1	12/5/2023	8:41	14.02
1	12/5/2023	8:42	14.06
1	12/5/2023	8:43	13.95
1	12/5/2023	8:44	13.97
1	12/5/2023	8:45	14.00
1	12/5/2023	8:46	13.99
1	12/5/2023	8:47	13.97
1	12/5/2023	8:48	13.95
1	12/5/2023	8:49	13.82
1	12/5/2023	8:50	13.80
1	12/5/2023	8:51	13.86
1	12/5/2023	8:52	13.96
1	12/5/2023	8:53	13.96
1	12/5/2023	8:54	13.89
1	12/5/2023	8:55	13.88
1	12/5/2023	8:56	14.00
1	12/5/2023	8:57	13.97
1	12/5/2023	8:58	14.03
1	12/5/2023	8:59	13.91
1	12/5/2023	9:00	13.99
1	12/5/2023	9:01	13.96
1	12/5/2023	9:02	14.01
1	12/5/2023	9:03	14.01
1	12/5/2023	9:04	13.94
1	12/5/2023	9:05	13.99
1	12/5/2023	9:06	13.95
1	12/5/2023	9:07	13.94
1	12/5/2023	9:08	13.96
1	12/5/2023	9:09	13.96
1	12/5/2023	9:10	13.95
1	12/5/2023	9:11	13.98
1	12/5/2023	9:12	14.04
1	12/5/2023	9:13	13.96
1	12/5/2023	9:14	13.95

Montrose Air Quality Services

Cemex Construction Materials Florida
Miami, Florida Facility
In-Line Kiln (EU 018) Stack
EPA §114 ICR Testing
Mill On Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
1	12/5/2023	9:15	13.94
1	12/5/2023	9:16	13.88
1	12/5/2023	9:17	13.95
1	12/5/2023	9:18	13.94
1	12/5/2023	9:19	13.96
1	12/5/2023	9:20	13.95
1	12/5/2023	9:21	13.97
1	12/5/2023	9:22	14.00
1	12/5/2023	9:23	13.92
1	12/5/2023	9:24	13.99
1	12/5/2023	9:25	13.96
1	12/5/2023	9:26	14.04
1	12/5/2023	9:27	13.98
1	12/5/2023	9:28	14.04
1	12/5/2023	9:29	13.97
		Averages:	13.98

Montrose Air Quality Services

Cemex Construction Materials Florida
Miami, Florida Facility
In-Line Kiln (EU 018) Stack
EPA §114 ICR Testing
Mill On Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
2	12/5/2023	10:10	13.88
2	12/5/2023	10:11	13.87
2	12/5/2023	10:12	13.89
2	12/5/2023	10:13	13.96
2	12/5/2023	10:14	13.89
2	12/5/2023	10:15	14.00
2	12/5/2023	10:16	13.98
2	12/5/2023	10:17	14.01
2	12/5/2023	10:18	14.20
2	12/5/2023	10:19	14.29
2	12/5/2023	10:20	14.31
2	12/5/2023	10:21	14.23
2	12/5/2023	10:22	14.16
2	12/5/2023	10:23	14.23
2	12/5/2023	10:24	14.28
2	12/5/2023	10:25	14.16
2	12/5/2023	10:26	14.02
2	12/5/2023	10:27	14.11
2	12/5/2023	10:28	14.24
2	12/5/2023	10:29	14.19
2	12/5/2023	10:30	14.13
2	12/5/2023	10:31	14.12
2	12/5/2023	10:32	14.06
2	12/5/2023	10:33	14.06
2	12/5/2023	10:34	14.08
2	12/5/2023	10:35	14.01
2	12/5/2023	10:36	14.04
2	12/5/2023	10:37	13.95
2	12/5/2023	10:38	14.03
2	12/5/2023	10:39	13.97
2	12/5/2023	10:40	13.96
2	12/5/2023	10:41	13.94
2	12/5/2023	10:42	14.03
2	12/5/2023	10:43	14.08
2	12/5/2023	10:44	14.04
2	12/5/2023	10:45	14.04
2	12/5/2023	10:46	14.02
2	12/5/2023	10:47	13.99
2	12/5/2023	10:48	14.09
2	12/5/2023	10:49	14.11
2	12/5/2023	10:50	14.01
2	12/5/2023	10:51	13.96
2	12/5/2023	10:52	13.95
2	12/5/2023	10:53	13.98
2	12/5/2023	10:54	13.85

Montrose Air Quality Services

Cemex Construction Materials Florida
Miami, Florida Facility
In-Line Kiln (EU 018) Stack
EPA §114 ICR Testing
Mill On Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
2	12/5/2023	10:55	13.83
2	12/5/2023	10:56	13.85
2	12/5/2023	10:57	13.93
2	12/5/2023	10:58	13.92
2	12/5/2023	10:59	13.80
2	12/5/2023	11:00	13.77
2	12/5/2023	11:01	13.80
2	12/5/2023	11:02	13.80
2	12/5/2023	11:03	13.67
2	12/5/2023	11:04	13.75
2	12/5/2023	11:05	13.78
2	12/5/2023	11:06	13.83
2	12/5/2023	11:07	13.70
2	12/5/2023	11:08	13.86
2	12/5/2023	11:09	13.79
		Averages:	13.99

Montrose Air Quality Services

Cemex Construction Materials Florida
Miami, Florida Facility
In-Line Kiln (EU 018) Stack
EPA §114 ICR Testing
Mill On Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
3	12/5/2023	12:00	14.01
3	12/5/2023	12:01	13.93
3	12/5/2023	12:02	13.90
3	12/5/2023	12:03	13.96
3	12/5/2023	12:04	13.87
3	12/5/2023	12:05	13.89
3	12/5/2023	12:06	13.92
3	12/5/2023	12:07	13.91
3	12/5/2023	12:08	13.90
3	12/5/2023	12:09	13.89
3	12/5/2023	12:10	14.10
3	12/5/2023	12:11	13.96
3	12/5/2023	12:12	13.94
3	12/5/2023	12:13	13.92
3	12/5/2023	12:14	13.99
3	12/5/2023	12:15	13.91
3	12/5/2023	12:16	13.99
3	12/5/2023	12:17	14.04
3	12/5/2023	12:18	14.06
3	12/5/2023	12:19	14.05
3	12/5/2023	12:20	13.96
3	12/5/2023	12:21	14.10
3	12/5/2023	12:22	14.08
3	12/5/2023	12:23	14.00
3	12/5/2023	12:24	14.05
3	12/5/2023	12:25	13.97
3	12/5/2023	12:26	14.14
3	12/5/2023	12:27	13.94
3	12/5/2023	12:28	13.99
3	12/5/2023	12:29	13.99
3	12/5/2023	12:30	13.96
3	12/5/2023	12:31	13.97
3	12/5/2023	12:32	14.01
3	12/5/2023	12:33	14.05
3	12/5/2023	12:34	13.83
3	12/5/2023	12:35	13.96
3	12/5/2023	12:36	14.08
3	12/5/2023	12:37	13.98
3	12/5/2023	12:38	13.96
3	12/5/2023	12:39	13.92
3	12/5/2023	12:40	13.97
3	12/5/2023	12:41	13.96
3	12/5/2023	12:42	13.97
3	12/5/2023	12:43	13.97
3	12/5/2023	12:44	14.10

Montrose Air Quality Services

Cemex Construction Materials Florida
Miami, Florida Facility
In-Line Kiln (EU 018) Stack
EPA §114 ICR Testing
Mill On Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
3	12/5/2023	12:45	14.08
3	12/5/2023	12:46	14.08
3	12/5/2023	12:47	14.06
3	12/5/2023	12:48	14.00
3	12/5/2023	12:49	13.95
3	12/5/2023	12:50	13.94
3	12/5/2023	12:51	13.94
3	12/5/2023	12:52	14.07
3	12/5/2023	12:53	14.04
3	12/5/2023	12:54	14.02
3	12/5/2023	12:55	14.10
3	12/5/2023	12:56	14.08
3	12/5/2023	12:57	13.98
3	12/5/2023	12:58	14.20
3	12/5/2023	12:59	14.07
		Averages:	13.99

Appendix A.13
Instrumental Test Method Data - Miami Kiln Stack, Raw Mill Off

Facility ID:	Cemex Construction Materials Florida
Source ID:	In-Line Kiln (EU 018) Stack
Process Condition:	Mill Off
Date:	12/5/2023

Run 1

Calibration Error	
Analyte	O_2
Units	%(d)
CS	22.17
Zero Ref ID	CC65993
Zero Ref Cyl	0.00
Zero Avg	0.01
Zero Error%	0.05
Mid Ref ID	CC34630
Mid Ref Cyl	10.01
Mid Avg	10.03
Mid Error%	0.09
High Ref ID	XC023754B
High Ref Cyl	22.17
High Avg	22.17
High Error%	0.00
Response Time, min	2.5
Initial Bias Check	
Zero Avg	0.02
Zero Bias%	0.05
Span Avg	10.02
Span Bias%	-0.05
Final Bias Check	
Zero Avg	0.01
Zero Bias%	0.00
Zero Drift%	0.05
Span Avg	10.05
Span Bias%	0.09
Span Drift%	0.14
Run 1 Avg	13.61
Co	0.015
Cm	10.035
Cgas Run 1	13.58

Facility ID:	Cemex Construction Materials Florida
Source ID:	In-Line Kiln (EU 018) Stack
Process Condition:	Mill Off
Date:	12/6/2023

Run 2

Calibration Error	
Analyte	O_2
Units	%(d)
CS	22.17
Zero Ref ID	CC65993
Zero Ref Cyl	0.00
Zero Avg	0.00
Zero Error%	0.00
Mid Ref ID	CC34630
Mid Ref Cyl	10.01
Mid Avg	10.02
Mid Error%	0.05
High Ref ID	XC023754B
High Ref Cyl	22.17
High Avg	22.18
High Error%	0.05
Response Time, min	2.5
Initial Bias Check	
Zero Avg	0.07
Zero Bias%	0.32
Span Avg	10.01
Span Bias%	-0.05
Final Bias Check	
Zero Avg	0.01
Zero Bias%	0.05
Zero Drift%	0.27
Span Avg	10.02
Span Bias%	0.00
Span Drift%	0.05
Run 2 Avg	12.26
Co	0.040
Cm	10.015
Cgas Run 2	12.26

Facility ID:	Cemex Construction Materials Florida
Source ID:	In-Line Kiln (EU 018) Stack
Process Condition:	Mill Off
Date:	12/6/2023

Run 3

Calibration Error	
Analyte	O_2
Units	%(d)
CS	22.17
Zero Ref ID	CC65993
Zero Ref Cyl	0.00
Zero Avg	0.00
Zero Error%	0.00
Mid Ref ID	CC34630
Mid Ref Cyl	10.01
Mid Avg	10.02
Mid Error%	0.05
High Ref ID	XC023754B
High Ref Cyl	22.17
High Avg	22.18
High Error%	0.05
Response Time, min	2.5
Initial Bias Check	
Zero Avg	0.01
Zero Bias%	0.05
Span Avg	10.02
Span Bias%	0.00
Final Bias Check	
Zero Avg	0.01
Zero Bias%	0.05
Zero Drift%	0.00
Span Avg	10.02
Span Bias%	0.00
Span Drift%	0.00
Run 3 Avg	12.26
Co	0.010
Cm	10.020
Cgas Run 3	12.25

Montrose Air Quality Services

Cemex Construction Materials Florida
Miami, Florida Facility
In-Line Kiln (EU 018) Stack
EPA §114 ICR Testing
Mill Off Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
1	12/5/2023	14:40	13.27
1	12/5/2023	14:41	13.28
1	12/5/2023	14:42	13.21
1	12/5/2023	14:43	13.24
1	12/5/2023	14:44	13.23
1	12/5/2023	14:45	13.13
1	12/5/2023	14:46	13.15
1	12/5/2023	14:47	13.21
1	12/5/2023	14:48	13.59
1	12/5/2023	14:49	13.58
1	12/5/2023	14:50	13.56
1	12/5/2023	14:51	13.54
1	12/5/2023	14:52	13.52
1	12/5/2023	14:53	13.50
1	12/5/2023	14:54	13.60
1	12/5/2023	14:55	13.52
1	12/5/2023	14:56	13.57
1	12/5/2023	14:57	13.63
1	12/5/2023	14:58	13.77
1	12/5/2023	14:59	13.65
1	12/5/2023	15:00	13.70
1	12/5/2023	15:01	13.70
1	12/5/2023	15:02	13.73
1	12/5/2023	15:03	13.69
1	12/5/2023	15:04	13.69
1	12/5/2023	15:05	13.73
1	12/5/2023	15:06	13.71
1	12/5/2023	15:07	13.64
1	12/5/2023	15:08	13.64
1	12/5/2023	15:09	13.76
1	12/5/2023	15:10	13.79
1	12/5/2023	15:11	13.70
1	12/5/2023	15:12	13.67
1	12/5/2023	15:13	13.69
1	12/5/2023	15:14	13.64
1	12/5/2023	15:15	13.79
1	12/5/2023	15:16	13.69
1	12/5/2023	15:17	13.71
1	12/5/2023	15:18	13.66
1	12/5/2023	15:19	13.67
1	12/5/2023	15:20	13.67
1	12/5/2023	15:21	13.64
1	12/5/2023	15:22	13.71
1	12/5/2023	15:23	13.60
1	12/5/2023	15:24	13.69

Montrose Air Quality Services

Cemex Construction Materials Florida
Miami, Florida Facility
In-Line Kiln (EU 018) Stack
EPA §114 ICR Testing
Mill Off Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
1	12/5/2023	15:25	13.75
1	12/5/2023	15:26	13.67
1	12/5/2023	15:27	13.58
1	12/5/2023	15:28	13.68
1	12/5/2023	15:29	13.61
1	12/5/2023	15:30	13.78
1	12/5/2023	15:31	13.84
1	12/5/2023	15:32	13.74
1	12/5/2023	15:33	13.64
1	12/5/2023	15:34	13.74
1	12/5/2023	15:35	13.67
1	12/5/2023	15:36	13.80
1	12/5/2023	15:37	13.74
1	12/5/2023	15:38	13.77
1	12/5/2023	15:39	13.69
		Averages:	13.61

Montrose Air Quality Services

Cemex Construction Materials Florida
Miami, Florida Facility
In-Line Kiln (EU 018) Stack
EPA §114 ICR Testing
Mill Off Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
2	12/6/2023	8:20	12.20
2	12/6/2023	8:21	12.29
2	12/6/2023	8:22	12.30
2	12/6/2023	8:23	12.22
2	12/6/2023	8:24	12.25
2	12/6/2023	8:25	12.37
2	12/6/2023	8:26	12.25
2	12/6/2023	8:27	12.42
2	12/6/2023	8:28	12.25
2	12/6/2023	8:29	12.23
2	12/6/2023	8:30	12.28
2	12/6/2023	8:31	12.29
2	12/6/2023	8:32	12.24
2	12/6/2023	8:33	12.24
2	12/6/2023	8:34	12.13
2	12/6/2023	8:35	12.04
2	12/6/2023	8:36	12.19
2	12/6/2023	8:37	12.29
2	12/6/2023	8:38	12.29
2	12/6/2023	8:39	12.24
2	12/6/2023	8:40	12.24
2	12/6/2023	8:41	12.28
2	12/6/2023	8:42	12.26
2	12/6/2023	8:43	12.36
2	12/6/2023	8:44	12.34
2	12/6/2023	8:45	12.28
2	12/6/2023	8:46	12.28
2	12/6/2023	8:47	12.28
2	12/6/2023	8:48	12.22
2	12/6/2023	8:49	12.22
2	12/6/2023	8:50	12.16
2	12/6/2023	8:51	12.23
2	12/6/2023	8:52	12.27
2	12/6/2023	8:53	12.18
2	12/6/2023	8:54	12.20
2	12/6/2023	8:55	12.18
2	12/6/2023	8:56	12.23
2	12/6/2023	8:57	12.30
2	12/6/2023	8:58	12.30
2	12/6/2023	8:59	12.30
2	12/6/2023	9:00	12.34
2	12/6/2023	9:01	12.43
2	12/6/2023	9:02	12.29
2	12/6/2023	9:03	12.22
2	12/6/2023	9:04	12.27

Montrose Air Quality Services

Cemex Construction Materials Florida
Miami, Florida Facility
In-Line Kiln (EU 018) Stack
EPA §114 ICR Testing
Mill Off Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
2	12/6/2023	9:05	12.31
2	12/6/2023	9:06	12.26
2	12/6/2023	9:07	12.21
2	12/6/2023	9:08	12.26
2	12/6/2023	9:09	12.27
2	12/6/2023	9:10	12.33
2	12/6/2023	9:11	12.30
2	12/6/2023	9:12	12.28
2	12/6/2023	9:13	12.27
2	12/6/2023	9:14	12.31
2	12/6/2023	9:15	12.23
2	12/6/2023	9:16	12.15
2	12/6/2023	9:17	12.22
2	12/6/2023	9:18	12.27
2	12/6/2023	9:19	12.37
		Averages:	12.26

Montrose Air Quality Services

Cemex Construction Materials Florida
Miami, Florida Facility
In-Line Kiln (EU 018) Stack
EPA §114 ICR Testing
Mill Off Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
3	12/6/2023	10:10	12.19
3	12/6/2023	10:11	12.26
3	12/6/2023	10:12	12.21
3	12/6/2023	10:13	12.30
3	12/6/2023	10:14	12.26
3	12/6/2023	10:15	12.25
3	12/6/2023	10:16	12.26
3	12/6/2023	10:17	12.24
3	12/6/2023	10:18	12.42
3	12/6/2023	10:19	12.23
3	12/6/2023	10:20	12.32
3	12/6/2023	10:21	12.25
3	12/6/2023	10:22	12.28
3	12/6/2023	10:23	12.24
3	12/6/2023	10:24	12.20
3	12/6/2023	10:25	12.30
3	12/6/2023	10:26	12.25
3	12/6/2023	10:27	12.13
3	12/6/2023	10:28	12.16
3	12/6/2023	10:29	12.27
3	12/6/2023	10:30	12.16
3	12/6/2023	10:31	12.32
3	12/6/2023	10:32	12.30
3	12/6/2023	10:33	12.23
3	12/6/2023	10:34	12.26
3	12/6/2023	10:35	12.26
3	12/6/2023	10:36	12.23
3	12/6/2023	10:37	12.22
3	12/6/2023	10:38	12.30
3	12/6/2023	10:39	12.27
3	12/6/2023	10:40	12.24
3	12/6/2023	10:41	12.60
3	12/6/2023	10:42	12.29
3	12/6/2023	10:43	12.31
3	12/6/2023	10:44	12.39
3	12/6/2023	10:45	12.28
3	12/6/2023	10:46	12.43
3	12/6/2023	10:47	12.30
3	12/6/2023	10:48	12.31
3	12/6/2023	10:49	12.08
3	12/6/2023	10:50	12.32
3	12/6/2023	10:51	12.35
3	12/6/2023	10:52	12.25
3	12/6/2023	10:53	12.18
3	12/6/2023	10:54	12.16

Montrose Air Quality Services

Cemex Construction Materials Florida
Miami, Florida Facility
In-Line Kiln (EU 018) Stack
EPA §114 ICR Testing
Mill Off Process Condition
Minute Averages

Run No.	Date	Time	$\%O_2$, dry
3	12/6/2023	10:55	12.14
3	12/6/2023	10:56	12.47
3	12/6/2023	10:57	12.20
3	12/6/2023	10:58	12.23
3	12/6/2023	10:59	12.24
3	12/6/2023	11:00	12.28
3	12/6/2023	11:01	12.19
3	12/6/2023	11:02	12.18
3	12/6/2023	11:03	12.21
3	12/6/2023	11:04	12.18
3	12/6/2023	11:05	12.31
3	12/6/2023	11:06	12.25
3	12/6/2023	11:07	12.22
3	12/6/2023	11:08	12.12
3	12/6/2023	11:09	12.17
		Averages:	12.26

Appendix A.14
Calculations/Results - Brooksville Kiln 1 Stack Raw Mill On

Source Overview

SOURCE OWNER:	Cemex Construction Materials Florida
PLANT LOCATION (CITY / STATE):	Brooksville, Florida
SOURCE(S) NAME(S):	In-Line Kiln 1 (EU 020) Stack
SOURCE(S) CONDITION:	EPA §114 ICR
PROCESS CONDITION:	Mill On
METHOD 26A SAMPLING TRAIN ID:	Method 26A Sampling Train A
SOURCE(S) SHAPE:	Circular
PROBE WASH CHEMICAL:	Acetone
SOURCE PERMIT NUMBER:	0530021-088-AV

REFERENCE METHOD TESTS:

Sample Location	US EPA	Method	1
Volumetric Flow	US EPA	Method	2
Oxygen	US EPA	Method	3A
Hydrogen Fluoride	US EPA	Method	26A
Chlorine	US EPA	Method	26A
Carbon Dioxide	US EPA	Method	320
Moisture Content	US EPA	Method	320
Hydrogen Fluoride	US EPA	Method	320
Hydrogen Cyanide	US EPA	Method	320

PROJECT MANAGER	Jose Medina
ENVIRONMENTAL ANALYST - ASSISTANT	Todd Gregg, Steven Metosh, Joshua Fuller
OWNER'S REPRESENTATIVE:	Greg Bridge
RULING AGENCY :	Florida Department of Environmental Protection
DATE(S) TEST CONDUCTED:	11/29/2023
MONTROSE PROJECT NUMBER:	031486

In-Line Kiln 1 (EU 020) Stack

Emissions Summary

Test Performed For:	Cemex Construction Materials Florida	Testing Performed By:
	Brooksville, Florida	Montrose Air Quality Services
Source(s) Tested:	In-Line Kiln 1 (EU 020) Stack	Project Manager:
Test Condition:	EPA §114 ICR	Jose Medina
Process Condition:	Mill On	
Test(s) Performed:	Hydrogen fluoride, chlorine, & hydrogen cyanide emissions	
Sampling Train ID:	Method 26A Sampling Train A	

Run Number		Run 1	Run 2	Run 3	Average
Date of Run		11/29/23	11/29/23	11/29/23	-
Test Run Time Start - End		10:10-11:12	12:45-13:50	14:39-15:41	-
Clinker Processed Rate	Short Tons/hr	64.8	64.9	65.3	65.0
Oxygen Concentration	%(dry)	17.01	17.03	16.74	16.93
Carbon Dioxide Concentration	%(dry)	6.26	6.36	6.87	6.50
Isokinetic Sampling Rate	%	96.14	101.56	97.00	98.23
Stack Temperature	^{o}F	223.3	221.5	233.8	226.2
Moisture Content	% volume	5.72	5.42	6.34	5.83
Stack Gas Velocity	f/s	20.85	19.17	19.21	19.74
Stack Gas Flow @ Actual Conditions	acfm	341,701	314,264	314,851	323,605
Stack Gas Flow @ Standard Conditions	scfm	264,736	244,134	239,760	249,544
Stack Gas Flow @ Dry Standard Conditions	dscfm	249,580	230,909	224,552	235,014
Hydrogen Fluoride Collected	µg	41.1	17.4 BDL	18.4 BDL	25.6 DLL
Hydrogen Fluoride Concentration	ppmvd	4.0E-02	1.7E-02 BDL	2.0E-02 BDL	2.6E-02 DLL
Hydrogen Fluoride Concentration	ppmvd @ 7 %O2	1.4E-01	6.2E-02 BDL	6.6E-02 BDL	9.0E-02 DLL
Hydrogen Fluoride Concentration	gr/dscf	1.5E-05	6.3E-06 BDL	7.2E-06 BDL	9.3E-06 DLL
Hydrogen Fluoride Emissions Rate	lb/hr	3.1E-02	1.2E-02 BDL	1.4E-02 BDL	1.9E-02 DLL
Hydrogen Fluoride Emissions Rate	lb/ton	4.8E-04	1.9E-04 BDL	2.1E-04 BDL	2.9E-04 DLL
Chlorine Collected	µg	59.3	52.1	29.5	47.0
Chlorine Concentration	ppmvd	1.6E-02	1.5E-02	8.9E-03	1.3E-02
Chlorine Concentration	ppmvd @ 7 %O2	5.8E-02	5.2E-02	3.0E-02	4.7E-02
Chlorine Concentration	gr/dscf	2.1E-05	1.9E-05	1.1E-05	1.7E-05
Chlorine Emissions Rate	lb/hr	4.5E-02	3.7E-02	2.2E-02	3.5E-02
Chlorine Emissions Rate	lb/ton	6.9E-04	5.7E-04	3.4E-04	5.3E-04
Hydrogen Cyanide Collected	ppmvw	0.7	0.7	0.7	0.7
Hydrogen Cyanide Concentration	ppmvd	7.3E-01	6.9E-01	7.0E-01	7.1E-01
Hydrogen Cyanide Concentration	ppmvd @ 7 %O2	2.6E+00	2.5E+00	2.4E+00	2.5E+00
Hydrogen Cyanide Concentration	gr/dscf	3.6E-04	3.4E-04	3.5E-04	3.5E-04
Hydrogen Cyanide Emissions Rate	lb/hr	7.7E-01	6.7E-01	6.7E-01	7.0E-01
Hydrogen Cyanide Emissions Rate	lb/ton	1.2E-02	1.0E-02	1.0E-02	1.1E-02
Hydrogen Fluoride Collected (Method 320)	ppmvw	0.1 BDL	0.1 BDL	0.1 BDL	0.1 BDL
Hydrogen Fluoride Concentration (Method 320)	ppmvd	1.1E-01 BDL	1.1E-01 BDL	1.1E-01 BDL	1.1E-01 BDL
Hydrogen Fluoride Concentration (Method 320)	ppmvd @ 7 %O2	3.8E-01 BDL	3.8E-01 BDL	3.6E-01 BDL	3.7E-01 BDL
Hydrogen Fluoride Concentration (Method 320)	gr/dscf	3.9E-05 BDL	3.8E-05 BDL	3.9E-05 BDL	3.9E-05 BDL
Hydrogen Fluoride Emissions Rate (Method 320)	lb/hr	8.2E-02 BDL	7.6E-02 BDL	7.5E-02 BDL	7.8E-02 BDL
Hydrogen Fluoride Emissions Rate (Method 320)	lb/ton	1.3E-03 BDL	1.2E-03 BDL	1.1E-03 BDL	1.2E-03 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

INPUT TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031486

Source: In-Line Kiln 1 (EU 020) Stack — Data Input By: Jose Medina

Process: Mill On

Field Data	Symbol	Units	Test Data			
Run Number	-	-	1	2	3	AVERAGE
Test Date	-	-	11/29/23	11/29/23	11/29/23	-
Test Run Time Start - End	-	Military Time	10:10-11:12	12:45-13:50	14:39-15:41	-
Sampling Time	θ	minutes	60	60	60	60
Stack Area	A_s	Ft^2	273.18	273.18	273.18	-
Barometric Pressure at Ground Level	$P_{bargound}$	in. Hg	30.24	30.24	30.18	30.22
Elevation of Sampling Location	Esam	ft	200	200	200	200
Barometric Pressure at Sampling Location	P_{bar}	in. Hg	30.04	30.04	29.98	30.02
Stack Static Pressure	P_g	in. H_20	-0.48	-0.48	-0.48	-0.48
Pitot Tube Correction factor	C_p	-	0.84	0.84	0.84	0.84
Meter Calibration Factor	Y	-	0.998	0.998	0.998	0.998
Meter Delta H @	$\Delta H@$	in. H_20	1.872	1.872	1.872	1.872
Nozzle Diameter	D_n	inches	0.390	0.390	0.390	0.390
Initial Meter Volume	V_{mi}	dcf	973.829	17.672	61.997	-
Final Meter Volume	V_{mf}	dcf	1017.498	60.857	102.653	-
Total Meter Volume	V_m	dcf	43.669	43.185	40.656	42.503
Meter Temperature	t_m	°F	70.8	76.7	82.8	76.75
Actual Orifice Pressure Differential (Average Delta H)	ΔH	in. H_20	1.81	1.55	1.52	1.63
Impingers Weight Gain (Moisture)	W_{imp}	grams	47.4	42.9	47.5	45.9
Silica Gel Impinger Weight Gain (Moisture)	W_{sg}	grams	8.9	9.0	9.5	9.1
Avg. Sq. Rt. of Delta P	$(sqrt\ \Delta P)_{avg}$	$(in.\ H_20)^{1/2}$	0.3277	0.3021	0.2994	0.3098
Stack Temperature	t_s	°F	223.3	221.5	233.8	226.2
Hydrogen Fluoride Collected	$mn_{HF,\ \mu g}$	μg_{HF}	41.1	17.4 BDL	18.4 BDL	25.6 DLL
Hydrogen Fluoride Concentration	$C_{HF,\ ppmvd}$	ppmvd	4.0E-02	1.7E-02 BDL	2.0E-02 BDL	2.6E-02 DLL
Hydrogen Fluoride Concentration @ 7 $\%O_2$	$C_{HF,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	1.4E-01	6.2E-02 BDL	6.6E-02 BDL	9.0E-02 DLL
Chlorine Collected	$mn_{Cl2,\ \mu g}$	μg_{Cl2}	59.3	52.1	29.5	47.0
Chlorine Concentration	$C_{Cl2,\ ppmvd}$	ppmvd	1.6E-02	1.5E-02	8.9E-03	1.3E-02
Chlorine Concentration @ 7 $\%O_2$	$C_{Cl2,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	5.8E-02	5.2E-02	3.0E-02	4.7E-02
Method 3A O_2 Concentration Data						
Oxygen Concentration, dry basis	$\%O_2$	% (d)	17.01	17.03	16.74	16.93
Method 320 Moisture Fraction & Concentration Data						
Carbon Dioxide Concentration, dry basis	$\%CO_2$	% (d)	5.90	6.02	6.43	6.12
Carbon Dioxide Concentration, dry basis	$\%CO_2$	% (d)	6.26	6.36	6.87	6.50
Moisture Fraction	B_{ws}	dimensionless	0.0579	0.0606	0.0611	0.0599
Hydrogen Cyanide Concentration, Wet Basis	$C_{HCN,\ ppmvw}$	ppmvw	0.69	0.65	0.66	0.67
Hydrogen Cyanide Concentration, Dry Basis	$C_{HCN,\ ppmvd}$	ppmvd	7.3E-01	6.9E-01	7.0E-01	7.1E-01
Hydrogen Cyanide Concentration @ 7 $\%O_2$	$C_{HCN,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	2.6E+00	2.5E+00	2.4E+00	2.5E+00
Hydrogen Fluoride Concentration, Wet Basis	$C_{HF,\ ppmvw}$	ppmvw	0.1 BDL	0.1 BDL	0.1 BDL	0.1 BDL
Hydrogen Fluoride Concentration, Dry Basis	$C_{HF,\ ppmvd}$	ppmvd	1.1E-01 BDL	1.1E-01 BDL	1.1E-01 BDL	1.1E-01 BDL
Hydrogen Fluoride Concentration @ 7 $\%O_2$	$C_{HF,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	3.8E-01 BDL	3.8E-01 BDL	3.6E-01 BDL	3.7E-01 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

CALCULATED TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031486

Source: In-Line Kiln 1 (EU 020) Stack — Input By: Jose Medina

Process: Mill On

Description	Formulas	Symbol	Units	Calculated Data			
Run Number		-	-	1	2	3	AVERAGE
Test Date		-	-	11/29/23	11/29/23	11/29/23	-
Test Run Time Start - End		-	Military Time	10:10-11:12	12:45-13:50	14:39-15:41	-
Stack Pressure	$= P_{bar} + P_g / 13.6$	P_s	in. Hg	30.00	30.00	29.94	29.98
Meter Pressure	$= P_{bar} + \Delta H / 13.6$	P_m	in. Hg	30.17	30.15	30.09	30.14
Standard Meter Volume	$= (T_{std}/P_{std})^* Y^* (V_m/T_m)^* (P_{bar} + \Delta H / 13.6)$	$V_{m(std)}$	dscf	43.723	42.733	39.692	42.049
Standard Volume of Water Vapor Condensed	$=0.04716^*W_{imp}$	$V_{wc(std)}$	scf	2.235	2.023	2.240	2.166
Standard Volume of Water Collected in Silica Gel	$=0.04716^*W_{sg}$	$V_{wsg(std)}$	scf	0.420	0.424	0.448	0.431
Total Standard Volume of Water Collected	$=V_{wc(std)imp} + V_{wsg(std)sg}$	$V_{wc(std)}$	scf	2.655	2.448	2.688	2.597
Moisture Fraction	$=(V_{wc(std)})/(V_{wc(std)} + V_{m(std)})$	B_{ws}	fraction	0.0572	0.0542	0.0634	0.0583
Moisture Fraction @ Saturation (Theoretical)	$=10^{[6.6911-(3144/(ts+390.86))]}/P_s$	TB_{ws}	fraction	1.2445	1.2014	1.5202	1.3220
Molecular Weight Of Stack Gas, dry basis	=0.32(O2)+0.44(CO2)+0.28(100-O2-CO2))	M_d	lb/lb-mole	29.6819	29.6994	29.7681	29.7165
Molecular Weight Of Stack Gas, wet basis	$= M_d^*(1-B_{ws})+18.015^*(B_{ws})$	M_s	lb/lb-mole	29.0140	29.0664	29.0226	29.0343
Average Stack Gas Velocity	$= 85.49^*C_p^*(\text{sqrt } \Delta P)_{avg}^*SQRT((T_s) / (P_s^*M_w))$	v_s	ft/s	20.85	19.17	19.21	19.743
Stack Gas Flow @ Actual Conditions	$= 60^*v_s^*A_s$	Q_a	acfm	341,701	314,264	314,851	323,605
Stack Gas Flow @ Standard Conditions	$= Q_a^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_s	scfm	264,736	244,134	239,760	249,544
Stack Gas Flow @ Dry Standard Conditions	$= Q_a^*(1-B_{ws})^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_{std}	dscfm	249,580	230,909	224,552	235,014
Volume Collected Through Nozzle	$=T_s/P_s^*[0.002669^*V_{lc}+ V_m^*Y^*P_m/T_m]$	V_n	acf	59.854	58.154	55.646	57.885
Isokinetic Sampling Rate, Percent	$= 100^*Vn / (60^*v_s^*A_n^*\theta)$	I	%	96.1	101.6	97.0	98.2
Post-test DGM Coefficient (EMC ALT-009 Y_{qa})		y_{qa}	-	1.0004	0.9377	0.9928	0.9770
Post-test Meter Orifice Calibration Check % Difference (Calibration must be within 5% of original Y-factor):							2.11%
Hydrogen Fluoride Concentration	$=1.543E\text{-}05^*(mn_{HF,\ \mu g})/V_{m(std)}$	C_{HF}	gr/dscf	1.5E-05	6.3E-06 BDL	7.2E-06 BDL	9.3E-06 DLL
Hydrogen Fluoride Emissions Rate	$=(60/7000)^*C_{HF}^*Q_{std}$	lb/hr_{HF}	lb/hr	3.1E-02	1.2E-02 BDL	1.4E-02 BDL	1.9E-02 DLL
Chlorine Concentration	$=1.543E\text{-}05^*(mn_{Cl2,\ \mu g})/V_{m(std)}$	C_{Cl2}	gr/dscf	2.1E-05	1.9E-05	1.1E-05	1.7E-05
Chlorine Gas Emissions	$=(60/7000)^*C_{Cl2}^*Q_{std}$	lb/hr_{Cl2}	lb/hr	4.5E-02	3.7E-02	2.2E-02	3.5E-02
Method 320 Concentration & Emissions Data							
Hydrogen Cyanide Concentration	$= C_{HCN,\ ppmvd}^*27.0253^*7000/385,300,000$	$C_{HCN,\ lb/dscf}$	gr/dscf	3.6E-04	3.4E-04	3.5E-04	3.5E-04
Hydrogen Cyanide Emissions Rate	$=C_{HCN,\ gr/dscf}^*Q_{std}^*60/7000$	$E_{HCN,\ lb/hr}$	lb/hr	7.7E-01	6.7E-01	6.7E-01	7.0E-01
Hydrogen Fluoride Concentration	$= C_{HF,\ ppmvd}^*20.01^*7000/385,300,000$	$C_{HF,\ lb/dscf}$	gr/dscf	3.9E-05 BDL	3.8E-05 BDL	3.9E-05 BDL	3.9E-05 BDL
Hydrogen Fluoride Emissions Rate	$=C_{HF,\ gr/dscf}^*Q_{std}^*60/7000$	$E_{HF,\ lb/hr}$	lb/hr	8.2E-02 BDL	7.6E-02 BDL	7.5E-02 BDL	7.8E-02 BDL

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MONTROSE AIR QUALITY SERVICES

Method Sample Recovery & Calibration Check Datasheet

Project Information		Equipment Identification	
Date	11/29/2023	Ref. Thermometer	230441739
Project #	031486	Hygrometer	-
Customer / Facility	Cemex Construction Materials Florida	Field Balance	PCFS2
Unit ID / Sample Location	In-Line Kiln 1 (EU 020) Stack	Check Weights	1000195948
Run #	1, 2, & 3	Calipers	BHMCLP13
Operator	J.Fuller		

Balance Audit (Field balance must be within 0.5g of check weight mass)				Ambient Conditions (Mobile Lab)	
Date	11/29/2023			Relative humidity, %	51
Standard mass, g	500.0			Temperature, °F	68
Field balance mass, g	499.7				
Difference, g	0.3				

Moisture Determination

		Run 1			Run 2			Run 3		
	Contents	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g
Impinger 1	H_2SO_4	690.4	706.2	15.8	690.8	698.1	7.3	694.1	717.5	23.4
Impinger 2	H_2SO_4	795	813.9	18.9	694	715.3	21.3	795.3	810.4	15.1
Impinger 3	Empty	673.5	679.8	6.3	667.3	674.4	7.1	675.8	678.8	3
Impinger 4	NaOH	741.6	745.9	4.3	768.6	774.2	5.6	741.3	744.8	3.5
Impinger 5	NaOH	704.6	706.7	2.1	706.8	708.4	1.6	706.7	709.2	2.5
Impinger Net Gain, Vwc				47.4			42.9			47.5
Silica Gel, Vwsg		905.2	914.1	8.9	873.4	882.4	9	892.1	901.6	9.5
Train Net Gain, Vlc				56.3			51.9			57

Nozzle Measurements (Difference between any two measurements must not be more than 0.004 in (0.1 mm))

Nozzle 1 diameters	D1	0.390	D2	0.390	D3	0.390	Avg	0.390	Difference 0.000
Nozzle 2 diameters	D1		D2		D3		Avg		Difference
Nozzle 3 diameters	D1		D2		D3		Avg		Difference

Nozzle Material ☐ quartz ☑ glass ☐ steel ☐ titanium ☐ inconel ☐ other

Probe Type ☑ heated ☐ unheated ☐ air-cooled ☐ water-cooled ☐ other

Probe Liner ☐ quartz ☑ glass ☐ steel ☐ Teflon ☐ other

Filter Information

Front Half: ☐ quartz fiber ☐ glass fiber ☐ Teflon ☑ Teflon/quartz ☐ other

Reagent Information		Sample Observations
Type	Lot Number	
0.1N H2SO4	202307291732	
0.1N NaOH	202307291800	
Deionized Water	202307291630	

QA/QC Check: Completeness X Legibility X Accuracy X Specifications X

Checked by: N.Hendricks Data Custodian: J.Fuller

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 1 (EU 020) Stack

Test Date: 11/29/2023

Run Number: 1

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.10	0.3162	16.86	1.69	1.69	223	71
A-2	0.12	0.3464	16.86	2.02	2.02	223	68
A-3	0.11	0.3317	16.86	1.85	1.85	224	68
B-1	0.10	0.3162	16.86	1.69	1.69	224	68
B-2	0.11	0.3317	16.86	1.85	1.85	225	69
B-3	0.11	0.3317	16.86	1.85	1.85	224	71
C-1	0.11	0.3317	16.86	1.85	1.85	224	71
C-2	0.11	0.3317	16.86	1.85	1.85	223	71
C-3	0.11	0.3317	16.86	1.85	1.85	222	70
D-1	0.11	0.3317	16.86	1.85	1.85	223	72
D-2	0.10	0.3162	16.86	1.69	1.69	222	75
D-3	0.10	0.3162	16.86	1.69	1.69	223	75
Average:	0.11	0.3277	16.86	1.81	1.81	223.3	70.8
Max:	0.12	0.3464	16.86	2.02	2.02	225.0	75.0
Min:	0.10	0.3162	16.86	1.69	1.69	222.0	68.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 1 (EU 020) Stack

Test Date: 11/29/2023

Run Number: 2

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.10	0.3162	16.86	1.69	1.69	220	76
A-2	0.10	0.3162	16.86	1.69	1.69	219	75
A-3	0.08	0.2828	16.86	1.35	1.35	218	76
B-1	0.08	0.2828	16.86	1.35	1.35	216	76
B-2	0.11	0.3317	16.86	1.85	1.85	217	76
B-3	0.10	0.3162	16.86	1.69	1.69	219	77
C-1	0.08	0.2828	16.86	1.35	1.35	220	77
C-2	0.10	0.3162	16.86	1.69	1.69	222	77
C-3	0.08	0.2828	16.86	1.35	1.35	222	77
D-1	0.08	0.2828	16.86	1.35	1.35	228	77
D-2	0.11	0.3317	16.86	1.85	1.85	228	78
D-3	0.08	0.2828	16.86	1.35	1.35	229	78
Average:	0.09	0.3021	16.86	1.55	1.55	221.5	76.7
Max:	0.11	0.3317	16.86	1.85	1.85	229.0	78.0
Min:	0.08	0.2828	16.86	1.35	1.35	216.0	75.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 1 (EU 020) Stack

Test Date: 11/29/2023

Run Number: 3

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.10	0.3162	16.86	1.69	1.69	240	76
A-2	0.10	0.3162	16.86	1.69	1.69	238	77
A-3	0.08	0.2828	16.86	1.35	1.35	224	78
B-1	0.10	0.3162	16.86	1.69	1.69	237	83
B-2	0.09	0.3000	16.86	1.52	1.52	237	84
B-3	0.07	0.2646	16.86	1.18	1.18	232	85
C-1	0.10	0.3162	16.86	1.69	1.69	233	85
C-2	0.10	0.3162	16.86	1.69	1.69	234	85
C-3	0.08	0.2828	16.86	1.35	1.35	229	84
D-1	0.10	0.3162	16.86	1.69	1.69	232	85
D-2	0.08	0.2828	16.86	1.35	1.35	233	86
D-3	0.08	0.2828	16.86	1.35	1.35	237	86
Average:	0.09	0.2994	16.86	1.52	1.52	233.8	82.8
Max:	0.10	0.3162	16.86	1.69	1.69	240.0	86.0
Min:	0.07	0.2646	16.86	1.18	1.18	224.0	76.0

Source Overview

SOURCE OWNER:	Cemex Construction Materials Florida
PLANT LOCATION (CITY / STATE):	Brooksville, Florida
SOURCE(S) NAME(S):	In-Line Kiln 1 (EU 020) Stack
SOURCE(S) CONDITION:	EPA §114 ICR
PROCESS CONDITION:	Mill On
METHOD 26A SAMPLING TRAIN ID:	Method 26A Sampling Train B
SOURCE(S) SHAPE:	Circular
PROBE WASH CHEMICAL:	Acetone
SOURCE PERMIT NUMBER:	0530021-088-AV

REFERENCE METHOD TESTS:

Sample Location	US EPA	Method	1
Volumetric Flow	US EPA	Method	2
Oxygen	US EPA	Method	3A
Hydrogen Fluoride	US EPA	Method	26A
Chlorine	US EPA	Method	26A
Carbon Dioxide	US EPA	Method	320
Moisture Content	US EPA	Method	320

PROJECT MANAGER	Jose Medina
ENVIRONMENTAL ANALYST - ASSISTANT	Todd Gregg, Steven Metosh, Joshua Fuller
OWNER'S REPRESENTATIVE:	Greg Bridge
RULING AGENCY :	Florida Department of Environmental Protection
DATE(S) TEST CONDUCTED:	11/29/2023
MONTROSE PROJECT NUMBER:	031486

In-Line Kiln 1 (EU 020) Stack

Emissions Summary

Test Performed For:	Cemex Construction Materials Florida	Testing Performed By:
	Brooksville, Florida	Montrose Air Quality Services
Source(s) Tested:	In-Line Kiln 1 (EU 020) Stack	Project Manager:
Test Condition:	EPA §114 ICR	Jose Medina
Process Condition:	Mill On	
Test(s) Performed:	Hydrogen fluoride, chlorine, & hydrogen cyanide emissions	
Sampling Train ID:	Method 26A Sampling Train B	

Run Number		Run 1	Run 2	Run 3	Average
Date of Run		11/29/23	11/29/23	11/29/23	-
Test Run Time Start - End		10:10-11:12	12:45-13:50	14:39-15:41	-
Clinker Processed Rate	Short Tons/hr	64.8	64.9	65.3	65.0
Oxygen Concentration	%(dry)	17.01	17.03	16.74	16.93
Carbon Dioxide Concentration	%(dry)	6.27	6.39	6.83	6.50
Isokinetic Sampling Rate	%	99.83	98.08	99.24	99.05
Stack Temperature	°F	224.0	222.0	235.1	227.0
Moisture Content	% volume	5.88	5.79	5.86	5.84
Stack Gas Velocity	f/s	19.59	22.04	22.51	21.38
Stack Gas Flow @ Actual Conditions	acfm	321,056	361,266	368,925	350,415
Stack Gas Flow @ Standard Conditions	scfm	248,333	280,255	280,245	269,611
Stack Gas Flow @ Dry Standard Conditions	dscfm	233,738	264,027	263,816	253,860
Hydrogen Fluoride Collected	µg	105.0	39.1	24.2	56.1
Hydrogen Fluoride Concentration	ppmvd	1.0E-01	3.5E-02	2.2E-02	5.4E-02
Hydrogen Fluoride Concentration	ppmvd @ 7 %O2	3.8E-01	1.3E-01	7.2E-02	1.9E-01
Hydrogen Fluoride Concentration	gr/dscf	3.8E-05	1.3E-05	7.8E-06	2.0E-05
Hydrogen Fluoride Emissions Rate	lb/hr	7.6E-02	2.9E-02	1.8E-02	4.1E-02
Hydrogen Fluoride Emissions Rate	lb/ton	1.2E-03	4.5E-04	2.7E-04	6.3E-04
Chlorine Collected	µg	74.0	405.0	33.6	170.9
Chlorine Concentration	ppmvd	2.1E-02	1.0E-01	8.4E-03	4.4E-02
Chlorine Concentration	ppmvd @ 7 %O2	7.5E-02	3.7E-01	2.8E-02	1.6E-01
Chlorine Concentration	gr/dscf	2.7E-05	1.3E-04	1.1E-05	5.7E-05
Chlorine Emissions Rate	lb/hr	5.4E-02	3.0E-01	2.5E-02	1.3E-01
Chlorine Emissions Rate	lb/ton	8.3E-04	4.6E-03	3.8E-04	1.9E-03

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Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

INPUT TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031486

Source: In-Line Kiln 1 (EU 020) Stack — Data Input By: Jose Medina

Process: Mill On

Field Data	Symbol	Units	Test Data			
Run Number	-	-	1	2	3	AVERAGE
Test Date	-	-	11/29/23	11/29/23	11/29/23	-
Test Run Time Start - End	-	Military Time	10:10-11:12	12:45-13:50	14:39-15:41	-
Sampling Time	θ	minutes	60	60	60	60
Stack Area	A_s	Ft^2	273.18	273.18	273.18	-
Barometric Pressure at Ground Level	$P_{barground}$	in. Hg	30.22	30.22	30.16	30.20
Elevation of Sampling Location	Esam	ft	200	200	200	200
Barometric Pressure at Sampling Location	P_{bar}	in. Hg	30.02	30.02	29.96	30.00
Stack Static Pressure	P_g	in. H_20	-0.48	-0.48	-0.48	-0.48
Pitot Tube Correction factor	C_p	-	0.84	0.84	0.84	0.84
Meter Calibration Factor	Y	-	0.985	0.985	0.985	0.985
Meter Delta H @	$\Delta H@$	in. H_20	1.833	1.833	1.833	1.833
Nozzle Diameter	D_n	inches	0.390	0.390	0.390	0.390
Initial Meter Volume	V_{mi}	dcf	878.188	920.299	968.094	-
Final Meter Volume	V_{mf}	dcf	920.160	967.945	1016.409	-
Total Meter Volume	V_m	dcf	41.972	47.646	48.315	45.978
Meter Temperature	t_m	°F	57.1	69.5	70.1	65.56
Actual Orifice Pressure Differential (Average Delta H)	ΔH	in. H_20	1.59	2.03	2.08	1.90
Impingers Weight Gain (Moisture)	W_{imp}	grams	46.9	50.3	53.3	50.2
Silica Gel Impinger Weight Gain (Moisture)	W_{sg}	grams	9.4	11.2	9.7	10.1
Avg. Sq. Rt. of Delta P	$(sqrt\ \Delta P)_{avg}$	$(in.\ H_2O)^{1/2}$	0.3076	0.3468	0.3507	0.3351
Stack Temperature	t_s	°F	224.0	222.0	235.1	227.0
Hydrogen Fluoride Collected	$mn_{HF,\ \mu g}$	μg_{HF}	105.0	39.1	24.2	56.1
Hydrogen Fluoride Concentration	$C_{HF,\ ppmvd}$	ppmvd	1.0E-01	3.5E-02	2.2E-02	5.4E-02
Hydrogen Fluoride Concentration @ 7 $\%O_2$	$C_{HF,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	3.8E-01	1.3E-01	7.2E-02	1.9E-01
Chlorine Collected	$mn_{Cl2,\ \mu g}$	μg_{Cl2}	74.0	405.0	33.6	170.9
Chlorine Concentration	$C_{Cl2,\ ppmvd}$	ppmvd	2.1E-02	1.0E-01	8.4E-03	4.4E-02
Chlorine Concentration @ 7 $\%O_2$	$C_{Cl2,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	7.5E-02	3.7E-01	2.8E-02	1.6E-01
Method 3A O_2 Concentration Data						
Oxygen Concentration, dry basis	$\%O_2$	% (d)	17.01	17.03	16.74	16.93
Method 320 Moisture Fraction & Concentration Data						
Carbon Dioxide Concentration, wet basis	$\%CO_2$	% (w)	5.90	6.02	6.43	6.12
Carbon Dioxide Concentration, dry basis	$\%CO_2$	% (d)	6.27	6.39	6.83	6.50
Moisture Fraction	B_{ws}	dimensionless	0.0579	0.0606	0.0611	0.0599

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

CALCULATED TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031486

Source: In-Line Kiln 1 (EU 020) Stack — Input By: Jose Medina

Process: Mill On

Description	Formulas	Symbol	Units	Calculated Data			
Run Number		-	-	1	2	3	AVERAGE
Test Date		-	-	11/29/23	11/29/23	11/29/23	-
Test Run Time Start - End		-	Military Time	10:10-11:12	12:45-13:50	14:39-15:41	-
Stack Pressure	$= P_{bar} + P_g / 13.6$	P_s	in. Hg	29.98	29.98	29.92	29.96
Meter Pressure	$= P_{bar} + \Delta H / 13.6$	P_m	in. Hg	30.14	30.17	30.11	30.14
Standard Meter Volume	$= (T_{std}/P_{std})^* Y^* (V_m/T_m)^* (P_{bar} + \Delta H / 13.6)$	$V_{m(std)}$	dscf	42.522	47.188	47.709	45.806
Standard Volume of Water Vapor Condensed	$=0.04716^*W_{imp}$	$V_{wc(std)}$	scf	2.212	2.372	2.514	2.366
Standard Volume of Water Collected in Silica Gel	$=0.04716^*W_{sg}$	$V_{wsg(std)}$	scf	0.443	0.528	0.457	0.476
Total Standard Volume of Water Collected	$=V_{wc(std)imp} + V_{wsg(std)sg}$	$V_{wc(std)}$	scf	2.655	2.900	2.971	2.842
Moisture Fraction	$=(V_{wc(std)})/(V_{wc(std)} + V_{m(std)})$	B_{ws}	fraction	0.0588	0.0579	0.0586	0.0584
Moisture Fraction @ Saturation (Theoretical)	$=10^{[6.6911-(3144/(ts+390.86))]}/P_s$	TB_{ws}	fraction	1.2614	1.2138	1.5569	1.3440
Molecular Weight Of Stack Gas, dry basis	=0.32(O2)+0.44(CO2)+0.28(100-O2-CO2))	M_d	lb/lb-mole	29.6835	29.7034	29.7625	29.7165
Molecular Weight Of Stack Gas, wet basis	$= M_d^*(1-B_{ws})+18.015^*(B_{ws})$	M_s	lb/lb-mole	28.9978	29.0266	29.0738	29.0327
Average Stack Gas Velocity	$= 85.49^*C_p^*(\text{sqrt }\Delta P)_{avg}{}^*SQRT((T_s) / (P_s^*M_w))$	v_s	ft/s	19.59	22.04	22.51	21.379
Stack Gas Flow @ Actual Conditions	$= 60^*v_s^*A_s$	Q_a	acfm	321,056	361,266	368,925	350,415
Stack Gas Flow @ Standard Conditions	$= Q_a^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_s	scfm	248,333	280,255	280,245	269,611
Stack Gas Flow @ Dry Standard Conditions	$= Q_a^*(1-B_{ws})^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_{std}	dscfm	233,738	264,027	263,816	253,860
Volume Collected Through Nozzle	$=T_s/P_s^*[0.002669^*V_{lc}+ V_m^*Y^*P_m/T_m]$	V_n	acf	58.401	64.559	66.710	63.223
Isokinetic Sampling Rate, Percent	$= 100^*Vn / (60^*v_s^*A_n^*\theta)$	I	%	99.8	98.1	99.2	99.1
Post-test DGM Coefficient (EMC ALT-009 Y_{qa})		y_{qa}	-	0.9722	0.9763	0.9742	0.9742
Post-test Meter Orifice Calibration Check % Difference (Calibration must be within 5% of original Y-factor):							1.09%
Hydrogen Fluoride Concentration	$=1.543E\text{-}05^*(mn_{HF,\ \mu g})/V_{m(std)}$	C_{HF}	gr/dscf	3.8E-05	1.3E-05	7.8E-06	2.0E-05
Hydrogen Fluoride Emissions Rate	$=(60/7000)^*C_{HF}^*Q_{std}$	lb/hr_{HF}	lb/hr	7.6E-02	2.9E-02	1.8E-02	4.1E-02
Chlorine Concentration	$=1.543E\text{-}05^*(mn_{Cl2,\ \mu g})/V_{m(std)}$	C_{Cl2}	gr/dscf	2.7E-05	1.3E-04	1.1E-05	5.7E-05
Chlorine Gas Emissions	$=(60/7000)^*C_{Cl2}^*Q_{std}$	lb/hr_{Cl2}	lb/hr	5.4E-02	3.0E-01	2.5E-02	1.3E-01

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[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

MONTROSE AIR QUALITY SERVICES

Method Sample Recovery & Calibration Check Datasheet

Project Information		Equipment Identification	
Date	11/29/2023	Ref. Thermometer	230441739
Project #	031486	Hygrometer	-
Customer / Facility	Cemex Construction Materials Florida	Field Balance	PCFS2
Unit ID / Sample Location	In-Line Kiln 1 (EU 020) Stack	Check Weights	1000195948
Run #	1, 2, & 3	Calipers	BHMCLP13
Operator	S.Metosh		

Balance Audit (Field balance must be within 0.5g of check weight mass)				Ambient Conditions (Mobile Lab)	
Date	11/29/2023			Relative humidity, %	51
Standard mass, g	500.0			Temperature, °F	68
Field balance mass, g	499.8				
Difference, g	0.2				

Moisture Determination

		Run 1			Run 2			Run 3		
	Contents	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g
Impinger 1	H_2SO_4	731.5	749.5	18	690.2	706.1	15.9	735.1	759.2	24.1
Impinger 2	H_2SO_4	616.8	634.7	17.9	760.2	781.1	20.9	625.3	644	18.7
Impinger 3	Empty	664.1	669	4.9	652.6	658	5.4	665.8	670.1	4.3
Impinger 4	NaOH	723.1	726.6	3.5	707.3	712.7	5.4	729.8	734	4.2
Impinger 5	NaOH	761.9	764.5	2.6	710.6	713.3	2.7	764.8	766.8	2
Impinger Net Gain, Vwc				46.9			50.3			53.3
Silica Gel, Vwsg		880	889.4	9.4	908.7	919.9	11.2	889.4	899.1	9.7
Train Net Gain, Vlc				56.3			61.5			63

Nozzle Measurements (Difference between any two measurements must not be more than 0.004 in (0.1 mm))

Nozzle 1 diameters	D1	0.390	D2	0.390	D3	0.390	Avg	0.390	Difference 0.000
Nozzle 2 diameters	D1		D2		D3		Avg		Difference
Nozzle 3 diameters	D1		D2		D3		Avg		Difference

Nozzle Material ☐ quartz ☑ glass ☐ steel ☐ titanium ☐ inconel ☐ other

Probe Type ☑ heated ☐ unheated ☐ air-cooled ☐ water-cooled ☐ other

Probe Liner ☐ quartz ☑ glass ☐ steel ☐ Teflon ☐ other

Filter Information

Front Half: ☐ quartz fiber ☐ glass fiber ☐ Teflon ☐ Teflon/quartz ☐ other

Reagent Information		Sample Observations
Type	Lot Number	
0.1N H2SO4	202307291732	
0.1N NaOH	202307291800	
Deionized Water	202307291630	

QA/QC Check: Completeness X Legibility X Accuracy X Specifications X

Checked by: N.Hendricks Data Custodian: S.Metosh

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 1 (EU 020) Stack

Test Date: 11/29/2023

Run Number: 1

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.11	0.3317	16.77	1.84	1.84	224	52
A-2	0.10	0.3162	16.77	1.68	1.68	224	53
A-3	0.08	0.2828	16.77	1.34	1.34	223	55
B-1	0.10	0.3162	16.77	1.68	1.68	225	55
B-2	0.09	0.3000	16.77	1.51	1.51	225	56
B-3	0.08	0.2828	16.77	1.34	1.34	224	57
C-1	0.11	0.3317	16.77	1.84	1.84	225	58
C-2	0.10	0.3162	16.77	1.68	1.68	226	59
C-3	0.08	0.2828	16.77	1.34	1.34	222	59
D-1	0.11	0.3317	16.77	1.84	1.84	223	60
D-2	0.10	0.3162	16.77	1.68	1.68	224	60
D-3	0.08	0.2828	16.77	1.34	1.34	223	61
Average:	0.10	0.3076	16.77	1.59	1.59	224.0	57.1
Max:	0.11	0.3317	16.77	1.84	1.84	226.0	61.0
Min:	0.08	0.2828	16.77	1.34	1.34	222.0	52.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 1 (EU 020) Stack

Test Date: 11/29/2023

Run Number: 2

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.12	0.3464	16.77	2.01	2.01	223	66
A-2	0.13	0.3606	16.77	2.18	2.18	222	67
A-3	0.11	0.3317	16.77	1.84	1.84	219	67
B-1	0.13	0.3606	16.77	2.18	2.18	221	68
B-2	0.13	0.3606	16.77	2.18	2.18	221	69
B-3	0.11	0.3317	16.77	1.84	1.84	218	70
C-1	0.13	0.3606	16.77	2.18	2.18	221	70
C-2	0.13	0.3606	16.77	2.18	2.18	223	70
C-3	0.11	0.3317	16.77	1.84	1.84	221	71
D-1	0.14	0.3742	16.77	2.35	2.35	224	71
D-2	0.13	0.3606	16.77	2.18	2.18	228	72
D-3	0.08	0.2828	16.77	1.34	1.34	223	73
Average:	0.12	0.3468	16.77	2.03	2.03	222.0	69.5
Max:	0.14	0.3742	16.77	2.35	2.35	228.0	73.0
Min:	0.08	0.2828	16.77	1.34	1.34	218.0	66.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 1 (EU 020) Stack

Test Date: 11/29/2023

Run Number: 3

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.13	0.3606	16.77	2.18	2.18	241	67
A-2	0.11	0.3317	16.77	1.84	1.84	238	67
A-3	0.08	0.2828	16.77	1.34	1.34	234	68
B-1	0.14	0.3742	16.77	2.35	2.35	239	68
B-2	0.14	0.3742	16.77	2.35	2.35	238	69
B-3	0.09	0.3000	16.77	1.51	1.51	233	69
C-1	0.14	0.3742	16.77	2.35	2.35	234	70
C-2	0.15	0.3873	16.77	2.52	2.52	233	71
C-3	0.14	0.3742	16.77	2.35	2.35	231	72
D-1	0.15	0.3873	16.77	2.52	2.52	233	73
D-2	0.12	0.3464	16.77	2.01	2.01	234	73
D-3	0.10	0.3162	16.77	1.68	1.68	233	74
Average:	0.12	0.3507	16.77	2.08	2.08	235.1	70.1
Max:	0.15	0.3873	16.77	2.52	2.52	241.0	74.0
Min:	0.08	0.2828	16.77	1.34	1.34	231.0	67.0

Appendix A.15
Calculations/Results - Brooksville Kiln 1 Stack Raw Mill Off

Source Overview

SOURCE OWNER:	Cemex Construction Materials Florida
PLANT LOCATION (CITY / STATE):	Brooksville, Florida
SOURCE(S) NAME(S):	In-Line Kiln 1 (EU 020) Stack
SOURCE(S) CONDITION:	EPA §114 ICR
PROCESS CONDITION:	Mill Off
METHOD 26A SAMPLING TRAIN ID:	Method 26A Sampling Train A
SOURCE(S) SHAPE:	Circular
PROBE WASH CHEMICAL:	Acetone
SOURCE PERMIT NUMBER:	0530021-088-AV

REFERENCE METHOD TESTS:

Sample Location	US EPA	Method	1
Volumetric Flow	US EPA	Method	2
Oxygen	US EPA	Method	3A
Hydrogen Fluoride	US EPA	Method	26A
Chlorine	US EPA	Method	26A
Carbon Dioxide	US EPA	Method	320
Moisture Content	US EPA	Method	320
Hydrogen Fluoride	US EPA	Method	320
Hydrogen Cyanide	US EPA	Method	320

PROJECT MANAGER	Todd Gregg
ENVIRONMENTAL ANALYST - ASSISTANT	David Capers, Jordan Young, JT Satterfield
OWNER'S REPRESENTATIVE:	Greg Bridge
RULING AGENCY :	Florida Department of Environmental Protection
DATE(S) TEST CONDUCTED:	6/5/2024
MONTROSE PROJECT NUMBER:	031486

In-Line Kiln 1 (EU 020) Stack

Emissions Summary

Test Performed For:	Cemex Construction Materials Florida	Testing Performed By:
	Brooksville, Florida	Montrose Air Quality Services
Source(s) Tested:	In-Line Kiln 1 (EU 020) Stack	Project Manager:
Test Condition:	EPA §114 ICR	Todd Gregg
Process Condition:	Mill Off	
Test(s) Performed:	Hydrogen fluoride, chlorine, & hydrogen cyanide emissions	
Sampling Train ID:	Method 26A Sampling Train A	

Run Number		Run 1	Run 2	Run 3	Average
Date of Run		6/5/24	6/5/24	6/5/24	-
Test Run Time Start - End		8:00-9:10	9:25-10:35	10:50-12:00	-
Clinker Processed Rate	Short Tons/hr	56.9	56.9	56.9	56.9
Oxygen Concentration	%(dry)	17.19	17.23	17.27	17.23
Carbon Dioxide Concentration	%(dry)	6.37	6.36	6.31	6.35
Isokinetic Sampling Rate	%	101.52	100.66	101.34	101.17
Stack Temperature	°F	296.9	325.2	320.3	314.1
Moisture Content	% volume	5.94	5.28	5.14	5.45
Stack Gas Velocity	f/s	21.30	22.30	21.57	21.72
Stack Gas Flow @ Actual Conditions	acfm	349,153	365,513	353,475	356,047
Stack Gas Flow @ Standard Conditions	scfm	241,473	243,853	237,283	240,870
Stack Gas Flow @ Dry Standard Conditions	dscfm	227,127	230,972	225,095	227,732
Hydrogen Fluoride Collected	µg	42.2	28.8	19.9	30.3
Hydrogen Fluoride Concentration	ppmvd	4.1E-02	2.7E-02	1.9E-02	2.9E-02
Hydrogen Fluoride Concentration	ppmvd @ 7 %O2	1.5E-01	1.0E-01	7.4E-02	1.1E-01
Hydrogen Fluoride Concentration	gr/dscf	1.5E-05	1.0E-05	7.0E-06	1.1E-05
Hydrogen Fluoride Emissions Rate	lb/hr	2.9E-02	2.0E-02	1.4E-02	2.1E-02
Hydrogen Fluoride Emissions Rate	lb/ton	5.0E-04	3.5E-04	2.4E-04	3.6E-04
Chlorine Collected	µg	110.0	59.6	44.0	71.2
Chlorine Concentration	ppmvd	3.0E-02	1.6E-02	1.2E-02	1.9E-02
Chlorine Concentration	ppmvd @ 7 %O2	1.1E-01	6.1E-02	4.6E-02	7.3E-02
Chlorine Concentration	gr/dscf	3.8E-05	2.1E-05	1.6E-05	2.5E-05
Chlorine Emissions Rate	lb/hr	7.5E-02	4.1E-02	3.0E-02	4.9E-02
Chlorine Emissions Rate	lb/ton	1.3E-03	7.2E-04	5.3E-04	8.5E-04
Hydrogen Cyanide Collected	ppmvw	1.2	1.2	1.3	1.2
Hydrogen Cyanide Concentration	ppmvd	1.3E+00	1.3E+00	1.3E+00	1.3E+00
Hydrogen Cyanide Concentration	ppmvd @ 7 %O2	4.7E+00	5.0E+00	5.1E+00	4.9E+00
Hydrogen Cyanide Concentration	gr/dscf	6.2E-04	6.4E-04	6.6E-04	6.4E-04
Hydrogen Cyanide Emissions Rate	lb/hr	1.2E+00	1.3E+00	1.3E+00	1.2E+00
Hydrogen Cyanide Emissions Rate	lb/ton	2.1E-02	2.2E-02	2.2E-02	2.2E-02
Hydrogen Fluoride Collected (Method 320)	ppmvw	0.1 BDL	0.1 BDL	0.1 BDL	0.1 BDL
Hydrogen Fluoride Concentration (Method 320)	ppmvd	1.1E-01 BDL	1.1E-01 BDL	1.1E-01 BDL	1.1E-01 BDL
Hydrogen Fluoride Concentration (Method 320)	ppmvd @ 7 %O2	4.0E-01 BDL	4.0E-01 BDL	4.0E-01 BDL	4.0E-01 BDL
Hydrogen Fluoride Concentration (Method 320)	gr/dscf	3.9E-05 BDL	3.8E-05 BDL	3.8E-05 BDL	3.8E-05 BDL
Hydrogen Fluoride Emissions Rate (Method 320)	lb/hr	7.5E-02 BDL	7.6E-02 BDL	7.4E-02 BDL	7.5E-02 BDL
Hydrogen Fluoride Emissions Rate (Method 320)	lb/ton	1.3E-03 BDL	1.3E-03 BDL	1.3E-03 BDL	1.3E-03 BDL

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[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

INPUT TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031486

Source: In-Line Kiln 1 (EU 020) Stack — Data Input By: Todd Gregg

Process: Mill Off

Field Data	Symbol	Units	Test Data			
Run Number	-	-	1	2	3	AVERAGE
Test Date	-	-	06/05/24	06/05/24	06/05/24	-
Test Run Time Start - End	-	Military Time	8:00-9:10	9:25-10:35	10:50-12:00	-
Sampling Time	θ	minutes	60	60	60	60
Stack Area	A_s	Ft^2	273.18	273.18	273.18	-
Barometric Pressure at Ground Level	$P_{barground}$	in. Hg	29.91	29.93	29.93	29.92
Elevation of Sampling Location	Esam	ft	200	200	200	200
Barometric Pressure at Sampling Location	P_{bar}	in. Hg	29.71	29.73	29.73	29.72
Stack Static Pressure	P_g	in. H_20	-0.55	-0.55	-0.55	-0.55
Pitot Tube Correction factor	C_p	-	0.84	0.84	0.84	0.84
Meter Calibration Factor	Y	-	0.989	0.989	0.989	0.989
Meter Delta H @	$\Delta H@$	in. H_20	1.824	1.824	1.824	1.824
Nozzle Diameter	D_n	inches	0.400	0.400	0.400	0.400
Initial Meter Volume	V_{mi}	dcf	686.670	732.910	780.390	-
Final Meter Volume	V_{mf}	dcf	732.810	780.110	827.070	-
Total Meter Volume	V_m	dcf	46.140	47.200	46.680	46.673
Meter Temperature	t_m	°F	83.7	92.1	96.4	90.72
Actual Orifice Pressure Differential (Average Delta H)	ΔH	in. H_20	1.79	1.89	1.81	1.83
Impingers Weight Gain (Moisture)	W_{imp}	grams	44.7	38.7	36.9	40.1
Silica Gel Impinger Weight Gain (Moisture)	W_{sg}	grams	14.5	14.0	13.3	13.9
Avg. Sq. Rt. of Delta P	$(sqrt\ \Delta P)_{avg}$	$(in.\ H_20)^{1/2}$	0.3164	0.3257	0.3161	0.3194
Stack Temperature	t_s	°F	296.9	325.2	320.3	314.1
Hydrogen Fluoride Collected	$mn_{HF,\ \mu g}$	μg_{HF}	42.2	28.8	19.9	30.3
Hydrogen Fluoride Concentration	$C_{HF,\ ppmvd}$	ppmvd	4.1E-02	2.7E-02	1.9E-02	2.9E-02
Hydrogen Fluoride Concentration @ 7 $\%O_2$	$C_{HF,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	1.5E-01	1.0E-01	7.4E-02	1.1E-01
Chlorine Collected	$mn_{Cl2,\ \mu g}$	μg_{Cl2}	110.0	59.6	44.0	71.2
Chlorine Concentration	$C_{Cl2,\ ppmvd}$	ppmvd	3.0E-02	1.6E-02	1.2E-02	1.9E-02
Chlorine Concentration @ 7 $\%O_2$	$C_{Cl2,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	1.1E-01	6.1E-02	4.6E-02	7.3E-02
Method 3A O_2 Concentration Data						
Oxygen Concentration, dry basis	$\%O_2$	% (d)	17.19	17.23	17.27	17.23
Method 320 Moisture Fraction & Concentration Data						
Carbon Dioxide Concentration, wet basis	$\%CO_2$	% (w)	5.99	6.02	5.99	6.00
Carbon Dioxide Concentration, dry basis	$\%CO_2$	% (d)	6.37	6.36	6.31	6.35
Moisture Fraction	B_{ws}	dimensionless	0.0545	0.0517	0.0505	0.0522
Hydrogen Cyanide Concentration, Wet Basis	$C_{HCN,\ ppmvw}$	ppmvw	1.18	1.24	1.27	1.23
Hydrogen Cyanide Concentration, Dry Basis	$C_{HCN,\ ppmvd}$	ppmvd	1.3E+00	1.3E+00	1.3E+00	1.3E+00
Hydrogen Cyanide Concentration @ 7 $\%O_2$	$C_{HCN,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	4.7E+00	5.0E+00	5.1E+00	4.9E+00
Hydrogen Fluoride Concentration, Wet Basis	$C_{HF,\ ppmvw}$	ppmvw	0.1 BDL	0.1 BDL	0.1 BDL	0.1 BDL
Hydrogen Fluoride Concentration, Dry Basis	$C_{HF,\ ppmvd}$	ppmvd	1.1E-01 BDL	1.1E-01 BDL	1.1E-01 BDL	1.1E-01 BDL
Hydrogen Fluoride Concentration @ 7 $\%O_2$	$C_{HF,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	4.0E-01 BDL	4.0E-01 BDL	4.0E-01 BDL	4.0E-01 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

CALCULATED TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031486

Source: In-Line Kiln 1 (EU 020) Stack — Input By: Todd Gregg

Process: Mill Off

Description	Formulas	Symbol	Units	Calculated Data			
Run Number		-	-	1	2	3	AVERAGE
Test Date		-	-	06/05/24	06/05/24	06/05/24	-
Test Run Time Start - End		-	Military Time	8:00-9:10	9:25-10:35	10:50-12:00	-
Stack Pressure	$= P_{bar} + P_g / 13.6$	P_s	in. Hg	29.67	29.69	29.69	29.68
Meter Pressure	$= P_{bar} + \Delta H / 13.6$	P_m	in. Hg	29.84	29.87	29.86	29.86
Standard Meter Volume	$= (T_{std}/P_{std})^* Y^* (V_m/T_m)^* (P_{bar} + \Delta H / 13.6)$	$V_{m(std)}$	dscf	44.201	44.568	43.724	44.164
Standard Volume of Water Vapor Condensed	$=0.04716^*W_{imp}$	$V_{wc(std)}$	scf	2.108	1.825	1.740	1.891
Standard Volume of Water Collected in Silica Gel	$=0.04716^*W_{sg}$	$V_{wsg(std)}$	scf	0.684	0.660	0.627	0.657
Total Standard Volume of Water Collected	$=V_{wc(std)imp} + V_{wsg(std)sg}$	$V_{wc(std)}$	scf	2.792	2.485	2.367	2.548
Moisture Fraction	$=(V_{wc(std)})/(V_{wc(std)} + V_{m(std)})$	B_{ws}	fraction	0.0594	0.0528	0.0514	0.0545
Moisture Fraction @ Saturation (Theoretical)	$=10^{[6.6911-(3144/(ts+390.86))]}/P_s$	TB_{ws}	fraction	4.4416	6.7235	6.2771	5.8141
Molecular Weight Of Stack Gas, dry basis	=0.32(O2)+0.44(CO2)+0.28(100-O2-CO2))	M_d	lb/lb-mole	29.7067	29.7061	29.7012	29.7047
Molecular Weight Of Stack Gas, wet basis	$= M_d^*(1-B_{ws})+18.015^*(B_{ws})$	M_s	lb/lb-mole	29.0121	29.0886	29.1009	29.0672
Average Stack Gas Velocity	$= 85.49^*C_p^*(\text{sqrt } \Delta P)_{avg}^*SQRT((T_s) / (P_s^*M_w))$	v_s	ft/s	21.30	22.30	21.57	21.722
Stack Gas Flow @ Actual Conditions	$= 60^*v_s^*A_s$	Q_a	acfm	349,153	365,513	353,475	356,047
Stack Gas Flow @ Standard Conditions	$= Q_a^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_s	scfm	241,473	243,853	237,283	240,870
Stack Gas Flow @ Dry Standard Conditions	$= Q_a^*(1-B_{ws})^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_{std}	dscfm	227,127	230,972	225,095	227,732
Volume Collected Through Nozzle	$=T_s/P_s^*[0.002669^*V_{lc}+ V_m^*Y^*P_m/T_m]$	V_n	acf	67.941	70.521	68.654	69.039
Isokinetic Sampling Rate, Percent	$= 100^*Vn / (60^*v_s^*A_n^*\theta)$	I	%	101.5	100.7	101.3	101.2
Post-test DGM Coefficient (EMC ALT-009 Y_{qa})		y_{qa}	-	0.9594	0.9725	0.9580	0.9633
Post-test Meter Orifice Calibration Check % Difference (Calibration must be within 5% of original Y-factor):							2.60%
Hydrogen Fluoride Concentration	$=1.543E\text{-}05^*(mn_{HF,\ \mu g})/V_{m(std)}$	C_{HF}	gr/dscf	1.5E-05	1.0E-05	7.0E-06	1.1E-05
Hydrogen Fluoride Emissions Rate	$=(60/7000)^*C_{HF}^*Q_{std}$	lb/hr_{HF}	lb/hr	2.9E-02	2.0E-02	1.4E-02	2.1E-02
Chlorine Concentration	$=1.543E\text{-}05^*(mn_{Cl2,\ \mu g})/V_{m(std)}$	C_{Cl2}	gr/dscf	3.8E-05	2.1E-05	1.6E-05	2.5E-05
Chlorine Gas Emissions	$=(60/7000)^*C_{Cl2}^*Q_{std}$	lb/hr_{Cl2}	lb/hr	7.5E-02	4.1E-02	3.0E-02	4.9E-02
Method 320 Concentration & Emissions Data							
Hydrogen Cyanide Concentration	$= C_{HCN,\ ppmvd}^*27.0253^*7000/385,300,000$	$C_{HCN,\ lb/dscf}$	gr/dscf	6.2E-04	6.4E-04	6.6E-04	6.4E-04
Hydrogen Cyanide Emissions Rate	$=C_{HCN,\ gr/dscf}^*Q_{std}^*60/7000$	$E_{HCN,\ lb/hr}$	lb/hr	1.2E+00	1.3E+00	1.3E+00	1.2E+00
Hydrogen Fluoride Concentration	$= C_{HF,\ ppmvd}^*20.01^*7000/385,300,000$	$C_{HF,\ lb/dscf}$	gr/dscf	3.9E-05 BDL	3.8E-05 BDL	3.8E-05 BDL	3.8E-05 BDL
Hydrogen Fluoride Emissions Rate	$=C_{HF,\ gr/dscf}^*Q_{std}^*60/7000$	$E_{HF,\ lb/hr}$	lb/hr	7.5E-02 BDL	7.6E-02 BDL	7.4E-02 BDL	7.5E-02 BDL

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MONTROSE AIR QUALITY SERVICES

Method Sample Recovery & Calibration Check Datasheet

Project Information		Equipment Identification	
Date	6/5/2024	Ref. Thermometer	240123543
Project #	031486	Hygrometer	210403500
Customer / Facility	Cemex Construction Materials Florida	Field Balance	TG-1
Unit ID / Sample Location	In-Line Kiln 1 (EU 020) Stack	Check Weights	3511
Run #	1, 2, & 3	Calipers	CA1116
Operator	J.Young		

Balance Audit (Field balance must be within 0.5g of check weight mass)				Ambient Conditions (Mobile Lab)	
Date	6/4/2024	6/5/2024		Relative humidity, %	63
Standard mass, g	1000.0	1000.0		Temperature, °F	69
Field balance mass, g	1000.1	1000.1			
Difference, g	-0.1	-0.1			

Moisture Determination

		Run 1			Run 2			Run 3		
	Contents	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g
Impinger 1	H_2SO_4	678.2	694	15.8	693.6	702	8.4	685.9	682.5	-3.4
Impinger 2	H_2SO_4	757	775.3	18.3	689.4	705.8	16.4	758	777.4	19.4
Impinger 3	Empty	591.2	597.1	5.9	606.9	615.3	8.4	596.2	607.1	10.9
Impinger 4	NaOH	729.8	731.7	1.9	700.8	702.5	1.7	731.3	737.4	6.1
Impinger 5	NaOH	703.3	706.1	2.8	715.7	719.5	3.8	706.4	710.3	3.9
Impinger Net Gain, Vwc				44.7			38.7			36.9
Silica Gel, Vwsg		923.6	938.1	14.5	949.3	963.3	14	938.1	951.4	13.3
Train Net Gain, Vlc				59.2			52.7			50.2

Nozzle Measurements (Difference between any two measurements must not be more than 0.004 in (0.1 mm))

Nozzle 1 diameters	D1	0.400	D2	0.400	D3	0.400	Avg	0.400	Difference 0.000
Nozzle 2 diameters	D1		D2		D3		Avg		Difference
Nozzle 3 diameters	D1		D2		D3		Avg		Difference

Nozzle Material ☐ quartz ☑ glass ☐ steel ☐ titanium ☐ inconel ☐ other

Probe Type ☑ heated ☐ unheated ☐ air-cooled ☐ water-cooled ☐ other

Probe Liner ☐ quartz ☑ glass ☐ steel ☐ Teflon ☐ other

Filter Information

Front Half: ☐ quartz fiber ☐ glass fiber ☐ Teflon ☑ Teflon/quartz ☐ other

Reagent Information		Sample Observations
Type	Lot Number	
0.1N H2SO4	202405241600	
0.1N NaOH	202405241500	
Deionized Water	202405241200	

QA/QC Check: Completeness X Legibility X Accuracy X Specifications X

Checked by: N.Hendricks Data Custodian: J.Young

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 1 (EU 020) Stack

Test Date: 6/5/2024

Run Number: 1

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.13	0.3606	17.49	2.27	2.27	304	80
A-2	0.13	0.3606	17.49	2.27	2.27	293	80
A-3	0.05	0.2236	17.49	0.87	0.87	238	80
B-1	0.13	0.3606	17.49	2.27	2.27	290	80
B-2	0.11	0.3317	17.49	1.92	1.92	302	83
B-3	0.07	0.2646	17.49	1.22	1.22	290	84
C-1	0.12	0.3464	17.49	2.10	2.10	306	85
C-2	0.10	0.3162	17.49	1.75	1.75	309	85
C-3	0.05	0.2236	17.49	0.87	0.87	300	86
D-1	0.12	0.3464	17.49	2.10	2.10	301	86
D-2	0.12	0.3464	17.49	2.10	2.10	315	87
D-3	0.10	0.3162	17.49	1.75	1.75	315	88
Average:	0.10	0.3164	17.49	1.79	1.79	296.9	83.7
Max:	0.13	0.3606	17.49	2.27	2.27	315.0	88.0
Min:	0.05	0.2236	17.49	0.87	0.87	238.0	80.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 1 (EU 020) Stack

Test Date: 6/5/2024

Run Number: 2

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.13	0.3606	17.49	2.27	2.27	320	89
A-2	0.13	0.3606	17.49	2.27	2.27	326	89
A-3	0.07	0.2646	17.49	1.22	1.22	325	89
B-1	0.13	0.3606	17.49	2.27	2.27	327	90
B-2	0.12	0.3464	17.49	2.10	2.10	330	91
B-3	0.07	0.2646	17.49	1.22	1.22	322	91
C-1	0.13	0.3606	17.49	2.27	2.27	327	92
C-2	0.13	0.3606	17.49	2.27	2.27	330	93
C-3	0.06	0.2449	17.49	1.05	1.05	328	94
D-1	0.13	0.3606	17.49	2.27	2.27	325	95
D-2	0.13	0.3606	17.49	2.27	2.27	322	96
D-3	0.07	0.2646	17.49	1.22	1.22	320	96
Average:	0.11	0.3257	17.49	1.89	1.89	325.2	92.1
Max:	0.13	0.3606	17.49	2.27	2.27	330.0	96.0
Min:	0.06	0.2449	17.49	1.05	1.05	320.0	89.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 1 (EU 020) Stack

Test Date: 6/5/2024

Run Number: 3

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.14	0.3742	17.49	2.45	2.45	330	96
A-2	0.12	0.3464	17.49	2.10	2.10	330	96
A-3	0.05	0.2236	17.49	0.87	0.87	291	97
B-1	0.12	0.3464	17.49	2.10	2.10	315	97
B-2	0.13	0.3606	17.49	2.27	2.27	327	97
B-3	0.05	0.2236	17.49	0.87	0.87	330	97
C-1	0.13	0.3606	17.49	2.27	2.27	314	97
C-2	0.12	0.3464	17.49	2.10	2.10	328	96
C-3	0.06	0.2449	17.49	1.05	1.05	320	96
D-1	0.13	0.3606	17.49	2.27	2.27	312	96
D-2	0.13	0.3606	17.49	2.27	2.27	320	96
D-3	0.06	0.2449	17.49	1.05	1.05	327	96
Average:	0.10	0.3161	17.49	1.81	1.81	320.3	96.4
Max:	0.14	0.3742	17.49	2.45	2.45	330.0	97.0
Min:	0.05	0.2236	17.49	0.87	0.87	291.0	96.0

Source Overview

SOURCE OWNER:	Cemex Construction Materials Florida
PLANT LOCATION (CITY / STATE):	Brooksville, Florida
SOURCE(S) NAME(S):	In-Line Kiln 1 (EU 020) Stack
SOURCE(S) CONDITION:	EPA §114 ICR
PROCESS CONDITION:	Mill Off
METHOD 26A SAMPLING TRAIN ID:	Method 26A Sampling Train B
SOURCE(S) SHAPE:	Circular
PROBE WASH CHEMICAL:	Acetone
SOURCE PERMIT NUMBER:	0530021-088-AV

REFERENCE METHOD TESTS:

Sample Location	US EPA	Method	1
Volumetric Flow	US EPA	Method	2
Oxygen	US EPA	Method	3A
Hydrogen Fluoride	US EPA	Method	26A
Chlorine	US EPA	Method	26A
Carbon Dioxide	US EPA	Method	320
Moisture Content	US EPA	Method	320

PROJECT MANAGER	Todd Gregg
ENVIRONMENTAL ANALYST - ASSISTANT	David Capers, JT Satterfield, Jordan Young
OWNER'S REPRESENTATIVE:	Greg Bridge
RULING AGENCY :	Florida Department of Environmental Protection
DATE(S) TEST CONDUCTED:	6/5/2024
MONTROSE PROJECT NUMBER:	031486

In-Line Kiln 1 (EU 020) Stack

Emissions Summary

Test Performed For:	Cemex Construction Materials Florida	Testing Performed By:
	Brooksville, Florida	Montrose Air Quality Services
Source(s) Tested:	In-Line Kiln 1 (EU 020) Stack	Project Manager:
Test Condition:	EPA §114 ICR	Todd Gregg
Process Condition:	Mill Off	
Test(s) Performed:	Hydrogen fluoride, chlorine, & hydrogen cyanide emissions	
Sampling Train ID:	Method 26A Sampling Train B	

Run Number		Run 1	Run 2	Run 3	Average
Date of Run		6/5/24	6/5/24	6/5/24	-
Test Run Time Start - End		8:00-9:10	9:25-10:25	14:39-15:41	-
Clinker Processed Rate	Short Tons/hr	56.9	56.9	56.9	56.9
Oxygen Concentration	%(dry)	17.19	17.23	17.27	17.23
Carbon Dioxide Concentration	%(dry)	6.37	6.40	6.36	6.37
Isokinetic Sampling Rate	%	98.96	99.37	97.90	98.74
Stack Temperature	^{o}F	301.4	301.1	301.1	301.2
Moisture Content	% volume	5.94	5.90	5.75	5.87
Stack Gas Velocity	f/s	22.41	21.91	21.73	22.02
Stack Gas Flow @ Actual Conditions	acfm	367,383	359,202	356,117	360,901
Stack Gas Flow @ Standard Conditions	scfm	252,664	247,158	245,047	248,290
Stack Gas Flow @ Dry Standard Conditions	dscfm	237,651	232,563	230,958	233,724
Hydrogen Fluoride Collected	µg	40.4	56.7	56.7	51.3
Hydrogen Fluoride Concentration	ppmvd	4.2E-02	6.0E-02	6.2E-02	5.5E-02
Hydrogen Fluoride Concentration	ppmvd @ 7 %O2	1.6E-01	2.3E-01	2.4E-01	2.1E-01
Hydrogen Fluoride Concentration	gr/dscf	1.5E-05	2.2E-05	2.2E-05	2.0E-05
Hydrogen Fluoride Emissions Rate	lb/hr	3.1E-02	4.4E-02	4.4E-02	4.0E-02
Hydrogen Fluoride Emissions Rate	lb/ton	5.5E-04	7.7E-04	7.8E-04	7.0E-04
Chlorine Collected	µg	53.5	81.6	60.9	65.3
Chlorine Concentration	ppmvd	1.6E-02	2.4E-02	1.9E-02	2.0E-02
Chlorine Concentration	ppmvd @ 7 %O2	5.9E-02	9.3E-02	7.1E-02	7.4E-02
Chlorine Concentration	gr/dscf	2.0E-05	3.1E-05	2.4E-05	2.5E-05
Chlorine Emissions Rate	lb/hr	4.1E-02	6.3E-02	4.8E-02	5.1E-02
Chlorine Emissions Rate	lb/ton	7.3E-04	1.1E-03	8.4E-04	8.9E-04

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Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

INPUT TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031486

Source: In-Line Kiln 1 (EU 020) Stack — Data Input By: Todd Gregg

Process: Mill Off

Field Data	Symbol	Units	Test Data			
Run Number	-	-	1	2	3	AVERAGE
Test Date	-	-	06/05/24	06/05/24	06/05/24	-
Test Run Time Start - End	-	Military Time	8:00-9:10	9:25-10:25	14:39-15:41	-
Sampling Time	θ	minutes	60	60	60	60
Stack Area	A_s	Ft^2	273.18	273.18	273.18	-
Barometric Pressure at Ground Level	$P_{barground}$	in. Hg	29.92	29.92	29.92	29.92
Elevation of Sampling Location	Esam	ft	200	200	200	200
Barometric Pressure at Sampling Location	P_{bar}	in. Hg	29.72	29.72	29.72	29.72
Stack Static Pressure	P_g	in. H_20	-0.55	-0.53	-0.51	-0.53
Pitot Tube Correction factor	C_p	-	0.84	0.84	0.84	0.84
Meter Calibration Factor	Y	-	0.997	0.997	0.997	0.997
Meter Delta H @	$\Delta H@$	in. H_20	1.874	1.874	1.874	1.874
Nozzle Diameter	D_n	inches	0.380	0.380	0.380	0.380
Initial Meter Volume	V_{mi}	dcf	976.102	18.440	60.651	-
Final Meter Volume	V_{mf}	dcf	1018.250	60.430	102.220	-
Total Meter Volume	V_m	dcf	42.148	41.990	41.569	41.902
Meter Temperature	t_m	°F	83.8	91.3	97.7	90.94
Actual Orifice Pressure Differential (Average Delta H)	ΔH	in. H_20	1.60	1.54	1.52	1.55
Impingers Weight Gain (Moisture)	W_{imp}	grams	39.9	42.8	40.9	41.2
Silica Gel Impinger Weight Gain (Moisture)	W_{sg}	grams	14.6	10.4	9.7	11.6
Avg. Sq. Rt. of Delta P	$(sqrt\ \Delta P)_{avg}$	$(in.\ H_2O)^{1/2}$	0.3320	0.3247	0.3220	0.3262
Stack Temperature	t_s	°F	301.4	301.1	301.1	301.2
Hydrogen Fluoride Collected	$mn_{HF,\ \mu g}$	μg_{HF}	40.4	56.7	56.7	51.3
Hydrogen Fluoride Concentration	$C_{HF,\ ppmvd}$	ppmvd	4.2E-02	6.0E-02	6.2E-02	5.5E-02
Hydrogen Fluoride Concentration @ 7 $\%O_2$	$C_{HF,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	1.6E-01	2.3E-01	2.4E-01	2.1E-01
Chlorine Collected	$mn_{Cl2,\ \mu g}$	μg_{Cl2}	53.5	81.6	60.9	65.3
Chlorine Concentration	$C_{Cl2,\ ppmvd}$	ppmvd	1.6E-02	2.4E-02	1.9E-02	2.0E-02
Chlorine Concentration @ 7 $\%O_2$	$C_{Cl2,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	5.9E-02	9.3E-02	7.1E-02	7.4E-02
Method 3A O_2 Concentration Data						
Oxygen Concentration, dry basis	$\%O_2$	% (d)	17.19	17.23	17.27	17.23
Method 320 Moisture Fraction & Concentration Data						
Carbon Dioxide Concentration, wet basis	$\%CO_2$	% (w)	5.99	6.02	5.99	6.00
Carbon Dioxide Concentration, dry basis	$\%CO_2$	% (d)	6.37	6.40	6.36	6.37
Moisture Fraction	B_{ws}	dimensionless	0.0545	0.0517	0.0505	0.0522

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Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

CALCULATED TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031486

Source: In-Line Kiln 1 (EU 020) Stack — Input By: Todd Gregg

Process: Mill Off

Description	Formulas	Symbol	Units	Calculated Data			
Run Number		-	-	1	2	3	AVERAGE
Test Date		-	-	06/05/24	06/05/24	06/05/24	-
Test Run Time Start - End		-	Military Time	8:00-9:10	9:25-10:25	14:39-15:41	-
Stack Pressure	$= P_{bar} + P_g / 13.6$	P_s	in. Hg	29.68	29.68	29.68	29.68
Meter Pressure	$= P_{bar} + \Delta H / 13.6$	P_m	in. Hg	29.84	29.83	29.83	29.83
Standard Meter Volume	$= (T_{std}/P_{std})^* Y^* (V_m/T_m)^* (P_{bar} + \Delta H / 13.6)$	$V_{m(std)}$	dscf	40.686	39.979	39.118	39.928
Standard Volume of Water Vapor Condensed	$=0.04716^*W_{imp}$	$V_{wc(std)}$	scf	1.882	2.018	1.929	1.943
Standard Volume of Water Collected in Silica Gel	$=0.04716^*W_{sg}$	$V_{wsg(std)}$	scf	0.689	0.490	0.457	0.545
Total Standard Volume of Water Collected	$=V_{wc(std)imp} + V_{wsg(std)sg}$	$V_{wc(std)}$	scf	2.570	2.509	2.386	2.488
Moisture Fraction	$=(V_{wc(std)})/(V_{wc(std)} + V_{m(std)})$	B_{ws}	fraction	0.0594	0.0590	0.0575	0.0587
Moisture Fraction @ Saturation (Theoretical)	$=10^{[6.6911-(3144/(ts+390.86))]}/P_s$	TB_{ws}	fraction	4.7545	4.7304	4.7301	4.7383
Molecular Weight Of Stack Gas, dry basis	=0.32(O2)+0.44(CO2)+0.28(100-O2-CO2))	M_d	lb/lb-mole	29.7067	29.7128	29.7078	29.7091
Molecular Weight Of Stack Gas, wet basis	$= M_d^*(1-B_{ws})+18.015^*(B_{ws})$	M_s	lb/lb-mole	29.0120	29.0221	29.0355	29.0232
Average Stack Gas Velocity	$= 85.49^*C_p^*(\text{sqrt }\Delta P)_{avg}^*SQRT((T_s) / (P_s^*M_w))$	v_s	ft/s	22.41	21.91	21.73	22.018
Stack Gas Flow @ Actual Conditions	$= 60^*v_s^*A_s$	Q_a	acfm	367,383	359,202	356,117	360,901
Stack Gas Flow @ Standard Conditions	$= Q_a^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_s	scfm	252,664	247,158	245,047	248,290
Stack Gas Flow @ Dry Standard Conditions	$= Q_a^*(1-B_{ws})^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_{std}	dscfm	237,651	232,563	230,958	233,724
Volume Collected Through Nozzle	$=T_s/P_s^*[0.002669^*V_{lc}+ V_m^*Y^*P_m/T_m]$	V_n	acf	62.890	61.743	60.310	61.647
Isokinetic Sampling Rate, Percent	$= 100^*Vn / (60^*v_s^*A_n^*\theta)$	I	%	99.0	99.4	97.9	98.7
Post-test DGM Coefficient (EMC ALT-009 Y_{qa})		y_{qa}	-	0.9883	0.9770	0.9845	0.9832
Post-test Meter Orifice Calibration Check % Difference (Calibration must be within 5% of original Y-factor):							1.38%
Hydrogen Fluoride Concentration	$=1.543E\text{-}05^*(mn_{HF,\ \mu g})/V_{m(std)}$	C_{HF}	gr/dscf	1.5E-05	2.2E-05	2.2E-05	2.0E-05
Hydrogen Fluoride Emissions Rate	$=(60/7000)^*C_{HF}^*Q_{std}$	lb/hr_{HF}	lb/hr	3.1E-02	4.4E-02	4.4E-02	4.0E-02
Chlorine Concentration	$=1.543E\text{-}05^*(mn_{Cl2,\ \mu g})/V_{m(std)}$	C_{Cl2}	gr/dscf	2.0E-05	3.1E-05	2.4E-05	2.5E-05
Chlorine Gas Emissions	$=(60/7000)^*C_{Cl2}^*Q_{std}$	lb/hr_{Cl2}	lb/hr	4.1E-02	6.3E-02	4.8E-02	5.1E-02

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Project Information		Equipment Identification	
Date	11/29/2023	Ref. Thermometer	240123543
Project #	031486	Hygrometer	210403500
Customer / Facility	Cemex Construction Materials Florida	Field Balance	TG-1
Unit ID / Sample Location	In-Line Kiln 1 (EU 020) Stack	Check Weights	3511
Run #	1, 2, & 3	Calipers	CA116
Operator	JT Satterfield		

Balance Audit (Field balance must be within 0.5g of check weight mass)				Ambient Conditions (Mobile Lab)	
Date	6/4/2024	6/5/2024		Relative humidity, %	63
Standard mass, g	1000.0	1000.0		Temperature, °F	69
Field balance mass, g	1000.1	1000.1			
Difference, g	-0.1	-0.1			

Moisture Determination

		Run 1			Run 2			Run 3		
	Contents	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g
Impinger 1	H_2SO_4	696.4	715.7	19.3	676.5	704.1	27.6	700.7	722.6	21.9
Impinger 2	H_2SO_4	686.1	701.4	15.3	682	691.3	9.3	692.1	702.6	10.5
Impinger 3	Empty	595.6	599.1	3.5	596.7	598.7	2	600.9	605.4	4.5
Impinger 4	NaOH	697.5	697.5	0	700.3	701.4	1.1	701.8	703.7	1.9
Impinger 5	NaOH	699.5	701.3	1.8	725.4	728.2	2.8	704.1	706.2	2.1
Impinger Net Gain, Vwc				39.9			42.8			40.9
Silica Gel, Vwsg		864.4	879	14.6	918.2	928.6	10.4	879	888.7	9.7
Train Net Gain, Vlc				54.5			53.2			50.6

Nozzle Measurements (Difference between any two measurements must not be more than 0.004 in (0.1 mm))

Nozzle 1 diameters	D1	0.380	D2	0.380	D3	0.380	Avg	0.380	Difference 0.000
Nozzle 2 diameters	D1		D2		D3		Avg		Difference
Nozzle 3 diameters	D1		D2		D3		Avg		Difference

Nozzle Material ☐ quartz ☑ glass ☐ steel ☐ titanium ☐ inconel ☐ other

Probe Type ☑ heated ☐ unheated ☐ air-cooled ☐ water-cooled ☐ other

Probe Liner ☐ quartz ☑ glass ☐ steel ☐ Teflon ☐ other

Filter Information

Front Half: ☐ quartz fiber ☐ glass fiber ☐ Teflon ☐ Teflon/quartz ☐ other

Reagent Information		Sample Observations
Type	Lot Number	
0.1N H2SO4	202405241600	
0.1N NaOH	202405241500	
Deionized Water	202405241200	

QA/QC Check: Completeness X Legibility X Accuracy X Specifications X

Checked by: N.Hendricks Data Custodian: JT Satterfield

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 1 (EU 020) Stack

Test Date: 6/5/2024

Run Number: 1

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.14	0.3742	14.45	2.02	2.02	300	-
A-2	0.11	0.3317	14.45	1.59	1.59	301	80
A-3	0.10	0.3162	14.45	1.44	1.44	302	81
B-1	0.13	0.3606	14.45	1.88	1.88	301	81
B-2	0.11	0.3317	14.45	1.59	1.59	300	82
B-3	0.09	0.3000	14.45	1.30	1.30	303	83
C-1	0.12	0.3464	14.45	1.73	1.73	301	84
C-2	0.13	0.3606	14.45	1.88	1.88	303	85
C-3	0.09	0.3000	14.45	1.30	1.30	302	86
D-1	0.12	0.3464	14.45	1.73	1.73	301	86
D-2	0.10	0.3162	14.45	1.44	1.44	301	87
D-3	0.09	0.3000	14.45	1.30	1.30	302	87
Average:	0.11	0.3320	14.45	1.60	1.60	301.4	83.8
Max:	0.14	0.3742	14.45	2.02	2.02	303.0	87.0
Min:	0.09	0.3000	14.45	1.30	1.30	300.0	80.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 1 (EU 020) Stack

Test Date: 6/5/2024

Run Number: 2

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.14	0.3742	14.45	2.02	2.02	300	-
A-2	0.12	0.3464	14.45	1.73	1.73	301	89
A-3	0.08	0.2828	14.45	1.16	1.16	302	89
B-1	0.13	0.3606	14.45	1.88	1.88	302	90
B-2	0.11	0.3317	14.45	1.59	1.59	301	91
B-3	0.08	0.2828	14.45	1.16	1.16	300	91
C-1	0.12	0.3464	14.45	1.73	1.73	301	91
C-2	0.11	0.3317	14.45	1.59	1.59	302	92
C-3	0.07	0.2646	14.45	1.01	1.01	300	92
D-1	0.12	0.3464	14.45	1.73	1.73	301	93
D-2	0.12	0.3464	14.45	1.73	1.73	301	93
D-3	0.08	0.2828	14.45	1.16	1.16	302	93
Average:	0.11	0.3247	14.45	1.54	1.54	301.1	91.3
Max:	0.14	0.3742	14.45	2.02	2.02	302.0	93.0
Min:	0.07	0.2646	14.45	1.01	1.01	300.0	89.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 1 (EU 020) Stack

Test Date: 6/5/2024

Run Number: 3

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.13	0.3606	14.45	1.88	1.88	301	-
A-2	0.11	0.3317	14.45	1.59	1.59	302	96
A-3	0.08	0.2828	14.45	1.16	1.16	300	97
B-1	0.12	0.3464	14.45	1.73	1.73	301	97
B-2	0.12	0.3464	14.45	1.73	1.73	302	97
B-3	0.07	0.2646	14.45	1.01	1.01	301	97
C-1	0.13	0.3606	14.45	1.88	1.88	300	98
C-2	0.11	0.3317	14.45	1.59	1.59	301	98
C-3	0.08	0.2828	14.45	1.16	1.16	302	98
D-1	0.13	0.3606	14.45	1.88	1.88	302	99
D-2	0.11	0.3317	14.45	1.59	1.59	301	99
D-3	0.07	0.2646	14.45	1.01	1.01	300	99
Average:	0.11	0.3220	14.45	1.52	1.52	301.1	97.7
Max:	0.13	0.3606	14.45	1.88	1.88	302.0	99.0
Min:	0.07	0.2646	14.45	1.01	1.01	300.0	96.0

Appendix A.16
Calculations/Results - Brooksville Kiln 2 Stack Raw Mill On

Source Overview

SOURCE OWNER:	Cemex Construction Materials Florida
PLANT LOCATION (CITY / STATE):	Brooksville, Florida
SOURCE(S) NAME(S):	In-Line Kiln 2 (EU 044) Stack
SOURCE(S) CONDITION:	EPA §114 ICR
PROCESS CONDITION:	Mill On
METHOD 26A SAMPLING TRAIN ID:	Method 26A Sampling Train A
SOURCE(S) SHAPE:	Circular
PROBE WASH CHEMICAL:	Acetone
SOURCE PERMIT NUMBER:	0530021-088-AV

REFERENCE METHOD TESTS:

Sample Location	US EPA	Method	1
Volumetric Flow	US EPA	Method	2
Oxygen	US EPA	Method	3A
Hydrogen Fluoride	US EPA	Method	26A
Chlorine	US EPA	Method	26A
Carbon Dioxide	US EPA	Method	320
Moisture Content	US EPA	Method	320
Hydrogen Fluoride	US EPA	Method	320
Hydrogen Cyanide	US EPA	Method	320

PROJECT MANAGER	Jose Medina
ENVIRONMENTAL ANALYST - ASSISTANT	Todd Gregg, Steven Metosh, Joshua Fuller
OWNER'S REPRESENTATIVE:	Greg Bridge
RULING AGENCY :	Florida Department of Environmental Protection
DATE(S) TEST CONDUCTED:	11/30/2023 12/1/2023
MONTROSE PROJECT NUMBER:	031486

In-Line Kiln 2 (EU 044) Stack

Emissions Summary

Test Performed For:	Cemex Construction Materials Florida	Testing Performed By:
	Brooksville, Florida	Montrose Air Quality Services
Source(s) Tested:	In-Line Kiln 2 (EU 044) Stack	Project Manager:
Test Condition:	EPA §114 ICR	Jose Medina
Process Condition:	Mill On	
Test(s) Performed:	Hydrogen fluoride, chlorine, & hydrogen cyanide emissions	
Sampling Train ID:	Method 26A Sampling Train A	

Run Number		Run 1	Run 2	Run 3	Average
Date of Run		11/30/23	12/1/23	12/1/23	-
Test Run Time Start - End		17:09-18:14	10:37-11:42	12:20-13:26	-
Clinker Processed Rate	Short Tons/hr	120.9	129.7	129.3	126.6
Oxygen Concentration	%(dry)	14.11	13.38	13.46	13.65
Carbon Dioxide Concentration	%(dry)	11.72	13.22	13.00	12.64
Isokinetic Sampling Rate	%	104.52	102.93	102.06	103.17
Stack Temperature	°F	229.8	239.2	240.5	236.5
Moisture Content	% volume	12.35	13.68	13.74	13.26
Stack Gas Velocity	f/s	81.80	76.77	79.82	79.46
Stack Gas Flow @ Actual Conditions	acfm	390,891	366,822	381,408	379,707
Stack Gas Flow @ Standard Conditions	scfm	298,419	276,615	287,067	287,367
Stack Gas Flow @ Dry Standard Conditions	dscfm	261,550	238,769	247,619	249,313
Hydrogen Fluoride Collected	µg	26.4 BDL	25.8 BDL	26.1 BDL	26.1 BDL
Hydrogen Fluoride Concentration	ppmvd	1.6E-02 BDL	1.7E-02 BDL	1.7E-02 BDL	1.7E-02 BDL
Hydrogen Fluoride Concentration	ppmvd @ 7 %O2	3.3E-02 BDL	3.2E-02 BDL	3.2E-02 BDL	3.2E-02 BDL
Hydrogen Fluoride Concentration	gr/dscf	5.8E-06 BDL	6.3E-06 BDL	6.2E-06 BDL	6.1E-06 BDL
Hydrogen Fluoride Emissions Rate	lb/hr	1.3E-02 BDL	1.3E-02 BDL	1.3E-02 BDL	1.3E-02 BDL
Hydrogen Fluoride Emissions Rate	lb/ton	1.1E-04 BDL	9.9E-05 BDL	1.0E-04 BDL	1.0E-04 BDL
Chlorine Collected	µg	18.9	18.1	18.2	18.4
Chlorine Concentration	ppmvd	3.2E-03	3.4E-03	3.4E-03	3.3E-03
Chlorine Concentration	ppmvd @ 7 %O2	6.6E-03	6.4E-03	6.3E-03	6.4E-03
Chlorine Concentration	gr/dscf	4.2E-06	4.4E-06	4.3E-06	4.3E-06
Chlorine Emissions Rate	lb/hr	9.3E-03	9.1E-03	9.2E-03	9.2E-03
Chlorine Emissions Rate	lb/ton	7.7E-05	7.0E-05	7.1E-05	7.3E-05
Hydrogen Cyanide Collected	ppmvw	3.5	4.2	4.1	3.9
Hydrogen Cyanide Concentration	ppmvd	4.0E+00	4.8E+00	4.8E+00	4.5E+00
Hydrogen Cyanide Concentration	ppmvd @ 7 %O2	8.1E+00	8.9E+00	8.9E+00	8.6E+00
Hydrogen Cyanide Concentration	gr/dscf	1.9E-03	2.4E-03	2.3E-03	2.2E-03
Hydrogen Cyanide Emissions Rate	lb/hr	4.4E+00	4.8E+00	5.0E+00	4.7E+00
Hydrogen Cyanide Emissions Rate	lb/ton	3.6E-02	3.7E-02	3.8E-02	3.7E-02
Hydrogen Fluoride Collected (Method 320)	ppmvw	0.1 BDL	0.1 BDL	0.1 BDL	0.1 BDL
Hydrogen Fluoride Concentration (Method 320)	ppmvd	1.1E-01 BDL	1.2E-01 BDL	1.2E-01 BDL	1.2E-01 BDL
Hydrogen Fluoride Concentration (Method 320)	ppmvd @ 7 %O2	2.3E-01 BDL	2.1E-01 BDL	2.2E-01 BDL	2.2E-01 BDL
Hydrogen Fluoride Concentration (Method 320)	gr/dscf	4.1E-05 BDL	4.2E-05 BDL	4.2E-05 BDL	4.2E-05 BDL
Hydrogen Fluoride Emissions Rate (Method 320)	lb/hr	9.3E-02 BDL	8.6E-02 BDL	8.9E-02 BDL	9.0E-02 BDL
Hydrogen Fluoride Emissions Rate (Method 320)	lb/ton	7.7E-04 BDL	6.6E-04 BDL	6.9E-04 BDL	7.1E-04 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

INPUT TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031486

Source: In-Line Kiln 2 (EU 044) Stack — Data Input By: Jose Medina

Process: Mill On

Field Data	Symbol	Units	Test Data			
Run Number	-	-	1	2	3	AVERAGE
Test Date	-	-	11/30/23	12/01/23	12/01/23	-
Test Run Time Start - End	-	Military Time	17:09-18:14	10:37-11:42	12:20-13:26	-
Sampling Time	θ	minutes	60	60	60	60
Stack Area	A_s	Ft^2	79.64	79.64	79.64	-
Barometric Pressure at Ground Level	$P_{barground}$	in. Hg	30.09	30.12	30.12	30.11
Elevation of Sampling Location	Esam	ft	200	200	200	200
Barometric Pressure at Sampling Location	P_{bar}	in. Hg	29.89	29.92	29.92	29.91
Stack Static Pressure	P_g	in. H_20	-0.58	-0.53	-0.53	-0.55
Pitot Tube Correction factor	C_p	-	0.84	0.84	0.84	0.84
Meter Calibration Factor	Y	-	0.998	0.998	0.998	0.998
Meter Delta H @	$\Delta H@$	in. H_20	1.872	1.872	1.872	1.872
Nozzle Diameter	D_n	inches	0.250	0.250	0.250	0.250
Initial Meter Volume	V_{mi}	dcf	262.430	333.998	398.755	-
Final Meter Volume	V_{mf}	dcf	332.856	398.622	465.321	-
Total Meter Volume	V_m	dcf	70.426	64.624	66.566	67.205
Meter Temperature	t_m	°F	73.8	84.3	85.7	81.28
Actual Orifice Pressure Differential (Average Delta H)	ΔH	in. H_20	4.55	3.75	4.04	4.12
Impingers Weight Gain (Moisture)	W_{imp}	grams	195.6	197.8	200.3	197.9
Silica Gel Impinger Weight Gain (Moisture)	W_{sg}	grams	14.3	14.4	19.0	15.9
Avg. Sq. Rt. of Delta P	$(sqrt\ \Delta P)_{avg}$	$(in.\ H_20)^{1/2}$	1.2742	1.1888	1.2341	1.2324
Stack Temperature	t_s	°F	229.8	239.2	240.5	236.5
Hydrogen Fluoride Collected	$mn_{HF,\ \mu g}$	μg_{HF}	26.4 BDL	25.8 BDL	26.1 BDL	26.1 BDL
Hydrogen Fluoride Concentration	$C_{HF,\ ppmvd}$	ppmvd	1.6E-02 BDL	1.7E-02 BDL	1.7E-02 BDL	1.7E-02 BDL
Hydrogen Fluoride Concentration @ 7 $\%O_2$	$C_{HF,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	3.3E-02 BDL	3.2E-02 BDL	3.2E-02 BDL	3.2E-02 BDL
Chlorine Collected	$mn_{Cl2,\ \mu g}$	μg_{Cl2}	18.9	18.1	18.2	18.4
Chlorine Concentration	$C_{Cl2,\ ppmvd}$	ppmvd	3.2E-03	3.4E-03	3.4E-03	3.3E-03
Chlorine Concentration @ 7 $\%O_2$	$C_{Cl2,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	6.6E-03	6.4E-03	6.3E-03	6.4E-03
Method 3A O_2 Concentration Data						
Oxygen Concentration, dry basis	$\%O_2$	% (d)	14.11	13.38	13.46	13.65
Method 320 Moisture Fraction & Concentration Data						
Carbon Dioxide Concentration, wet basis	$\%CO_2$	% (w)	10.27	11.41	11.21	10.96
Carbon Dioxide Concentration, dry basis	$\%CO_2$	% (d)	11.72	13.22	13.00	12.64
Moisture Fraction	B_{ws}	dimensionless	0.1286	0.1399	0.1440	0.1375
Hydrogen Cyanide Concentration, Wet Basis	$C_{HCN,\ ppmvw}$	ppmvw	3.48	4.15	4.12	3.92
Hydrogen Cyanide Concentration, Dry Basis	$C_{HCN,\ ppmvd}$	ppmvd	4.0E+00	4.8E+00	4.8E+00	4.5E+00
Hydrogen Cyanide Concentration @ 7 $\%O_2$	$C_{HCN,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	8.1E+00	8.9E+00	8.9E+00	8.6E+00
Hydrogen Fluoride Concentration, Wet Basis	$C_{HF,\ ppmvw}$	ppmvw	0.1 BDL	0.1 BDL	0.1 BDL	0.1 BDL
Hydrogen Fluoride Concentration, Dry Basis	$C_{HF,\ ppmvd}$	ppmvd	1.1E-01 BDL	1.2E-01 BDL	1.2E-01 BDL	1.2E-01 BDL
Hydrogen Fluoride Concentration @ 7 $\%O_2$	$C_{HF,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	2.3E-01 BDL	2.1E-01 BDL	2.2E-01 BDL	2.2E-01 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

CALCULATED TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031486

Source: In-Line Kiln 2 (EU 044) Stack — Input By: Jose Medina

Process: Mill On

Description	Formulas	Symbol	Units	Calculated Data			
Run Number		-	-	1	2	3	AVERAGE
Test Date		-	-	11/30/23	12/01/23	12/01/23	-
Test Run Time Start - End		-	Military Time	17:09-18:14	10:37-11:42	12:20-13:26	-
Stack Pressure	$= P_{bar} + P_g / 13.6$	P_s	in. Hg	29.85	29.88	29.88	29.87
Meter Pressure	$= P_{bar} + \Delta H / 13.6$	P_m	in. Hg	30.22	30.20	30.22	30.21
Standard Meter Volume	$= (T_{std}/P_{std})^* Y^* (V_m/T_m)^* (P_{bar} + \Delta H / 13.6)$	$V_{m(std)}$	dscf	70.224	63.136	64.919	66.093
Standard Volume of Water Vapor Condensed	$=0.04716^*W_{imp}$	$V_{wc(std)}$	scf	9.224	9.328	9.446	9.333
Standard Volume of Water Collected in Silica Gel	$=0.04716^*W_{sg}$	$V_{wsg(std)}$	scf	0.674	0.679	0.896	0.750
Total Standard Volume of Water Collected	$=V_{wc(std)imp} + V_{wsg(std)sg}$	$V_{wc(std)}$	scf	9.899	10.007	10.342	10.083
Moisture Fraction	$=(V_{wc(std)})/(V_{wc(std)} + V_{m(std)})$	B_{ws}	fraction	0.1235	0.1368	0.1374	0.1326
Moisture Fraction @ Saturation (Theoretical)	$=10^{[6.6911-(3144/(ts+390.86))]}/P_s$	TB_{ws}	fraction	1.4154	1.6805	1.7218	1.6059
Molecular Weight Of Stack Gas, dry basis	=0.32(O2)+0.44(CO2)+0.28(100-O2-CO2))	M_d	lb/lb-mole	30.4392	30.6503	30.6176	30.5691
Molecular Weight Of Stack Gas, wet basis	$= M_d^*(1-B_{ws})+18.015^*(B_{ws})$	M_s	lb/lb-mole	28.9043	28.9216	28.8858	28.9039
Average Stack Gas Velocity	$= 85.49^*C_p^*(\text{sqrt } \Delta P)_{avg}^*SQRT((T_s) / (P_s^*M_w))$	v_s	ft/s	81.80	76.77	79.82	79.463
Stack Gas Flow @ Actual Conditions	$= 60^*v_s^*A_s$	Q_a	acfm	390,891	366,822	381,408	379,707
Stack Gas Flow @ Standard Conditions	$= Q_a^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_s	scfm	298,419	276,615	287,067	287,367
Stack Gas Flow @ Dry Standard Conditions	$= Q_a^*(1-B_{ws})^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_{std}	dscfm	261,550	238,769	247,619	249,313
Volume Collected Through Nozzle	$=T_s/P_s^*[0.002669^*V_{lc}+ V_m^*Y^*P_m/T_m]$	V_n	acf	104.927	96.970	99.969	100.622
Isokinetic Sampling Rate, Percent	$= 100^*Vn / (60^*v_s^*A_n^*\theta)$	I	%	104.5	102.9	102.1	103.2
Post-test DGM Coefficient (EMC ALT-009 Y_{qa})		y_{qa}	-	0.9724	0.9683	0.9773	0.9727
Post-test Meter Orifice Calibration Check % Difference (Calibration must be within 5% of original Y-factor):							2.54%
Hydrogen Fluoride Concentration	$=1.543E\text{-}05^*(mn_{HF,\ \mu g})/V_{m(std)}$	C_{HF}	gr/dscf	6E-06 BDL	6.3E-06 BDL	6.2E-06 BDL	6.1E-06 BDL
Hydrogen Fluoride Emissions Rate	$=(60/7000)^*C_{HF}^*Q_{std}$	lb/hr_{HF}	lb/hr	1E-02 BDL	1.3E-02 BDL	1.3E-02 BDL	1.3E-02 BDL
Chlorine Concentration	$=1.543E\text{-}05^*(mn_{Cl2,\ \mu g})/V_{m(std)}$	C_{Cl2}	gr/dscf	4.2E-06	4.4E-06	4.3E-06	4.3E-06
Chlorine Gas Emissions	$=(60/7000)^*C_{Cl2}^*Q_{std}$	lb/hr_{Cl2}	lb/hr	9.3E-03	9.1E-03	9.2E-03	9.2E-03
Method 320 Concentration & Emissions Data							
Hydrogen Cyanide Concentration	$= C_{HCN,\ ppmvd}^*27.0253^*7000/385,300,000$	$C_{HCN,\ lb/dscf}$	gr/dscf	1.9E-03	2.4E-03	2.3E-03	2.2E-03
Hydrogen Cyanide Emissions Rate	$=C_{HCN,\ gr/dscf}^*Q_{std}^*60/7000$	$E_{HCN,\ lb/hr}$	lb/hr	4.4E+00	4.8E+00	5.0E+00	4.7E+00
Hydrogen Fluoride Concentration	$= C_{HF,\ ppmvd}^*20.01^*7000/385,300,000$	$C_{HF,\ lb/dscf}$	gr/dscf	4.1E-05 BDL	4.2E-05 BDL	4.2E-05 BDL	4.2E-05 BDL
Hydrogen Fluoride Emissions Rate	$=C_{HF,\ gr/dscf}^*Q_{std}^*60/7000$	$E_{HF,\ lb/hr}$	lb/hr	9.3E-02 BDL	8.6E-02 BDL	8.9E-02 BDL	9.0E-02 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

MONTROSE AIR QUALITY SERVICES

Method Sample Recovery & Calibration Check Datasheet

Project Information		Equipment Identification	
Date	11/30/23-12/1/23	Ref. Thermometer	230441739
Project #	031486	Hygrometer	-
Customer / Facility	Cemex Construction Materials Florida	Field Balance	PCFS2
Unit ID / Sample Location	In-Line Kiln 2 (EU 044) Stack	Check Weights	1000195948
Run #	1, 2, & 3	Calipers	BHMCLP13
Operator	J.Fuller		

Balance Audit (Field balance must be within 0.5g of check weight mass)				Ambient Conditions (Mobile Lab)	
Date	11/30/2023	12/1/2023		Relative humidity, %	73
Standard mass, g	500.0	500.0		Temperature, °F	76
Field balance mass, g	499.7	499.8			
Difference, g	0.3	0.0			

Moisture Determination

		Run 1			Run 2			Run 3		
	Contents	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g
Impinger 1	H_2SO_4	699.2	802.6	103.4	694	800.2	106.2	697.5	825.9	128.4
Impinger 2	H_2SO_4	696	759.8	63.8	795.8	858.8	63	694	748.5	54.5
Impinger 3	Empty	669.6	684.5	14.9	676.3	689.4	13.1	669	678.6	9.6
Impinger 4	NaOH	772.6	805.8	33.2	745.8	756.7	10.9	768.5	775.6	7.1
Impinger 5	NaOH	712.5	692.8	-19.7	714	718.6	4.6	709.1	709.8	0.7
Impinger Net Gain, Vwc				195.6			197.8			200.3
Silica Gel, Vwsg		850.7	865	14.3	954.3	968.7	14.4	959.7	978.7	19
Train Net Gain, Vlc				209.9			212.2			219.3

Nozzle Measurements (Difference between any two measurements must not be more than 0.004 in (0.1 mm))

Nozzle 1 diameters	D1	0.250	D2	0.250	D3	0.250	Avg	0.250	Difference 0.000
Nozzle 2 diameters	D1		D2		D3		Avg		Difference
Nozzle 3 diameters	D1		D2		D3		Avg		Difference

Nozzle Material ☐ quartz ☑ glass ☐ steel ☐ titanium ☐ inconel ☐ other

Probe Type ☑ heated ☐ unheated ☐ air-cooled ☐ water-cooled ☐ other

Probe Liner ☐ quartz ☑ glass ☐ steel ☐ Teflon ☐ other

Filter Information

Front Half: ☐ quartz fiber ☐ glass fiber ☐ Teflon ☑ Teflon/quartz ☐ other

Reagent Information		Sample Observations
Type	Lot Number	
0.1N H2SO4	202307291732	
0.1N NaOH	202307291800	
Deionized Water	202307291630	

QA/QC Check: Completeness X Legibility X Accuracy X Specifications X

Checked by: N.Hendricks Data Custodian: J.Fuller

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 2 (EU 044) Stack

Test Date: 11/30/2023

Run Number: 1

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	1.7	1.3038	2.80	4.76	4.76	228	72
A-2	1.6	1.2649	2.80	4.48	4.48	228	72
A-3	1.5	1.2247	2.80	4.20	4.20	229	73
B-1	1.7	1.3038	2.80	4.76	4.76	227	73
B-2	1.7	1.3038	2.80	4.76	4.76	226	74
B-3	1.6	1.2649	2.80	4.48	4.48	230	74
C-1	1.7	1.3038	2.80	4.76	4.76	229	74
C-2	1.7	1.3038	2.80	4.76	4.76	229	74
C-3	1.4	1.1832	2.80	3.92	3.92	230	75
D-1	1.7	1.3038	2.80	4.76	4.76	231	75
D-2	1.6	1.2649	2.80	4.48	4.48	234	75
D-3	1.6	1.2649	2.80	4.48	4.48	237	75
Average:	1.63	1.2742	2.80	4.55	4.55	229.8	73.8
Max:	1.70	1.3038	2.80	4.76	4.76	237.0	75.0
Min:	1.40	1.1832	2.80	3.92	3.92	226.0	72.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 2 (EU 044) Stack

Test Date: 12/1/2023

Run Number: 2

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	1.6	1.2649	2.65	4.24	4.24	241	80
A-2	1.5	1.2247	2.65	3.98	3.98	239	80
A-3	1.2	1.0954	2.65	3.18	3.18	238	81
B-1	1.6	1.2649	2.65	4.24	4.24	239	82
B-2	1.5	1.2247	2.65	3.98	3.98	239	84
B-3	1.3	1.1402	2.65	3.45	3.45	239	85
C-1	1.6	1.2649	2.65	4.24	4.24	239	86
C-2	1.5	1.2247	2.65	3.98	3.98	239	86
C-3	1.3	1.1402	2.65	3.45	3.45	239	87
D-1	1.3	1.1402	2.65	3.45	3.45	239	87
D-2	1.3	1.1402	2.65	3.45	3.45	239	87
D-3	1.3	1.1402	2.65	3.45	3.45	240	87
Average:	1.42	1.1888	2.65	3.75	3.75	239.2	84.3
Max:	1.60	1.2649	2.65	4.24	4.24	241.0	87.0
Min:	1.20	1.0954	2.65	3.18	3.18	238.0	80.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 2 (EU 044) Stack

Test Date: 12/1/2023

Run Number: 3

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	1.6	1.2649	2.65	4.24	4.24	239	82
A-2	1.5	1.2247	2.65	3.98	3.98	239	83
A-3	1.3	1.1402	2.65	3.45	3.45	239	83
B-1	1.6	1.2649	2.65	4.24	4.24	239	85
B-2	1.5	1.2247	2.65	3.98	3.98	239	85
B-3	1.5	1.2247	2.65	3.98	3.98	240	86
C-1	1.6	1.2649	2.65	4.24	4.24	241	86
C-2	1.6	1.2649	2.65	4.24	4.24	242	87
C-3	1.4	1.1832	2.65	3.71	3.71	244	87
D-1	1.7	1.3038	2.65	4.51	4.51	243	88
D-2	1.6	1.2649	2.65	4.24	4.24	241	88
D-3	1.4	1.1832	2.65	3.71	3.71	240	88
Average:	1.53	1.2341	2.65	4.04	4.04	240.5	85.7
Max:	1.70	1.3038	2.65	4.51	4.51	244.0	88.0
Min:	1.30	1.1402	2.65	3.45	3.45	239.0	82.0

Source Overview

SOURCE OWNER:	Cemex Construction Materials Florida			
PLANT LOCATION (CITY / STATE):	Brooksville, Florida			
SOURCE(S) NAME(S):	In-Line Kiln 2 (EU 044) Stack			
SOURCE(S) CONDITION:	EPA §114 ICR			
PROCESS CONDITION:	Mill On			
METHOD 26A SAMPLING TRAIN ID:	Method 26A Sampling Train B			
SOURCE(S) SHAPE:	Circular			
PROBE WASH CHEMICAL:	Acetone			
SOURCE PERMIT NUMBER:	0530021-088-AV			
REFERENCE METHOD TESTS:	Sample Location	US EPA	Method	1
	Volumetric Flow	US EPA	Method	2
	Oxygen	US EPA	Method	3A
	Hydrogen Fluoride	US EPA	Method	26A
	Chlorine	US EPA	Method	26A
	Carbon Dioxide	US EPA	Method	320
	Moisture Content	US EPA	Method	320
PROJECT MANAGER	Jose Medina			
ENVIRONMENTAL ANALYST - ASSISTANT	Todd Gregg, Steven Metosh, Joshua Fuller			
OWNER'S REPRESENTATIVE:	Greg Bridge			
RULING AGENCY :	Florida Department of Environmental Protection			
DATE(S) TEST CONDUCTED:	11/30/2023 12/1/2023			
MONTROSE PROJECT NUMBER:	031486			

In-Line Kiln 2 (EU 044) Stack

Emissions Summary

Test Performed For:	Cemex Construction Materials Florida	Testing Performed By:
	Brooksville, Florida	Montrose Air Quality Services
Source(s) Tested:	In-Line Kiln 2 (EU 044) Stack	Project Manager:
Test Condition:	EPA §114 ICR	Jose Medina
Process Condition:	Mill On	
Test(s) Performed:	Hydrogen fluoride, chlorine, & hydrogen cyanide emissions	
Sampling Train ID:	Method 26A Sampling Train B	

Run Number		Run 1	Run 2	Run 3	Average
Date of Run		11/30/23	12/1/23	12/1/23	-
Test Run Time Start - End		17:09-18:14	10:37-11:42	12:20-13:26	-
Clinker Processed Rate	Short Tons/hr	120.9	129.7	129.3	126.6
Oxygen Concentration	%(dry)	14.11	13.38	13.46	13.65
Carbon Dioxide Concentration	%(dry)	11.74	13.19	12.97	12.64
Isokinetic Sampling Rate	%	107.62	102.34	102.24	104.07
Stack Temperature	^{o}F	231.6	239.9	240.6	237.4
Moisture Content	% volume	12.54	13.50	13.58	13.21
Stack Gas Velocity	f/s	73.88	71.72	72.73	72.78
Stack Gas Flow @ Actual Conditions	acfm	353,022	342,707	347,546	347,759
Stack Gas Flow @ Standard Conditions	scfm	268,736	258,240	261,462	262,813
Stack Gas Flow @ Dry Standard Conditions	dscfm	235,028	223,367	225,962	228,119
Hydrogen Fluoride Collected	µg	26.2 BDL	25.2 BDL	25.3 BDL	25.6 BDL
Hydrogen Fluoride Concentration	ppmvd	1.7E-02 BDL	1.8E-02 BDL	1.8E-02 BDL	1.8E-02 BDL
Hydrogen Fluoride Concentration	ppmvd @ 7 %O2	3.5E-02 BDL	3.4E-02 BDL	3.4E-02 BDL	3.4E-02 BDL
Hydrogen Fluoride Concentration	gr/dscf	6.2E-06 BDL	6.6E-06 BDL	6.6E-06 BDL	6.5E-06 BDL
Hydrogen Fluoride Emissions Rate	lb/hr	1.3E-02 BDL	1.3E-02 BDL	1.3E-02 BDL	1.3E-02 BDL
Hydrogen Fluoride Emissions Rate	lb/ton	1.0E-04 BDL	9.8E-05 BDL	9.9E-05 BDL	1.0E-04 BDL
Chlorine Collected	µg	43.7	19.4	21.2	28.1
Chlorine Concentration	ppmvd	8.1E-03	4.0E-03	4.3E-03	5.4E-03
Chlorine Concentration	ppmvd @ 7 %O2	1.6E-02	7.3E-03	8.0E-03	1.1E-02
Chlorine Concentration	gr/dscf	1.0E-05	5.1E-06	5.5E-06	7.0E-06
Chlorine Emissions Rate	lb/hr	2.1E-02	9.8E-03	1.1E-02	1.4E-02
Chlorine Emissions Rate	lb/ton	1.7E-04	7.5E-05	8.3E-05	1.1E-04

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[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

INPUT TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031486

Source: In-Line Kiln 2 (EU 044) Stack — Data Input By: Jose Medina

Process: Mill On

Field Data	Symbol	Units	Test Data			
Run Number	-	-	1	2	3	AVERAGE
Test Date	-	-	11/30/23	12/01/23	12/01/23	-
Test Run Time Start - End	-	Military Time	17:09-18:14	10:37-11:42	12:20-13:26	-
Sampling Time	θ	minutes	60	60	60	60
Stack Area	A_s	Ft^2	79.64	79.64	79.64	-
Barometric Pressure at Ground Level	$P_{barground}$	in. Hg	30.08	30.13	30.11	30.11
Elevation of Sampling Location	Esam	ft	200	200	200	200
Barometric Pressure at Sampling Location	P_{bar}	in. Hg	29.88	29.93	29.91	29.91
Stack Static Pressure	P_g	in. H_20	-0.58	-0.53	-0.53	-0.55
Pitot Tube Correction factor	C_p	-	0.84	0.84	0.84	0.84
Meter Calibration Factor	Y	-	0.985	0.985	0.985	0.985
Meter Delta H @	$\Delta H@$	in. H_20	1.833	1.833	1.833	1.833
Nozzle Diameter	D_n	inches	0.250	0.250	0.250	0.250
Initial Meter Volume	V_{mi}	dcf	166.334	233.178	293.910	-
Final Meter Volume	V_{mf}	dcf	232.710	293.741	355.391	-
Total Meter Volume	V_m	dcf	66.376	60.563	61.481	62.807
Meter Temperature	t_m	°F	75.4	80.7	82.8	79.64
Actual Orifice Pressure Differential (Average Delta H)	ΔH	in. H_20	3.71	3.11	3.20	3.34
Impingers Weight Gain (Moisture)	W_{imp}	grams	183.8	181.1	185.8	183.6
Silica Gel Impinger Weight Gain (Moisture)	W_{sg}	grams	13.8	13.3	11.9	13.0
Avg. Sq. Rt. of Delta P	$(sqrt\ \Delta P)_{avg}$	$(in.\ H_2O)^{1/2}$	1.1487	1.1106	1.1246	1.1280
Stack Temperature	t_s	°F	231.6	239.9	240.6	237.4
Hydrogen Fluoride Collected	$mn_{HF,\ \mu g}$	μg_{HF}	26.2 BDL	25.2 BDL	25.3 BDL	25.6 BDL
Hydrogen Fluoride Concentration	$C_{HF,\ ppmvd}$	ppmvd	1.7E-02 BDL	1.8E-02 BDL	1.8E-02 BDL	1.8E-02 BDL
Hydrogen Fluoride Concentration @ 7 $\%O_2$	$C_{HF,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	3.5E-02 BDL	3.4E-02 BDL	3.4E-02 BDL	3.4E-02 BDL
Chlorine Collected	$mn_{Cl2,\ \mu g}$	μg_{Cl2}	43.7	19.4	21.2	28.1
Chlorine Concentration	$C_{Cl2,\ ppmvd}$	ppmvd	8.1E-03	4.0E-03	4.3E-03	5.4E-03
Chlorine Concentration @ 7 $\%O_2$	$C_{Cl2,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	1.6E-02	7.3E-03	8.0E-03	1.1E-02
Method 3A O_2 Concentration Data						
Oxygen Concentration, dry basis	$\%O_2$	% (d)	14.11	13.38	13.46	13.65
Method 320 Moisture Fraction & Concentration Data						
Carbon Dioxide Concentration, wet basis	$\%CO_2$	% (w)	10.27	11.41	11.21	10.96
Carbon Dioxide Concentration, dry basis	$\%CO_2$	% (d)	11.74	13.19	12.97	12.64
Moisture Fraction	B_{ws}	dimensionless	0.1286	0.1399	0.1440	0.1375

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[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

CALCULATED TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031486

Source: In-Line Kiln 2 (EU 044) Stack — Input By: Jose Medina

Process: Mill On

Description	Formulas	Symbol	Units	Calculated Data			
Run Number		-	-	1	2	3	AVERAGE
Test Date		-	-	11/30/23	12/01/23	12/01/23	-
Test Run Time Start - End		-	Military Time	17:09-18:14	10:37-11:42	12:20-13:26	-
Stack Pressure	$= P_{bar} + P_g / 13.6$	P_s	in. Hg	29.84	29.89	29.87	29.87
Meter Pressure	$= P_{bar} + \Delta H / 13.6$	P_m	in. Hg	30.15	30.16	30.15	30.15
Standard Meter Volume	$= (T_{std}/P_{std})^* Y^* (V_m/T_m)^* (P_{bar} + \Delta H / 13.6)$	$V_{m(std)}$	dscf	64.976	58.721	59.346	61.014
Standard Volume of Water Vapor Condensed	$=0.04716^*W_{imp}$	$V_{wc(std)}$	scf	8.668	8.541	8.762	8.657
Standard Volume of Water Collected in Silica Gel	$=0.04716^*W_{sg}$	$V_{wsg(std)}$	scf	0.651	0.627	0.561	0.613
Total Standard Volume of Water Collected	$=V_{wc(std)imp} + V_{wsg(std)sg}$	$V_{wc(std)}$	scf	9.319	9.168	9.324	9.270
Moisture Fraction	$=(V_{wc(std)})/(V_{wc(std)} + V_{m(std)})$	B_{ws}	fraction	0.1254	0.1350	0.1358	0.1321
Moisture Fraction @ Saturation (Theoretical)	$=10^{[6.6911-(3144/(ts+390.86))]}/P_s$	TB_{ws}	fraction	1.4631	1.7031	1.7250	1.6304
Molecular Weight Of Stack Gas, dry basis	=0.32(O2)+0.44(CO2)+0.28(100-O2-CO2))	M_d	lb/lb-mole	30.4433	30.6460	30.6137	30.5676
Molecular Weight Of Stack Gas, wet basis	$= M_d^*(1-B_{ws})+18.015^*(B_{ws})$	M_s	lb/lb-mole	28.8844	28.9403	28.9031	28.9092
Average Stack Gas Velocity	$= 85.49^*C_p^*(\text{sqrt }\Delta P)_{avg}^*SQRT((T_s) / (P_s^*M_w))$	v_s	ft/s	73.88	71.72	72.73	72.777
Stack Gas Flow @ Actual Conditions	$= 60^*v_s^*A_s$	Q_a	acfm	353,022	342,707	347,546	347,759
Stack Gas Flow @ Standard Conditions	$= Q_a^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_s	scfm	268,736	258,240	261,462	262,813
Stack Gas Flow @ Dry Standard Conditions	$= Q_a^*(1-B_{ws})^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_{std}	dscfm	235,028	223,367	225,962	228,119
Volume Collected Through Nozzle	$=T_s/P_s^*[0.002669^*V_{lc}+ V_m^*Y^*P_m/T_m]$	V_n	acf	97.573	90.072	91.255	92.967
Isokinetic Sampling Rate, Percent	$= 100^*Vn / (60^*v_s^*A_n^*\theta)$	I	%	107.6	102.3	102.2	104.1
Post-test DGM Coefficient (EMC ALT-009 Y_{qa})		y_{qa}	-	0.9424	0.9468	0.9471	0.9455
Post-test Meter Orifice Calibration Check % Difference (Calibration must be within 5% of original Y-factor):							4.01%
Hydrogen Fluoride Concentration	$=1.543E\text{-}05^*(mn_{HF,\ \mu g})/V_{m(std)}$	C_{HF}	gr/dscf	6.2E-06 BDL	6.6E-06 BDL	6.6E-06 BDL	6.5E-06 BDL
Hydrogen Fluoride Emissions Rate	$=(60/7000)^*C_{HF}^*Q_{std}$	lb/hr_{HF}	lb/hr	1.3E-02 BDL	1.3E-02 BDL	1.3E-02 BDL	1.3E-02 BDL
Chlorine Concentration	$=1.543E\text{-}05^*(mn_{Cl2,\ \mu g})/V_{m(std)}$	C_{Cl2}	gr/dscf	1.0E-05	5.1E-06	5.5E-06	7.0E-06
Chlorine Gas Emissions	$=(60/7000)^*C_{Cl2}^*Q_{std}$	lb/hr_{Cl2}	lb/hr	2.1E-02	9.8E-03	1.1E-02	1.4E-02

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

MONTROSE AIR QUALITY SERVICES

Method Sample Recovery & Calibration Check Datasheet

Project Information		Equipment Identification	
Date	11/30/23-12/1/23	Ref. Thermometer	230441739
Project #	031486	Hygrometer	-
Customer / Facility	Cemex Construction Materials Florida	Field Balance	PCFS2
Unit ID / Sample Location	In-Line Kiln 2 (EU 044) Stack	Check Weights	1000195948
Run #	1, 2, & 3	Calipers	BHMCLP13
Operator	S.Metosh		

Balance Audit (Field balance must be within 0.5g of check weight mass)				Ambient Conditions (Mobile Lab)	
Date	11/30/2023	12/1/2023		Relative humidity, %	73
Standard mass, g	500.0	500.0		Temperature, °F	76
Field balance mass, g	499.7	499.8			
Difference, g	0.3	0.0			

Moisture Determination

		Run 1			Run 2			Run 3		
	Contents	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g
Impinger 1	H_2SO_4	694	812.5	118.5	735	861.5	126.5	691.1	822.8	131.7
Impinger 2	H_2SO_4	765.1	815.1	50	624	668.4	44.4	764.4	805.4	41
Impinger 3	Empty	656.9	665	8.1	666	671.6	5.6	655.7	662.2	6.5
Impinger 4	NaOH	721	725.9	4.9	729.5	733.3	3.8	714	718.6	4.6
Impinger 5	NaOH	714.8	717.1	2.3	762.9	763.7	0.8	709.8	711.8	2
Impinger Net Gain, Vwc				183.8			181.1			185.8
Silica Gel, Vwsg		865.2	879	13.8	920.6	933.9	13.3	879	890.9	11.9
Train Net Gain, Vlc				197.6			194.4			197.7

Nozzle Measurements (Difference between any two measurements must not be more than 0.004 in (0.1 mm))

Nozzle 1 diameters	D1	0.250	D2	0.250	D3	0.250	Avg	0.250	Difference 0.000
Nozzle 2 diameters	D1		D2		D3		Avg		Difference
Nozzle 3 diameters	D1		D2		D3		Avg		Difference

Nozzle Material ☐ quartz ☑ glass ☐ steel ☐ titanium ☐ inconel ☐ other

Probe Type ☑ heated ☐ unheated ☐ air-cooled ☐ water-cooled ☐ other

Probe Liner ☐ quartz ☑ glass ☐ steel ☐ Teflon ☐ other

Filter Information

Front Half: ☐ quartz fiber ☐ glass fiber ☐ Teflon ☑ Teflon/quartz ☐ other

Reagent Information		Sample Observations
Type	Lot Number	
0.1N H2SO4	202307291732	
0.1N NaOH	202307291800	
Deionized Water	202307291630	

QA/QC Check: Completeness X Legibility X Accuracy X Specifications X

Checked by: N.Hendricks Data Custodian: S.Metosh

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 2 (EU 044) Stack

Test Date: 11/30/2023

Run Number: 1

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	1.5	1.2247	2.80	4.20	4.20	230	73
A-2	1.3	1.1402	2.80	3.64	3.64	230	72
A-3	1.1	1.0488	2.80	3.08	3.08	231	73
B-1	1.5	1.2247	2.80	4.20	4.20	229	74
B-2	1.3	1.1402	2.80	3.64	3.64	229	75
B-3	1.2	1.0954	2.80	3.36	3.36	232	76
C-1	1.6	1.2649	2.80	4.48	4.48	231	75
C-2	1.3	1.1402	2.80	3.64	3.64	230	76
C-3	1.1	1.0488	2.80	3.08	3.08	230	77
D-1	1.5	1.2247	2.80	4.20	4.20	233	77
D-2	1.4	1.1832	2.80	3.92	3.92	236	78
D-3	1.1	1.0488	2.80	3.08	3.08	238	79
Average:	1.33	1.1487	2.80	3.71	3.71	231.6	75.4
Max:	1.60	1.2649	2.80	4.48	4.48	238.0	79.0
Min:	1.10	1.0488	2.80	3.08	3.08	229.0	72.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 2 (EU 044) Stack

Test Date: 12/1/2023

Run Number: 2

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	1.5	1.2247	2.51	3.77	3.77	243	77
A-2	1.3	1.1402	2.51	3.26	3.26	241	78
A-3	0.99	0.9950	2.51	2.48	2.48	239	78
B-1	1.4	1.1832	2.51	3.51	3.51	240	79
B-2	1.3	1.1402	2.51	3.26	3.26	240	80
B-3	1.0	1.0000	2.51	2.51	2.51	240	82
C-1	1.4	1.1832	2.51	3.51	3.51	240	83
C-2	1.2	1.0954	2.51	3.01	3.01	239	83
C-3	1.0	1.0000	2.51	2.51	2.51	238	83
D-1	1.5	1.2247	2.51	3.77	3.77	239	82
D-2	1.3	1.1402	2.51	3.26	3.26	240	82
D-3	1.0	1.0000	2.51	2.51	2.51	240	81
Average:	1.24	1.1106	2.51	3.11	3.11	239.9	80.7
Max:	1.50	1.2247	2.51	3.77	3.77	243.0	83.0
Min:	0.99	0.9950	2.51	2.48	2.48	238.0	77.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Test Date: 12/1/2023

Source: In-Line Kiln 2 (EU 044) Stack

Run Number: 3

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	1.5	1.2247	2.51	3.77	3.77	240	79
A-2	1.2	1.0954	2.51	3.01	3.01	239	80
A-3	1.0	1.0000	2.51	2.51	2.51	239	81
B-1	1.5	1.2247	2.51	3.77	3.77	240	81
B-2	1.3	1.1402	2.51	3.26	3.26	239	81
B-3	0.99	0.9950	2.51	2.48	2.48	238	82
C-1	1.4	1.1832	2.51	3.51	3.51	241	83
C-2	1.4	1.1832	2.51	3.51	3.51	242	85
C-3	1.1	1.0488	2.51	2.76	2.76	243	86
D-1	1.6	1.2649	2.51	4.02	4.02	243	85
D-2	1.3	1.1402	2.51	3.26	3.26	242	85
D-3	0.99	0.9950	2.51	2.48	2.48	241	86
Average:	1.27	1.1246	2.51	3.20	3.20	240.6	82.8
Max:	1.60	1.2649	2.51	4.02	4.02	243.0	86.0
Min:	0.99	0.9950	2.51	2.48	2.48	238.0	79.0

Appendix A.17
Calculations/Results - Brooksville Kiln 2 Stack Raw Mill Off

Source Overview

SOURCE OWNER:	Cemex Construction Materials Florida
PLANT LOCATION (CITY / STATE):	Brooksville, Florida
SOURCE(S) NAME(S):	In-Line Kiln 2 (EU 044) Stack
SOURCE(S) CONDITION:	EPA §114 ICR
PROCESS CONDITION:	Mill Off
METHOD 26A SAMPLING TRAIN ID:	Method 26A Sampling Train A
SOURCE(S) SHAPE:	Circular
PROBE WASH CHEMICAL:	Acetone
SOURCE PERMIT NUMBER:	0530021-088-AV

REFERENCE METHOD TESTS:

Sample Location	US EPA	Method	1
Volumetric Flow	US EPA	Method	2
Oxygen	US EPA	Method	3A
Hydrogen Fluoride	US EPA	Method	26A
Chlorine	US EPA	Method	26A
Carbon Dioxide	US EPA	Method	320
Moisture Content	US EPA	Method	320
Hydrogen Fluoride	US EPA	Method	320
Hydrogen Cyanide	US EPA	Method	320

PROJECT MANAGER	Jose Medina
ENVIRONMENTAL ANALYST - ASSISTANT	Todd Gregg, Steven Metosh, Joshua Fuller
OWNER'S REPRESENTATIVE:	Greg Bridge
RULING AGENCY :	Florida Department of Environmental Protection
DATE(S) TEST CONDUCTED:	11/30/2023
MONTROSE PROJECT NUMBER:	031486

In-Line Kiln 2 (EU 044) Stack

Emissions Summary

Test Performed For:	Cemex Construction Materials Florida	Testing Performed By:
	Brooksville, Florida	Montrose Air Quality Services
Source(s) Tested:	In-Line Kiln 2 (EU 044) Stack	Project Manager:
Test Condition:	EPA §114 ICR	Jose Medina
Process Condition:	Mill Off	
Test(s) Performed:	Hydrogen fluoride, chlorine, & hydrogen cyanide emissions	
Sampling Train ID:	Method 26A Sampling Train A	

Run Number		Run 1	Run 2	Run 3	Average
Date of Run		11/30/23	11/30/23	11/30/23	-
Test Run Time Start - End		10:25-11:30	12:10-13:14	13:55-15:01	-
Clinker Processed Rate	Short Tons/hr	127.6	129.1	100.0	118.9
Oxygen Concentration	%(dry)	12.95	11.62	12.31	12.29
Carbon Dioxide Concentration	%(dry)	13.92	16.24	14.90	15.02
Isokinetic Sampling Rate	%	101.40	101.40	100.49	101.10
Stack Temperature	°F	334.4	339.1	322.8	332.1
Moisture Content	% volume	12.02	13.59	14.12	13.24
Stack Gas Velocity	f/s	81.84	72.06	67.42	73.78
Stack Gas Flow @ Actual Conditions	acfm	391,088	344,323	322,183	352,531
Stack Gas Flow @ Standard Conditions	scfm	260,100	227,508	217,033	234,880
Stack Gas Flow @ Dry Standard Conditions	dscfm	228,849	196,585	186,397	203,944
Hydrogen Fluoride Collected	µg	49.4	31.2	23.7 BDL	34.8 DLL
Hydrogen Fluoride Concentration	ppmvd	3.52E-02	2.6E-02	2.1E-02 BDL	2.7E-02 DLL
Hydrogen Fluoride Concentration	ppmvd @ 7 %O2	6.15E-02	3.9E-02	3.4E-02 BDL	4.5E-02 DLL
Hydrogen Fluoride Concentration	gr/dscf	1.28E-05	9.4E-06	7.6E-06 BDL	9.9E-06 DLL
Hydrogen Fluoride Emissions Rate	lb/hr	2.51E-02	1.6E-02	1.2E-02 BDL	1.8E-02 DLL
Hydrogen Fluoride Emissions Rate	lb/ton	1.97E-04	1.2E-04	1.2E-04 BDL	1.5E-04 DLL
Chlorine Collected	µg	23.7	18.9	35.1	25.9
Chlorine Concentration	ppmvd	4.8E-03	4.4E-03	8.7E-03	6.0E-03
Chlorine Concentration	ppmvd @ 7 %O2	8.3E-03	6.6E-03	1.4E-02	9.7E-03
Chlorine Concentration	gr/dscf	6.1E-06	5.7E-06	1.1E-05	7.7E-06
Chlorine Emissions Rate	lb/hr	1.2E-02	9.6E-03	1.8E-02	1.3E-02
Chlorine Emissions Rate	lb/ton	9.4E-05	7.4E-05	1.8E-04	1.2E-04
Hydrogen Cyanide Collected	ppmvw	4.5	5.0	4.3	4.6
Hydrogen Cyanide Concentration	ppmvd	5.2E+00	5.8E+00	5.0E+00	5.3E+00
Hydrogen Cyanide Concentration	ppmvd @ 7 %O2	9.0E+00	8.6E+00	8.1E+00	8.6E+00
Hydrogen Cyanide Concentration	gr/dscf	2.5E-03	2.8E-03	2.5E-03	2.6E-03
Hydrogen Cyanide Emissions Rate	lb/hr	5.0E+00	4.8E+00	3.9E+00	4.6E+00
Hydrogen Cyanide Emissions Rate	lb/ton	3.9E-02	3.7E-02	3.9E-02	3.8E-02
Hydrogen Fluoride Collected (Method 320)	ppmvw	0.1 BDL	0.1 BDL	0.1 BDL	0.1 BDL
Hydrogen Fluoride Concentration (Method 320)	ppmvd	1.1E-01 BDL	1.2E-01 BDL	1.2E-01 BDL	1.2E-01 BDL
Hydrogen Fluoride Concentration (Method 320)	ppmvd @ 7 %O2	2.0E-01 BDL	1.7E-01 BDL	1.9E-01 BDL	1.9E-01 BDL
Hydrogen Fluoride Concentration (Method 320)	gr/dscf	4.1E-05 BDL	4.2E-05 BDL	4.2E-05 BDL	4.2E-05 BDL
Hydrogen Fluoride Emissions Rate (Method 320)	lb/hr	8.1E-02 BDL	7.1E-02 BDL	6.8E-02 BDL	7.3E-02 BDL
Hydrogen Fluoride Emissions Rate (Method 320)	lb/ton	6.4E-04 BDL	5.5E-04 BDL	6.8E-04 BDL	6.2E-04 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

INPUT TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031486

Source: In-Line Kiln 2 (EU 044) Stack — Data Input By: Jose Medina

Process: Mill Off

Field Data	Symbol	Units	Test Data			
Run Number	-	-	1	2	3	AVERAGE
Test Date	-	-	11/30/23	11/30/23	11/30/23	-
Test Run Time Start - End	-	Military Time	10:25-11:30	12:10-13:14	13:55-15:01	-
Sampling Time	θ	minutes	60	60	60	60
Stack Area	A_s	Ft^2	79.64	79.64	79.64	-
Barometric Pressure at Ground Level	$P_{barground}$	in. Hg	30.20	30.18	30.14	30.17
Elevation of Sampling Location	Esam	ft	200	200	200	200
Barometric Pressure at Sampling Location	P_{bar}	in. Hg	30.00	29.98	29.94	29.97
Stack Static Pressure	P_g	in. H_20	-0.74	-0.74	-0.74	-0.74
Pitot Tube Correction factor	C_p	-	0.84	0.84	0.84	0.84
Meter Calibration Factor	Y	-	0.998	0.998	0.998	0.998
Meter Delta H @	$\Delta H@$	in. H_20	1.872	1.872	1.872	1.872
Nozzle Diameter	D_n	inches	0.250	0.250	0.250	0.250
Initial Meter Volume	V_{mi}	dcf	102.795	161.685	213.371	-
Final Meter Volume	V_{mf}	dcf	161.559	213.216	262.035	-
Total Meter Volume	V_m	dcf	58.764	51.531	48.664	52.986
Meter Temperature	t_m	°F	65.0	74.6	76.2	71.92
Actual Orifice Pressure Differential (Average Delta H)	ΔH	in. H_20	3.23	2.49	2.22	2.64
Impingers Weight Gain (Moisture)	W_{imp}	grams	159.1	158.4	157.9	158.5
Silica Gel Impinger Weight Gain (Moisture)	W_{sg}	grams	13.5	12.4	9.8	11.9
Avg. Sq. Rt. of Delta P	$(sqrt\ \Delta P)_{avg}$	$(in.\ H_20)^{1/2}$	1.1963	1.0511	0.9892	1.0789
Stack Temperature	t_s	°F	334.4	339.1	322.8	332.1
Hydrogen Fluoride Collected	$mn_{HF,\ ug}$	μg_{HF}	49.4	31.2	23.7 BDL	34.8 DLL
Hydrogen Fluoride Concentration	$C_{HF,\ ppmvd}$	ppmvd	3.5E-02	2.6E-02	2.1E-02 BDL	2.7E-02 DLL
Hydrogen Fluoride Concentration @ 7 $\%O_2$	$C_{HF,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	6.2E-02	3.9E-02	3.4E-02 BDL	4.5E-02 DLL
Chlorine Collected	$mn_{Cl2,\ ug}$	μg_{Cl2}	23.7	18.9	35.1	25.9
Chlorine Concentration	$C_{Cl2,\ ppmvd}$	ppmvd	4.8E-03	4.4E-03	8.7E-03	6.0E-03
Chlorine Concentration @ 7 $\%O_2$	$C_{Cl2,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	8.3E-03	6.6E-03	1.4E-02	9.7E-03
Method 3A O_2 Concentration Data						
Oxygen Concentration, dry basis	$\%O_2$	% (d)	12.95	11.62	12.31	12.29
Method 320 Moisture Fraction & Concentration Data						
Carbon Dioxide Concentration, wet basis	$\%CO_2$	% (w)	12.25	14.03	12.80	13.03
Carbon Dioxide Concentration, dry basis	$\%CO_2$	% (d)	13.92	16.24	14.90	15.02
Moisture Fraction	B_{ws}	dimensionless	0.1250	0.1394	0.1486	0.1377
Hydrogen Cyanide Concentration, Wet Basis	$C_{HCN,\ ppmvw}$	ppmvw	4.54	4.97	4.30	4.60
Hydrogen Cyanide Concentration, Dry Basis	$C_{HCN,\ ppmvd}$	ppmvd	5.2E+00	5.8E+00	5.0E+00	5.3E+00
Hydrogen Cyanide Concentration @ 7 $\%O_2$	$C_{HCN,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	9.0E+00	8.6E+00	8.1E+00	8.6E+00
Hydrogen Fluoride Concentration, Wet Basis	$C_{HF,\ ppmvw}$	ppmvw	0.1 BDL	0.1 BDL	0.1 BDL	0.1 BDL
Hydrogen Fluoride Concentration, Dry Basis	$C_{HF,\ ppmvd}$	ppmvd	1.1E-01 BDL	1.2E-01 BDL	1.2E-01 BDL	1.2E-01 BDL
Hydrogen Fluoride Concentration @ 7 $\%O_2$	$C_{HF,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	2.0E-01 BDL	1.7E-01 BDL	1.9E-01 BDL	1.9E-01 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

CALCULATED TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031486

Source: In-Line Kiln 2 (EU 044) Stack — Input By: Jose Medina

Process: Mill Off

Description	Formulas	Symbol	Units	Calculated Data			
Run Number		-	-	1	2	3	AVERAGE
Test Date		-	-	11/30/23	11/30/23	11/30/23	-
Test Run Time Start - End		-	Military Time	10:25-11:30	12:10-13:14	13:55-15:01	-
Stack Pressure	$= P_{bar} + P_g / 13.6$	P_s	in. Hg	29.95	29.93	29.89	29.92
Meter Pressure	$= P_{bar} + \Delta H / 13.6$	P_m	in. Hg	30.24	30.16	30.10	30.17
Standard Meter Volume	$= (T_{std}/P_{std})^* Y^* (V_m/T_m)^* (P_{bar} + \Delta H / 13.6)$	$V_{m(std)}$	dscf	59.607	51.207	48.119	52.978
Standard Volume of Water Vapor Condensed	$=0.04716^*W_{imp}$	$V_{wc(std)}$	scf	7.503	7.470	7.447	7.473
Standard Volume of Water Collected in Silica Gel	$=0.04716^*W_{sg}$	$V_{wsg(std)}$	scf	0.637	0.585	0.462	0.561
Total Standard Volume of Water Collected	$=V_{wc(std)imp} + V_{wsg(std)sg}$	$V_{wc(std)}$	scf	8.140	8.055	7.909	8.034
Moisture Fraction	$=(V_{wc(std)})/(V_{wc(std)} + V_{m(std)})$	B_{ws}	fraction	0.1202	0.1359	0.1412	0.1324
Moisture Fraction @ Saturation (Theoretical)	$=10^{[6.6911-(3144/(ts+390.86))]}/P_s$	TB_{ws}	fraction	7.5835	8.0886	6.4546	7.3756
Molecular Weight Of Stack Gas, dry basis	=0.32(O2)+0.44(CO2)+0.28(100-O2-CO2))	M_d	lb/lb-mole	30.7456	31.0626	30.8769	30.8950
Molecular Weight Of Stack Gas, wet basis	$= M_d^*(1-B_{ws})+18.015^*(B_{ws})$	M_s	lb/lb-mole	29.2160	29.2892	29.0613	29.1888
Average Stack Gas Velocity	$= 85.49^*C_p^*(\text{sqrt } \Delta P)_{avg}^*SQRT((T_s) / (P_s^*M_w))$	v_s	ft/s	81.84	72.06	67.42	73.776
Stack Gas Flow @ Actual Conditions	$= 60^*v_s^*A_s$	Q_a	acfm	391,088	344,323	322,183	352,531
Stack Gas Flow @ Standard Conditions	$= Q_a^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_s	scfm	260,100	227,508	217,033	234,880
Stack Gas Flow @ Dry Standard Conditions	$= Q_a^*(1-B_{ws})^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_{std}	dscfm	228,849	196,585	186,397	203,944
Volume Collected Through Nozzle	$=T_s/P_s^*[0.002669^*V_{lc}+ V_m^*Y^*P_m/T_m]$	V_n	acf	101.841	89.667	83.151	91.553
Isokinetic Sampling Rate, Percent	$= 100^*Vn / (60^*v_s^*A_n^*\theta)$	I	%	101.4	101.4	100.5	101.1
Post-test DGM Coefficient (EMC ALT-009 Y_{qa})		y_{qa}	-	0.9676	0.9745	0.9765	0.9729
Post-test Meter Orifice Calibration Check % Difference (Calibration must be within 5% of original Y-factor):							2.52%
Hydrogen Fluoride Concentration	$=1.543E\text{-}05^*(mn_{HF,\ \mu g})/V_{m(std)}$	C_{HF}	gr/dscf	1.3E-05	9.4E-06	7.6E-06 BDL	9.9E-06 DLL
Hydrogen Fluoride Emissions Rate	$=(60/7000)^*C_{HF}^*Q_{std}$	lb/hr_{HF}	lb/hr	2.5E-02	1.6E-02	1.2E-02 BDL	1.8E-02 DLL
Chlorine Concentration	$=1.543E\text{-}05^*(mn_{Cl2,\ \mu g})/V_{m(std)}$	C_{Cl2}	gr/dscf	6.1E-06	5.7E-06	1.1E-05	7.7E-06
Chlorine Gas Emissions	$=(60/7000)^*C_{Cl2}^*Q_{std}$	lb/hr_{Cl2}	lb/hr	1.2E-02	9.6E-03	1.8E-02	1.3E-02
Method 320 Concentration & Emissions Data							
Hydrogen Cyanide Concentration	$= C_{HCN,\ ppmvd}^*27.0253^*7000/385,300,000$	$C_{HCN,\ lb/dscf}$	gr/dscf	2.5E-03	2.8E-03	2.5E-03	2.6E-03
Hydrogen Cyanide Emissions Rate	$=C_{HCN,\ gr/dscf}^*Q_{std}^*60/7000$	$E_{HCN,\ lb/hr}$	lb/hr	5.0E+00	4.8E+00	3.9E+00	4.6E+00
Hydrogen Fluoride Concentration	$= C_{HF,\ ppmvd}^*20.01^*7000/385,300,000$	$C_{HF,\ lb/dscf}$	gr/dscf	4.1E-05 BDL	4.2E-05 BDL	4.2E-05 BDL	4.2E-05 BDL
Hydrogen Fluoride Emissions Rate	$=C_{HF,\ gr/dscf}^*Q_{std}^*60/7000$	$E_{HF,\ lb/hr}$	lb/hr	8.1E-02 BDL	7.1E-02 BDL	6.8E-02 BDL	7.3E-02 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

MONTROSE AIR QUALITY SERVICES

Method Sample Recovery & Calibration Check Datasheet

Project Information

Date: 11/30/23-12/1/23 Project #: 031486
Customer / Facility: Cemex Construction Materials Florida
Unit ID / Sample Location: In-Line Kiln 2 (EU 044) Stack
Run #: 1, 2, & 3 Operator: J.Fuller

Equipment Identification

Ref. Thermometer: 230441739
Hygrometer: -
Field Balance: PCFS2
Check Weights: 1000195948
Calipers: BHMCLP13

Balance Audit (Field balance must be within 0.5g of check weight mass)

Date	11/30/2023		
Standard mass, g	500.0		
Field balance mass, g	499.7		
Difference, g	0.3		

Ambient Conditions (Mobile Lab)

Relative humidity, %: 73
Temperature, °F: 76

Moisture Determination

		Run 1			Run 2			Run 3		
	Contents	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g
Impinger 1	H_2SO_4	694.9	755.8	60.9	697.3	785.6	88.3	692.2	762.5	70.3
Impinger 2	H_2SO_4	796.2	858.5	62.3	698.4	749.1	50.7	797.1	853.6	56.5
Impinger 3	Empty	675.7	692.6	16.9	670.2	679.5	9.3	676	691.6	15.6
Impinger 4	NaOH	745.6	760	14.4	767.8	775.6	7.8	745.9	757.6	11.7
Impinger 5	NaOH	710.2	714.8	4.6	710.2	712.5	2.3	720.8	724.6	3.8
Impinger Net Gain, Vwc				159.1			158.4			157.9
Silica Gel, Vwsg		901.5	915	13.5	838.3	850.7	12.4	915.2	925	9.8
Train Net Gain, Vlc				172.6			170.8			167.7

Nozzle Measurements (Difference between any two measurements must not be more than 0.004 in (0.1 mm))

Nozzle 1 diameters: D1 0.250 D2 0.250 D3 0.250 Avg 0.250 Difference 0.000
Nozzle 2 diameters: D1 D2 D3 Avg Difference
Nozzle 3 diameters: D1 D2 D3 Avg Difference

Nozzle Material: ☐ quartz ☑ glass ☐ steel ☐ titanium ☐ inconel ☐ other
Probe Type: ☑ heated ☐ unheated ☐ air-cooled ☐ water-cooled ☐ other
Probe Liner: ☐ quartz ☑ glass ☐ steel ☐ Teflon ☐ other

Filter Information

Front Half: ☐ quartz fiber ☐ glass fiber ☐ Teflon ☑ Teflon/quartz ☐ other

Reagent Information		Sample Observations
Type	Lot Number	
0.1N H2SO4	202307291732	
0.1N NaOH	202307291800	
Deionized Water	202307291630	

QA/QC Check: Completeness X Legibility X Accuracy X Specifications X

Checked by: N.Hendricks Data Custodian: J.Fuller

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 2 (EU 044) Stack

Test Date: 11/30/2023

Run Number: 1

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	1.4	1.1832	2.25	3.15	3.15	335	60
A-2	1.5	1.2247	2.25	3.38	3.38	335	63
A-3	1.4	1.1832	2.25	3.15	3.15	332	62
B-1	1.5	1.2247	2.25	3.38	3.38	337	64
B-2	1.5	1.2247	2.25	3.38	3.38	336	64
B-3	1.3	1.1402	2.25	2.93	2.93	335	65
C-1	1.5	1.2247	2.25	3.38	3.38	335	65
C-2	1.5	1.2247	2.25	3.38	3.38	334	66
C-3	1.2	1.0954	2.25	2.70	2.70	335	67
D-1	1.6	1.2649	2.25	3.60	3.60	335	67
D-2	1.5	1.2247	2.25	3.38	3.38	333	68
D-3	1.3	1.1402	2.25	2.93	2.93	331	69
Average:	1.43	1.1963	2.25	3.23	3.23	334.4	65.0
Max:	1.60	1.2649	2.25	3.60	3.60	337.0	69.0
Min:	1.20	1.0954	2.25	2.70	2.70	331.0	60.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 2 (EU 044) Stack

Test Date: 11/30/2023

Run Number: 2

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	1.2	1.0954	2.25	2.70	2.70	336	70
A-2	1.1	1.0488	2.25	2.48	2.48	337	71
A-3	1.0	1.0000	2.25	2.25	2.25	336	71
B-1	1.2	1.0954	2.25	2.70	2.70	337	73
B-2	1.1	1.0488	2.25	2.48	2.48	333	74
B-3	1.0	1.0000	2.25	2.25	2.25	339	74
C-1	1.2	1.0954	2.25	2.70	2.70	341	75
C-2	1.1	1.0488	2.25	2.48	2.48	327	75
C-3	0.98	0.9899	2.25	2.21	2.21	345	77
D-1	1.2	1.0954	2.25	2.70	2.70	346	78
D-2	1.2	1.0954	2.25	2.70	2.70	346	78
D-3	1.0	1.0000	2.25	2.25	2.25	346	79
Average:	1.11	1.0511	2.25	2.49	2.49	339.1	74.6
Max:	1.20	1.0954	2.25	2.70	2.70	346.0	79.0
Min:	0.98	0.9899	2.25	2.21	2.21	327.0	70.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 2 (EU 044) Stack

Test Date: 11/30/2023

Run Number: 3

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	1.2	1.0954	2.25	2.70	2.70	327	72
A-2	1.1	1.0488	2.25	2.48	2.48	325	74
A-3	0.94	0.9695	2.25	2.12	2.12	324	74
B-1	1.2	1.0954	2.25	2.70	2.70	324	75
B-2	1.1	1.0488	2.25	2.48	2.48	325	76
B-3	0.98	0.9899	2.25	2.21	2.21	326	76
C-1	1.2	1.0954	2.25	2.70	2.70	327	77
C-2	0.95	0.9747	2.25	2.14	2.14	320	78
C-3	0.71	0.8426	2.25	1.60	1.60	324	78
D-1	0.85	0.9220	2.25	1.91	1.91	316	78
D-2	0.85	0.9220	2.25	1.91	1.91	317	79
D-3	0.75	0.8660	2.25	1.69	1.69	318	77
Average:	0.99	0.9892	2.25	2.22	2.22	322.8	76.2
Max:	1.20	1.0954	2.25	2.70	2.70	327.0	79.0
Min:	0.71	0.8426	2.25	1.60	1.60	316.0	72.0

Source Overview

SOURCE OWNER:	Cemex Construction Materials Florida
PLANT LOCATION (CITY / STATE):	Brooksville, Florida
SOURCE(S) NAME(S):	In-Line Kiln 2 (EU 044) Stack
SOURCE(S) CONDITION:	EPA §114 ICR
PROCESS CONDITION:	Mill Off
METHOD 26A SAMPLING TRAIN ID:	Method 26A Sampling Train B
SOURCE(S) SHAPE:	Circular
PROBE WASH CHEMICAL:	Acetone
SOURCE PERMIT NUMBER:	0530021-088-AV

REFERENCE METHOD TESTS:

Sample Location	US EPA	Method	1
Volumetric Flow	US EPA	Method	2
Oxygen	US EPA	Method	3A
Hydrogen Fluoride	US EPA	Method	26A
Chlorine	US EPA	Method	26A
Carbon Dioxide	US EPA	Method	320
Moisture Content	US EPA	Method	320

PROJECT MANAGER	Jose Medina
ENVIRONMENTAL ANALYST - ASSISTANT	Todd Gregg, Steven Metosh, Joshua Fuller
OWNER'S REPRESENTATIVE:	Greg Bridge
RULING AGENCY :	Florida Department of Environmental Protection
DATE(S) TEST CONDUCTED:	11/30/2023
MONTROSE PROJECT NUMBER:	031486

In-Line Kiln 2 (EU 044) Stack

Emissions Summary

Test Performed For:	Cemex Construction Materials Florida	Testing Performed By:
	Brooksville, Florida	Montrose Air Quality Services
Source(s) Tested:	In-Line Kiln 2 (EU 044) Stack	Project Manager:
Test Condition:	EPA §114 ICR	Jose Medina
Process Condition:	Mill Off	
Test(s) Performed:	Hydrogen fluoride, chlorine, & hydrogen cyanide emissions	
Sampling Train ID:	Method 26A Sampling Train B	

Run Number		Run 1	Run 2	Run 3	Average
Date of Run		11/30/23	11/30/23	11/30/23	-
Test Run Time Start - End		10:25-11:30	12:10-13:14	13:55-15:01	-
Clinker Processed Rate	Short Tons/hr	127.6	129.1	100.0	118.9
Oxygen Concentration	%(dry)	12.95	11.62	12.31	12.29
Carbon Dioxide Concentration	%(dry)	13.92	16.22	14.97	15.04
Isokinetic Sampling Rate	%	100.35	102.85	102.49	101.90
Stack Temperature	^{o}F	335.3	340.3	322.1	332.6
Moisture Content	% volume	12.02	13.49	14.50	13.33
Stack Gas Velocity	f/s	72.53	66.39	64.40	67.77
Stack Gas Flow @ Actual Conditions	acfm	346,567	317,220	307,718	323,835
Stack Gas Flow @ Standard Conditions	scfm	230,172	209,133	207,188	215,498
Stack Gas Flow @ Dry Standard Conditions	dscfm	202,511	180,930	177,150	186,864
Hydrogen Fluoride Collected	µg	37.8	24.0 BDL	24.4 BDL	28.7 DLL
Hydrogen Fluoride Concentration	ppmvd	3.1E-02	2.1E-02 BDL	2.2E-02 BDL	2.5E-02 DLL
Hydrogen Fluoride Concentration	ppmvd @ 7 %O2	5.4E-02	3.2E-02 BDL	3.6E-02 BDL	4.1E-02 DLL
Hydrogen Fluoride Concentration	gr/dscf	1.1E-05	7.7E-06 BDL	8.1E-06 BDL	9.0E-06 DLL
Hydrogen Fluoride Emissions Rate	lb/hr	1.9E-02	1.2E-02 BDL	1.2E-02 BDL	1.5E-02 DLL
Hydrogen Fluoride Emissions Rate	lb/ton	1.5E-04	9.3E-05 BDL	1.2E-04 BDL	1.2E-04 DLL
Chlorine Collected	µg	33.6	21.7	17.3	24.2
Chlorine Concentration	ppmvd	7.7E-03	5.4E-03	4.4E-03	5.9E-03
Chlorine Concentration	ppmvd @ 7 %O2	1.3E-02	8.1E-03	7.2E-03	9.6E-03
Chlorine Concentration	gr/dscf	9.9E-06	7.0E-06	5.7E-06	7.6E-06
Chlorine Emissions Rate	lb/hr	1.7E-02	1.1E-02	8.7E-03	1.2E-02
Chlorine Emissions Rate	lb/ton	1.4E-04	8.4E-05	8.7E-05	1.0E-04

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Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

INPUT TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031486

Source: In-Line Kiln 2 (EU 044) Stack — Data Input By: Jose Medina

Process: Mill Off

Field Data	Symbol	Units	Test Data			
Run Number	-	-	1	2	3	AVERAGE
Test Date	-	-	11/30/23	11/30/23	11/30/23	-
Test Run Time Start - End	-	Military Time	10:25-11:30	12:10-13:14	13:55-15:01	-
Sampling Time	θ	minutes	60	60	60	60
Stack Area	A_s	Ft^2	79.64	79.64	79.64	-
Barometric Pressure at Ground Level	$P_{barground}$	in. Hg	30.19	30.16	30.10	30.15
Elevation of Sampling Location	Esam	ft	200	200	200	200
Barometric Pressure at Sampling Location	P_{bar}	in. Hg	29.99	29.96	29.90	29.95
Stack Static Pressure	P_g	in. H_20	-0.74	-0.74	-0.74	-0.74
Pitot Tube Correction factor	C_p	-	0.84	0.84	0.84	0.84
Meter Calibration Factor	Y	-	0.985	0.985	0.985	0.985
Meter Delta H @	$\Delta H@$	in. H_20	1.833	1.833	1.833	1.833
Nozzle Diameter	D_n	inches	0.250	0.250	0.250	0.250
Initial Meter Volume	V_{mi}	dcf	16.912	69.558	118.419	-
Final Meter Volume	V_{mf}	dcf	69.406	118.255	166.168	-
Total Meter Volume	V_m	dcf	52.494	48.697	47.749	49.647
Meter Temperature	t_m	°F	67.4	73.3	74.7	71.78
Actual Orifice Pressure Differential (Average Delta H)	ΔH	in. H_20	2.51	2.09	1.99	2.20
Impingers Weight Gain (Moisture)	W_{imp}	grams	141.1	149.3	157.0	149.1
Silica Gel Impinger Weight Gain (Moisture)	W_{sg}	grams	10.1	8.7	10.7	9.8
Avg. Sq. Rt. of Delta P	$(sqrt\ \Delta P)_{avg}$	$(in.\ H_2O)^{1/2}$	1.0594	0.9675	0.9439	0.9903
Stack Temperature	t_s	°F	335.3	340.3	322.1	332.6
Hydrogen Fluoride Collected	$mn_{HF,\ \mu g}$	μg_{HF}	37.8	24.0 BDL	24.4 BDL	28.7 DLL
Hydrogen Fluoride Concentration	$C_{HF,\ ppmvd}$	ppmvd	3.1E-02	2.1E-02 BDL	2.2E-02 BDL	2.5E-02 DLL
Hydrogen Fluoride Concentration @ 7 $\%O_2$	$C_{HF,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	5.4E-02	3.2E-02 BDL	3.6E-02 BDL	4.1E-02 DLL
Chlorine Collected	$mn_{Cl2,\ \mu g}$	μg_{Cl2}	33.6	21.7	17.3	24.2
Chlorine Concentration	$C_{Cl2,\ ppmvd}$	ppmvd	7.7E-03	5.4E-03	4.4E-03	5.9E-03
Chlorine Concentration @ 7 $\%O_2$	$C_{Cl2,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	1.3E-02	8.1E-03	7.2E-03	9.6E-03
Method 3A O_2 Concentration Data						
Oxygen Concentration, dry basis	$\%O_2$	% (d)	12.95	11.62	12.31	12.29
Method 320 Moisture Fraction & Concentration Data						
Carbon Dioxide Concentration, wet basis	$\%CO_2$	% (w)	12.25	14.03	12.80	13.03
Carbon Dioxide Concentration, dry basis	$\%CO_2$	% (d)	13.92	16.22	14.97	15.04
Moisture Fraction	B_{ws}	dimensionless	0.1250	0.1394	0.1486	0.1377

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Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

CALCULATED TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031486

Source: In-Line Kiln 2 (EU 044) Stack — Input By: Jose Medina

Process: Mill Off

Description	Formulas	Symbol	Units	Calculated Data			
Run Number		-	-	1	2	3	AVERAGE
Test Date		-	-	11/30/23	11/30/23	11/30/23	-
Test Run Time Start - End		-	Military Time	10:25-11:30	12:10-13:14	13:55-15:01	-
Stack Pressure	$= P_{bar} + P_g / 13.6$	P_s	in. Hg	29.94	29.91	29.85	29.90
Meter Pressure	$= P_{bar} + \Delta H / 13.6$	P_m	in. Hg	30.17	30.11	30.05	30.11
Standard Meter Volume	$= (T_{std}/P_{std})^* Y^* (V_m/T_m)^* (P_{bar} + \Delta H / 13.6)$	$V_{m(std)}$	dscf	52.204	47.802	46.643	48.883
Standard Volume of Water Vapor Condensed	$=0.04716^*W_{imp}$	$V_{wc(std)}$	scf	6.654	7.041	7.404	7.033
Standard Volume of Water Collected in Silica Gel	$=0.04716^*W_{sg}$	$V_{wsg(std)}$	scf	0.476	0.410	0.505	0.464
Total Standard Volume of Water Collected	$=V_{wc(std)imp} + V_{wsg(std)sg}$	$V_{wc(std)}$	scf	7.131	7.451	7.909	7.497
Moisture Fraction	$=(V_{wc(std)})/(V_{wc(std)} + V_{m(std)})$	B_{ws}	fraction	0.1202	0.1349	0.1450	0.1333
Moisture Fraction @ Saturation (Theoretical)	$=10^{[6.6911-(3144/(ts+390.86))]}/P_s$	TB_{ws}	fraction	7.6734	8.2324	6.4022	7.4360
Molecular Weight Of Stack Gas, dry basis	=0.32(O2)+0.44(CO2)+0.28(100-O2-CO2))	M_d	lb/lb-mole	30.7457	31.0595	30.8875	30.8976
Molecular Weight Of Stack Gas, wet basis	$= M_d^*(1-B_{ws})+18.015^*(B_{ws})$	M_s	lb/lb-mole	29.2158	29.3003	29.0213	29.1791
Average Stack Gas Velocity	$= 85.49^*C_p^*(\text{sqrt }\Delta P)_{avg}^*SQRT((T_s) / (P_s^*M_w))$	v_s	ft/s	72.53	66.39	64.40	67.771
Stack Gas Flow @ Actual Conditions	$= 60^*v_s^*A_s$	Q_a	acfm	346,567	317,220	307,718	323,835
Stack Gas Flow @ Standard Conditions	$= Q_a^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_s	scfm	230,172	209,133	207,188	215,498
Stack Gas Flow @ Dry Standard Conditions	$= Q_a^*(1-B_{ws})^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_{std}	dscfm	202,511	180,930	177,150	186,864
Volume Collected Through Nozzle	$=T_s/P_s^*[0.002669^*V_{lc}+ V_m^*Y^*P_m/T_m]$	V_n	acf	89.319	83.788	80.998	84.702
Isokinetic Sampling Rate, Percent	$= 100^*Vn / (60^*v_s^*A_n^*\theta)$	I	%	100.4	102.8	102.5	101.9
Post-test DGM Coefficient (EMC ALT-009 Y_{qa})		y_{qa}	-	0.9682	0.9546	0.9548	0.9592
Post-test Meter Orifice Calibration Check % Difference (Calibration must be within 5% of original Y-factor):							2.62%
Hydrogen Fluoride Concentration	$=1.543E\text{-}05^*(mn_{HF,\ \mu g})/V_{m(std)}$	C_{HF}	gr/dscf	1.1E-05	7.7E-06 BDL	8.1E-06 BDL	9.0E-06 DLL
Hydrogen Fluoride Emissions Rate	$=(60/7000)^*C_{HF}^*Q_{std}$	lb/hr_{HF}	lb/hr	1.9E-02	1.2E-02 BDL	1.2E-02 BDL	1.5E-02 DLL
Chlorine Concentration	$=1.543E\text{-}05^*(mn_{Cl2,\ \mu g})/V_{m(std)}$	C_{Cl2}	gr/dscf	9.9E-06	7.0E-06	5.7E-06	7.6E-06
Chlorine Gas Emissions	$=(60/7000)^*C_{Cl2}^*Q_{std}$	lb/hr_{Cl2}	lb/hr	1.7E-02	1.1E-02	8.7E-03	1.2E-02

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MONTROSE AIR QUALITY SERVICES

Method Sample Recovery & Calibration Check Datasheet

Project Information		Equipment Identification	
Date	11/30/23-12/1/23	Ref. Thermometer	230441739
Project #	031486	Hygrometer	-
Customer / Facility	Cemex Construction Materials Florida	Field Balance	PCFS2
Unit ID / Sample Location	In-Line Kiln 2 (EU 044) Stack	Check Weights	1000195948
Run #	1, 2, & 3	Calipers	BHMCLP13
Operator	S.Metosh		

Balance Audit (Field balance must be within 0.5g of check weight mass)				Ambient Conditions (Mobile Lab)	
Date	11/30/2023			Relative humidity, %	73
Standard mass, g	500.0			Temperature, °F	76
Field balance mass, g	499.7				
Difference, g	0.3				

Moisture Determination

		Run 1			Run 2			Run 3		
	Contents	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g
Impinger 1	H_2SO_4	732.6	814	81.4	691.5	788.1	96.6	732.3	829.5	97.2
Impinger 2	H_2SO_4	622.7	666.8	44.1	767.4	807.6	40.2	624.9	669.6	44.7
Impinger 3	Empty	666.1	674.4	8.3	656	662	6	665.9	673.8	7.9
Impinger 4	NaOH	722.5	727.5	5	712.3	716.4	4.1	732.4	737.1	4.7
Impinger 5	NaOH	768.6	770.9	2.3	715.2	717.6	2.4	767.8	770.3	2.5
Impinger Net Gain, Vwc				141.1			149.3			157
Silica Gel, Vwsg		899.1	909.2	10.1	919.8	928.5	8.7	910	920.7	10.7
Train Net Gain, Vlc				151.2			158			167.7

Nozzle Measurements (Difference between any two measurements must not be more than 0.004 in (0.1 mm))

Nozzle 1 diameters	D1	0.250	D2	0.250	D3	0.250	Avg	0.250	Difference 0.000
Nozzle 2 diameters	D1		D2		D3		Avg		Difference
Nozzle 3 diameters	D1		D2		D3		Avg		Difference

Nozzle Material ☐ quartz ☑ glass ☐ steel ☐ titanium ☐ inconel ☐ other

Probe Type ☑ heated ☐ unheated ☐ air-cooled ☐ water-cooled ☐ other

Probe Liner ☐ quartz ☑ glass ☐ steel ☐ Teflon ☐ other

Filter Information

Front Half: ☐ quartz fiber ☐ glass fiber ☐ Teflon ☑ Teflon/quartz ☐ other

Reagent Information		Sample Observations
Type	Lot Number	
0.1N H2SO4	202307291732	
0.1N NaOH	202307291800	
Deionized Water	202307291630	

QA/QC Check: Completeness X Legibility X Accuracy X Specifications X

Checked by: N.Hendricks Data Custodian: S.Metosh

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 2 (EU 044) Stack

Test Date: 11/30/2023

Run Number: 1

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	1.2	1.0954	2.23	2.68	2.68	337	65
A-2	1.1	1.0488	2.23	2.45	2.45	336	65
A-3	0.98	0.9899	2.23	2.19	2.19	334	65
B-1	1.3	1.1402	2.23	2.90	2.90	338	65
B-2	1.2	1.0954	2.23	2.68	2.68	337	66
B-3	0.99	0.9950	2.23	2.21	2.21	335	68
C-1	1.3	1.1402	2.23	2.90	2.90	335	68
C-2	1.1	1.0488	2.23	2.45	2.45	336	68
C-3	0.97	0.9849	2.23	2.16	2.16	334	69
D-1	1.3	1.1402	2.23	2.90	2.90	336	70
D-2	1.1	1.0488	2.23	2.45	2.45	334	70
D-3	0.97	0.9849	2.23	2.16	2.16	331	70
Average:	1.13	1.0594	2.23	2.51	2.51	335.3	67.4
Max:	1.30	1.1402	2.23	2.90	2.90	338.0	70.0
Min:	0.97	0.9849	2.23	2.16	2.16	331.0	65.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 2 (EU 044) Stack

Test Date: 11/30/2023

Run Number: 2

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	1.0	1.0000	2.23	2.23	2.23	337	70
A-2	0.98	0.9899	2.23	2.19	2.19	336	70
A-3	0.84	0.9165	2.23	1.87	1.87	334	71
B-1	1.0	1.0000	2.23	2.23	2.23	338	71
B-2	0.97	0.9849	2.23	2.16	2.16	337	72
B-3	0.80	0.8944	2.23	1.78	1.78	337	73
C-1	0.99	0.9950	2.23	2.21	2.21	343	74
C-2	0.98	0.9899	2.23	2.19	2.19	343	75
C-3	0.85	0.9220	2.23	1.90	1.90	343	75
D-1	1.0	1.0000	2.23	2.23	2.23	346	76
D-2	0.98	0.9899	2.23	2.19	2.19	346	76
D-3	0.86	0.9274	2.23	1.92	1.92	344	76
Average:	0.94	0.9675	2.23	2.09	2.09	340.3	73.3
Max:	1.00	1.0000	2.23	2.23	2.23	346.0	76.0
Min:	0.80	0.8944	2.23	1.78	1.78	334.0	70.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln 2 (EU 044) Stack

Test Date: 11/30/2023

Run Number: 3

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	1.0	1.0000	2.23	2.23	2.23	328	73
A-2	0.97	0.9849	2.23	2.16	2.16	326	75
A-3	0.85	0.9220	2.23	1.90	1.90	323	74
B-1	0.99	0.9950	2.23	2.21	2.21	325	73
B-2	0.97	0.9849	2.23	2.16	2.16	326	74
B-3	0.80	0.8944	2.23	1.78	1.78	325	74
C-1	0.99	0.9950	2.23	2.21	2.21	328	75
C-2	0.97	0.9849	2.23	2.16	2.16	322	75
C-3	0.68	0.8246	2.23	1.52	1.52	315	76
D-1	0.91	0.9539	2.23	2.03	2.03	314	76
D-2	0.86	0.9274	2.23	1.92	1.92	316	76
D-3	0.74	0.8602	2.23	1.65	1.65	317	75
Average:	0.89	0.9439	2.23	1.99	1.99	322.1	74.7
Max:	1.00	1.0000	2.23	2.23	2.23	328.0	76.0
Min:	0.68	0.8246	2.23	1.52	1.52	314.0	73.0

Appendix A.18
Calculations/Results - Miami Kiln Stack Raw Mill On

Source Overview

SOURCE OWNER:	Cemex Construction Materials Florida
PLANT LOCATION (CITY / STATE):	Miami, Florida
SOURCE(S) NAME(S):	In-Line Kiln (EU 018) Stack
SOURCE(S) CONDITION:	EPA §114 ICR
PROCESS CONDITION:	Mill On
METHOD 26A SAMPLING TRAIN ID:	Method 26A Sampling Train A
SOURCE(S) SHAPE:	Circular
PROBE WASH CHEMICAL:	Acetone
SOURCE PERMIT NUMBER:	0250014-072-AV

REFERENCE METHOD TESTS:

Sample Location	US EPA	Method	1
Volumetric Flow	US EPA	Method	2
Oxygen	US EPA	Method	3A
Hydrogen Fluoride	US EPA	Method	26A
Chlorine	US EPA	Method	26A
Carbon Dioxide	US EPA	Method	320
Moisture Content	US EPA	Method	320
Hydrogen Fluoride	US EPA	Method	320
Hydrogen Cyanide	US EPA	Method	320

PROJECT MANAGER	Jose Medina
ENVIRONMENTAL ANALYST - ASSISTANT	Todd Gregg, Steven Metosh, Joshua Fuller
OWNER'S REPRESENTATIVE:	Greg Bridge
RULING AGENCY :	Florida Department of Environmental Protection
DATE(S) TEST CONDUCTED:	12/5/2023
MONTROSE PROJECT NUMBER:	031494

In-Line Kiln (EU 018) Stack

Emissions Summary

Test Performed For:	Cemex Construction Materials Florida	Testing Performed By:
	Miami, Florida	Montrose Air Quality Services
Source(s) Tested:	In-Line Kiln (EU 018) Stack	Project Manager:
Test Condition:	EPA §114 ICR	Jose Medina
Process Condition:	Mill On	
Test(s) Performed:	Hydrogen fluoride, chlorine, & hydrogen cyanide emissions	
Sampling Train ID:	Method 26A Sampling Train A	

Run Number		Run 1	Run 2	Run 3	Average
Date of Run		12/5/23	12/5/23	12/5/23	-
Test Run Time Start - End		8:30-9:34	10:10-11:16	12:00-13:03	-
Clinker Processed Rate	Short Tons/hr	126.9	126.9	127.0	126.9
Oxygen Concentration	%(dry)	13.98	13.99	13.99	13.99
Carbon Dioxide Concentration	%(dry)	11.91	12.08	12.12	12.04
Isokinetic Sampling Rate	%	103.13	102.22	100.88	102.08
Stack Temperature	°F	263.8	248.3	243.3	251.8
Moisture Content	% volume	13.20	13.76	14.27	13.74
Stack Gas Velocity	f/s	59.88	57.80	57.47	58.38
Stack Gas Flow @ Actual Conditions	acfm	343,485	331,567	329,683	334,912
Stack Gas Flow @ Standard Conditions	scfm	249,353	246,172	246,378	247,301
Stack Gas Flow @ Dry Standard Conditions	dscfm	216,441	212,301	211,227	213,323
Hydrogen Fluoride Collected	µg	22.7 BDL	22.4 BDL	22.4 BDL	22.5 BDL
Hydrogen Fluoride Concentration	ppmvd	2.0E-02 BDL	2.0E-02 BDL	2.1E-02 BDL	2.1E-02 BDL
Hydrogen Fluoride Concentration	ppmvd @ 7 %O2	4.1E-02 BDL	4.1E-02 BDL	4.2E-02 BDL	4.1E-02 BDL
Hydrogen Fluoride Concentration	gr/dscf	7.3E-06 BDL	7.4E-06 BDL	7.6E-06 BDL	7.5E-06 BDL
Hydrogen Fluoride Emissions Rate	lb/hr	1.4E-02 BDL	1.4E-02 BDL	1.4E-02 BDL	1.4E-02 BDL
Hydrogen Fluoride Emissions Rate	lb/ton	1.1E-04 BDL	1.1E-04 BDL	1.1E-04 BDL	1.1E-04 BDL
Chlorine Collected	µg	15.2 BDL	17.5	15.5 BDL	16.1 DLL
Chlorine Concentration	ppmvd	3.8E-03 BDL	4.5E-03	4.1E-03 BDL	4.1E-03 DLL
Chlorine Concentration	ppmvd @ 7 %O2	7.7E-03 BDL	9.1E-03	8.2E-03 BDL	8.3E-03 DLL
Chlorine Concentration	gr/dscf	4.9E-06 BDL	5.8E-06	5.2E-06 BDL	5.3E-06 DLL
Chlorine Emissions Rate	lb/hr	9.1E-03 BDL	1.1E-02	9.5E-03 BDL	9.7E-03 DLL
Chlorine Emissions Rate	lb/ton	7.2E-05 BDL	8.3E-05	7.5E-05 BDL	7.7E-05 DLL
Hydrogen Cyanide Collected	ppmvw	2.1	2.1	2.0	2.1
Hydrogen Cyanide Concentration	ppmvd	2.4E+00	2.4E+00	2.3E+00	2.4E+00
Hydrogen Cyanide Concentration	ppmvd @ 7 %O2	4.9E+00	4.8E+00	4.7E+00	4.8E+00
Hydrogen Cyanide Concentration	gr/dscf	1.2E-03	1.2E-03	1.2E-03	1.2E-03
Hydrogen Cyanide Emissions Rate	lb/hr	2.2E+00	2.1E+00	2.1E+00	2.1E+00
Hydrogen Cyanide Emissions Rate	lb/ton	1.7E-02	1.7E-02	1.6E-02	1.7E-02
Hydrogen Fluoride Collected (Method 320)	ppmvw	0.1 BDL	0.1 BDL	0.1 BDL	0.1 BDL
Hydrogen Fluoride Concentration (Method 320)	ppmvd	1.2E-01 BDL	1.2E-01 BDL	1.2E-01 BDL	1.2E-01 BDL
Hydrogen Fluoride Concentration (Method 320)	ppmvd @ 7 %O2	2.3E-01 BDL	2.3E-01 BDL	2.3E-01 BDL	2.3E-01 BDL
Hydrogen Fluoride Concentration (Method 320)	gr/dscf	4.2E-05 BDL	4.2E-05 BDL	4.2E-05 BDL	4.2E-05 BDL
Hydrogen Fluoride Emissions Rate (Method 320)	lb/hr	7.8E-02 BDL	7.7E-02 BDL	7.7E-02 BDL	7.7E-02 BDL
Hydrogen Fluoride Emissions Rate (Method 320)	lb/ton	6.1E-04 BDL	6.0E-04 BDL	6.0E-04 BDL	6.1E-04 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

[3] CEMS time is one hour ahead of test time.

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

INPUT TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031494

Source: In-Line Kiln (EU 018) Stack — Data Input By: Jose Medina

Process: Mill On

Field Data	Symbol	Units	Test Data			
Run Number	-	-	1	2	3	AVERAGE
Test Date	-	-	12/05/23	12/05/23	12/05/23	-
Test Run Time Start - End	-	Military Time	8:30-9:34	10:10-11:16	12:00-13:03	-
Sampling Time	θ	minutes	60	60	60	60
Stack Area	A_s	Ft^2	95.61	95.61	95.61	-
Barometric Pressure at Ground Level	$P_{barground}$	in. Hg	30.08	30.10	30.08	30.09
Elevation of Sampling Location	Esam	ft	225	225	225	225
Barometric Pressure at Sampling Location	P_{bar}	in. Hg	29.86	29.88	29.86	29.86
Stack Static Pressure	P_g	in. H_20	-1.00	-0.94	-0.94	-0.96
Pitot Tube Correction factor	C_p	-	0.84	0.84	0.84	0.84
Meter Calibration Factor	Y	-	0.985	0.985	0.985	0.985
Meter Delta H @	$\Delta H@$	in. H_20	1.833	1.833	1.833	1.833
Nozzle Diameter	D_n	inches	0.250	0.250	0.250	0.250
Initial Meter Volume	V_{mi}	dcf	356.237	405.705	453.924	-
Final Meter Volume	V_{mf}	dcf	405.561	453.731	501.522	-
Total Meter Volume	V_m	dcf	49.324	48.026	47.598	48.316
Meter Temperature	t_m	°F	78.5	79.5	84.2	80.72
Actual Orifice Pressure Differential (Average Delta H)	ΔH	in. H_20	1.95	1.86	1.84	1.88
Impingers Weight Gain (Moisture)	W_{imp}	grams	140.4	144.1	150.4	145.0
Silica Gel Impinger Weight Gain (Moisture)	W_{sg}	grams	13.6	13.0	10.5	12.4
Avg. Sq. Rt. of Delta P	$(sqrt\ \Delta P)_{avg}$	$(in.\ H_20)^{1/2}$	0.9082	0.8859	0.8828	0.8923
Stack Temperature	t_s	°F	263.8	248.3	243.3	251.8
Hydrogen Fluoride Collected	$mn_{HF,\ ug}$	μg_{HF}	22.7 BDL	22.4 BDL	22.4 BDL	22.5 BDL
Hydrogen Fluoride Concentration	$C_{HF,\ ppmvd}$	ppmvd	2.0E-02 BDL	2.0E-02 BDL	2.1E-02 BDL	2.1E-02 BDL
Hydrogen Fluoride Concentration @ 7 $\%O_2$	$C_{HF,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	4.1E-02 BDL	4.1E-02 BDL	4.2E-02 BDL	4.1E-02 BDL
Chlorine Collected	$mn_{Cl2,\ ug}$	μg_{Cl2}	15.2 BDL	17.5	15.5 BDL	16.1 DLL
Chlorine Concentration	$C_{Cl2,\ ppmvd}$	ppmvd	3.8E-03 BDL	0.005	4.1E-03 BDL	4.1E-03 BDL
Chlorine Concentration @ 7 $\%O_2$	$C_{Cl2,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	7.7E-03 BDL	0.01	8.2E-03 BDL	8.3E-03 BDL
Method 3A O_2 Concentration Data						
Oxygen Concentration, dry basis	$\%O_2$	% (d)	13.98	13.99	13.99	13.99
Method 320 Moisture Fraction & Concentration Data						
Carbon Dioxide Concentration, wet basis	$\%CO_{2,\ wet}$	$\%CO_2$ (wet)	10.34	10.42	10.39	10.38
Carbon Dioxide Concentration, dry basis	$\%CO_{2,\ dry}$	$\%CO_2$ (dry)	11.91	12.08	12.12	12.04
Moisture Fraction	B_{ws}	dimensionless	0.1301	0.1357	0.1373	0.1344
Hydrogen Cyanide Concentration, Wet Basis	$C_{HCN,\ ppmvw}$	ppmvw	2.10	2.06	2.01	2.06
Hydrogen Cyanide Concentration, Dry Basis	$C_{HCN,\ ppmvd}$	ppmvd	2.4E+00	2.4E+00	2.3E+00	2.4E+00
Hydrogen Cyanide Concentration @ 7 $\%O_2$	$C_{HCN,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	4.9E+00	4.8E+00	4.7E+00	4.8E+00
Hydrogen Fluoride Concentration, Wet Basis	$C_{HF,\ ppmvw}$	ppmvw	0.1 BDL	0.1 BDL	0.1 BDL	0.1 BDL
Hydrogen Fluoride Concentration, Dry Basis	$C_{HF,\ ppmvd}$	ppmvd	1.2E-01 BDL	1.2E-01 BDL	1.2E-01 BDL	1.2E-01 BDL
Hydrogen Fluoride Concentration @ 7 $\%O_2$	$C_{HF,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	2.3E-01 BDL	2.3E-01 BDL	2.3E-01 BDL	2.3E-01 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

CALCULATED TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031494

Source: In-Line Kiln (EU 018) Stack — Input By: Jose Medina

Process: Mill On

Description	Formulas	Symbol	Units	Calculated Data			
Run Number		-	-	1	2	3	AVERAGE
Test Date		-	-	12/05/23	12/05/23	12/05/23	-
Test Run Time Start - End		-	Military Time	8:30-9:34	10:10-11:16	12:00-13:03	-
Stack Pressure	$= P_{bar} + P_g / 13.6$	P_s	in. Hg	29.78	29.81	29.79	29.79
Meter Pressure	$= P_{bar} + \Delta H / 13.6$	P_m	in. Hg	30.00	30.01	29.99	30.00
Standard Meter Volume	$= (T_{std}/P_{std})^* Y^* (V_m/T_m)^* (P_{bar} + \Delta H / 13.6)$	$V_{m(std)}$	dscf	47.761	46.438	45.597	46.599
Standard Volume of Water Vapor Condensed	$=0.04716^*W_{imp}$	$V_{wc(std)}$	scf	6.621	6.796	7.093	6.837
Standard Volume of Water Collected in Silica Gel	$=0.04716^*W_{sg}$	$V_{wsg(std)}$	scf	0.641	0.613	0.495	0.583
Total Standard Volume of Water Collected	$=V_{wc(std)imp} + V_{wsg(std)sg}$	$V_{wc(std)}$	scf	7.263	7.409	7.588	7.420
Moisture Fraction	$=(V_{wc(std)})/(V_{wc(std)} + V_{m(std)})$	B_{ws}	fraction	0.1320	0.1376	0.1427	0.1374
Moisture Fraction @ Saturation (Theoretical)	$=10^{[6.6911-(3144/(ts+390.86))]}/P_s$	TB_{ws}	fraction	2.5996	1.9865	1.8153	2.1338
Molecular Weight Of Stack Gas, dry basis	=0.32(O2)+0.44(CO2)+0.28(100-O2-CO2))	M_d	lb/lb-mole	30.4653	30.4926	30.4985	30.4855
Molecular Weight Of Stack Gas, wet basis	$= M_d^*(1-B_{ws})+18.015^*(B_{ws})$	M_s	lb/lb-mole	28.8220	28.7758	28.7175	28.7718
Average Stack Gas Velocity	$= 85.49^*C_p^*(\text{sqrt } \Delta P)_{avg}^*SQRT((T_s) / (P_s^*M_w))$	v_s	ft/s	59.88	57.80	57.47	58.382
Stack Gas Flow @ Actual Conditions	$= 60^*v_s^*A_s$	Q_a	acfm	343,485	331,567	329,683	334,912
Stack Gas Flow @ Standard Conditions	$= Q_a^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_s	scfm	249,353	246,172	246,378	247,301
Stack Gas Flow @ Dry Standard Conditions	$= Q_a^*(1-B_{ws})^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_{std}	dscfm	216,441	212,301	211,227	213,323
Volume Collected Through Nozzle	$=T_s/P_s^*[0.002669^*V_{lc}+ V_m^*Y^*P_m/T_m]$	V_n	acf	75.777	72.507	71.149	73.144
Isokinetic Sampling Rate, Percent	$= 100^*Vn / (60^*v_s^*A_n^*\theta)$	I	%	103.1	102.2	100.9	102.1
Post-test DGM Coefficient (EMC ALT-009 Y_{qa})		y_{qa}	-	0.9233	0.9252	0.9345	0.9276
Post-test Meter Orifice Calibration Check % Difference (Calibration must be within 5% of original Y-factor):							5.82%
Hydrogen Fluoride Concentration	$=1.543E\text{-}05^*(mn_{HF,\ \mu g})/V_{m(std)}$	C_{HF}	gr/dscf	7.3E-06 BDL	7.4E-06 BDL	7.6E-06 BDL	7.5E-06 BDL
Hydrogen Fluoride Emissions Rate	$=(60/7000)^*C_{HF}^*Q_{std}$	lb/hr_{HF}	lb/hr	1.4E-02 BDL	1.4E-02 BDL	1.4E-02 BDL	1.4E-02 BDL
Chlorine Concentration	$=1.543E\text{-}05^*(mn_{Cl2,\ \mu g})/V_{m(std)}$	C_{Cl2}	gr/dscf	4.9E-06 BDL	5.81E-06	5.2E-06 BDL	5.3E-06 DLL
Chlorine Gas Emissions	$=(60/7000)^*C_{Cl2}^*Q_{std}$	lb/hr_{Cl2}	lb/hr	9.1E-03 BDL	1.06E-02	9.5E-03 BDL	9.7E-03 DLL
Method 320 Concentration & Emissions Data							
Hydrogen Cyanide Concentration	$= C_{HCN,\ ppmvd}^*27.0253^*7000/385,300,000$	$C_{HCN,\ lb/dscf}$	gr/dscf	1.2E-03	1.2E-03	1.2E-03	1.2E-03
Hydrogen Cyanide Emissions Rate	$=C_{HCN,\ gr/dscf}^*Q_{std}^*60/7000$	$E_{HCN,\ lb/hr}$	lb/hr	2.2E+00	2.1E+00	2.1E+00	2.1E+00
Hydrogen Fluoride Concentration	$= C_{HF,\ ppmvd}^*20.01^*7000/385,300,000$	$C_{HF,\ lb/dscf}$	gr/dscf	4.2E-05 BDL	4.2E-05 BDL	4.2E-05 BDL	4.2E-05 BDL
Hydrogen Fluoride Emissions Rate	$=C_{HF,\ gr/dscf}^*Q_{std}^*60/7000$	$E_{HF,\ lb/hr}$	lb/hr	7.8E-02 BDL	7.7E-02 BDL	7.7E-02 BDL	7.7E-02 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Project Information		Equipment Identification	
Date	12/5/2023	Ref. Thermometer	230441739
Project #	031494	Hygrometer	-
Customer / Facility	Cemex Construction Materials Florida	Field Balance	PCFS2
Unit ID / Sample Location	In-Line Kiln (EU 018) Stack	Check Weights	1000195948
Run #	1, 2, & 3	Calipers	BHMCLP13
Operator	S.Metosh		

Balance Audit (Field balance must be within 0.5g of check weight mass)				Ambient Conditions (Mobile Lab)	
Date	12/5/2023			Relative humidity, %	57
Standard mass, g	500.0			Temperature, °F	76
Field balance mass, g	499.8				
Difference, g	0.2				

Moisture Determination

		Run 1			Run 2			Run 3		
	Contents	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g
Impinger 1	H_2SO_4	696.8	782.6	85.8	693.1	780.6	87.5	697.1	787.5	90.4
Impinger 2	H_2SO_4	691.2	724.9	33.7	797.8	837	39.2	692.5	733.5	41
Impinger 3	Empty	669.3	680.1	10.8	675.6	684.5	8.9	668.9	678.8	9.9
Impinger 4	NaOH	765.9	774.6	8.7	743	749.3	6.3	766.9	774.8	7.9
Impinger 5	NaOH	709.8	711.2	1.4	706.8	709	2.2	710.2	711.4	1.2
Impinger Net Gain, Vwc				140.4			144.1			150.4
Silica Gel, Vwsg		845.4	859	13.6	876.3	889.3	13	859	869.5	10.5
Train Net Gain, Vlc				154			157.1			160.9

Nozzle Measurements (Difference between any two measurements must not be more than 0.004 in (0.1 mm))

Nozzle 1 diameters	D1	0.250	D2	0.250	D3	0.250	Avg	0.250	Difference 0.000
Nozzle 2 diameters	D1		D2		D3		Avg		Difference
Nozzle 3 diameters	D1		D2		D3		Avg		Difference

Nozzle Material ☐ quartz ☑ glass ☐ steel ☐ titanium ☐ inconel ☐ other

Probe Type ☑ heated ☐ unheated ☐ air-cooled ☐ water-cooled ☐ other

Probe Liner ☐ quartz ☑ glass ☐ steel ☐ Teflon ☐ other

Filter Information

Front Half: ☐ quartz fiber ☐ glass fiber ☐ Teflon ☑ Teflon/quartz ☐ other

Reagent Information		Sample Observations
Type	Lot Number	
0.1N H2SO4	202307291732	
0.1N NaOH	202307291800	
Deionized Water	202307291630	

QA/QC Check: Completeness X Legibility X Accuracy X Specifications X

Checked by: N.Hendricks Data Custodian: S.Metosh

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln (EU 018) Stack

Test Date: 12/5/2023

Run Number: 1

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	1.0	1.0000	2.35	2.35	2.35	293	78
A-2	0.89	0.9434	2.35	2.09	2.09	281	78
A-3	0.65	0.8062	2.35	1.53	1.53	271	78
B-1	0.97	0.9849	2.35	2.28	2.28	267	78
B-2	0.92	0.9592	2.35	2.16	2.16	267	78
B-3	0.60	0.7746	2.35	1.41	1.41	258	78
C-1	0.94	0.9695	2.35	2.21	2.21	261	78
C-2	0.84	0.9165	2.35	1.97	1.97	256	79
C-3	0.67	0.8185	2.35	1.57	1.57	253	79
D-1	0.94	0.9695	2.35	2.21	2.21	255	79
D-2	0.89	0.9434	2.35	2.09	2.09	254	79
D-3	0.66	0.8124	2.35	1.55	1.55	250	80
Average:	0.83	0.9082	2.35	1.95	1.95	263.8	78.5
Max:	1.00	1.0000	2.35	2.35	2.35	293.0	80.0
Min:	0.60	0.7746	2.35	1.41	1.41	250.0	78.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Test Date: 12/5/2023

Source: In-Line Kiln (EU 018) Stack

Run Number: 2

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.92	0.9592	2.35	2.16	2.16	254	76
A-2	0.83	0.9110	2.35	1.95	1.95	254	77
A-3	0.67	0.8185	2.35	1.57	1.57	249	78
B-1	0.93	0.9644	2.35	2.19	2.19	252	78
B-2	0.87	0.9327	2.35	2.04	2.04	252	78
B-3	0.60	0.7746	2.35	1.41	1.41	247	79
C-1	0.91	0.9539	2.35	2.14	2.14	251	80
C-2	0.82	0.9055	2.35	1.93	1.93	249	81
C-3	0.64	0.8000	2.35	1.50	1.50	245	81
D-1	0.89	0.9434	2.35	2.09	2.09	245	82
D-2	0.82	0.9055	2.35	1.93	1.93	243	82
D-3	0.58	0.7616	2.35	1.36	1.36	239	82
Average:	0.79	0.8859	2.35	1.86	1.86	248.3	79.5
Max:	0.93	0.9644	2.35	2.19	2.19	254.0	82.0
Min:	0.58	0.7616	2.35	1.36	1.36	239.0	76.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln (EU 018) Stack

Test Date: 12/5/2023

Run Number: 3

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.91	0.9539	2.35	2.14	2.14	245	82
A-2	0.84	0.9165	2.35	1.97	1.97	244	83
A-3	0.63	0.7937	2.35	1.48	1.48	242	83
B-1	0.89	0.9434	2.35	2.09	2.09	245	84
B-2	0.86	0.9274	2.35	2.02	2.02	245	84
B-3	0.63	0.7937	2.35	1.48	1.48	241	85
C-1	0.90	0.9487	2.35	2.12	2.12	244	85
C-2	0.83	0.9110	2.35	1.95	1.95	243	85
C-3	0.61	0.7810	2.35	1.43	1.43	240	84
D-1	0.89	0.9434	2.35	2.09	2.09	244	85
D-2	0.81	0.9000	2.35	1.90	1.90	244	85
D-3	0.61	0.7810	2.35	1.43	1.43	242	85
Average:	0.78	0.8828	2.35	1.84	1.84	243.3	84.2
Max:	0.91	0.9539	2.35	2.14	2.14	245.0	85.0
Min:	0.61	0.7810	2.35	1.43	1.43	240.0	82.0

Source Overview

SOURCE OWNER:	Cemex Construction Materials Florida
PLANT LOCATION (CITY / STATE):	Miami, Florida
SOURCE(S) NAME(S):	In-Line Kiln (EU 018) Stack
SOURCE(S) CONDITION:	EPA §114 ICR
PROCESS CONDITION:	Mill On
METHOD 26A SAMPLING TRAIN ID:	Method 26A Sampling Train B
SOURCE(S) SHAPE:	Circular
PROBE WASH CHEMICAL:	Acetone
SOURCE PERMIT NUMBER:	0250014-072-AV

REFERENCE METHOD TESTS:

Sample Location	US EPA	Method	1
Volumetric Flow	US EPA	Method	2
Oxygen	US EPA	Method	3A
Hydrogen Fluoride	US EPA	Method	26A
Chlorine	US EPA	Method	26A
Carbon Dioxide	US EPA	Method	320
Moisture Content	US EPA	Method	320

PROJECT MANAGER	Jose Medina
ENVIRONMENTAL ANALYST - ASSISTANT	Todd Gregg, Steven Metosh, Joshua Fuller
OWNER'S REPRESENTATIVE:	Greg Bridge
RULING AGENCY :	Florida Department of Environmental Protection
DATE(S) TEST CONDUCTED:	12/5/2023
MONTROSE PROJECT NUMBER:	031494

In-Line Kiln (EU 018) Stack

Emissions Summary

Test Performed For:	Cemex Construction Materials Florida	Testing Performed By:
	Miami, Florida	Montrose Air Quality Services
Source(s) Tested:	In-Line Kiln (EU 018) Stack	Project Manager:
Test Condition:	EPA §114 ICR	Jose Medina
Process Condition:	Mill On	
Test(s) Performed:	Hydrogen fluoride & chlorine emissions	
Sampling Train ID:	Method 26A Sampling Train B	

Run Number		Run 1	Run 2	Run 3	Average
Date of Run		12/5/23	12/5/23	12/5/23	-
Test Run Time Start - End		8:30-9:34	10:10-11:16	12:00-13:03	-
Clinker Processed Rate	Short Tons/hr	126.9	126.9	127.0	126.9
Oxygen Concentration	%(dry)	13.98	13.99	13.99	13.99
Carbon Dioxide Concentration	%(dry)	11.84	12.24	12.19	12.09
Isokinetic Sampling Rate	%	96.60	98.80	98.77	98.06
Stack Temperature	^{o}F	261.3	245.9	243.4	250.2
Moisture Content	% volume	12.68	14.84	14.78	14.10
Stack Gas Velocity	f/s	63.47	56.96	58.42	59.62
Stack Gas Flow @ Actual Conditions	acfm	364,109	326,746	335,108	341,988
Stack Gas Flow @ Standard Conditions	scfm	265,241	243,424	250,541	253,069
Stack Gas Flow @ Dry Standard Conditions	dscfm	231,610	207,310	213,522	217,481
Hydrogen Fluoride Collected	µg	21.9 BDL	22.7 BDL	49.7	31.4 DLL
Hydrogen Fluoride Concentration	ppmvd	1.9E-02 BDL	2.2E-02 BDL	4.7E-02	2.9E-02 DLL
Hydrogen Fluoride Concentration	ppmvd @ 7 %O2	3.9E-02 BDL	4.4E-02 BDL	9.4E-02	5.9E-02 DLL
Hydrogen Fluoride Concentration	gr/dscf	7.1E-06 BDL	8.0E-06 BDL	1.7E-05	1.1E-05 DLL
Hydrogen Fluoride Emissions Rate	lb/hr	1.4E-02 BDL	1.4E-02 BDL	3.1E-02	2.0E-02 DLL
Hydrogen Fluoride Emissions Rate	lb/ton	1.1E-04 BDL	1.1E-04 BDL	2.4E-04	1.6E-04 DLL
Chlorine Collected	µg	58.9	15.2	16.6	30.2
Chlorine Concentration	ppmvd	1.5E-02	4.2E-03	4.4E-03	7.8E-03
Chlorine Concentration	ppmvd @ 7 %O2	3.0E-02	8.4E-03	8.9E-03	1.6E-02
Chlorine Concentration	gr/dscf	1.9E-05	5.4E-06	5.7E-06	1.0E-05
Chlorine Emissions Rate	lb/hr	3.8E-02	9.5E-03	1.0E-02	1.9E-02
Chlorine Emissions Rate	lb/ton	3.0E-04	7.5E-05	8.2E-05	1.5E-04

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

[3] CEMS time is one hour ahead of test time.

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

INPUT TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031494

Source: In-Line Kiln (EU 018) Stack — Data Input By: Jose Medina

Process: Mill On

Field Data	Symbol	Units	Test Data			
Run Number	-	-	1	2	3	AVERAGE
Test Date	-	-	12/05/23	12/05/23	12/05/23	-
Test Run Time Start - End	-	Military Time	8:30-9:34	10:10-11:16	12:00-13:03	-
Sampling Time	θ	minutes	60	60	60	60
Stack Area	A_s	Ft^2	95.61	95.61	95.61	-
Barometric Pressure at Ground Level	$P_{barground}$	in. Hg	30.08	30.10	30.10	30.09
Elevation of Sampling Location	Esam	ft	225	225	225	225
Barometric Pressure at Sampling Location	P_{bar}	in. Hg	29.86	29.88	29.88	29.87
Stack Static Pressure	P_g	in. H_20	-1.00	-0.94	-0.94	-0.96
Pitot Tube Correction factor	C_p	-	0.84	0.84	0.84	0.84
Meter Calibration Factor	Y	-	0.998	0.998	0.998	0.998
Meter Delta H @	$\Delta H@$	in. H_20	1.872	1.872	1.872	1.872
Nozzle Diameter	D_n	inches	0.250	0.250	0.250	0.250
Initial Meter Volume	V_{mi}	dcf	465.558	515.106	560.109	-
Final Meter Volume	V_{mf}	dcf	514.957	559.995	606.737	-
Total Meter Volume	V_m	dcf	49.399	44.889	46.628	46.972
Meter Temperature	t_m	°F	85.5	81.3	86.2	84.31
Actual Orifice Pressure Differential (Average Delta H)	ΔH	in. H_20	2.20	1.80	1.90	1.96
Impingers Weight Gain (Moisture)	W_{imp}	grams	135.6	151.4	155.2	147.4
Silica Gel Impinger Weight Gain (Moisture)	W_{sg}	grams	11.8	10.5	10.7	11.0
Avg. Sq. Rt. of Delta P	$(sqrt\ \Delta P)_{avg}$	$(in.\ H_2O)^{1/2}$	0.9653	0.8728	0.8967	0.9116
Stack Temperature	t_s	°F	261.3	245.9	243.4	250.2
Hydrogen Fluoride Collected	$mn_{HF,\ \mu g}$	μg_{HF}	21.9 BDL	22.7 BDL	49.7	31.4 DLL
Hydrogen Fluoride Concentration	$C_{HF,\ ppmvd}$	ppmvd	1.9E-02 BDL	2.2E-02 BDL	0.05	2.9E-02 DLL
Hydrogen Fluoride Concentration @ 7 $\%O_2$	$C_{HF,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	3.9E-02 BDL	4.4E-02 BDL	0.09	5.9E-02 DLL
Chlorine Collected	$mn_{Cl2,\ \mu g}$	μg_{Cl2}	58.9	15.2	16.6	30.2
Chlorine Concentration	$C_{Cl2,\ ppmvd}$	ppmvd	1.5E-02	4.2E-03	4.4E-03	7.8E-03
Chlorine Concentration @ 7 $\%O_2$	$C_{Cl2,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	3.0E-02	8.4E-03	8.9E-03	1.6E-02
Method 3A O_2 Concentration Data						
Oxygen Concentration, dry basis	$\%O_2$	% (d)	13.98	13.99	13.99	13.99
Method 320 Moisture Fraction & Concentration Data						
Carbon Dioxide Concentration, wet basis	$\%CO_{2,\ wet}$	$\%CO_2$ (wet)	10.34	10.42	10.39	10.38
Carbon Dioxide Concentration, dry basis	$\%CO_2$	% (d)	11.84	12.24	12.19	12.09
Moisture Fraction	B_{ws}	dimensionless	0.1301	0.1357	0.1373	0.1344

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Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

CALCULATED TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031494

Source: In-Line Kiln (EU 018) Stack — Input By: Jose Medina

Process: Mill On

Description	Formulas	Symbol	Units	Calculated Data			
Run Number		-	-	1	2	3	AVERAGE
Test Date		-	-	12/05/23	12/05/23	12/05/23	-
Test Run Time Start - End		-	Military Time	8:30-9:34	10:10-11:16	12:00-13:03	-
Stack Pressure	$= P_{bar} + P_g / 13.6$	P_s	in. Hg	29.78	29.81	29.81	29.80
Meter Pressure	$= P_{bar} + \Delta H / 13.6$	P_m	in. Hg	30.02	30.01	30.01	30.01
Standard Meter Volume	$= (T_{std}/P_{std})^* Y^* (V_m/T_m)^* (P_{bar} + \Delta H / 13.6)$	$V_{m(std)}$	dscf	47.872	43.829	45.128	45.610
Standard Volume of Water Vapor Condensed	$=0.04716^*W_{imp}$	$V_{wc(std)}$	scf	6.395	7.140	7.319	6.951
Standard Volume of Water Collected in Silica Gel	$=0.04716^*W_{sg}$	$V_{wsg(std)}$	scf	0.556	0.495	0.505	0.519
Total Standard Volume of Water Collected	$=V_{wc(std)imp} + V_{wsg(std)sg}$	$V_{wc(std)}$	scf	6.951	7.635	7.824	7.470
Moisture Fraction	$=(V_{wc(std)})/(V_{wc(std)} + V_{m(std)})$	B_{ws}	fraction	0.1268	0.1484	0.1478	0.1410
Moisture Fraction @ Saturation (Theoretical)	$=10^{[6.6911-(3144/(ts+390.86))]}/P_s$	TB_{ws}	fraction	2.4917	1.9030	1.8196	2.0714
Molecular Weight Of Stack Gas, dry basis	=0.32(O2)+0.44(CO2)+0.28(100-O2-CO2))	M_d	lb/lb-mole	30.4539	30.5171	30.5101	30.4937
Molecular Weight Of Stack Gas, wet basis	$= M_d^*(1-B_{ws})+18.015^*(B_{ws})$	M_s	lb/lb-mole	28.8767	28.6623	28.6639	28.7343
Average Stack Gas Velocity	$= 85.49^*C_p^*(\text{sqrt }\Delta P)_{avg}^*SQRT((T_s) / (P_s^*M_w))$	v_s	ft/s	63.47	56.96	58.42	59.615
Stack Gas Flow @ Actual Conditions	$= 60^*v_s^*A_s$	Q_a	acfm	364,109	326,746	335,108	341,988
Stack Gas Flow @ Standard Conditions	$= Q_a^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_s	scfm	265,241	243,424	250,541	253,069
Stack Gas Flow @ Dry Standard Conditions	$= Q_a^*(1-B_{ws})^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_{std}	dscfm	231,610	207,310	213,522	217,481
Volume Collected Through Nozzle	$=T_s/P_s^*[0.002669^*V_{lc}+ V_m^*Y^*P_m/T_m]$	V_n	acf	75.240	69.061	70.805	71.702
Isokinetic Sampling Rate, Percent	$= 100^*Vn / (60^*v_s^*A_n^*\theta)$	I	%	96.6	98.8	98.8	98.1
Post-test DGM Coefficient (EMC ALT-009 Y_{qa})		y_{qa}	-	0.9737	0.9641	0.9580	0.9653
Post-test Meter Orifice Calibration Check % Difference (Calibration must be within 5% of original Y-factor):							3.28%
Hydrogen Fluoride Concentration	$=1.543E\text{-}05^*(mn_{HF,\ \mu g})/V_{m(std)}$	C_{HF}	gr/dscf	7.1E-06 BDL	8.0E-06 BDL	1.7E-05	1.1E-05 DLL
Hydrogen Fluoride Emissions Rate	$=(60/7000)^*C_{HF}^*Q_{std}$	lb/hr_{HF}	lb/hr	1.4E-02 BDL	1.4E-02 BDL	3.1E-02	2.0E-02 DLL
Chlorine Concentration	$=1.543E\text{-}05^*(mn_{Cl2,\ \mu g})/V_{m(std)}$	C_{Cl2}	gr/dscf	1.9E-05	5.4E-06	5.7E-06	1.0E-05
Chlorine Gas Emissions	$=(60/7000)^*C_{Cl2}^*Q_{std}$	lb/hr_{Cl2}	lb/hr	3.8E-02	9.5E-03	1.0E-02	1.9E-02

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[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Project Information		Equipment Identification	
Date	12/5/2023	Ref. Thermometer	230441739
Project #	031494	Hygrometer	-
Customer / Facility	Cemex Construction Materials Florida	Field Balance	PCFS2
Unit ID / Sample Location	In-Line Kiln (EU 018) Stack	Check Weights	1000195948
Run #	1, 2, & 3	Calipers	BHMCLP13
Operator	J.Fuller		

Balance Audit (Field balance must be within 0.5g of check weight mass)				Ambient Conditions (Mobile Lab)	
Date	12/5/2023			Relative humidity, %	57
Standard mass, g	500.0			Temperature, °F	76
Field balance mass, g	499.8				
Difference, g	0.2				

Moisture Determination

		Run 1			Run 2			Run 3		
	Contents	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g
Impinger 1	H_2SO_4	692.7	779.1	86.4	729.5	850.4	120.9	692.5	812	119.5
Impinger 2	H_2SO_4	761.1	800	38.9	623.7	647.8	24.1	762	786.7	24.7
Impinger 3	Empty	656.3	661.2	4.9	665.7	668	2.3	655.8	661.4	5.6
Impinger 4	NaOH	719.1	722.3	3.2	726.9	729	2.1	720.2	723.6	3.4
Impinger 5	NaOH	709.5	711.7	2.2	765.8	767.8	2	709.9	711.9	2
Impinger Net Gain, Vwc				135.6			151.4			155.2
Silica Gel, Vwsg		899.3	911.1	11.8	892.5	903	10.5	911.1	921.8	10.7
Train Net Gain, Vlc				147.4			161.9			165.9

Nozzle Measurements (Difference between any two measurements must not be more than 0.004 in (0.1 mm))

Nozzle 1 diameters	D1	0.250	D2	0.250	D3	0.250	Avg	0.250	Difference 0.000
Nozzle 2 diameters	D1		D2		D3		Avg		Difference
Nozzle 3 diameters	D1		D2		D3		Avg		Difference

Nozzle Material ☐ quartz ☑ glass ☐ steel ☐ titanium ☐ inconel ☐ other

Probe Type ☑ heated ☐ unheated ☐ air-cooled ☐ water-cooled ☐ other

Probe Liner ☐ quartz ☑ glass ☐ steel ☐ Teflon ☐ other

Filter Information

Front Half: ☐ quartz fiber ☐ glass fiber ☐ Teflon ☑ Teflon/quartz ☐ other

Reagent Information		Sample Observations
Type	Lot Number	
0.1N H2SO4	202307291732	
0.1N NaOH	202307291800	
Deionized Water	202307291630	

QA/QC Check: Completeness X Legibility X Accuracy X Specifications X

Checked by: N.Hendricks Data Custodian: J.Fuller

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln (EU 018) Stack

Test Date: 12/5/2023

Run Number: 1

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	1.2	1.0954	2.34	2.81	2.81	291	85
A-2	1.0	1.0000	2.34	2.34	2.34	277	85
A-3	0.74	0.8602	2.34	1.73	1.73	267	84
B-1	1.2	1.0954	2.34	2.81	2.81	266	85
B-2	1.0	1.0000	2.34	2.34	2.34	265	86
B-3	0.77	0.8775	2.34	1.80	1.80	257	85
C-1	1.0	1.0000	2.34	2.34	2.34	260	85
C-2	0.96	0.9798	2.34	2.25	2.25	255	85
C-3	0.70	0.8367	2.34	1.64	1.64	248	87
D-1	1.0	1.0000	2.34	2.34	2.34	254	87
D-2	0.98	0.9899	2.34	2.29	2.29	253	86
D-3	0.72	0.8485	2.34	1.68	1.68	243	86
Average:	0.94	0.9653	2.34	2.20	2.20	261.3	85.5
Max:	1.20	1.0954	2.34	2.81	2.81	291.0	87.0
Min:	0.70	0.8367	2.34	1.64	1.64	243.0	84.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Test Date: 12/5/2023

Source: In-Line Kiln (EU 018) Stack

Run Number: 2

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	1.0	1.0000	2.34	2.34	2.34	253	79
A-2	0.82	0.9055	2.34	1.92	1.92	251	80
A-3	0.57	0.7550	2.34	1.33	1.33	242	80
B-1	0.93	0.9644	2.34	2.18	2.18	250	80
B-2	0.78	0.8832	2.34	1.83	1.83	250	80
B-3	0.64	0.8000	2.34	1.50	1.50	246	81
C-1	0.94	0.9695	2.34	2.20	2.20	250	81
C-2	0.79	0.8888	2.34	1.85	1.85	247	82
C-3	0.60	0.7746	2.34	1.40	1.40	242	83
D-1	0.85	0.9220	2.34	1.99	1.99	243	83
D-2	0.72	0.8485	2.34	1.68	1.68	241	83
D-3	0.58	0.7616	2.34	1.36	1.36	236	83
Average:	0.77	0.8728	2.34	1.80	1.80	245.9	81.3
Max:	1.00	1.0000	2.34	2.34	2.34	253.0	83.0
Min:	0.57	0.7550	2.34	1.33	1.33	236.0	79.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln (EU 018) Stack

Test Date: 12/5/2023

Run Number: 3

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.95	0.9747	2.34	2.22	2.22	244	85
A-2	0.84	0.9165	2.34	1.97	1.97	244	85
A-3	0.58	0.7616	2.34	1.36	1.36	243	85
B-1	0.94	0.9695	2.34	2.20	2.20	245	85
B-2	0.84	0.9165	2.34	1.97	1.97	244	86
B-3	0.64	0.8000	2.34	1.50	1.50	241	86
C-1	0.98	0.9899	2.34	2.29	2.29	244	87
C-2	0.82	0.9055	2.34	1.92	1.92	243	87
C-3	0.69	0.8307	2.34	1.61	1.61	240	87
D-1	0.98	0.9899	2.34	2.29	2.29	246	87
D-2	0.82	0.9055	2.34	1.92	1.92	245	87
D-3	0.64	0.8000	2.34	1.50	1.50	242	87
Average:	0.81	0.8967	2.34	1.90	1.90	243.4	86.2
Max:	0.98	0.9899	2.34	2.29	2.29	246.0	87.0
Min:	0.58	0.7616	2.34	1.36	1.36	240.0	85.0

Appendix A.19
Calculations/Results - Miami Kiln Stack Raw Mill Off

Source Overview

SOURCE OWNER:	Cemex Construction Materials Florida
PLANT LOCATION (CITY / STATE):	Miami, Florida
SOURCE(S) NAME(S):	In-Line Kiln (EU 018) Stack
SOURCE(S) CONDITION:	EPA §114 ICR
PROCESS CONDITION:	Mill Off
METHOD 26A SAMPLING TRAIN ID:	Method 26A Sampling Train A
SOURCE(S) SHAPE:	Circular
PROBE WASH CHEMICAL:	Acetone
SOURCE PERMIT NUMBER:	0250014-072-AV

REFERENCE METHOD TESTS:

Sample Location	US EPA	Method	1
Volumetric Flow	US EPA	Method	2
Oxygen	US EPA	Method	3A
Hydrogen Fluoride	US EPA	Method	26A
Chlorine	US EPA	Method	26A
Carbon Dioxide	US EPA	Method	320
Moisture Content	US EPA	Method	320
Hydrogen Fluoride	US EPA	Method	320
Hydrogen Cyanide	US EPA	Method	320

PROJECT MANAGER	Jose Medina
ENVIRONMENTAL ANALYST - ASSISTANT	Todd Gregg, Steven Metosh, Joshua Fuller
OWNER'S REPRESENTATIVE:	Greg Bridge
RULING AGENCY :	Florida Department of Environmental Protection
DATE(S) TEST CONDUCTED:	12/5/2023 12/6/2023
MONTROSE PROJECT NUMBER:	031494

In-Line Kiln (EU 018) Stack

Emissions Summary

Test Performed For:	Cemex Construction Materials Florida	Testing Performed By:
	Miami, Florida	Montrose Air Quality Services
Source(s) Tested:	In-Line Kiln (EU 018) Stack	Project Manager:
Test Condition:	EPA §114 ICR	Jose Medina
Process Condition:	Mill Off	
Test(s) Performed:	Hydrogen fluoride, chlorine, & hydrogen cyanide emissions	
Sampling Train ID:	Method 26A Sampling Train A	

Run Number		Run 1	Run 2	Run 3	Average
Date of Run		12/5/23	12/6/23	12/6/23	-
Test Run Time Start - End		14:40-15:45	8:20-9:23	10:10-11:14	-
Clinker Processed Rate	Short Tons/hr	127.0	126.9	126.9	126.9
Oxygen Concentration	%(dry)	13.58	12.26	12.25	12.70
Carbon Dioxide Concentration	%(dry)	12.25	14.91	14.71	13.95
Isokinetic Sampling Rate	%	106.40	108.57	108.84	107.94
Stack Temperature	°F	402.9	410.3	411.8	408.3
Moisture Content	% volume	9.22	11.32	11.01	10.51
Stack Gas Velocity	f/s	63.82	56.49	56.06	58.79
Stack Gas Flow @ Actual Conditions	acfm	366,097	324,064	321,570	337,244
Stack Gas Flow @ Standard Conditions	scfm	222,500	195,740	194,113	204,118
Stack Gas Flow @ Dry Standard Conditions	dscfm	201,990	173,592	172,749	182,777
Hydrogen Fluoride Collected	µg	20.0 BDL	20.5 BDL	21.0 BDL	20.5 BDL
Hydrogen Fluoride Concentration	ppmvd	1.8E-02 BDL	2.2E-02 BDL	2.2E-02 BDL	2.1E-02 BDL
Hydrogen Fluoride Concentration	ppmvd @ 7 %O2	3.5E-02 BDL	3.5E-02 BDL	3.6E-02 BDL	3.5E-02 BDL
Hydrogen Fluoride Concentration	gr/dscf	6.7E-06 BDL	7.8E-06 BDL	8.1E-06 BDL	7.5E-06 BDL
Hydrogen Fluoride Emissions Rate	lb/hr	1.2E-02 BDL	1.2E-02 BDL	1.2E-02 BDL	1.2E-02 BDL
Hydrogen Fluoride Emissions Rate	lb/ton	9.1E-05 BDL	9.2E-05 BDL	9.4E-05 BDL	9.2E-05 BDL
Chlorine Collected	µg	17.2	15.0 BDL	15.3 BDL	15.8 DLL
Chlorine Concentration	ppmvd	4.5E-03	4.5E-03 BDL	4.6E-03 BDL	4.5E-03 DLL
Chlorine Concentration	ppmvd @ 7 %O2	8.5E-03	7.2E-03 BDL	7.3E-03 BDL	7.7E-03 DLL
Chlorine Concentration	gr/dscf	5.8E-06	5.7E-06 BDL	5.9E-06 BDL	5.8E-06 DLL
Chlorine Emissions Rate	lb/hr	1.0E-02	8.5E-03 BDL	8.7E-03 BDL	9.1E-03 DLL
Chlorine Emissions Rate	lb/ton	7.9E-05	6.7E-05 BDL	6.8E-05 BDL	7.1E-05 DLL
Hydrogen Cyanide Collected	ppmvw	2.5	2.7	2.6	2.6
Hydrogen Cyanide Concentration	ppmvd	2.7E+00	3.1E+00	3.0E+00	2.9E+00
Hydrogen Cyanide Concentration	ppmvd @ 7 %O2	5.1E+00	5.0E+00	4.7E+00	5.0E+00
Hydrogen Cyanide Concentration	gr/dscf	1.3E-03	1.5E-03	1.5E-03	1.4E-03
Hydrogen Cyanide Emissions Rate	lb/hr	2.3E+00	2.2E+00	2.1E+00	2.2E+00
Hydrogen Cyanide Emissions Rate	lb/ton	1.8E-02	1.8E-02	1.7E-02	1.8E-02
Hydrogen Fluoride Collected (Method 320)	ppmvw	0.1 BDL	0.1 BDL	0.1 BDL	0.1 BDL
Hydrogen Fluoride Concentration (Method 320)	ppmvd	1.1E-01 BDL	1.1E-01 BDL	1.1E-01 BDL	1.1E-01 BDL
Hydrogen Fluoride Concentration (Method 320)	ppmvd @ 7 %O2	2.1E-01 BDL	1.8E-01 BDL	1.8E-01 BDL	1.9E-01 BDL
Hydrogen Fluoride Concentration (Method 320)	gr/dscf	4.0E-05 BDL	4.1E-05 BDL	4.1E-05 BDL	4.1E-05 BDL
Hydrogen Fluoride Emissions Rate (Method 320)	lb/hr	6.9E-02 BDL	6.1E-02 BDL	6.0E-02 BDL	6.4E-02 BDL
Hydrogen Fluoride Emissions Rate (Method 320)	lb/ton	5.5E-04 BDL	4.8E-04 BDL	4.8E-04 BDL	5.0E-04 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

[3] CEMS time is one hour ahead of test time.

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

INPUT TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031494

Source: In-Line Kiln (EU 018) Stack — Data Input By: Jose Medina

Process: Mill Off

Field Data	Symbol	Units	Test Data			
Run Number	-	-	1	2	3	AVERAGE
Test Date	-	-	12/05/23	12/06/23	12/06/23	-
Test Run Time Start - End	-	Military Time	14:40-15:45	8:20-9:23	10:10-11:14	-
Sampling Time	θ	minutes	60	60	60	60
Stack Area	A_s	Ft^2	95.61	95.61	95.61	-
Barometric Pressure at Ground Level	$P_{barground}$	in. Hg	30.02	30.11	30.14	30.09
Elevation of Sampling Location	Esam	ft	225	225	225	225
Barometric Pressure at Sampling Location	P_{bar}	in. Hg	29.80	29.89	29.92	29.87
Stack Static Pressure	P_g	in. H_20	-0.94	-1.20	-1.20	-1.11
Pitot Tube Correction factor	C_p	-	0.84	0.84	0.84	0.84
Meter Calibration Factor	Y	-	0.985	0.985	0.985	0.985
Meter Delta H @	$\Delta H@$	in. H_20	1.833	1.833	1.833	1.833
Nozzle Diameter	D_n	inches	0.250	0.250	0.250	0.250
Initial Meter Volume	V_{mi}	dcf	501.666	554.117	595.743	-
Final Meter Volume	V_{mf}	dcf	550.913	595.086	636.609	-
Total Meter Volume	V_m	dcf	49.247	40.969	40.866	43.694
Meter Temperature	t_m	°F	97.3	69.6	70.0	78.94
Actual Orifice Pressure Differential (Average Delta H)	ΔH	in. H_20	1.89	1.41	1.39	1.56
Impingers Weight Gain (Moisture)	W_{imp}	grams	89.3	99.1	93.6	94.0
Silica Gel Impinger Weight Gain (Moisture)	W_{sg}	grams	9.7	10.0	11.9	10.5
Avg. Sq. Rt. of Delta P	$(sqrt\ \Delta P)_{avg}$	$(in.\ H_20)^{1/2}$	0.8938	0.7896	0.7835	0.8223
Stack Temperature	t_s	°F	402.9	410.3	411.8	408.3
Hydrogen Fluoride Collected	$mn_{HF,\ \mu g}$	μg_{HF}	20.0 BDL	20.5 BDL	21.0 BDL	20.5 BDL
Hydrogen Fluoride Concentration	$C_{HF,\ ppmvd}$	ppmvd	1.8E-02 BDL	2.2E-02 BDL	2.2E-02 BDL	2.1E-02 BDL
Hydrogen Fluoride Concentration @ 7 $\%O_2$	$C_{HF,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	3.5E-02 BDL	3.5E-02 BDL	3.6E-02 BDL	3.5E-02 BDL
Chlorine Collected	$mn_{Cl2,\ \mu g}$	μg_{Cl2}	17.2	15.0 BDL	15.3 BDL	15.8 DLL
Chlorine Concentration	$C_{Cl2,\ ppmvd}$	ppmvd	4.5E-03	4.5E-03 BDL	4.6E-03 BDL	4.5E-03 DLL
Chlorine Concentration @ 7 $\%O_2$	$C_{Cl2,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	8.5E-03	7.2E-03 BDL	7.3E-03 BDL	7.7E-03 DLL
Method 3A O_2 Concentration Data						
Oxygen Concentration, dry basis	$\%O_{2,\ dry}$	% O_2 (dry)	13.58	12.26	12.25	12.70
Method 320 Moisture Fraction & Concentration Data						
Carbon Dioxide Concentration, wet basis	$\%CO_{2,\ wet}$	$\%CO_2$ (wet)	11.12	13.22	13.09	12.48
Carbon Dioxide Concentration, dry basis	$\%CO_{2,\ dry}$	$\%CO_2$ (dry)	12.25	14.91	14.71	13.95
Moisture Fraction	B_{ws}	dimensionless	0.0908	0.1102	0.1135	0.1048
Hydrogen Cyanide Concentration, Wet Basis	$C_{HCN,\ ppmvw}$	ppmvw	2.46	2.73	2.63	2.61
Hydrogen Cyanide Concentration, Dry Basis	$C_{HCN,\ ppmvd}$	ppmvd	2.7E+00	3.1E+00	3.0E+00	2.9E+00
Hydrogen Cyanide Concentration @ 7 $\%O_2$	$C_{HCN,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	5.1E+00	5.0E+00	4.7E+00	5.0E+00
Hydrogen Fluoride Concentration, Wet Basis	$C_{HF,\ ppmvw}$	ppmvw	0.1 BDL	0.1 BDL	0.1 BDL	0.1 BDL
Hydrogen Fluoride Concentration, Dry Basis	$C_{HF,\ ppmvd}$	ppmvd	1.1E-01 BDL	1.1E-01 BDL	1.1E-01 BDL	1.1E-01 BDL
Hydrogen Fluoride Concentration @ 7 $\%O_2$	$C_{HF,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	2.1E-01 BDL	1.8E-01 BDL	1.8E-01 BDL	1.9E-01 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

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Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

CALCULATED TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031494

Source: In-Line Kiln (EU 018) Stack — Input By: Jose Medina

Process: Mill Off

Description	Formulas	Symbol	Units	Calculated Data			
Run Number		-	-	1	2	3	AVERAGE
Test Date		-	-	12/05/23	12/06/23	12/06/23	-
Test Run Time Start - End		-	Military Time	14:40-15:45	8:20-9:23	10:10-11:14	-
Stack Pressure	$= P_{bar} + P_g / 13.6$	P_s	in. Hg	29.73	29.80	29.83	29.78
Meter Pressure	$= P_{bar} + \Delta H / 13.6$	P_m	in. Hg	29.93	29.99	30.02	29.98
Standard Meter Volume	$= (T_{std}/P_{std})^* Y^* (V_m/T_m)^* (P_{bar} + \Delta H / 13.6)$	$V_{m(std)}$	dscf	45.982	40.326	40.231	42.180
Standard Volume of Water Vapor Condensed	$=0.04716^*W_{imp}$	$V_{wc(std)}$	scf	4.211	4.674	4.414	4.433
Standard Volume of Water Collected in Silica Gel	$=0.04716^*W_{sg}$	$V_{wsg(std)}$	scf	0.457	0.472	0.561	0.497
Total Standard Volume of Water Collected	$=V_{wc(std)imp} + V_{wsg(std)sg}$	$V_{wc(std)}$	scf	4.669	5.145	4.975	4.930
Moisture Fraction	$=(V_{wc(std)})/(V_{wc(std)} + V_{m(std)})$	B_{ws}	fraction	0.0922	0.1132	0.1101	0.1051
Moisture Fraction @ Saturation (Theoretical)	$=10^{[6.6911-(3144/(ts+390.86))]}/P_s$	TB_{ws}	fraction	18.0781	19.6239	19.9193	19.2071
Molecular Weight Of Stack Gas, dry basis	=0.32(O2)+0.44(CO2)+0.28(100-O2-CO2))	M_d	lb/lb-mole	30.5032	30.8757	30.8433	30.7407
Molecular Weight Of Stack Gas, wet basis	$= M_d^*(1-B_{ws})+18.015^*(B_{ws})$	M_s	lb/lb-mole	29.3521	29.4205	29.4315	29.4013
Average Stack Gas Velocity	$= 85.49^*C_p^*(\text{sqrt } \Delta P)_{avg}^*SQRT((T_s) / (P_s^*M_w))$	v_s	ft/s	63.82	56.49	56.06	58.788
Stack Gas Flow @ Actual Conditions	$= 60^*v_s^*A_s$	Q_a	acfm	366,097	324,064	321,570	337,244
Stack Gas Flow @ Standard Conditions	$= Q_a^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_s	scfm	222,500	195,740	194,113	204,118
Stack Gas Flow @ Dry Standard Conditions	$= Q_a^*(1-B_{ws})^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_{std}	dscfm	201,990	173,592	172,749	182,777
Volume Collected Through Nozzle	$=T_s/P_s^*[0.002669^*V_{lc}+ V_m^*Y^*P_m/T_m]$	V_n	acf	83.326	75.266	74.874	77.822
Isokinetic Sampling Rate, Percent	$= 100^*Vn / (60^*v_s^*A_n^*\theta)$	I	%	106.4	108.6	108.8	107.9
Post-test DGM Coefficient (EMC ALT-009 Y_{qa})		y_{qa}	-	0.9262	0.9317	0.9272	0.9283
Post-test Meter Orifice Calibration Check % Difference (Calibration must be within 5% of original Y-factor):							5.75%
Hydrogen Fluoride Concentration	$=1.543E\text{-}05^*(mn_{HF,\ \mu g})/V_{m(std)}$	C_{HF}	gr/dscf	6.71E-06 BDL	7.84E-06 BDL	8.05E-06 BDL	7.54E-06 BDL
Hydrogen Fluoride Emissions Rate	$=(60/7000)^*C_{HF}^*Q_{std}$	lb/hr_{HF}	lb/hr	1.16E-02 BDL	1.17E-02 BDL	1.19E-02 BDL	1.17E-02 BDL
Chlorine Concentration	$=1.543E\text{-}05^*(mn_{Cl2,\ \mu g})/V_{m(std)}$	C_{Cl2}	gr/dscf	5.77E-06	5.74E-06 BDL	5.87E-06 BDL	5.79E-06 DLL
Chlorine Gas Emissions	$=(60/7000)^*C_{Cl2}^*Q_{std}$	lb/hr_{Cl2}	lb/hr	9.99E-03	8.54E-03 BDL	8.69E-03 BDL	9.07E-03 DLL
Method 320 Concentration & Emissions Data							
Hydrogen Cyanide Concentration	$= C_{HCN,\ ppmvd}^*27.0253^*7000/385,300,000$	$C_{HCN,\ lb/dscf}$	gr/dscf	1.33E-03	1.51E-03	1.45E-03	1.43E-03
Hydrogen Cyanide Emissions Rate	$=C_{HCN,\ gr/dscf}^*Q_{std}^*60/7000$	$E_{HCN,\ lb/hr}$	lb/hr	2.30	2.25	2.15	2.23
Hydrogen Fluoride Concentration	$= C_{HF,\ ppmvd}^*20.01^*7000/385,300,000$	$C_{HF,\ lb/dscf}$	gr/dscf	4.0E-05 BDL	4.1E-05 BDL	4.1E-05 BDL	4.1E-05 BDL
Hydrogen Fluoride Emissions Rate	$=C_{HF,\ gr/dscf}^*Q_{std}^*60/7000$	$E_{HF,\ lb/hr}$	lb/hr	6.9E-02 BDL	6.1E-02 BDL	6.0E-02 BDL	6.4E-02 BDL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Project Information		Equipment Identification	
Date	12/5/23-12/6/23	Ref. Thermometer	230441739
Project #	031494	Hygrometer	-
Customer / Facility	Cemex Construction Materials Florida	Field Balance	PCFS2
Unit ID / Sample Location	In-Line Kiln (EU 018) Stack	Check Weights	1000195948
Run #	1, 2, & 3	Calipers	BHMCLP13
Operator	S.Metosh		

Balance Audit (Field balance must be within 0.5g of check weight mass)				Ambient Conditions (Mobile Lab)	
Date	12/5/2023	12/6/2023		Relative humidity, %	49
Standard mass, g	500.0	500.0		Temperature, °F	65
Field balance mass, g	499.8	499.8			
Difference, g	0.2	0.2			

Moisture Determination

		Run 1			Run 2			Run 3		
	Contents	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g
Impinger 1	H_2SO_4	695.6	755	59.4	697.5	770	72.5	698.2	759.5	61.3
Impinger 2	H_2SO_4	795.2	819.5	24.3	697.6	719.5	21.9	794.9	820.2	25.3
Impinger 3	Empty	675.7	678.3	2.6	669.5	671.5	2	676.3	678.8	2.5
Impinger 4	NaOH	744	746.5	2.5	769.2	770.5	1.3	746	747.7	1.7
Impinger 5	NaOH	710	710.5	0.5	708.1	709.5	1.4	710.2	713	2.8
Impinger Net Gain, Vwc				89.3			99.1			93.6
Silica Gel, Vwsg		888.8	898.5	9.7	869.5	879.5	10	898.5	910.4	11.9
Train Net Gain, Vlc				99			109.1			105.5

Nozzle Measurements (Difference between any two measurements must not be more than 0.004 in (0.1 mm))

Nozzle 1 diameters	D1	0.250	D2	0.250	D3	0.250	Avg	0.250	Difference 0.000
Nozzle 2 diameters	D1		D2		D3		Avg		Difference
Nozzle 3 diameters	D1		D2		D3		Avg		Difference

Nozzle Material ☐ quartz ☑ glass ☐ steel ☐ titanium ☐ inconel ☐ other

Probe Type ☑ heated ☐ unheated ☐ air-cooled ☐ water-cooled ☐ other

Probe Liner ☐ quartz ☑ glass ☐ steel ☑ Teflon ☐ other

Filter Information

Front Half: ☐ quartz fiber ☐ glass fiber ☐ Teflon ☑ Teflon/quartz ☐ other

Reagent Information		Sample Observations
Type	Lot Number	
0.1N H2SO4	202307291732	
0.1N NaOH	202307291800	
Deionized Water	202307291630	

QA/QC Check: Completeness X Legibility X Accuracy X Specifications X

Checked by: N.Hendricks Data Custodian: S.Metosh

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln (EU 018) Stack

Test Date: 12/5/2023

Run Number: 1

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.90	0.9487	2.35	2.12	2.12	405	89
A-2	0.84	0.9165	2.35	1.97	1.97	404	91
A-3	0.66	0.8124	2.35	1.55	1.55	399	92
B-1	0.96	0.9798	2.35	2.26	2.26	407	94
B-2	0.89	0.9434	2.35	2.09	2.09	407	97
B-3	0.53	0.7280	2.35	1.25	1.25	392	99
C-1	0.93	0.9644	2.35	2.19	2.19	407	101
C-2	0.84	0.9165	2.35	1.97	1.97	405	101
C-3	0.66	0.8124	2.35	1.55	1.55	400	101
D-1	0.9	0.9644	2.35	2.19	2.19	407	101
D-2	0.87	0.9327	2.35	2.04	2.04	405	101
D-3	0.65	0.8062	2.35	1.53	1.53	397	100
Average:	0.81	0.8938	2.35	1.89	1.89	402.9	97.3
Max:	0.96	0.9798	2.35	2.26	2.26	407.0	101.0
Min:	0.53	0.7280	2.35	1.25	1.25	392.0	89.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln (EU 018) Stack

Test Date: 12/6/2023

Run Number: 2

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.72	0.8485	2.25	1.62	1.62	413	68
A-2	0.62	0.7874	2.25	1.40	1.40	409	68
A-3	0.51	0.7141	2.25	1.15	1.15	402	68
B-1	0.73	0.8544	2.25	1.64	1.64	415	69
B-2	0.68	0.8246	2.25	1.53	1.53	413	69
B-3	0.47	0.6856	2.25	1.06	1.06	403	70
C-1	0.72	0.8485	2.25	1.62	1.62	416	70
C-2	0.66	0.8124	2.25	1.49	1.49	412	70
C-3	0.52	0.7211	2.25	1.17	1.17	407	71
D-1	0.73	0.8544	2.25	1.64	1.64	416	71
D-2	0.68	0.8246	2.25	1.53	1.53	415	71
D-3	0.49	0.7000	2.25	1.10	1.10	403	70
Average:	0.63	0.7896	2.25	1.41	1.41	410.3	69.6
Max:	0.73	0.8544	2.25	1.64	1.64	416.0	71.0
Min:	0.47	0.6856	2.25	1.06	1.06	402.0	68.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln (EU 018) Stack

Test Date: 12/6/2023

Run Number: 3

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.72	0.8485	2.25	1.62	1.62	417	68
A-2	0.62	0.7874	2.25	1.40	1.40	413	68
A-3	0.49	0.7000	2.25	1.10	1.10	405	69
B-1	0.72	0.8485	2.25	1.62	1.62	418	69
B-2	0.69	0.8307	2.25	1.55	1.55	415	70
B-3	0.49	0.7000	2.25	1.10	1.10	405	70
C-1	0.70	0.8367	2.25	1.58	1.58	417	71
C-2	0.63	0.7937	2.25	1.42	1.42	413	70
C-3	0.48	0.6928	2.25	1.08	1.08	405	71
D-1	0.73	0.8544	2.25	1.64	1.64	417	71
D-2	0.69	0.8307	2.25	1.55	1.55	415	71
D-3	0.46	0.6782	2.25	1.04	1.04	401	72
Average:	0.62	0.7835	2.25	1.39	1.39	411.8	70.0
Max:	0.73	0.8544	2.25	1.64	1.64	418.0	72.0
Min:	0.46	0.6782	2.25	1.04	1.04	401.0	68.0

Source Overview

SOURCE OWNER:	Cemex Construction Materials Florida
PLANT LOCATION (CITY / STATE):	Miami, Florida
SOURCE(S) NAME(S):	In-Line Kiln (EU 018) Stack
SOURCE(S) CONDITION:	EPA §114 ICR
PROCESS CONDITION:	Mill Off
METHOD 26A SAMPLING TRAIN ID:	Method 26A Sampling Train B
SOURCE(S) SHAPE:	Circular
PROBE WASH CHEMICAL:	Acetone
SOURCE PERMIT NUMBER:	0250014-072-AV

REFERENCE METHOD TESTS:

Sample Location	US EPA	Method	1
Volumetric Flow	US EPA	Method	2
Oxygen	US EPA	Method	3A
Hydrogen Fluoride	US EPA	Method	26A
Chlorine	US EPA	Method	26A
Carbon Dioxide	US EPA	Method	320
Moisture Content	US EPA	Method	320

PROJECT MANAGER	Jose Medina
ENVIRONMENTAL ANALYST - ASSISTANT	Todd Gregg, Steven Metosh, Joshua Fuller
OWNER'S REPRESENTATIVE:	Greg Bridge
RULING AGENCY :	Florida Department of Environmental Protection
DATE(S) TEST CONDUCTED:	12/5/2023 12/6/2023
MONTROSE PROJECT NUMBER:	031494

In-Line Kiln (EU 018) Stack

Emissions Summary

Test Performed For:	Cemex Construction Materials Florida	Testing Performed By:
	Miami, Florida	Montrose Air Quality Services
Source(s) Tested:	In-Line Kiln (EU 018) Stack	Project Manager:
Test Condition:	EPA §114 ICR	Jose Medina
Process Condition:	Mill Off	
Test(s) Performed:	Hydrogen fluoride & chlorine emissions	
Sampling Train ID:	Method 26A Sampling Train B	

Run Number		Run 1	Run 2	Run 3	Average
Date of Run		12/5/23	12/6/23	12/6/23	-
Test Run Time Start - End		14:40-15:45	8:20-9:23	10:10-11:14	-
Clinker Processed Rate	Short Tons/hr	127.0	126.9	126.9	126.9
Oxygen Concentration	%(dry)	13.58	12.26	12.25	12.70
Carbon Dioxide Concentration	%(dry)	12.27	15.05	14.78	14.03
Isokinetic Sampling Rate	%	102.31	104.10	105.13	103.85
Stack Temperature	°F	401.8	406.9	408.2	405.6
Moisture Content	% volume	9.38	12.15	11.44	10.99
Stack Gas Velocity	f/s	65.37	58.38	57.39	60.38
Stack Gas Flow @ Actual Conditions	acfm	374,992	334,874	329,230	346,366
Stack Gas Flow @ Standard Conditions	scfm	228,192	203,067	199,558	210,272
Stack Gas Flow @ Dry Standard Conditions	dscfm	206,778	178,402	176,727	187,302
Hydrogen Fluoride Collected	µg	20.3 BDL	20.7 BDL	22.0 BDL	21.0 BDL
Hydrogen Fluoride Concentration	ppmvd	1.9E-02 BDL	2.2E-02 BDL	2.3E-02 BDL	2.2E-02 BDL
Hydrogen Fluoride Concentration	ppmvd @ 7 %O2	3.6E-02 BDL	3.6E-02 BDL	3.8E-02 BDL	3.7E-02 BDL
Hydrogen Fluoride Concentration	gr/dscf	6.9E-06 BDL	8.0E-06 BDL	8.5E-06 BDL	7.8E-06 BDL
Hydrogen Fluoride Emissions Rate	lb/hr	1.2E-02 BDL	1.2E-02 BDL	1.3E-02 BDL	1.2E-02 BDL
Hydrogen Fluoride Emissions Rate	lb/ton	9.7E-05 BDL	9.7E-05 BDL	1.0E-04 BDL	9.8E-05 BDL
Chlorine Collected	µg	16.5	16.7	15.8 BDL	16.3 DLL
Chlorine Concentration	ppmvd	4.4E-03	5.0E-03	4.8E-03 BDL	4.7E-03 DLL
Chlorine Concentration	ppmvd @ 7 %O2	8.3E-03	8.1E-03	7.6E-03 BDL	8.0E-03 DLL
Chlorine Concentration	gr/dscf	5.6E-06	6.5E-06	6.1E-06 BDL	6.1E-06 DLL
Chlorine Emissions Rate	lb/hr	1.0E-02	9.9E-03	9.3E-03 BDL	9.7E-03 DLL
Chlorine Emissions Rate	lb/ton	7.8E-05	7.8E-05	7.3E-05 BDL	7.7E-05 DLL

[1] A value followed by the acronym BDL (below detection level) indicates all analytical values used to calculate and report the value are less than the analytical laboratory's detection level

[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

[3] CEMS time is one hour ahead of test time.

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

INPUT TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031494

Source: In-Line Kiln (EU 018) Stack — Data Input By: Jose Medina

Process: Mill Off

Field Data	Symbol	Units	Test Data			
Run Number	-	-	1	2	3	AVERAGE
Test Date	-	-	12/05/23	12/06/23	12/06/23	-
Test Run Time Start - End	-	Military Time	14:40-15:45	8:20-9:23	10:10-11:14	-
Sampling Time	θ	minutes	60	60	60	60
Stack Area	A_s	Ft^2	95.61	95.61	95.61	-
Barometric Pressure at Ground Level	$P_{barground}$	in. Hg	30.02	30.11	30.14	30.09
Elevation of Sampling Location	Esam	ft	225	225	225	225
Barometric Pressure at Sampling Location	P_{bar}	in. Hg	29.80	29.89	29.92	29.87
Stack Static Pressure	P_g	in. H_20	-0.94	-1.20	-1.20	-1.11
Pitot Tube Correction factor	C_p	-	0.84	0.84	0.84	0.84
Meter Calibration Factor	Y	-	0.998	0.998	0.998	0.998
Meter Delta H @	ΔH@	in. H_20	1.872	1.872	1.872	1.872
Nozzle Diameter	D_n	inches	0.250	0.250	0.250	0.250
Initial Meter Volume	V_{mi}	dcf	606.818	654.846	694.934	-
Final Meter Volume	V_{mf}	dcf	654.735	694.813	734.894	-
Total Meter Volume	V_m	dcf	47.917	39.967	39.960	42.615
Meter Temperature	t_m	°F	98.2	71.3	71.5	80.33
Actual Orifice Pressure Differential (Average Delta H)	ΔH	in. H_20	1.98	1.52	1.47	1.65
Impingers Weight Gain (Moisture)	W_{imp}	grams	89.8	106.8	98.6	98.4
Silica Gel Impinger Weight Gain (Moisture)	W_{sg}	grams	9.6	9.7	10.3	9.9
Avg. Sq. Rt. of Delta P	$(sqrt\ \Delta P)_{avg}$	$(in.\ H_2O)^{1/2}$	0.9158	0.8164	0.8032	0.8451
Stack Temperature	t_s	°F	401.8	406.9	408.2	405.6
Hydrogen Fluoride Collected	$mn_{HF,\ \mu g}$	μg_{HF}	20.3 BDL	20.7 BDL	22.0 BDL	21.0 BDL
Hydrogen Fluoride Concentration	$C_{HF,\ ppmvd}$	ppmvd	1.9E-02 BDL	2.2E-02 BDL	2.3E-02 BDL	2.2E-02 BDL
Hydrogen Fluoride Concentration @ 7 $\%O_2$	$C_{HF,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	3.6E-02 BDL	3.6E-02 BDL	3.8E-02 BDL	3.7E-02 BDL
Chlorine Collected	$mn_{Cl2,\ \mu g}$	μg_{Cl2}	16.5	16.7	15.8 BDL	16.3 DLL
Chlorine Concentration	$C_{Cl2,\ ppmvd}$	ppmvd	4.4E-03	5.0E-03	4.8E-03 BDL	4.7E-03 DLL
Chlorine Concentration @ 7 $\%O_2$	$C_{HCN,\ ppmvd\ @\ 7\ \%O2}$	ppmvd	8.3E-03	8.1E-03	7.6E-03 BDL	8.0E-03 DLL
Method 3A O_2 Concentration Data						
Oxygen Concentration, dry basis	$\%O_2$	% (d)	13.58	12.26	12.25	12.70
Method 320 Moisture Fraction & Concentration Data						
Carbon Dioxide Concentration, wet basis	$\%CO_{2,\ wet}$	$\%CO_2$ (wet)	11.12	13.22	13.09	12.48
Carbon Dioxide Concentration, dry basis	$\%CO_{2,\ dry}$	$\%CO_2$ (dry)	12.27	15.05	14.78	14.03
Moisture Fraction	B_{ws}	dimensionless	0.0908	0.1102	0.1135	0.1048

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[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

CALCULATED TEST DATA

Client: Cemex Construction Materials Florida — Job No.: 031494

Source: In-Line Kiln (EU 018) Stack — Input By: Jose Medina

Process: Mill Off

Description	Formulas	Symbol	Units	Calculated Data			
Run Number		-	-	1	2	3	AVERAGE
Test Date		-	-	12/05/23	12/06/23	12/06/23	-
Test Run Time Start - End		-	Military Time	14:40-15:45	8:20-9:23	10:10-11:14	-
Stack Pressure	$= P_{bar} + P_g / 13.6$	P_s	in. Hg	29.73	29.80	29.83	29.78
Meter Pressure	$= P_{bar} + \Delta H / 13.6$	P_m	in. Hg	29.94	30.00	30.02	29.99
Standard Meter Volume	$= (T_{std}/P_{std})^* Y^* (V_m/T_m)^* (P_{bar} + \Delta H / 13.6)$	$V_{m(std)}$	dscf	45.266	39.738	39.754	41.586
Standard Volume of Water Vapor Condensed	$=0.04716^*W_{imp}$	$V_{wc(std)}$	scf	4.235	5.037	4.650	4.641
Standard Volume of Water Collected in Silica Gel	$=0.04716^*W_{sg}$	$V_{wsg(std)}$	scf	0.453	0.457	0.486	0.465
Total Standard Volume of Water Collected	$=V_{wc(std)imp} + V_{wsg(std)sg}$	$V_{wc(std)}$	scf	4.688	5.494	5.136	5.106
Moisture Fraction	$=(V_{wc(std)})/(V_{wc(std)} + V_{m(std)})$	B_{ws}	fraction	0.0938	0.1215	0.1144	0.1099
Moisture Fraction @ Saturation (Theoretical)	$=10^{[6.6911-(3144/(ts+390.86))]}/P_s$	TB_{ws}	fraction	17.8542	18.8790	19.1296	18.6209
Molecular Weight Of Stack Gas, dry basis	=0.32(O2)+0.44(CO2)+0.28(100-O2-CO2))	M_d	lb/lb-mole	30.5068	30.8982	30.8549	30.7533
Molecular Weight Of Stack Gas, wet basis	$= M_d^*(1-B_{ws})+18.015^*(B_{ws})$	M_s	lb/lb-mole	29.3346	29.3334	29.3859	29.3513
Average Stack Gas Velocity	$= 85.49^*C_p^*(\text{sqrt }\Delta P)_{avg}{}^*SQRT((T_s) / (P_s^*M_w))$	v_s	ft/s	65.37	58.38	57.39	60.378
Stack Gas Flow @ Actual Conditions	$= 60^*v_s^*A_s$	Q_a	acfm	374,992	334,874	329,230	346,366
Stack Gas Flow @ Standard Conditions	$= Q_a^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_s	scfm	228,192	203,067	199,558	210,272
Stack Gas Flow @ Dry Standard Conditions	$= Q_a^*(1-B_{ws})^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_{std}	dscfm	206,778	178,402	176,727	187,302
Volume Collected Through Nozzle	$=T_s/P_s^*[0.002669^*V_{lc}+ V_m^*Y^*P_m/T_m]$	V_n	acf	82.075	74.575	74.043	76.897
Isokinetic Sampling Rate, Percent	$= 100^*Vn / (60^*v_s^*A_n^*\theta)$	I	%	102.3	104.1	105.1	103.8
Post-test DGM Coefficient (EMC ALT-009 Y_{qa})		y_{qa}	-	0.9637	0.9782	0.9629	0.9683
Post-test Meter Orifice Calibration Check % Difference (Calibration must be within 5% of original Y-factor):							2.98%
Hydrogen Fluoride Concentration	$=1.543E\text{-}05^*(mn_{HF,\ \mu g})/V_{m(std)}$	C_{HF}	gr/dscf	6.92E-06 BDL	8.04E-06 BDL	8.54E-06 BDL	7.83E-06 BDL
Hydrogen Fluoride Emissions Rate	$=(60/7000)^*C_{HF}^*Q_{std}$	lb/hr_{HF}	lb/hr	1.23E-02 BDL	1.23E-02 BDL	1.29E-02 BDL	1.25E-02 BDL
Chlorine Concentration	$=1.543E\text{-}05^*(mn_{Cl2,\ \mu g})/V_{m(std)}$	C_{Cl2}	gr/dscf	5.62E-06	6.48E-06	6.13E-06 BDL	6.08E-06 DLL
Chlorine Gas Emissions	$=(60/7000)^*C_{Cl2}^*Q_{std}$	lb/hr_{Cl2}	lb/hr	9.97E-03	9.92E-03	9.29E-03 BDL	9.72E-03 DLL

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[2] A value followed by the acronym DLL (detection level limited) indicates at least one but not all values used to calculate and report the value are less than the analytical laboratory's detection level

MONTROSE AIR QUALITY SERVICES

Method Sample Recovery & Calibration Check Datasheet

Project Information		Equipment Identification	
Date	12/5/23-12/6/23	Ref. Thermometer	230441739
Project #	031494	Hygrometer	-
Customer / Facility	Cemex Construction Materials Florida	Field Balance	PCFS2
Unit ID / Sample Location	In-Line Kiln (EU 018) Stack	Check Weights	1000195948
Run #	1, 2, & 3	Calipers	BHMCLP13
Operator	J.Fuller		

Balance Audit (Field balance must be within 0.5g of check weight mass)				Ambient Conditions (Mobile Lab)	
Date	12/5/2023	12/6/2023		Relative humidity, %	49
Standard mass, g	500.0	500.0		Temperature, °F	65
Field balance mass, g	499.8	499.8			
Difference, g	0.2	0.2			

Moisture Determination

		Run 1			Run 2			Run 3		
	Contents	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g	Initial, g	Final, g	Net, g
Impinger 1	H_2SO_4	735.5	800	64.5	690.5	767.3	76.8	734.6	802	67.4
Impinger 2	H_2SO_4	623	643.5	20.5	766	788.4	22.4	623.5	648.1	24.6
Impinger 3	Empty	665.8	668	2.2	657.3	660.5	3.2	664.9	666.3	1.4
Impinger 4	NaOH	728.6	730.3	1.7	717.3	720	2.7	728.4	731.9	3.5
Impinger 5	NaOH	764.7	765.6	0.9	714.6	716.3	1.7	766.3	768	1.7
Impinger Net Gain, Vwc				89.8			106.8			98.6
Silica Gel, Vwsg		902.4	912	9.6	922.5	932.2	9.7	912	922.3	10.3
Train Net Gain, Vlc				99.4			116.5			108.9

Nozzle Measurements (Difference between any two measurements must not be more than 0.004 in (0.1 mm))

Nozzle 1 diameters	D1	0.250	D2	0.250	D3	0.250	Avg	0.250	Difference 0.000
Nozzle 2 diameters	D1		D2		D3		Avg		Difference
Nozzle 3 diameters	D1		D2		D3		Avg		Difference

Nozzle Material ☐ quartz ☑ glass ☐ steel ☐ titanium ☑ inconel ☐ other

Probe Type ☑ heated ☐ unheated ☐ air-cooled ☐ water-cooled ☐ other

Probe Liner ☐ quartz ☑ glass ☐ steel ☑ Teflon ☐ other

Filter Information

Front Half: ☐ quartz fiber ☐ glass fiber ☐ Teflon ☑ Teflon/quartz ☐ other

Reagent Information		Sample Observations
Type	Lot Number	
0.1N H2SO4	202307291732	
0.1N NaOH	202307291800	
Deionized Water	202307291630	

QA/QC Check: Completeness X Legibility X Accuracy X Specifications X

Checked by: N.Hendricks Data Custodian: J.Fuller

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Test Date: 12/5/2023

Source: In-Line Kiln (EU 018) Stack

Run Number: 1

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	1.0	1.0000	2.34	2.34	2.34	404	91
A-2	0.85	0.9220	2.34	1.99	1.99	402	93
A-3	0.70	0.8367	2.34	1.64	1.64	396	93
B-1	0.98	0.9899	2.34	2.29	2.29	407	95
B-2	0.87	0.9327	2.34	2.04	2.04	403	97
B-3	0.76	0.8718	2.34	1.78	1.78	399	99
C-1	1.0	1.0000	2.34	2.34	2.34	405	100
C-2	0.80	0.8944	2.34	1.87	1.87	404	102
C-3	0.61	0.7810	2.34	1.43	1.43	397	102
D-1	1.0	1.0000	2.34	2.34	2.34	407	102
D-2	0.90	0.9487	2.34	2.11	2.11	402	102
D-3	0.66	0.8124	2.34	1.54	1.54	396	102
Average:	0.84	0.9158	2.34	1.98	1.98	401.8	98.2
Max:	1.00	1.0000	2.34	2.34	2.34	407.0	102.0
Min:	0.61	0.7810	2.34	1.43	1.43	396.0	91.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln (EU 018) Stack

Test Date: 12/6/2023

Run Number: 2

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.8	0.9055	2.25	1.85	1.85	411	69
A-2	0.68	0.8246	2.25	1.53	1.53	407	70
A-3	0.49	0.7000	2.25	1.10	1.10	399	70
B-1	0.82	0.9055	2.25	1.85	1.85	412	70
B-2	0.72	0.8485	2.25	1.62	1.62	408	73
B-3	0.45	0.6708	2.25	1.01	1.01	399	71
C-1	0.83	0.9110	2.25	1.87	1.87	414	72
C-2	0.73	0.8544	2.25	1.64	1.64	408	72
C-3	0.48	0.6928	2.25	1.08	1.08	401	73
D-1	0.80	0.8944	2.25	1.80	1.80	413	72
D-2	0.79	0.8888	2.25	1.78	1.78	409	72
D-3	0.49	0.7000	2.25	1.10	1.10	402	72
Average:	0.68	0.8164	2.25	1.52	1.52	406.9	71.3
Max:	0.83	0.9110	2.25	1.87	1.87	414.0	73.0
Min:	0.45	0.6708	2.25	1.01	1.01	399.0	69.0

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: Cemex Construction Materials Florida

Source: In-Line Kiln (EU 018) Stack

Test Date: 12/6/2023

Run Number: 3

EPA METHODS 1-4 TEST DATA

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H (Desired)	Delta H (Actual)	Stack Temp. (°F)	Meter Temp. (°F)
A-1	0.81	0.9000	2.25	1.82	1.82	413	69
A-2	0.69	0.8307	2.25	1.55	1.55	409	70
A-3	0.46	0.6782	2.25	1.04	1.04	401	70
B-1	0.80	0.8944	2.25	1.80	1.80	414	71
B-2	0.73	0.8544	2.25	1.64	1.64	410	71
B-3	0.48	0.6928	2.25	1.08	1.08	402	71
C-1	0.80	0.8944	2.25	1.80	1.80	414	74
C-2	0.66	0.8124	2.25	1.49	1.49	408	72
C-3	0.44	0.6633	2.25	0.99	0.99	400	72
D-1	0.78	0.8832	2.25	1.76	1.76	413	72
D-2	0.72	0.8485	2.25	1.62	1.62	411	73
D-3	0.47	0.6856	2.25	1.06	1.06	403	73
Average:	0.65	0.8032	2.25	1.47	1.47	408.2	71.5
Max:	0.81	0.9000	2.25	1.82	1.82	414.0	74.0
Min:	0.44	0.6633	2.25	0.99	0.99	400.0	69.0

Appendix A.20
Cl_2 Paired Train Agreement

Table A-1
Method 26A Cl2 Paired Train Agreement

Cemex Brooksville Kiln 1 - Raw Mill On

	Train 1A	Train 1B	Train 2A	Train 2B	Train 3A	Train 3B
Cl_2, ppmvd	1.6E-02	2.1E-02	1.5E-02	1.0E-01	8.9E-03	8.4E-03
Difference, ppmvd	**0.0046**		**0.0882**		**0.0005**	
Relative Difference, %	24.8		150.2		5.4	
Compliance Status	Compliant		Compliant		Compliant	

Cemex Brooksville Kiln 1 - Raw Mill Off

	Train 1A	Train 1B	Train 2A	Train 2B	Train 3A	Train 3B
Cl_2, ppmvd	3.0E-02	1.6E-02	1.6E-02	2.4E-02	1.2E-02	1.9E-02
Difference, ppmvd	**0.014**		**0.008**		**0.007**	
Relative Difference, %	61.7		41.7		43.0	
Compliance Status	Compliant		Compliant		Compliant	

Cemex Brooksville Kiln 2 - Raw Mill On

	Train 1A	Train 1B	Train 2A	Train 2B	Train 3A	Train 3B
Cl_2, ppmvd	3.2E-03	8.1E-03	3.4E-03	4.0E-03	3.4E-03	4.3E-03
Difference, ppmvd	**0.0048**		**0.0005**		**0.0009**	
Relative Difference, %	85.7		14.2		24.1	
Compliance Status	Compliant		Compliant		Compliant	

Cemex Brooksville Kiln 2 - Raw Mill Off

	Train 1A	Train 1B	Train 2A	Train 2B	Train 3A	Train 3B
Cl_2, ppmvd	4.8E-03	7.7E-03	4.4E-03	5.4E-03	8.7E-03	4.4E-03
Difference, ppmvd	**0.0029**		**0.0010**		**0.0043**	
Relative Difference, %	47.3		20.6		65.2	
Compliance Status	Compliant		Compliant		Compliant	

Cemex Miami Kiln - Raw Mill On

	Train 1A	Train 1B	Train 2A	Train 2B	Train 3A	Train 3B
Cl_2, ppmvd	3.8E-03 BDL	1.5E-02	4.5E-03	4.2E-03	4.1E-03 BDL	4.4E-03
Difference, ppmvd	**0.0109**		**0.0004**		**0.0003**	
Relative Difference, %	117.8		8.3		7.9	
Compliance Status	Compliant		Compliant		Compliant	

Cemex Miami Kiln - Raw Mill Off

	Train 1A	Train 1B	Train 2A	Train 2B	Train 3A	Train 3B
Cl_2, ppmvd	4.5E-03	4.4E-03	4.5E-03 BDL	5.0E-03 BDL	4.6E-03 BDL	4.8E-03 BDL
Difference, ppmvd	**0.0001**		**0.0006**		**0.0002**	
Relative Difference, %	2.6		12.2		4.4	
Compliance Status	Compliant		Compliant		Compliant	

Acceptance criteria for paired sampels: 10% relative deviation or 0.2 ppm absolute difference, whichever is least restrictive.

Appendix A.21
Example Calculations -
Brooksville Kiln 1 Raw Mill Off Train A Run 1

Volumetric Flow Rate

Stack Area, A_s

$$A_s = \pi r^2 = \pi\left(\frac{223.8}{2(12)}\right)\left(\frac{223.8}{2(12)}\right) = 273.18$$

Stack Pressure, P_s

$$P_s = 29.71 + \frac{-0.55}{13.6} = 29.6695588235294$$

Meter Pressure, P_m

$$P_m = 29.71 + \frac{1.792725}{13.6} = 29.8418180147059$$

Sample Gas Volume, $V_{m(std),\ dscf}$

$$V_{m(std)} = 46.140(0.989)\left(\frac{527.67}{29.92}\right)\left(\frac{29.8418180147059}{543.336666666667}\right) = 44.2008844654738$$

Volume of Water Vapor Condensed, $V_{wc(std)}$

$$V_{wc(std)} = (44.7)0.04716 = 2.108052$$

Volume of Water Collected in Silica Gel, $V_{wsg(std)}$

$$V_{wsg(std)} = (14.5)0.04716 = 0.68382$$

Moisture Content, B_{ws}

$$B_{ws} = \frac{2.108052 + 0.68382}{2.108052 + 0.68382 + 44.2008844654738} = 0.0594106881568274$$

Saturation Moisture, TB_{ws}

$$TB_{ws} = \frac{10^{\left(6.6911 - \frac{3144}{296.916666666667 + 390.86}\right)}}{29.6695588235294} = 4.44158098030203$$

Molecular Weight, M_d

$$M_d = 0.32(17.1934) + 0.44(6.36834793312932) + 0.28(100 - 17.1934 - 6.36834793312932) = 29.7066716693007$$

Molecular Weight, M_s

$$M_s = 29.7066716693007(1 - 0.0594106881568274) + 18.015(0.0594106881568274) = 29.0120614097239$$

Velocity, v_s

$$v_s = 85.49(0.84)(0.316400217071346)\sqrt{\frac{756.586666666667}{(29.6695588235294)(29.0120614097239)}} = 21.3017792282747$$

Volumetric Flow Rate (Continued)

Actual Volumetric Flow Rate, Q_a

$$Q_a = \left(\frac{60 \text{ min}}{1 \text{ hr}}\right)(21.3017792282747)(273.18) = 349153.202974805$$

Standard Volumetric Flow Rate, Q_s

$$Q_s = 349153.202974805\left(\frac{527.67}{756.586666666667}\right)\left(\frac{29.6695588235294}{29.92}\right) = 241473.373774315$$

Dry Standard Volumetric Flow Rate, Q_{std}

$$Q_{std} = 349153.202974805\left(\frac{527.67}{756.586666666667}\right)\left(\frac{29.6695588235294}{29.92}\right)(1 - 0.0594106881568274) = 227127.274466832$$

O_2 Concentration, Corrected for System Bias

O_2 Concentration Adjusted for Bias, $C_{gas,\ ppmvd}$

$$C_{\%O2} = \frac{(17.2026666666667 - (-0.005))12.01}{12.015 - (-0.005)} = 17.1934$$

Hydrogen Halide/Halogen Concentration

HF Concentration, gr/dscf

$$C_{HF,\ gr/dscf} = \frac{42.2}{44.2008844654738}\left(\frac{0.00001543\ gr}{1\ \mu g}\right) = 0.000014731515169309$$

Cl_2 Concentration, gr/dscf

$$C_{Cl2,\ gr/dscf} = \frac{110}{44.2008844654738}\left(\frac{0.00001543\ gr}{1\ \mu g}\right) = 0.0000383996840906157$$

HF Concentration, Dry Basis, $C_{HF,\ ppmvd}$

$$C_{HF,\ ppmvd} = \frac{42.2}{44.2008844654738}\left(\frac{0.03531\ ft^3}{1\ L}\right)\left(\frac{24.056\ L\ air}{1\ mol\ air}\right)\left(\frac{1\ g}{1{,}000{,}000\ \mu g}\right)\left(\frac{1\ mol\ HF}{20.01\ g\ HF}\right)\left(\frac{1{,}000{,}000\ parts}{1\ ppm}\right) = 0.0405280338570649$$

Cl_2 Concentration, Dry Basis, $C_{Cl2,\ ppmvd}$

$$C_{Cl2,\ ppmvd} = \frac{110}{44.2008844654738}\left(\frac{0.03531\ ft^3}{1\ L}\right)\left(\frac{24.056\ L\ air}{1\ mol\ air}\right)\left(\frac{1\ g}{1{,}000{,}000\ \mu g}\right)\left(\frac{1\ mol\ Cl_2}{70.906\ g\ Cl_2}\right)\left(\frac{1{,}000{,}000\ parts}{1\ ppm}\right) = 0.0298126012781308$$

HF Concentration, Corrected to 7 $\%O_2$, ppmvd

$$C_{HF,\ pppmvd\ @\ 7\ \%O2} = 0.0405280338570649\left(\frac{20.9 - 7}{20.9 - 17.1934}\right) = 0.151982860468678$$

Cl_2 Concentration, Corrected to 7 $\%O_2$, ppmvd

$$C_{Cl2,\ pppmvd\ @\ 7\ \%O2} = 0.0298126012781308\left(\frac{20.9 - 7}{20.9 - 17.1934}\right) = 0.111799265571148$$

Hydrogen Cyanide/Method 320 Hydrogen Fluoride Concentration

HCN Concentration, ppmvd

$$C_{HCN,\ ppmvd} = \frac{1.18}{1 - 0.0594106881568274} = 1.25453264792865$$

HF Concentration, ppmvd

$$C_{HF,\ ppmvd} = \frac{0.1}{1 - 0.0594106881568274} = 0.106316326095648$$

HCN Concentration, Corrected to 7 %O2, ppmvd

$$C_{HCN,\ ppmvd\ @\ 7\ \%O2} = 1.25453264792865\left(\frac{20.9 - 7}{20.9 - 17.1934}\right) = 4.70458204451741$$

HF Concentration, Corrected to 7 %O2, ppmvd

$$C_{HF,\ ppmvd\ @\ 7\ \%O2} = 0.106316326095648\left(\frac{20.9 - 7}{20.9 - 17.1934}\right) = 0.39869339360317$$

HCN Concentration, gr/dscf

$C_{HCN,\frac{gr}{dscf}}$

$= 1.25453264792865\left(\frac{1\ mol\ air}{24.056\ L\ air}\right)\left(\frac{1\ L}{0.03531\ ft^3}\right)\left(\frac{70.906\ g\ HCN}{1\ mol\ HCN}\right)\left(\frac{1\ lb}{453.592\ g}\right)\left(\frac{7{,}000\ gr}{1\ lb}\right)\left(\frac{1\ ppm}{1{,}000{,}000\ pa}\right.$

$= 0.00161613068162045$

HF Concentration gr/dscf

$C_{HF,\frac{gr}{dscf}}$

$= 0.106316326095648\left(\frac{1\ mol\ air}{24.056\ L\ air}\right)\left(\frac{1\ L}{0.03531\ ft^3}\right)\left(\frac{20.01\ g\ HF}{1\ mol\ HF}\right)\left(\frac{1\ lb}{453.592\ g}\right)\left(\frac{7{,}000\ gr}{1\ lb}\right)\left(\frac{1\ ppm}{1{,}000{,}000\ par}\right.$

$= 0.0000386508073702079$

HF/Cl_2 Emissions Rate

HF Emissions Rate, $E_{HF,\ lb/hr}$

$$E_{HF,\ lb/hr} = 0.000014731515169309(227127.274466832)\left(\frac{1\ lb}{7{,}000\ gr}\right)\left(\frac{60\ \text{min}}{1\ \text{hr}}\right) = 0.0286793904786166$$

Cl_2 Emissions Rate, $E_{Cl2,\ lb/hr}$

$$E_{Cl2,\ lb/hr} = 0.000038399684090615 7(227127.274466832)\left(\frac{1\ lb}{7{,}000\ gr}\right)\left(\frac{60\ \text{min}}{1\ \text{hr}}\right)$$
$$= 0.0747567050390479$$

HF Emissions Rate, $E_{HF,\ lb/ton}$

$$E_{HF,\ lb/ton} = \frac{0.0286793904786166}{56.9} = 0.000504031467111011$$

Cl_2 Emissions Rate, $E_{Cl2,\ lb/ton}$

$$E_{Cl2,\ lb/ton} = \frac{0.0747567050390479}{56.9} = 0.00131382609910453$$

HCN/HF (Method 320) Emissions Rate

HCN Emissions Rate, $E_{HCN,\ lb/hr}$

$$E_{Cl2,\ lb/hr} = 0.00161613068162045(227127.274466832)\left(\frac{1\ lb}{7{,}000\ gr}\right)\left(\frac{60\ \text{min}}{1\ \text{hr}}\right) = 3.14629163056007$$

HF Emissions Rate, $E_{HF,\ lb/hr}$

$$E_{HF,\ lb/hr} = 0.000038650807370207 9(227127.274466832)\left(\frac{1\ lb}{7{,}000\ gr}\right)\left(\frac{60\ \text{min}}{1\ \text{hr}}\right) = 0.0752455931480387$$

HCN Emissions Rate, $E_{HCN,\ lb/ton}$

$$E_{HCN,\ lb/ton} = \frac{3.14629163056007}{56.9} = 0.0552951077427077$$

HF Emissions Rate, $E_{HF,\ lb/ton}$

$$E_{HF,\ lb/ton} = \frac{0.0752455931480387}{56.9} = 0.00132241815725903$$

Appendix A.22
General Equations

Volumetric Flow Rate

Stack Area, A_s

$$A_s = \pi r^2 = \pi\left(\frac{D_s}{2(12)}\right)\left(\frac{D_s}{2(12)}\right)$$

Stack Pressure, P_s

$$P_s = P_{bar} + \frac{P_g}{13.6}$$

Meter Pressure, P_m

$$P_m = P_{bar} + \frac{\Delta H}{13.6}$$

Sample Gas Volume, $V_{m(std),\ dscf}$

$$V_{m(std)} = V_m(Y)\left(\frac{T_{std}}{P_{std}}\right)\left(\frac{P_m}{T_m}\right)$$

Volume of Water Vapor Condensed, $V_{wc(std)}$

$$V_{wc(std)} = (V_f - V_i)0.04716$$

Volume of Water Collected in Silica Gel, $V_{wsg(std)}$

$$V_{wsg(std)} = (W_f - W_i)0.04716$$

Moisture Content, B_{ws}

$$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

Saturation Moisture, TB_{ws}

$$TB_{ws} = \frac{10^{\left(6.6911 - \frac{3144}{t_s + 390.86}\right)}}{P_s}$$

Molecular Weight, M_d

$$M_d = 0.32\%O_2 + 0.44\%CO_2 + 0.28(100 - \%O_2 - \%CO_2)$$

Molecular Weight, M_s

$$M_s = M_d(1 - B_{ws}) + 18.015(B_{ws})$$

Velocity, v_s

$$v_s = 85.49(C_p)\left(\sum_{n=1}^{i}\sqrt{p_i}\right)\sqrt{\frac{T_s}{(P_s)(M_s)}}$$

Volumetric Flow Rate (Continued)

Actual Volumetric Flow Rate, Q_a

$$Q_a = \left(\frac{60\ \text{min}}{1\ \text{hr}}\right)(v_s)(A_s)$$

Standard Volumetric Flow Rate, Q_s

$$Q_s = Q_a\left(\frac{T_{std}}{T_s}\right)\left(\frac{P_s}{P_{std}}\right)$$

Dry Standard Volumetric Flow Rate, Q_{std}

$$Q_{std} = Q_a\left(\frac{T_{std}}{T_s}\right)\left(\frac{P_s}{P_{std}}\right)(1 - B_{ws})$$

O_2 Concentration, Corrected for System Bias

O_2 Concentration Adjusted for Bias, $C_{gas,\ ppmvd}$

$$C_{\%O2} = \frac{(C_{\%O2,\ Avg} - C_O)C_{MA}}{C_M - C_O}$$

HF/Cl_2 Concentration

HF Concentration, gr/dscf

$$C_{HF,\ gr/dscf} = \frac{mn_{HF,\ \mu g}}{V_{m(std)}}\left(\frac{0.00001543\ gr}{1\ \mu g}\right)$$

Cl_2 Concentration, gr/dscf

$$C_{Cl2,\ gr/dscf} = \frac{mn_{Cl2,\ \mu g}}{V_{m(std)}}\left(\frac{0.00001543\ gr}{1\ \mu g}\right)$$

HF Concentration, Dry Basis, $C_{HF,\ ppmvd}$

$$C_{HF,\ ppmvd} = \frac{mn_{HF,\ \mu g}}{V_{m(std)}}\left(\frac{0.03531\ ft^3}{1\ L}\right)\left(\frac{24.056\ L\ air}{1\ mol\ air}\right)\left(\frac{1\ g}{1{,}000{,}000\ \mu g}\right)\left(\frac{1\ mol\ HF}{20.01\ g\ HF}\right)\left(\frac{1{,}000{,}000\ parts}{1\ ppm}\right)$$

Cl_2 Concentration, Dry Basis, $C_{Cl2,\ ppmvd}$

$$C_{Cl2,\ ppmvd} = \frac{mn_{Cl2,\ \mu g}}{V_{m(std)}}\left(\frac{0.03531\ ft^3}{1\ L}\right)\left(\frac{24.056\ L\ air}{1\ mol\ air}\right)\left(\frac{1\ g}{1{,}000{,}000\ \mu g}\right)\left(\frac{1\ mol\ Cl_2}{70.906\ g\ Cl_2}\right)\left(\frac{1{,}000{,}000\ parts}{1\ ppm}\right)$$

HF Concentration, Corrected to 7 %O_2, ppmvd

$$C_{HF,\ pppmvd\ @\ 7\ \%O2} = C_{HF,\ ppmvd}\left(\frac{20.9 - 7}{20.9 - \%O_2}\right)$$

Cl_2 Concentration, Corrected to 7 %O_2, ppmvd

$$C_{Cl2,\ pppmvd\ @\ 7\ \%O2} = C_{Cl2,\ ppmvd}\left(\frac{20.9 - 7}{20.9 - \%O_2}\right)$$

HCN/HF (Method 320) Concentration

HCN Concentration, ppmvd

$$C_{HCN,\ ppmvd} = \frac{C_{HCN,\ ppmvw}}{1 - B_{ws}}$$

HF Concentration, ppmvd

$$C_{HF,\ ppmvd} = \frac{C_{HF,\ ppmvw}}{1 - B_{ws}}$$

HCN Concentration, Corrected to 7 %O2, ppmvd

$$C_{HCN,\ ppmvd\ @\ 7\ \%O2} = C_{HCN,\ ppmvd}\left(\frac{20.9 - 7}{20.9 - \%O_2}\right)$$

HF Concentration, Corrected to 7 %O2, ppmvd

$$C_{HF,\ ppmvd\ @\ 7\ \%O2} = C_{HF,\ ppmvd}\left(\frac{20.9 - 7}{20.9 - \%O_2}\right)$$

HCN Concentration, gr/dscf

$$C_{HCN,\ gr/dscf} = C_{HCN,\ ppmvd}\left(\frac{1\ mol\ air}{24.056\ L\ air}\right)\left(\frac{1\ L}{0.03531\ ft^3}\right)\left(\frac{70.906\ g\ HCN}{1\ mol\ HCN}\right)\left(\frac{1\ lb}{453.592\ g}\right)\left(\frac{7{,}000\ gr}{1\ lb}\right)\left(\frac{1\ ppm}{1{,}000{,}000\ parts}\right)$$

HF Concentration gr/dscf

$$C_{HF,\ gr/dscf} = C_{HF,\ ppmvd}\left(\frac{1\ mol\ air}{24.056\ L\ air}\right)\left(\frac{1\ L}{0.03531\ ft^3}\right)\left(\frac{20.01\ g\ HF}{1\ mol\ HF}\right)\left(\frac{1\ lb}{453.592\ g}\right)\left(\frac{7{,}000\ gr}{1\ lb}\right)\left(\frac{1\ ppm}{1{,}000{,}000\ parts}\right)$$

Emissions Rate

Emissions Rate, $E_{lb/hr}$

$$E_{lb/hr} = C_{gr/dscf}(Q_{std})\left(\frac{1\ lb}{7{,}000\ gr}\right)\left(\frac{60\ \text{min}}{1\ \text{hr}}\right)$$

Emissions Rate, $E_{lb/ton}$

$$E_{lb/ton} = \frac{E_{lb/hr}}{P_{ton/hr}}$$

Appendix B
Facility Process Data

Appendix B.1
Brooksville, FL

1-Minute Data Report

From: 11/29/2023 10:10 **To:** 11/29/2023 11:14 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:43 **Location:** Brooksville, FL

Red = Sample Invalid

Date/Time	Kiln 1 KilnFeed, TonPerHr 1 Minute(s)	Kiln 1 Clinker, TonPerHr 1 Minute(s)	Kiln 1 StackFlow, kscfm 1 Minute(s)	Kiln 1 O2, Dry, Pct 1 Minute(s)	Kiln 1 CO2, Pct 1 Minute(s)
11/29/2023 10:10	101.9	64.2	208.2	17.0	5.9
11/29/2023 10:11	102.5	64.6	206.1	17.0	5.9
11/29/2023 10:12	102.2	64.4	205.7	17.0	5.8
11/29/2023 10:13	101.8	64.1	205.6	17.0	5.8
11/29/2023 10:14	102.1	64.3	215.8	17.0	5.9
11/29/2023 10:15	102.2	64.4	208.9	17.0	5.8
11/29/2023 10:16	101.8	64.1	203.3	17.1	5.8
11/29/2023 10:17	102.7	64.7	206.2	17.1	5.8
11/29/2023 10:18	104.0	65.5	207.3	17.1	5.8
11/29/2023 10:19	104.9	66.1	210.0	17.1	5.8
11/29/2023 10:20	105.5	66.5	207.6	17.1	5.8
11/29/2023 10:21	105.0	66.2	215.4	17.1	5.7
11/29/2023 10:22	103.7	65.3	214.3	17.1	5.8
11/29/2023 10:23	101.8	64.1	208.8	17.1	5.8
11/29/2023 10:24	100.8	63.5	210.1	17.1	5.7
11/29/2023 10:25	100.0	63.0	209.2	17.1	5.7
11/29/2023 10:26	99.7	62.8	213.5	17.1	5.7
11/29/2023 10:27	101.0	63.6	213.4	17.1	5.7
11/29/2023 10:28	102.1	64.3	206.8	17.1	5.7
11/29/2023 10:29	103.2	65.0	216.3	17.1	5.7
11/29/2023 10:30	103.8	65.4	208.5	17.1	5.7
11/29/2023 10:31	103.5	65.2	212.6	17.1	5.7
11/29/2023 10:32	104.0	65.5	212.8	17.1	5.7
11/29/2023 10:33	103.5	65.2	205.0	17.1	5.7
11/29/2023 10:34	103.2	65.0	215.2	17.1	5.7
11/29/2023 10:35	103.1	65.0	221.4	17.1	5.7
11/29/2023 10:36	103.0	64.9	213.2	17.1	5.8
11/29/2023 10:37	102.8	64.8	215.7	17.1	5.8
11/29/2023 10:38	102.6	64.6	208.6	17.1	5.7
11/29/2023 10:39	103.1	65.0	210.9	17.1	5.7

1-Minute Data Report

From: 11/29/2023 10:10 **To:** 11/29/2023 11:14 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:43 **Location:** Brooksville, FL

Red = Sample Invalid

11/29/2023 10:40	102.3	64.4	207.8	17.1	5.6
11/29/2023 10:41	102.0	64.3	213.1	17.2	5.7
11/29/2023 10:42	101.7	64.1	212.0	17.1	5.8
11/29/2023 10:43	100.6	63.4	208.8	17.1	5.8
11/29/2023 10:44	99.9	62.9	212.0	17.1	5.8
11/29/2023 10:45	101.1	63.7	210.4	17.1	5.8
11/29/2023 10:46	102.8	64.8	215.9	17.1	5.8
11/29/2023 10:47	103.4	65.1	204.8	17.1	5.7
11/29/2023 10:48	104.0	65.5	207.0	17.1	5.7
11/29/2023 10:49	104.8	66.0	205.9	17.1	5.7
11/29/2023 10:50	104.8	66.0	209.9	17.1	5.7
11/29/2023 10:51	103.5	65.2	211.5	17.1	5.7
11/29/2023 10:52	102.2	64.4	210.6	17.1	5.7
11/29/2023 10:53	100.9	63.6	205.4	17.1	5.7
11/29/2023 10:54	100.2	63.1	212.7	17.1	5.7
11/29/2023 10:55	100.3	63.2	210.9	17.1	5.7
11/29/2023 10:56	101.4	63.9	214.6	17.1	5.6
11/29/2023 10:57	104.2	65.6	213.4	17.1	5.6
11/29/2023 10:58	104.9	66.1	216.4	17.1	5.7
11/29/2023 10:59	106.3	67.0	205.5	17.1	5.7
11/29/2023 11:00	103.7	65.3	209.3	17.1	5.8
11/29/2023 11:01	100.9	63.6	217.0	17.1	5.8
11/29/2023 11:02	99.2	62.5	208.8	17.1	5.8
11/29/2023 11:03	100.1	63.1	207.7	17.1	5.8
11/29/2023 11:04	103.2	65.0	208.7	17.1	5.7
11/29/2023 11:05	106.1	66.8	212.3	17.1	5.8
11/29/2023 11:06	106.6	67.2	211.8	17.1	5.8
11/29/2023 11:07	107.1	67.5	211.9	17.1	5.8
11/29/2023 11:08	105.5	66.5	203.2	17.1	5.8
11/29/2023 11:09	104.7	66.0	214.1	17.1	5.8
11/29/2023 11:10	102.9	64.8	217.6	17.1	5.9
11/29/2023 11:11	103.0	64.9	210.7	17.0	5.9
11/29/2023 11:12	102.2	64.4	208.0	17.0	5.9
11/29/2023 11:13	103.4	65.1	207.0	17.0	5.9
11/29/2023 11:14	104.8	66.0	214.5	16.9	5.9

1-Minute Data Report

From: 11/29/2023 10:10 **To:** 11/29/2023 11:14 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:43 **Location:** Brooksville, FL

Red = Sample Invalid

Valid Data Points:	65	65	65	65	65
Average:	102.9	64.8	210.6	17.1	5.8

1-Minute Data Report

From: 11/29/2023 12:45 **To:** 11/29/2023 13:50 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:45 **Location:** Brooksville, FL

Red = Sample Invalid

Date/Time	Kiln 1 KilnFeed, TonPerHr 1 Minute(s)	Kiln 1 Clinker, TonPerHr 1 Minute(s)	Kiln 1 StackFlow, kscfm 1 Minute(s)	Kiln 1 O2, Dry, Pct 1 Minute(s)	Kiln 1 CO2, Pct 1 Minute(s)
11/29/2023 12:45	101.6	64.0	214.6	17.1	5.6
11/29/2023 12:46	102.9	64.8	216.1	17.1	5.6
11/29/2023 12:47	105.1	66.2	211.0	17.1	5.6
11/29/2023 12:48	107.9	68.0	208.0	17.1	5.6
11/29/2023 12:49	108.0	68.0	216.8	17.2	5.6
11/29/2023 12:50	106.8	67.3	213.6	17.2	5.6
11/29/2023 12:51	104.8	66.0	206.1	17.2	5.6
11/29/2023 12:52	101.9	64.2	219.6	17.2	5.6
11/29/2023 12:53	98.7	62.2	210.8	17.2	5.6
11/29/2023 12:54	97.2	61.2	212.4	17.2	5.6
11/29/2023 12:55	98.3	61.9	206.5	17.2	5.6
11/29/2023 12:56	100.9	63.6	207.3	17.1	5.6
11/29/2023 12:57	102.1	64.3	212.1	17.1	5.6
11/29/2023 12:58	104.2	65.6	210.3	17.1	5.7
11/29/2023 12:59	103.7	65.3	206.9	17.1	5.7
11/29/2023 13:00	102.6	64.6	208.8	17.1	5.7
11/29/2023 13:01	101.2	63.8	211.1	17.1	5.7
11/29/2023 13:02	100.2	63.1	212.3	17.1	5.6
11/29/2023 13:03	99.6	62.7	206.4	17.2	5.5
11/29/2023 13:04	98.3	61.9	214.4	17.2	5.4
11/29/2023 13:05	98.7	62.2	200.4	17.2	5.5
11/29/2023 13:06	100.3	63.2	202.5	17.2	5.5
11/29/2023 13:07	101.8	64.1	202.2	17.1	5.6
11/29/2023 13:08	102.8	64.8	208.6	17.1	5.7
11/29/2023 13:09	103.0	64.9	211.8	17.0	5.8
11/29/2023 13:10	102.9	64.8	214.4	17.0	5.8
11/29/2023 13:11	103.1	65.0	206.9	17.1	5.7
11/29/2023 13:12	102.2	64.4	206.6	17.1	5.7
11/29/2023 13:13	100.7	63.4	205.4	17.1	5.7
11/29/2023 13:14	99.4	62.6	206.7	17.1	5.8

1-Minute Data Report

From: 11/29/2023 12:45 **To:** 11/29/2023 13:50 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:45 **Location:** Brooksville, FL

Red = Sample Invalid

11/29/2023 13:15	98.0	61.7	204.4	17.1	5.8
11/29/2023 13:16	98.9	62.3	211.0	17.1	5.7
11/29/2023 13:17	99.8	62.9	213.2	17.1	5.7
11/29/2023 13:18	103.5	65.2	200.9	17.2	5.7
11/29/2023 13:19	106.9	67.3	217.4	17.2	5.6
11/29/2023 13:20	106.6	67.2	221.2	17.2	5.5
11/29/2023 13:21	104.0	65.5	220.9	17.1	5.5
11/29/2023 13:22	101.5	63.9	212.5	17.1	5.6
11/29/2023 13:23	100.2	63.1	215.2	17.1	5.5
11/29/2023 13:24	101.1	63.7	209.6	17.1	5.6
11/29/2023 13:25	103.5	65.2	208.7	17.1	5.6
11/29/2023 13:26	105.0	66.2	207.9	17.1	5.6
11/29/2023 13:27	105.9	66.7	200.5	17.1	5.6
11/29/2023 13:28	106.8	67.3	206.7	17.1	5.6
11/29/2023 13:29	106.9	67.3	209.5	17.1	5.7
11/29/2023 13:30	104.9	66.1	212.8	17.1	5.7
11/29/2023 13:31	103.4	65.1	207.4	17.1	5.7
11/29/2023 13:32	101.6	64.0	208.3	17.1	5.7
11/29/2023 13:33	101.2	63.8	212.3	17.1	5.8
11/29/2023 13:34	102.6	64.6	56.2	17.1	5.8
11/29/2023 13:35	104.6	65.9	66.6	17.1	5.8
11/29/2023 13:36	106.3	67.0	67.0	17.1	5.8
11/29/2023 13:37	107.7	67.9	75.0	17.1	5.8
11/29/2023 13:38	107.0	67.4	212.3	17.1	5.7
11/29/2023 13:39	104.8	66.0	197.3	17.1	5.7
11/29/2023 13:40	103.2	65.0	201.3	17.1	5.7
11/29/2023 13:41	101.8	64.1	205.6	17.1	5.7
11/29/2023 13:42	101.3	63.8	204.6	17.1	5.7
11/29/2023 13:43	102.2	64.4	204.3	17.1	5.7
11/29/2023 13:44	103.7	65.3	199.3	17.1	5.7
11/29/2023 13:45	105.7	66.6	206.0	17.1	5.7
11/29/2023 13:46	106.1	66.8	207.3	17.1	5.6
11/29/2023 13:47	106.7	67.2	201.4	17.1	5.5
11/29/2023 13:48	107.1	67.5	206.6	17.1	5.5
11/29/2023 13:49	105.7	66.6	207.6	17.1	5.5

1-Minute Data Report

From: 11/29/2023 12:45 **To:** 11/29/2023 13:50 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:45 **Location:** Brooksville, FL

Red = Sample Invalid

11/29/2023 13:50	104.0	65.5	205.3	17.2	5.5
Valid Data Points:	66	66	62	66	66
Average:	103.0	64.9	208.9	17.1	5.6

1-Minute Data Report

From: 11/29/2023 14:39 **To:** 11/29/2023 15:41 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:45 **Location:** Brooksville, FL

Red = Sample Invalid

Date/Time	Kiln 1 KilnFeed, TonPerHr 1 Minute(s)	Kiln 1 Clinker, TonPerHr 1 Minute(s)	Kiln 1 StackFlow, kscfm 1 Minute(s)	Kiln 1 O2, Dry, Pct 1 Minute(s)	Kiln 1 CO2, Pct 1 Minute(s)
11/29/2023 14:39	103.1	65.0	202.4	16.5	6.2
11/29/2023 14:40	104.1	65.6	202.2	16.6	6.2
11/29/2023 14:41	104.2	65.6	205.2	16.5	6.2
11/29/2023 14:42	104.6	65.9	203.3	16.5	6.2
11/29/2023 14:43	105.3	66.3	200.0	16.6	6.1
11/29/2023 14:44	105.2	66.3	208.3	16.7	6.0
11/29/2023 14:45	104.6	65.9	206.1	16.8	6.1
11/29/2023 14:46	104.1	65.6	205.4	16.7	6.1
11/29/2023 14:47	103.0	64.9	201.1	16.7	6.1
11/29/2023 14:48	101.8	64.1	211.8	16.7	6.1
11/29/2023 14:49	101.5	63.9	204.2	16.7	6.1
11/29/2023 14:50	101.0	63.6	206.5	16.7	6.1
11/29/2023 14:51	102.4	64.5	204.9	16.8	6.0
11/29/2023 14:52	103.9	65.5	201.2	16.8	6.0
11/29/2023 14:53	105.7	66.6	207.1	16.8	6.0
11/29/2023 14:54	107.0	67.4	201.9	16.7	6.1
11/29/2023 14:55	105.0	66.2	202.8	16.7	6.1
11/29/2023 14:56	103.3	65.1	200.9	16.7	6.1
11/29/2023 14:57	101.4	63.9	201.1	16.7	6.1
11/29/2023 14:58	100.8	63.5	198.9	16.7	6.1
11/29/2023 14:59	101.0	63.6	198.1	16.7	6.1
11/29/2023 15:00	102.7	64.7	198.1	16.7	6.1
11/29/2023 15:01	104.2	65.6	206.1	16.6	6.1
11/29/2023 15:02	105.2	66.3	195.0	16.5	6.1
11/29/2023 15:03	106.1	66.8	195.8	16.6	6.1
11/29/2023 15:04	106.1	66.8	200.4	16.7	6.1
11/29/2023 15:05	104.8	66.0	204.9	16.6	6.1
11/29/2023 15:06	103.4	65.1	196.6	16.7	6.0
11/29/2023 15:07	101.9	64.2	196.5	16.7	6.0
11/29/2023 15:08	101.8	64.1	196.1	16.8	6.0

1-Minute Data Report

From: 11/29/2023 14:39 **To:** 11/29/2023 15:41 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:45 **Location:** Brooksville, FL

Red = Sample Invalid

11/29/2023 15:09	101.8	64.1	201.5	16.7	6.0
11/29/2023 15:10	101.8	64.1	195.3	16.7	6.0
11/29/2023 15:11	102.7	64.7	188.8	16.7	6.0
11/29/2023 15:12	103.9	65.5	192.1	16.7	6.0
11/29/2023 15:13	104.2	65.6	207.1	16.7	6.0
11/29/2023 15:14	104.5	65.8	204.3	16.8	5.9
11/29/2023 15:15	104.7	66.0	197.3	16.8	5.9
11/29/2023 15:16	105.1	66.2	198.2	16.8	6.0
11/29/2023 15:17	105.0	66.2	208.7	16.7	6.0
11/29/2023 15:18	104.6	65.9	198.9	16.6	6.0
11/29/2023 15:19	104.2	65.6	191.9	16.6	6.0
11/29/2023 15:20	103.3	65.1	199.5	16.6	6.0
11/29/2023 15:21	101.6	64.0	195.2	16.6	6.1
11/29/2023 15:22	100.7	63.4	200.2	16.5	6.1
11/29/2023 15:23	101.1	63.7	194.9	16.5	6.1
11/29/2023 15:24	102.3	64.4	198.0	16.6	6.1
11/29/2023 15:25	103.5	65.2	199.6	16.6	6.1
11/29/2023 15:26	104.6	65.9	198.9	16.7	6.0
11/29/2023 15:27	105.1	66.2	192.2	16.7	5.9
11/29/2023 15:28	104.9	66.1	205.3	16.8	5.9
11/29/2023 15:29	105.1	66.2	203.3	16.8	5.9
11/29/2023 15:30	105.4	66.4	194.4	16.8	6.0
11/29/2023 15:31	104.0	65.5	198.4	16.8	5.9
11/29/2023 15:32	103.4	65.1	198.7	16.8	5.9
11/29/2023 15:33	101.9	64.2	208.8	16.8	5.9
11/29/2023 15:34	101.2	63.8	197.2	16.8	5.8
11/29/2023 15:35	100.8	63.5	200.3	16.9	5.8
11/29/2023 15:36	101.5	63.9	204.4	16.9	5.8
11/29/2023 15:37	103.3	65.1	206.1	16.8	5.8
11/29/2023 15:38	105.0	66.2	201.5	16.8	5.8
11/29/2023 15:39	106.0	66.8	201.0	16.9	5.8
11/29/2023 15:40	106.1	66.8	202.1	16.9	5.8
11/29/2023 15:41	105.6	66.5	207.4	16.9	5.8

1-Minute Data Report

From: 11/29/2023 14:39 **To:** 11/29/2023 15:41 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:45 **Location:** Brooksville, FL

Red = Sample Invalid

Valid Data Points:	63	63	63	63	63
Average:	103.6	65.3	200.9	16.7	6.0

1-Minute Data Report

From: 06/05/2024 08:00 **To:** 06/05/2024 09:10 **Facility Name:** CEMEX Brooksville South
Generated: 06/25/2024 11:55 **Location:** Brooksville, FL

Red = Sample Invalid

Date/Time	Kiln 1 KilnFeed, TonPerHr 1 Minute(s)	Kiln 1 Clinker, TonPerHr 1 Minute(s)	Kiln 1 StackFlow, kscfm 1 Minute(s)	Kiln 1 O2, Dry, Pct 1 Minute(s)	Kiln 1 CO2, Pct 1 Minute(s)
06/05/2024 08:00	91.0	57.3	223.1	17.2	5.5
06/05/2024 08:01	91.3	57.5	218.0	17.2	5.3
06/05/2024 08:02	91.3	57.5	214.5	17.3	5.2
06/05/2024 08:03	90.7	57.1	225.1	17.4	5.2
06/05/2024 08:04	89.4	56.3	219.9	17.3	5.6
06/05/2024 08:05	88.7	55.9	216.1	17.2	5.8
06/05/2024 08:06	88.9	56.0	221.0	17.2	5.8
06/05/2024 08:07	88.7	55.9	230.7	17.2	5.5
06/05/2024 08:08	88.7	55.9	221.4	17.3	5.2
06/05/2024 08:09	89.9	56.6	221.4	17.5	4.9
06/05/2024 08:10	91.2	57.5	218.7	17.5	5.0
06/05/2024 08:11	91.5	57.6	220.2	17.3	5.4
06/05/2024 08:12	91.4	57.6	218.9	17.2	5.7
06/05/2024 08:13	91.2	57.5	218.6	17.2	5.9
06/05/2024 08:14	90.6	57.1	212.9	17.2	6.0
06/05/2024 08:15	89.1	56.1	213.6	17.2	5.9
06/05/2024 08:16	88.2	55.6	210.9	17.2	5.5
06/05/2024 08:17	88.9	56.0	215.9	17.4	5.2
06/05/2024 08:18	89.6	56.4	220.2	17.5	5.1
06/05/2024 08:19	89.4	56.3	224.6	17.3	5.4
06/05/2024 08:20	89.8	56.6	226.1	17.2	5.7
06/05/2024 08:21	89.9	56.6	222.3	17.2	5.7
06/05/2024 08:22	89.9	56.6	218.1	17.2	5.6
06/05/2024 08:23	90.8	57.2	220.7	17.2	5.5
06/05/2024 08:24	90.5	57.0	216.4	17.3	5.2
06/05/2024 08:25	90.5	57.0	216.1	17.5	5.0
06/05/2024 08:26	89.7	56.5	218.8	17.5	5.1
06/05/2024 08:27	89.8	56.6	223.0	17.3	5.5
06/05/2024 08:28	90.5	57.0	214.6	17.1	5.7
06/05/2024 08:29	91.1	57.4	215.7	17.2	5.8

1-Minute Data Report

From: 06/05/2024 08:00 **To:** 06/05/2024 09:10 **Facility Name:** CEMEX Brooksville South
Generated: 06/25/2024 11:55 **Location:** Brooksville, FL

Red = Sample Invalid

06/05/2024 08:30	90.8	57.2	219.7	17.2	5.8
06/05/2024 08:31	90.5	57.0	221.0	17.2	5.6
06/05/2024 08:32	90.1	56.8	220.6	17.2	5.3
06/05/2024 08:33	89.9	56.6	221.5	17.4	5.1
06/05/2024 08:34	89.6	56.4	220.3	17.3	5.3
06/05/2024 08:35	89.7	56.5	220.7	17.2	5.7
06/05/2024 08:36	90.4	57.0	218.9	17.1	5.7
06/05/2024 08:37	91.4	57.6	219.3	17.2	5.4
06/05/2024 08:38	91.3	57.5	220.9	17.4	5.1
06/05/2024 08:39	90.4	57.0	223.6	17.6	4.9
06/05/2024 08:40	90.1	56.8	215.4	17.6	4.9
06/05/2024 08:41	89.6	56.4	218.9	17.4	5.2
06/05/2024 08:42	89.5	56.4	215.9	17.2	5.5
06/05/2024 08:43	90.0	56.7	221.7	17.1	5.8
06/05/2024 08:44	92.0	58.0	215.5	17.2	5.9
06/05/2024 08:45	93.1	58.7	211.4	17.2	5.7
06/05/2024 08:46	94.7	59.7	212.3	17.2	5.4
06/05/2024 08:47	93.6	59.0	213.8	17.3	5.3
06/05/2024 08:48	90.8	57.2	209.3	17.5	5.1
06/05/2024 08:49	89.9	56.6	217.8	17.5	5.1
06/05/2024 08:50	89.6	56.4	215.0	17.4	5.4
06/05/2024 08:51	89.5	56.4	225.2	17.2	5.6
06/05/2024 08:52	89.1	56.1	209.3	17.2	5.6
06/05/2024 08:53	90.0	56.7	218.0	17.2	5.7
06/05/2024 08:54	90.6	57.1	223.4	17.2	5.8
06/05/2024 08:55	90.9	57.3	215.2	17.2	5.8
06/05/2024 08:56	92.1	58.0	212.8	17.2	5.5
06/05/2024 08:57	93.5	58.9	215.9	17.4	5.0
06/05/2024 08:58	93.7	59.0	219.9	17.7	4.9
06/05/2024 08:59	91.5	57.6	220.2	17.5	5.1
06/05/2024 09:00	88.2	55.6	224.9	17.2	5.5
06/05/2024 09:01	86.5	54.5	226.3	17.1	5.6
06/05/2024 09:02	87.9	55.4	223.7	17.1	5.6
06/05/2024 09:03	89.3	56.3	228.3	17.2	5.3
06/05/2024 09:04	89.8	56.6	222.0	17.5	5.0

1-Minute Data Report

From: 06/05/2024 08:00 **To:** 06/05/2024 09:10 **Facility Name:** CEMEX Brooksville South
Generated: 06/25/2024 11:55 **Location:** Brooksville, FL

Red = Sample Invalid

06/05/2024 09:05	90.4	57.0	227.7	17.6	5.0
06/05/2024 09:06	90.4	57.0	228.3	17.4	5.2
06/05/2024 09:07	90.6	57.1	220.9	17.2	5.5
06/05/2024 09:08	90.7	57.1	222.7	17.1	5.5
06/05/2024 09:09	90.3	56.9	219.3	17.2	5.4
06/05/2024 09:10	89.3	56.3	228.3	17.2	5.3
Valid Data Points:	71	71	71	71	71
Average:	90.3	56.9	219.5	17.3	5.4

1-Minute Data Report

From: 06/05/2024 09:25 **To:** 06/05/2024 10:25 **Facility Name:** CEMEX Brooksville South
Generated: 06/25/2024 11:57 **Location:** Brooksville, FL

Red = Sample Invalid

Date/Time	Kiln 1 KilnFeed, TonPerHr 1 Minute(s)	Kiln 1 Clinker, TonPerHr 1 Minute(s)	Kiln 1 StackFlow, kscfm 1 Minute(s)	Kiln 1 O2, Dry, Pct 1 Minute(s)	Kiln 1 CO2, Pct 1 Minute(s)
06/05/2024 09:25	88.8	55.9	213.9	17.2	5.4
06/05/2024 09:26	90.0	56.7	218.4	17.2	5.3
06/05/2024 09:27	90.7	57.1	203.1	17.3	5.3
06/05/2024 09:28	91.2	57.5	212.2	17.3	5.3
06/05/2024 09:29	90.9	57.3	221.2	17.2	5.5
06/05/2024 09:30	90.1	56.8	224.3	17.1	5.6
06/05/2024 09:31	89.7	56.5	221.1	17.1	5.6
06/05/2024 09:32	90.1	56.8	223.0	17.2	5.4
06/05/2024 09:33	89.7	56.5	225.9	17.4	5.2
06/05/2024 09:34	89.5	56.4	49.9	17.5	5.1
06/05/2024 09:35	90.0	56.7	60.0	17.3	5.3
06/05/2024 09:36	90.3	56.9	59.3	17.2	5.5
06/05/2024 09:37	91.1	57.4	79.1	17.1	5.6
06/05/2024 09:38	93.1	58.7	225.9	17.2	5.4
06/05/2024 09:39	94.4	59.5	211.9	17.3	5.2
06/05/2024 09:40	94.2	59.3	209.4	17.5	5.1
06/05/2024 09:41	91.1	57.4	213.6	17.4	5.2
06/05/2024 09:42	88.8	55.9	216.6	17.2	5.4
06/05/2024 09:43	87.3	55.0	208.9	17.1	5.5
06/05/2024 09:44	88.1	55.5	212.9	17.1	5.7
06/05/2024 09:45	90.1	56.8	219.8	17.1	5.8
06/05/2024 09:46	93.2	58.7	224.9	17.1	5.7
06/05/2024 09:47	94.8	59.7	216.1	17.1	5.5
06/05/2024 09:48	93.5	58.9	219.0	17.2	5.4
06/05/2024 09:49	91.2	57.5	217.3	17.3	5.3
06/05/2024 09:50	88.6	55.8	214.8	17.3	5.3
06/05/2024 09:51	87.5	55.1	208.5	17.2	5.4
06/05/2024 09:52	88.0	55.4	212.6	17.2	5.4
06/05/2024 09:53	89.0	56.1	221.6	17.3	5.3
06/05/2024 09:54	90.5	57.0	216.6	17.3	5.2

1-Minute Data Report

From: 06/05/2024 09:25 **To:** 06/05/2024 10:25 **Facility Name:** CEMEX Brooksville South
Generated: 06/25/2024 11:57 **Location:** Brooksville, FL

Red = Sample Invalid

06/05/2024 09:55	91.3	57.5	214.4	17.3	5.3
06/05/2024 09:56	92.7	58.4	219.0	17.2	5.4
06/05/2024 09:57	93.8	59.1	224.2	17.1	5.5
06/05/2024 09:58	92.9	58.5	215.0	17.2	5.5
06/05/2024 09:59	90.6	57.1	215.9	17.3	5.3
06/05/2024 10:00	88.4	55.7	216.3	17.4	5.2
06/05/2024 10:01	87.0	54.8	218.3	17.4	5.3
06/05/2024 10:02	87.8	55.3	217.5	17.4	5.3
06/05/2024 10:03	89.1	56.1	214.9	17.4	5.3
06/05/2024 10:04	89.9	56.6	215.9	17.4	5.3
06/05/2024 10:05	90.0	56.7	221.1	17.5	5.2
06/05/2024 10:06	90.4	57.0	217.5	17.4	5.3
06/05/2024 10:07	90.4	57.0	221.5	17.3	5.3
06/05/2024 10:08	90.2	56.8	220.7	17.4	5.2
06/05/2024 10:09	89.9	56.6	223.9	17.4	5.4
06/05/2024 10:10	89.7	56.5	218.2	17.2	5.7
06/05/2024 10:11	90.3	56.9	227.2	17.1	5.9
06/05/2024 10:12	90.9	57.3	223.9	17.1	5.9
06/05/2024 10:13	91.1	57.4	224.3	17.2	5.7
06/05/2024 10:14	90.1	56.8	216.8	17.3	5.3
06/05/2024 10:15	89.5	56.4	221.5	17.5	5.1
06/05/2024 10:16	89.7	56.5	222.7	17.4	5.2
06/05/2024 10:17	89.9	56.6	219.3	17.3	5.4
06/05/2024 10:18	90.4	57.0	222.6	17.3	5.3
06/05/2024 10:19	90.7	57.1	221.0	17.4	5.3
06/05/2024 10:20	89.8	56.6	223.9	17.3	5.4
06/05/2024 10:21	89.6	56.4	223.3	17.2	5.6
06/05/2024 10:22	89.8	56.6	215.3	17.1	5.7
06/05/2024 10:23	89.9	56.6	216.7	17.1	5.6
06/05/2024 10:24	90.4	57.0	219.0	17.2	5.5
06/05/2024 10:25	90.5	57.0	222.9	17.2	5.5
Valid Data Points:	61	61	57	61	61
Average:	90.4	56.9	218.4	17.3	5.4

1-Minute Data Report

From: 06/05/2024 10:50 **To:** 06/05/2024 12:00 **Facility Name:** CEMEX Brooksville South
Generated: 06/25/2024 11:57 **Location:** Brooksville, FL

Red = Sample Invalid

Date/Time	Kiln 1 KilnFeed, TonPerHr 1 Minute(s)	Kiln 1 Clinker, TonPerHr 1 Minute(s)	Kiln 1 StackFlow, kscfm 1 Minute(s)	Kiln 1 O2, Dry, Pct 1 Minute(s)	Kiln 1 CO2, Pct 1 Minute(s)
06/05/2024 10:50	90.1	56.8	206.9	17.2	5.5
06/05/2024 10:51	90.5	57.0	202.8	17.1	5.6
06/05/2024 10:52	90.1	56.8	207.0	17.1	5.6
06/05/2024 10:53	90.8	57.2	203.6	17.1	5.6
06/05/2024 10:54	89.9	56.6	203.1	17.2	5.5
06/05/2024 10:55	89.3	56.3	203.8	17.1	5.5
06/05/2024 10:56	89.1	56.1	206.4	17.1	5.6
06/05/2024 10:57	88.4	55.7	202.0	17.1	5.7
06/05/2024 10:58	89.2	56.2	196.0	17.1	5.8
06/05/2024 10:59	89.4	56.3	208.7	17.1	5.9
06/05/2024 11:00	89.2	56.2	207.1	17.1	6.0
06/05/2024 11:01	90.2	56.8	203.7	17.0	6.1
06/05/2024 11:02	91.4	57.6	203.3	16.9	6.2
06/05/2024 11:03	92.2	58.1	204.1	17.0	6.1
06/05/2024 11:04	93.4	58.8	207.8	17.1	5.8
06/05/2024 11:05	92.3	58.1	209.0	17.2	5.5
06/05/2024 11:06	87.7	55.3	210.0	17.3	5.2
06/05/2024 11:07	86.6	54.6	211.6	17.4	5.2
06/05/2024 11:08	88.0	55.4	206.4	17.2	5.4
06/05/2024 11:09	89.7	56.5	210.9	17.1	5.6
06/05/2024 11:10	91.0	57.3	212.0	17.0	5.7
06/05/2024 11:11	90.9	57.3	215.6	16.9	6.0
06/05/2024 11:12	91.1	57.4	215.4	16.9	6.0
06/05/2024 11:13	92.4	58.2	210.7	17.0	5.8
06/05/2024 11:14	92.8	58.5	211.9	17.2	5.5
06/05/2024 11:15	92.4	58.2	217.7	17.2	5.4
06/05/2024 11:16	90.7	57.1	225.0	17.2	5.3
06/05/2024 11:17	88.9	56.0	220.0	17.3	5.2
06/05/2024 11:18	87.1	54.9	217.6	17.3	5.2
06/05/2024 11:19	87.4	55.1	219.4	17.2	5.4

1-Minute Data Report

From: 06/05/2024 10:50 **To:** 06/05/2024 12:00 **Facility Name:** CEMEX Brooksville South
Generated: 06/25/2024 11:57 **Location:** Brooksville, FL

Red = Sample Invalid

06/05/2024 11:20	88.2	55.6	225.8	17.2	5.6
06/05/2024 11:21	89.8	56.6	215.7	17.2	5.5
06/05/2024 11:22	90.3	56.9	229.2	17.1	5.4
06/05/2024 11:23	90.9	57.3	234.1	17.1	5.4
06/05/2024 11:24	91.3	57.5	237.7	17.2	5.4
06/05/2024 11:25	90.7	57.1	234.8	17.3	5.3
06/05/2024 11:26	89.3	56.3	234.2	17.4	5.2
06/05/2024 11:27	88.9	56.0	249.1	17.5	5.1
06/05/2024 11:28	90.6	57.1	261.2	17.7	4.9
06/05/2024 11:29	89.9	56.6	255.1	17.8	4.8
06/05/2024 11:30	90.2	56.8	260.5	17.8	4.6
06/05/2024 11:31	90.9	57.3	269.3	17.9	4.5
06/05/2024 11:32	90.5	57.0	275.0	18.1	4.3
06/05/2024 11:33	90.8	57.2	268.1	18.3	4.1
06/05/2024 11:34	90.2	56.8	271.1	18.2	4.2
06/05/2024 11:35	89.9	56.6	282.4	18.0	4.5
06/05/2024 11:36	90.0	56.7	285.0	17.9	4.4
06/05/2024 11:37	90.9	57.3	276.5	18.2	4.1
06/05/2024 11:38	90.9	57.3	291.8	18.5	3.9
06/05/2024 11:39	91.0	57.3	293.3	18.4	4.2
06/05/2024 11:40	91.6	57.7	301.8	18.2	4.3
06/05/2024 11:41	92.0	58.0	289.6	18.2	4.4
06/05/2024 11:42	94.0	59.2	298.7	18.2	4.3
06/05/2024 11:43	92.9	58.5	315.9	18.4	4.1
06/05/2024 11:44	90.9	57.3	316.0	18.5	3.9
06/05/2024 11:45	89.8	56.6	310.9	18.6	3.8
06/05/2024 11:46	88.4	55.7	315.6	18.6	3.8
06/05/2024 11:47	88.3	55.6	316.2	18.6	3.6
06/05/2024 11:48	88.8	55.9	309.5	18.6	3.4
06/05/2024 11:49	89.8	56.6	307.1	18.6	3.4
06/05/2024 11:50	90.5	57.0	308.5	18.6	3.5
06/05/2024 11:51	92.0	58.0	317.7	18.6	3.7
06/05/2024 11:52	92.4	58.2	295.6	18.6	3.8
06/05/2024 11:53	93.2	58.7	280.6	18.6	3.9
06/05/2024 11:54	92.6	58.3	256.3	18.4	4.3

1-Minute Data Report

From: 06/05/2024 10:50 **To:** 06/05/2024 12:00 **Facility Name:** CEMEX Brooksville South
Generated: 06/25/2024 11:57 **Location:** Brooksville, FL

Red = Sample Invalid

06/05/2024 11:55	90.3	56.9	231.2	17.9	5.1
06/05/2024 11:56	88.5	55.8	228.6	17.5	5.3
06/05/2024 11:57	88.1	55.5	226.3	17.6	5.0
06/05/2024 11:58	88.2	55.6	227.4	17.6	5.1
06/05/2024 11:59	89.4	56.3	236.6	17.6	5.3
06/05/2024 12:00	90.7	57.1	232.9	17.5	5.5
Valid Data Points:	71	71	71	71	71
Average:	90.3	56.9	244.4	17.6	5.0

1-Minute Data Report

From: 11/30/2023 17:09 **To:** 11/30/2023 18:14 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:50 **Location:** Brooksville, FL

Red = Sample Invalid

Date/Time	Kiln 2 KilnFeed, TonPerHr 1 Minute(s)	Kiln 2 Clinker, TonPerHr 1 Minute(s)	Kiln 2 O2, Dry, Pct 1 Minute(s)	Kiln 2 CO2, Pct 1 Minute(s)	Kiln 2 StackFlow, kscfm 1 Minute(s)
11/30/2023 17:09	190.8	120.2	11.5	11.1	265.9
11/30/2023 17:10	190.9	120.3	11.5	11.1	265.5
11/30/2023 17:11	190.8	120.2	11.5	11.0	264.0
11/30/2023 17:12	190.3	119.9	11.5	11.1	264.7
11/30/2023 17:13	190.8	120.2	11.5	11.2	264.5
11/30/2023 17:14	191.3	120.5	11.7	11.0	263.7
11/30/2023 17:15	190.9	120.3	11.9	10.8	263.0
11/30/2023 17:16	190.3	119.9	11.9	10.7	262.5
11/30/2023 17:17	190.9	120.3	11.7	10.7	261.7
11/30/2023 17:18	190.6	120.1	11.7	11.0	262.5
11/30/2023 17:19	191.6	120.7	11.7	10.9	262.8
11/30/2023 17:20	191.5	120.6	11.9	10.9	261.9
11/30/2023 17:21	191.7	120.8	11.6	11.1	263.9
11/30/2023 17:22	191.6	120.7	11.8	11.0	262.3
11/30/2023 17:23	190.8	120.2	11.8	10.8	261.1
11/30/2023 17:24	190.4	120.0	11.6	10.8	262.2
11/30/2023 17:25	190.0	119.7	11.8	11.0	262.0
11/30/2023 17:26	190.7	120.1	11.8	10.8	261.6
11/30/2023 17:27	189.7	119.5	11.7	10.8	261.8
11/30/2023 17:28	190.3	119.9	11.8	10.9	260.7
11/30/2023 17:29	189.7	119.5	11.5	10.7	259.8
11/30/2023 17:30	189.5	119.4	11.6	11.1	260.9
11/30/2023 17:31	190.3	119.9	11.7	11.1	261.2
11/30/2023 17:32	189.9	119.6	11.8	10.9	260.0
11/30/2023 17:33	189.8	119.6	12.0	10.6	260.0
11/30/2023 17:34	190.9	120.3	11.8	10.4	260.5
11/30/2023 17:35	191.6	120.7	11.8	11.0	261.7
11/30/2023 17:36	191.8	120.8	12.3	10.7	262.7
11/30/2023 17:37	192.3	121.1	12.7	10.3	263.3
11/30/2023 17:38	192.5	121.3	11.7	10.6	263.0

1-Minute Data Report

From: 11/30/2023 17:09 **To:** 11/30/2023 18:14 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:50 **Location:** Brooksville, FL

Red = Sample Invalid

11/30/2023 17:39	192.5	121.3	11.8	11.2	263.9
11/30/2023 17:40	192.6	121.3	11.8	11.0	263.9
11/30/2023 17:41	192.9	121.5	11.7	10.9	265.1
11/30/2023 17:42	191.8	120.8	11.9	11.1	260.4
11/30/2023 17:43	192.1	121.0	11.8	11.1	259.5
11/30/2023 17:44	191.4	120.6	12.0	10.9	259.8
11/30/2023 17:45	192.0	121.0	12.0	10.6	262.5
11/30/2023 17:46	191.9	120.9	12.1	10.5	263.1
11/30/2023 17:47	192.1	121.0	11.8	10.3	264.3
11/30/2023 17:48	192.8	121.5	11.7	10.9	265.2
11/30/2023 17:49	192.7	121.4	11.7	10.7	264.0
11/30/2023 17:50	192.4	121.2	11.7	10.8	263.4
11/30/2023 17:51	194.3	122.4	11.8	10.6	263.1
11/30/2023 17:52	192.1	121.0	11.6	10.6	261.8
11/30/2023 17:53	192.1	121.0	11.7	10.9	260.9
11/30/2023 17:54	192.0	121.0	11.6	10.9	260.9
11/30/2023 17:55	192.1	121.0	11.8	10.9	261.0
11/30/2023 17:56	192.1	121.0	11.8	10.9	260.9
11/30/2023 17:57	192.1	121.0	11.7	11.0	259.2
11/30/2023 17:58	192.4	121.2	11.6	11.1	258.6
11/30/2023 17:59	192.8	121.5	11.8	11.1	257.3
11/30/2023 18:00	191.9	120.9	11.8	11.0	258.9
11/30/2023 18:01	191.9	120.9	11.7	11.0	259.7
11/30/2023 18:02	191.4	120.6	11.9	11.0	258.8
11/30/2023 18:03	192.5	121.3	11.9	10.7	259.9
11/30/2023 18:04	192.5	121.3	11.8	10.9	260.6
11/30/2023 18:05	193.0	121.6	11.9	10.9	260.1
11/30/2023 18:06	192.4	121.2	11.9	10.9	258.0
11/30/2023 18:07	193.2	121.7	11.9	10.9	259.8
11/30/2023 18:08	194.0	122.2	12.0	11.0	258.5
11/30/2023 18:09	194.6	122.6	11.9	10.9	259.5
11/30/2023 18:10	194.6	122.6	11.9	11.1	258.2
11/30/2023 18:11	195.1	122.9	11.9	11.2	258.7
11/30/2023 18:12	194.8	122.7	11.7	11.3	257.9
11/30/2023 18:13	195.3	123.0	12.0	11.2	256.4

1-Minute Data Report

From: 11/30/2023 17:09 **To:** 11/30/2023 18:14 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:50 **Location:** Brooksville, FL

Red = Sample Invalid

11/30/2023 18:14	195.7	123.3	12.0	11.0	257.8
Valid Data Points:	66	66	66	66	66
Average:	191.9	120.9	11.8	10.9	261.4

1-Minute Data Report

From: 12/01/2023 10:37 **To:** 12/01/2023 11:42 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:51 **Location:** Brooksville, FL

Red = Sample Invalid

Date/Time	Kiln 2 KilnFeed, TonPerHr 1 Minute(s)	Kiln 2 Clinker, TonPerHr 1 Minute(s)	Kiln 2 O2, Dry, Pct 1 Minute(s)	Kiln 2 CO2, Pct 1 Minute(s)	Kiln 2 StackFlow, kscfm 1 Minute(s)
12/01/2023 10:37	206.5	130.1	11.3	12.0	250.8
12/01/2023 10:38	206.1	129.8	11.4	11.9	251.5
12/01/2023 10:39	206.7	130.2	11.3	11.7	249.7
12/01/2023 10:40	206.8	130.3	11.2	12.0	250.8
12/01/2023 10:41	206.1	129.8	11.1	12.3	251.8
12/01/2023 10:42	206.4	130.0	11.0	12.1	252.7
12/01/2023 10:43	205.9	129.7	11.0	12.4	253.0
12/01/2023 10:44	206.3	130.0	11.1	12.3	250.3
12/01/2023 10:45	206.5	130.1	11.1	12.1	251.5
12/01/2023 10:46	206.4	130.0	11.1	12.2	251.9
12/01/2023 10:47	206.8	130.3	11.2	12.2	253.3
12/01/2023 10:48	205.8	129.7	11.2	12.0	251.5
12/01/2023 10:49	206.3	130.0	11.3	12.0	252.1
12/01/2023 10:50	205.7	129.6	11.6	11.8	253.3
12/01/2023 10:51	205.7	129.6	11.5	11.6	252.8
12/01/2023 10:52	206.2	129.9	11.3	11.8	253.5
12/01/2023 10:53	205.7	129.6	11.2	11.9	251.9
12/01/2023 10:54	205.6	129.5	11.2	11.9	251.0
12/01/2023 10:55	204.9	129.1	11.2	11.9	254.1
12/01/2023 10:56	206.1	129.8	11.2	11.9	252.7
12/01/2023 10:57	206.2	129.9	11.3	12.0	253.6
12/01/2023 10:58	205.7	129.6	11.3	12.0	251.4
12/01/2023 10:59	205.3	129.3	11.3	12.0	252.5
12/01/2023 11:00	205.3	129.3	11.2	11.8	253.2
12/01/2023 11:01	205.8	129.7	11.2	11.9	254.9
12/01/2023 11:02	205.6	129.5	11.2	12.0	255.2
12/01/2023 11:03	206.0	129.8	11.4	11.9	253.5
12/01/2023 11:04	206.2	129.9	11.7	11.6	253.4
12/01/2023 11:05	205.4	129.4	11.6	11.4	255.2
12/01/2023 11:06	205.9	129.7	11.5	11.5	255.8

1-Minute Data Report

From: 12/01/2023 10:37 **To:** 12/01/2023 11:42 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:51 **Location:** Brooksville, FL

Red = Sample Invalid

12/01/2023 11:07	205.9	129.7	11.5	11.7	255.9
12/01/2023 11:08	205.1	129.2	11.4	11.7	257.9
12/01/2023 11:09	205.9	129.7	11.4	11.7	258.2
12/01/2023 11:10	206.7	130.2	11.4	11.8	257.4
12/01/2023 11:11	206.1	129.8	11.5	11.7	257.2
12/01/2023 11:12	205.8	129.7	11.3	11.7	257.6
12/01/2023 11:13	205.8	129.7	11.7	11.9	256.2
12/01/2023 11:14	206.1	129.8	11.9	11.2	256.6
12/01/2023 11:15	205.9	129.7	11.7	11.3	258.7
12/01/2023 11:16	206.3	130.0	11.6	11.4	257.3
12/01/2023 11:17	206.3	130.0	11.5	11.6	257.6
12/01/2023 11:18	205.3	129.3	11.5	11.6	257.3
12/01/2023 11:19	205.5	129.5	11.5	11.6	256.2
12/01/2023 11:20	205.1	129.2	11.6	11.4	257.0
12/01/2023 11:21	205.4	129.4	11.8	11.3	258.2
12/01/2023 11:22	205.1	129.2	11.9	10.9	255.3
12/01/2023 11:23	205.2	129.3	11.6	11.1	255.1
12/01/2023 11:24	205.5	129.5	11.5	11.4	255.2
12/01/2023 11:25	205.6	129.5	11.4	11.4	255.0
12/01/2023 11:26	205.0	129.2	11.3	11.8	257.0
12/01/2023 11:27	205.3	129.3	11.3	11.7	256.6
12/01/2023 11:28	206.0	129.8	11.3	11.9	257.8
12/01/2023 11:29	206.0	129.8	11.2	11.9	256.3
12/01/2023 11:30	205.8	129.7	11.2	11.9	257.0
12/01/2023 11:31	205.2	129.3	11.1	11.8	256.2
12/01/2023 11:32	205.0	129.2	11.1	12.1	255.7
12/01/2023 11:33	206.3	130.0	11.1	12.0	256.5
12/01/2023 11:34	205.8	129.7	11.2	12.0	254.4
12/01/2023 11:35	205.3	129.3	11.2	11.9	254.8
12/01/2023 11:36	205.8	129.7	11.3	12.1	255.9
12/01/2023 11:37	205.9	129.7	11.3	12.0	253.1
12/01/2023 11:38	206.5	130.1	11.2	11.8	253.0
12/01/2023 11:39	206.5	130.1	11.3	12.0	254.6
12/01/2023 11:40	205.6	129.5	11.4	11.9	255.8
12/01/2023 11:41	205.1	129.2	11.2	12.1	255.7

1-Minute Data Report

From: 12/01/2023 10:37 **To:** 12/01/2023 11:42 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:51 **Location:** Brooksville, FL

Red = Sample Invalid

12/01/2023 11:42	205.7	129.6	11.1	12.2	255.9
Valid Data Points:	66	66	66	66	66
Average:	205.8	129.7	11.3	11.8	254.6

1-Minute Data Report

From: 12/01/2023 12:20 **To:** 12/01/2023 13:26 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:51 **Location:** Brooksville, FL

Red = Sample Invalid

Date/Time	Kiln 2 KilnFeed, TonPerHr 1 Minute(s)	Kiln 2 Clinker, TonPerHr 1 Minute(s)	Kiln 2 O2, Dry, Pct 1 Minute(s)	Kiln 2 CO2, Pct 1 Minute(s)	Kiln 2 StackFlow, kscfm 1 Minute(s)
12/01/2023 12:20	204.7	129.0	11.0	11.9	256.6
12/01/2023 12:21	204.9	129.1	11.2	11.9	255.1
12/01/2023 12:22	205.1	129.2	11.1	11.9	257.3
12/01/2023 12:23	204.8	129.0	11.0	12.1	257.3
12/01/2023 12:24	204.5	128.8	11.1	12.0	256.8
12/01/2023 12:25	204.4	128.8	11.2	11.8	257.7
12/01/2023 12:26	204.6	128.9	11.3	11.8	255.9
12/01/2023 12:27	205.0	129.2	11.2	11.8	255.3
12/01/2023 12:28	205.6	129.5	11.2	11.9	256.9
12/01/2023 12:29	206.0	129.8	11.1	12.1	257.5
12/01/2023 12:30	205.2	129.3	11.4	12.0	257.4
12/01/2023 12:31	205.2	129.3	11.4	11.8	260.7
12/01/2023 12:32	205.4	129.4	11.5	11.9	260.8
12/01/2023 12:33	204.7	129.0	11.6	11.4	263.1
12/01/2023 12:34	204.9	129.1	11.5	11.3	264.0
12/01/2023 12:35	204.5	128.8	11.5	11.7	263.8
12/01/2023 12:36	204.9	129.1	11.7	11.5	261.5
12/01/2023 12:37	204.6	128.9	11.9	11.0	261.3
12/01/2023 12:38	205.2	129.3	11.6	11.2	261.5
12/01/2023 12:39	205.0	129.2	11.5	11.7	260.8
12/01/2023 12:40	205.1	129.2	11.5	11.5	260.2
12/01/2023 12:41	205.7	129.6	11.4	11.4	260.4
12/01/2023 12:42	205.1	129.2	11.4	11.6	259.0
12/01/2023 12:43	205.2	129.3	11.4	11.5	257.9
12/01/2023 12:44	205.1	129.2	11.5	11.5	258.0
12/01/2023 12:45	205.7	129.6	11.5	11.2	257.9
12/01/2023 12:46	205.5	129.5	11.3	11.6	261.1
12/01/2023 12:47	205.6	129.5	11.5	11.9	261.6
12/01/2023 12:48	204.7	129.0	11.5	11.7	261.9
12/01/2023 12:49	205.1	129.2	11.6	11.3	261.8

1-Minute Data Report

From: 12/01/2023 12:20 **To:** 12/01/2023 13:26 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:51 **Location:** Brooksville, FL

Red = Sample Invalid

12/01/2023 12:50	206.0	129.8	11.7	11.1	261.4
12/01/2023 12:51	206.0	129.8	11.6	11.1	260.6
12/01/2023 12:52	205.8	129.7	11.5	11.3	261.8
12/01/2023 12:53	206.2	129.9	11.4	11.5	260.4
12/01/2023 12:54	205.7	129.6	11.3	11.6	260.4
12/01/2023 12:55	204.7	129.0	11.3	11.6	261.0
12/01/2023 12:56	205.0	129.2	11.5	11.7	260.3
12/01/2023 12:57	205.6	129.5	11.6	11.7	261.5
12/01/2023 12:58	205.4	129.4	11.6	11.4	259.1
12/01/2023 12:59	206.3	130.0	11.6	11.5	258.4
12/01/2023 13:00	205.7	129.6	11.6	11.2	260.7
12/01/2023 13:01	205.3	129.3	11.7	11.3	259.5
12/01/2023 13:02	205.5	129.5	11.7	11.1	261.5
12/01/2023 13:03	205.8	129.7	11.8	11.1	258.2
12/01/2023 13:04	206.2	129.9	11.5	11.2	258.5
12/01/2023 13:05	206.1	129.8	11.5	11.3	261.6
12/01/2023 13:06	205.4	129.4	11.4	11.5	261.0
12/01/2023 13:07	205.3	129.3	11.3	11.6	259.6
12/01/2023 13:08	205.3	129.3	11.3	11.7	260.7
12/01/2023 13:09	206.0	129.8	11.3	11.8	259.7
12/01/2023 13:10	205.8	129.7	11.4	11.8	259.2
12/01/2023 13:11	204.7	129.0	11.3	11.7	260.3
12/01/2023 13:12	205.1	129.2	11.3	11.9	259.0
12/01/2023 13:13	204.6	128.9	11.1	11.9	256.9
12/01/2023 13:14	205.0	129.2	11.1	11.9	258.5
12/01/2023 13:15	205.2	129.3	11.0	12.1	258.5
12/01/2023 13:16	205.6	129.5	11.1	12.1	258.1
12/01/2023 13:17	205.0	129.2	11.1	12.2	258.9
12/01/2023 13:18	205.4	129.4	11.1	12.2	258.5
12/01/2023 13:19	204.2	128.6	11.2	12.0	258.2
12/01/2023 13:20	204.3	128.7	11.1	11.9	258.6
12/01/2023 13:21	205.6	129.5	11.1	11.9	258.0
12/01/2023 13:22	205.8	129.7	11.1	11.9	258.4
12/01/2023 13:23	204.9	129.1	11.1	11.9	257.7
12/01/2023 13:24	204.7	129.0	11.0	12.0	257.8

1-Minute Data Report

From: 12/01/2023 12:20 **To:** 12/01/2023 13:26 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:51 **Location:** Brooksville, FL

Red = Sample Invalid

12/01/2023 13:25	205.5	129.5	11.0	11.9	256.9
12/01/2023 13:26	205.3	129.3	10.9	11.8	256.2
Valid Data Points:	67	67	67	67	67
Average:	205.3	129.3	11.4	11.7	259.4

1-Minute Data Report

From: 11/30/2023 10:25 **To:** 11/30/2023 11:30 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:52 **Location:** Brooksville, FL

Red = Sample Invalid

Date/Time	Kiln 2 KilnFeed, TonPerHr 1 Minute(s)	Kiln 2 Clinker, TonPerHr 1 Minute(s)	Kiln 2 O2, Dry, Pct 1 Minute(s)	Kiln 2 CO2, Pct 1 Minute(s)	Kiln 2 StackFlow, kscfm 1 Minute(s)
11/30/2023 10:25	201.1	126.7	11.4	12.4	227.0
11/30/2023 10:26	202.1	127.3	11.4	12.1	227.0
11/30/2023 10:27	201.7	127.1	11.4	12.2	227.2
11/30/2023 10:28	201.7	127.1	11.2	12.2	229.6
11/30/2023 10:29	201.4	126.9	11.2	12.4	228.2
11/30/2023 10:30	202.1	127.3	11.1	12.5	228.0
11/30/2023 10:31	201.9	127.2	11.0	12.6	226.8
11/30/2023 10:32	201.6	127.0	11.0	12.5	225.8
11/30/2023 10:33	201.5	126.9	10.8	12.5	226.6
11/30/2023 10:34	201.9	127.2	10.7	13.6	228.3
11/30/2023 10:35	201.5	126.9	10.8	13.0	226.4
11/30/2023 10:36	201.5	126.9	10.8	13.0	226.5
11/30/2023 10:37	201.3	126.8	10.9	12.9	226.7
11/30/2023 10:38	201.3	126.8	10.9	12.8	226.3
11/30/2023 10:39	200.6	126.4	10.9	13.1	226.9
11/30/2023 10:40	200.8	126.5	10.8	13.0	226.4
11/30/2023 10:41	200.1	126.1	10.8	12.9	225.6
11/30/2023 10:42	200.0	126.0	10.8	12.9	226.8
11/30/2023 10:43	199.9	125.9	10.9	13.0	228.3
11/30/2023 10:44	199.8	125.9	10.9	12.9	224.6
11/30/2023 10:45	200.2	126.1	11.1	12.8	224.3
11/30/2023 10:46	200.1	126.1	11.1	12.5	226.6
11/30/2023 10:47	200.0	126.0	11.3	13.0	227.0
11/30/2023 10:48	200.3	126.2	11.3	12.4	224.9
11/30/2023 10:49	200.5	126.3	11.4	12.3	225.9
11/30/2023 10:50	200.6	126.4	11.3	12.3	227.5
11/30/2023 10:51	200.9	126.6	11.2	12.5	227.9
11/30/2023 10:52	201.4	126.9	11.1	12.6	225.2
11/30/2023 10:53	202.2	127.4	11.0	12.7	225.9
11/30/2023 10:54	202.5	127.6	10.9	12.9	226.9

1-Minute Data Report

From: 11/30/2023 10:25 **To:** 11/30/2023 11:30 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:52 **Location:** Brooksville, FL

Red = Sample Invalid

11/30/2023 10:55	202.4	127.5	10.9	12.8	226.5
11/30/2023 10:56	202.3	127.4	11.0	12.9	227.0
11/30/2023 10:57	201.8	127.1	11.1	12.7	226.1
11/30/2023 10:58	202.7	127.7	11.0	12.5	225.6
11/30/2023 10:59	202.6	127.6	11.0	12.8	226.4
11/30/2023 11:00	201.7	127.1	10.8	12.7	223.1
11/30/2023 11:01	202.7	127.7	10.7	13.0	219.4
11/30/2023 11:02	202.3	127.4	10.6	13.2	216.0
11/30/2023 11:03	203.2	128.0	9.9	13.4	211.5
11/30/2023 11:04	203.7	128.3	9.8	14.2	208.2
11/30/2023 11:05	203.6	128.3	9.7	13.9	207.8
11/30/2023 11:06	203.0	127.9	9.6	14.2	207.2
11/30/2023 11:07	203.5	128.2	9.5	14.8	207.2
11/30/2023 11:08	204.1	128.6	9.4	14.9	206.8
11/30/2023 11:09	204.5	128.8	9.4	14.7	205.7
11/30/2023 11:10	204.5	128.8	9.4	14.7	205.3
11/30/2023 11:11	203.3	128.1	9.4	14.6	204.7
11/30/2023 11:12	203.8	128.4	9.5	14.7	205.0
11/30/2023 11:13	203.3	128.1	9.5	14.7	204.8
11/30/2023 11:14	204.5	128.8	9.5	14.5	203.1
11/30/2023 11:15	204.9	129.1	9.4	14.6	204.0
11/30/2023 11:16	204.8	129.0	9.4	14.7	204.5
11/30/2023 11:17	204.1	128.6	9.4	14.6	204.3
11/30/2023 11:18	203.7	128.3	9.7	14.7	204.6
11/30/2023 11:19	203.8	128.4	10.3	14.3	204.4
11/30/2023 11:20	203.8	128.4	10.5	14.0	205.8
11/30/2023 11:21	203.3	128.1	10.3	13.6	204.6
11/30/2023 11:22	203.5	128.2	10.0	13.9	204.0
11/30/2023 11:23	204.6	128.9	9.8	14.1	206.0
11/30/2023 11:24	204.8	129.0	10.3	14.2	204.1
11/30/2023 11:25	205.3	129.3	10.3	13.6	205.8
11/30/2023 11:26	204.5	128.8	10.2	14.0	207.1
11/30/2023 11:27	204.1	128.6	10.2	14.1	206.2
11/30/2023 11:28	204.3	128.7	10.6	13.8	204.7
11/30/2023 11:29	204.3	128.7	10.6	13.4	207.2

1-Minute Data Report

From: 11/30/2023 10:25 **To:** 11/30/2023 11:30 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:52 **Location:** Brooksville, FL

Red = Sample Invalid

11/30/2023 11:30	203.6	128.3	10.7	13.6	206.4
Valid Data Points:	66	66	66	66	66
Average:	202.5	127.6	10.5	13.4	217.5

1-Minute Data Report

From: 11/30/2023 12:10 **To:** 11/30/2023 13:14 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:53 **Location:** Brooksville, FL

Red = Sample Invalid

Date/Time	Kiln 2 KilnFeed, TonPerHr 1 Minute(s)	Kiln 2 Clinker, TonPerHr 1 Minute(s)	Kiln 2 O2, Dry, Pct 1 Minute(s)	Kiln 2 CO2, Pct 1 Minute(s)	Kiln 2 StackFlow, kscfm 1 Minute(s)
11/30/2023 12:10	203.7	128.3	9.7	14.3	205.5
11/30/2023 12:11	204.5	128.8	9.8	14.4	205.2
11/30/2023 12:12	204.6	128.9	9.7	14.2	203.9
11/30/2023 12:13	205.2	129.3	9.6	14.5	204.9
11/30/2023 12:14	205.3	129.3	9.5	14.6	204.2
11/30/2023 12:15	205.4	129.4	9.7	14.6	205.6
11/30/2023 12:16	204.3	128.7	9.7	14.6	206.0
11/30/2023 12:17	204.7	129.0	9.6	14.6	205.0
11/30/2023 12:18	205.1	129.2	9.5	14.5	206.7
11/30/2023 12:19	205.4	129.4	9.4	14.8	207.0
11/30/2023 12:20	205.9	129.7	9.4	15.0	207.2
11/30/2023 12:21	205.3	129.3	9.4	14.8	206.3
11/30/2023 12:22	204.6	128.9	9.4	14.7	205.1
11/30/2023 12:23	205.1	129.2	9.4	14.7	206.6
11/30/2023 12:24	204.6	128.9	9.4	14.9	205.6
11/30/2023 12:25	204.6	128.9	9.4	14.7	205.2
11/30/2023 12:26	204.1	128.6	9.5	14.8	206.3
11/30/2023 12:27	204.7	129.0	9.7	14.6	204.4
11/30/2023 12:28	204.3	128.7	9.6	14.3	203.8
11/30/2023 12:29	205.5	129.5	9.5	14.5	204.1
11/30/2023 12:30	205.0	129.2	9.4	14.6	203.9
11/30/2023 12:31	205.0	129.2	9.3	14.8	203.6
11/30/2023 12:32	204.9	129.1	9.5	14.8	203.0
11/30/2023 12:33	204.5	128.8	9.6	14.5	201.8
11/30/2023 12:34	205.3	129.3	9.8	14.4	202.3
11/30/2023 12:35	204.9	129.1	9.9	14.0	203.4
11/30/2023 12:36	205.3	129.3	9.6	14.6	207.3
11/30/2023 12:37	205.9	129.7	9.7	14.8	205.0
11/30/2023 12:38	205.7	129.6	9.6	14.5	204.4
11/30/2023 12:39	205.1	129.2	9.5	14.5	204.0

1-Minute Data Report

From: 11/30/2023 12:10 **To:** 11/30/2023 13:14 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:53 **Location:** Brooksville, FL

Red = Sample Invalid

11/30/2023 12:40	205.8	129.7	9.4	14.7	205.3
11/30/2023 12:41	206.5	130.1	9.5	14.8	203.6
11/30/2023 12:42	205.0	129.2	9.6	14.6	204.7
11/30/2023 12:43	204.6	128.9	9.6	14.5	203.9
11/30/2023 12:44	204.2	128.6	9.4	14.4	205.8
11/30/2023 12:45	203.8	128.4	9.4	14.5	206.3
11/30/2023 12:46	203.8	128.4	9.4	14.5	206.6
11/30/2023 12:47	203.2	128.0	9.5	14.4	207.5
11/30/2023 12:48	203.4	128.1	9.5	14.5	207.0
11/30/2023 12:49	203.0	127.9	9.4	14.6	206.4
11/30/2023 12:50	203.5	128.2	9.5	14.4	207.5
11/30/2023 12:51	204.5	128.8	9.5	14.3	207.1
11/30/2023 12:52	205.0	129.2	9.5	14.3	207.9
11/30/2023 12:53	204.5	128.8	9.5	14.4	208.0
11/30/2023 12:54	204.4	128.8	9.5	14.4	206.8
11/30/2023 12:55	204.1	128.6	9.6	14.4	207.6
11/30/2023 12:56	204.2	128.6	9.9	14.2	207.3
11/30/2023 12:57	204.9	129.1	9.8	14.0	207.9
11/30/2023 12:58	205.6	129.5	9.8	14.2	208.3
11/30/2023 12:59	205.1	129.2	9.8	14.0	207.2
11/30/2023 13:00	205.1	129.2	9.8	14.1	208.8
11/30/2023 13:01	205.0	129.2	9.7	14.1	207.2
11/30/2023 13:02	205.8	129.7	9.5	14.3	210.9
11/30/2023 13:03	205.8	129.7	9.4	14.6	209.4
11/30/2023 13:04	205.4	129.4	9.4	14.7	211.0
11/30/2023 13:05	205.3	129.3	9.7	14.5	208.2
11/30/2023 13:06	205.5	129.5	10.0	13.9	206.5
11/30/2023 13:07	205.8	129.7	9.9	14.0	208.5
11/30/2023 13:08	205.1	129.2	9.8	14.2	208.2
11/30/2023 13:09	204.9	129.1	9.9	14.3	206.3
11/30/2023 13:10	205.2	129.3	9.8	14.2	206.9
11/30/2023 13:11	205.4	129.4	9.9	14.2	206.4
11/30/2023 13:12	205.2	129.3	10.1	14.0	206.7
11/30/2023 13:13	205.1	129.2	10.2	14.0	204.7
11/30/2023 13:14	205.0	129.2	10.1	13.8	207.1

1-Minute Data Report

From: 11/30/2023 12:10 **To:** 11/30/2023 13:14 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:53 **Location:** Brooksville, FL

Red = Sample Invalid

Valid Data Points:	65	65	65	65	65
Average:	204.9	129.1	9.6	14.4	206.1

1-Minute Data Report

From: 11/30/2023 13:55 **To:** 11/30/2023 15:01 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:54 **Location:** Brooksville, FL

Red = Sample Invalid

Date/Time	Kiln 2 KilnFeed, TonPerHr 1 Minute(s)	Kiln 2 Clinker, TonPerHr 1 Minute(s)	Kiln 2 O2, Dry, Pct 1 Minute(s)	Kiln 2 CO2, Pct 1 Minute(s)	Kiln 2 StackFlow, kscfm 1 Minute(s)
11/30/2023 13:55	201.9	127.2	9.6	14.7	198.2
11/30/2023 13:56	202.5	127.6	9.5	14.4	199.0
11/30/2023 13:57	202.5	127.6	9.4	14.8	195.1
11/30/2023 13:58	201.8	127.1	9.1	14.9	196.5
11/30/2023 13:59	201.5	126.9	9.2	15.5	197.6
11/30/2023 14:00	202.1	127.3	9.2	14.5	196.3
11/30/2023 14:01	203.2	128.0	9.3	14.4	195.8
11/30/2023 14:02	197.9	124.7	9.7	14.2	186.3
11/30/2023 14:03	174.9	110.2	10.3	13.3	183.8
11/30/2023 14:04	154.6	97.4	10.8	14.2	184.1
11/30/2023 14:05	144.3	90.9	11.0	12.8	183.1
11/30/2023 14:06	132.3	83.3	10.9	12.0	181.4
11/30/2023 14:07	126.3	79.6	11.0	11.9	181.1
11/30/2023 14:08	124.3	78.3	11.0	11.2	179.5
11/30/2023 14:09	119.0	75.0	11.1	11.2	177.4
11/30/2023 14:10	110.7	69.7	11.0	10.9	175.8
11/30/2023 14:11	111.5	70.2	11.0	11.0	176.3
11/30/2023 14:12	115.5	72.8	11.0	10.9	172.0
11/30/2023 14:13	120.5	75.9	11.2	10.5	172.2
11/30/2023 14:14	126.2	79.5	11.1	10.6	174.6
11/30/2023 14:15	131.6	82.9	11.0	11.1	173.8
11/30/2023 14:16	135.9	85.6	11.2	11.2	173.2
11/30/2023 14:17	138.9	87.5	11.0	11.5	173.5
11/30/2023 14:18	141.1	88.9	11.2	11.4	172.9
11/30/2023 14:19	143.4	90.3	11.3	11.5	173.1
11/30/2023 14:20	145.8	91.9	11.3	11.3	174.1
11/30/2023 14:21	146.5	92.3	11.0	11.6	174.9
11/30/2023 14:22	147.2	92.7	10.7	12.0	177.2
11/30/2023 14:23	148.0	93.2	10.9	12.5	176.5
11/30/2023 14:24	148.4	93.5	11.4	11.5	178.6

1-Minute Data Report

From: 11/30/2023 13:55 **To:** 11/30/2023 15:01 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:54 **Location:** Brooksville, FL

Red = Sample Invalid

11/30/2023 14:25	148.6	93.6	11.2	11.9	181.0
11/30/2023 14:26	149.4	94.1	11.1	11.7	179.7
11/30/2023 14:27	149.5	94.2	10.9	11.9	179.6
11/30/2023 14:28	149.8	94.4	11.0	12.0	178.6
11/30/2023 14:29	149.6	94.2	10.6	12.3	180.4
11/30/2023 14:30	149.1	93.9	10.5	12.5	181.7
11/30/2023 14:31	149.4	94.1	10.5	12.4	181.3
11/30/2023 14:32	150.6	94.9	10.2	13.0	184.9
11/30/2023 14:33	149.8	94.4	10.3	13.2	184.6
11/30/2023 14:34	149.6	94.2	10.3	12.8	183.8
11/30/2023 14:35	149.2	94.0	10.2	12.8	183.1
11/30/2023 14:36	148.2	93.4	10.2	12.7	186.3
11/30/2023 14:37	149.8	94.4	10.1	13.7	186.0
11/30/2023 14:38	152.4	96.0	10.0	13.3	186.3
11/30/2023 14:39	154.6	97.4	10.0	13.5	182.4
11/30/2023 14:40	157.2	99.0	10.0	13.1	183.4
11/30/2023 14:41	160.0	100.8	10.1	12.9	184.2
11/30/2023 14:42	161.7	101.9	10.1	13.2	186.5
11/30/2023 14:43	163.4	102.9	9.9	13.5	186.2
11/30/2023 14:44	165.6	104.3	9.9	13.5	185.2
11/30/2023 14:45	167.9	105.8	9.9	13.8	187.7
11/30/2023 14:46	171.4	108.0	10.0	13.7	188.2
11/30/2023 14:47	172.8	108.9	9.9	13.7	188.9
11/30/2023 14:48	173.4	109.2	9.8	13.6	189.0
11/30/2023 14:49	173.9	109.6	9.8	13.8	186.4
11/30/2023 14:50	174.6	110.0	9.8	13.8	188.1
11/30/2023 14:51	174.9	110.2	9.8	13.9	187.5
11/30/2023 14:52	174.5	109.9	9.9	13.9	187.7
11/30/2023 14:53	175.3	110.4	9.9	13.7	190.0
11/30/2023 14:54	175.0	110.3	10.0	13.7	189.3
11/30/2023 14:55	175.8	110.8	9.9	13.5	191.5
11/30/2023 14:56	177.6	111.9	9.9	14.2	192.5
11/30/2023 14:57	177.3	111.7	9.9	14.2	194.8
11/30/2023 14:58	178.2	112.3	9.9	14.2	193.9
11/30/2023 14:59	178.2	112.3	10.0	13.8	193.5

1-Minute Data Report

From: 11/30/2023 13:55 **To:** 11/30/2023 15:01 **Facility Name:** CEMEX Brooksville South
Generated: 06/03/2024 11:54 **Location:** Brooksville, FL

Red = Sample Invalid

11/30/2023 15:00	177.6	111.9	10.1	13.7	194.1
11/30/2023 15:01	177.9	112.1	10.1	13.6	194.5
Valid Data Points:	67	67	67	67	67
Average:	158.7	100.0	10.3	12.9	184.4

Appendix B.2
Miami, FL

1-Minute Data Report

From: 12/05/2023 09:30 **To:** 12/05/2023 10:34 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:48 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln StackFlow, kscfm 1 Minute(s)
12/05/2023 09:30	214.1	243.8
12/05/2023 09:31	212.2	242.2
12/05/2023 09:32	210.8	241.2
12/05/2023 09:33	208.8	238.9
12/05/2023 09:34	206.9	236.7
12/05/2023 09:35	206.6	236.4
12/05/2023 09:36	207.2	236.5
12/05/2023 09:37	206.6	236.1
12/05/2023 09:38	206.2	236.2
12/05/2023 09:39	205.6	236.0
12/05/2023 09:40	205.3	236.3
12/05/2023 09:41	205.6	236.9
12/05/2023 09:42	205.3	236.5
12/05/2023 09:43	205.3	236.5
12/05/2023 09:44	205.7	236.7
12/05/2023 09:45	205.2	235.9
12/05/2023 09:46	204.8	235.1
12/05/2023 09:47	205.6	235.2
12/05/2023 09:48	206.0	235.4
12/05/2023 09:49	205.8	235.5
12/05/2023 09:50	205.6	235.8
12/05/2023 09:51	205.2	235.9
12/05/2023 09:52	205.1	236.6
12/05/2023 09:53	206.0	237.9
12/05/2023 09:54	205.6	238.0
12/05/2023 09:55	205.2	238.3
12/05/2023 09:56	205.7	238.9
12/05/2023 09:57	205.7	238.3
12/05/2023 09:58	205.5	237.8
12/05/2023 09:59	206.8	238.3

1-Minute Data Report

From: 12/05/2023 09:30 **To:** 12/05/2023 10:34 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:48 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln StackFlow, kscfm 1 Minute(s)
12/05/2023 10:00	207.0	237.7
12/05/2023 10:01	206.4	236.2
12/05/2023 10:02	205.9	235.1
12/05/2023 10:03	205.0	233.8
12/05/2023 10:04	204.5	233.5
12/05/2023 10:05	205.8	235.2
12/05/2023 10:06	206.4	236.2
12/05/2023 10:07	206.1	236.1
12/05/2023 10:08	205.9	236.4
12/05/2023 10:09	205.6	236.0
12/05/2023 10:10	205.2	235.3
12/05/2023 10:11	205.3	235.4
12/05/2023 10:12	205.1	235.2
12/05/2023 10:13	204.9	235.0
12/05/2023 10:14	205.2	235.3
12/05/2023 10:15	205.0	235.1
12/05/2023 10:16	204.2	234.7
12/05/2023 10:17	204.5	236.1
12/05/2023 10:18	204.2	236.6
12/05/2023 10:19	204.2	236.3
12/05/2023 10:20	204.8	236.5
12/05/2023 10:21	204.8	236.5
12/05/2023 10:22	204.7	236.7
12/05/2023 10:23	205.3	237.3
12/05/2023 10:24	205.4	237.2
12/05/2023 10:25	205.4	237.2
12/05/2023 10:26	205.7	237.3
12/05/2023 10:27	205.4	236.6
12/05/2023 10:28	205.3	236.2
12/05/2023 10:29	205.7	236.7

1-Minute Data Report

From: 12/05/2023 09:30 **To:** 12/05/2023 10:34 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:48 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln StackFlow, kscfm 1 Minute(s)
12/05/2023 10:30	205.3	236.5
12/05/2023 10:31	204.3	235.4
12/05/2023 10:32	204.5	235.3
12/05/2023 10:33	205.1	235.8
12/05/2023 10:34	205.3	236.0
Valid Data Points:	65	65
Average:	205.8	236.6

1-Minute Data Report

From: 12/05/2023 09:30 **To:** 12/05/2023 10:34 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:37 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln KilnFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln Clinker, TonPerHr 1 Minute(s)	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln RawMillOn, TF 1 Minute(s)	No. 1 Cement Kiln CoalFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln TireFluff, TonPerHr 1 Minute(s)	No. 1 Cement Kiln UsedOil, GalPerMin 1 Minute(s)
12/05/2023 09:30	209.0	126.9	214.1	1	3.0	1.0	155.6
12/05/2023 09:31	209.0	126.9	212.2	1	3.0	1.0	155.6
12/05/2023 09:32	209.0	126.9	210.8	1	3.0	1.0	155.6
12/05/2023 09:33	209.0	126.9	208.8	1	3.0	1.0	155.6
12/05/2023 09:34	209.0	126.9	206.9	1	3.0	1.0	155.6
12/05/2023 09:35	209.0	126.9	206.6	1	3.0	1.0	155.6
12/05/2023 09:36	209.0	126.9	207.2	1	3.0	1.0	155.6
12/05/2023 09:37	209.0	126.9	206.6	1	3.0	1.0	155.6
12/05/2023 09:38	209.0	126.9	206.2	1	3.0	1.0	155.6
12/05/2023 09:39	209.0	126.9	205.6	1	3.0	1.0	155.6
12/05/2023 09:40	209.0	126.9	205.3	1	3.0	1.0	155.6
12/05/2023 09:41	209.0	126.9	205.6	1	3.2	1.0	155.6
12/05/2023 09:42	209.0	126.9	205.3	1	3.3	1.0	155.6
12/05/2023 09:43	209.0	126.9	205.3	1	3.5	1.0	155.6
12/05/2023 09:44	209.0	126.9	205.7	1	3.5	1.0	155.6
12/05/2023 09:45	209.0	126.9	205.2	1	4.0	1.0	155.6
12/05/2023 09:46	209.0	126.9	204.8	1	4.0	1.0	155.6
12/05/2023 09:47	209.0	126.9	205.6	1	3.6	1.0	155.6
12/05/2023 09:48	209.0	126.9	206.0	1	3.6	1.0	155.6
12/05/2023 09:49	209.0	126.9	205.8	1	3.0	1.0	155.6
12/05/2023 09:50	209.0	126.9	205.6	1	3.3	1.0	155.6
12/05/2023 09:51	209.0	126.9	205.2	1	3.0	1.0	155.6
12/05/2023 09:52	209.0	126.9	205.1	1	3.4	1.0	155.6
12/05/2023 09:53	209.0	126.9	206.0	1	3.0	1.0	155.6
12/05/2023 09:54	209.0	126.9	205.6	1	3.4	1.0	155.6
12/05/2023 09:55	209.0	126.9	205.2	1	3.1	1.0	155.6
12/05/2023 09:56	209.0	126.9	205.7	1	3.8	1.0	155.6
12/05/2023 09:57	209.0	126.9	205.7	1	3.4	1.0	155.6
12/05/2023 09:58	209.0	126.9	205.5	1	3.0	1.0	155.6

1-Minute Data Report

From: 12/05/2023 09:30 **To:** 12/05/2023 10:34 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:37 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln KilnFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln Clinker, TonPerHr 1 Minute(s)	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln RawMillOn, TF 1 Minute(s)	No. 1 Cement Kiln CoalFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln TireFluff, TonPerHr 1 Minute(s)	No. 1 Cement Kiln UsedOil, GalPerMin 1 Minute(s)
12/05/2023 09:59	209.0	126.9	206.8	1	3.0	1.0	155.6
12/05/2023 10:00	209.0	126.9	207.0	1	3.0	1.0	155.6
12/05/2023 10:01	209.0	126.9	206.4	1	3.1	1.0	167.1
12/05/2023 10:02	209.0	126.9	205.9	1	3.3	1.0	168.1
12/05/2023 10:03	209.0	126.9	205.0	1	3.3	1.0	168.1
12/05/2023 10:04	209.0	126.9	204.5	1	3.3	1.0	168.1
12/05/2023 10:05	209.0	126.9	205.8	1	3.1	1.0	168.1
12/05/2023 10:06	209.0	126.9	206.4	1	3.1	1.0	168.1
12/05/2023 10:07	209.1	126.9	206.1	1	4.0	1.0	168.1
12/05/2023 10:08	209.1	126.9	205.9	1	3.7	1.0	168.1
12/05/2023 10:09	209.0	126.9	205.6	1	3.4	1.0	168.1
12/05/2023 10:10	209.2	127.0	205.2	1	3.3	1.0	168.1
12/05/2023 10:11	209.0	126.9	205.3	1	3.3	1.0	168.1
12/05/2023 10:12	209.0	126.9	205.1	1	3.4	1.0	168.1
12/05/2023 10:13	209.0	126.9	204.9	1	3.5	1.0	168.1
12/05/2023 10:14	209.0	126.9	205.2	1	3.5	1.0	168.1
12/05/2023 10:15	209.0	126.9	205.0	1	3.6	1.0	168.1
12/05/2023 10:16	209.0	126.9	204.2	1	3.5	1.0	168.1
12/05/2023 10:17	209.0	126.9	204.5	1	3.0	1.0	168.1
12/05/2023 10:18	209.0	126.9	204.2	1	3.0	1.0	168.1
12/05/2023 10:19	209.0	126.9	204.2	1	3.0	1.0	168.1
12/05/2023 10:20	209.0	126.9	204.8	1	3.1	1.0	168.1
12/05/2023 10:21	209.0	126.9	204.8	1	3.1	1.0	168.1
12/05/2023 10:22	209.2	127.0	204.7	1	3.5	1.0	168.1
12/05/2023 10:23	209.5	127.2	205.3	1	3.0	1.0	168.1
12/05/2023 10:24	209.0	126.9	205.4	1	3.1	1.0	168.1
12/05/2023 10:25	209.0	126.9	205.4	1	3.1	1.0	168.1
12/05/2023 10:26	209.0	126.9	205.7	1	3.4	1.0	168.1
12/05/2023 10:27	209.0	126.9	205.4	1	3.1	1.0	168.1
12/05/2023 10:28	209.0	126.9	205.3	1	3.1	1.0	168.1

1-Minute Data Report

From: 12/05/2023 09:30 **To:** 12/05/2023 10:34 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:37 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln KilnFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln Clinker, TonPerHr 1 Minute(s)	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln RawMillOn, TF 1 Minute(s)	No. 1 Cement Kiln CoalFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln TireFluff, TonPerHr 1 Minute(s)	No. 1 Cement Kiln UsedOil, GalPerMin 1 Minute(s)
12/05/2023 10:29	209.0	126.9	205.7	1	3.1	1.0	168.1
12/05/2023 10:30	209.0	126.9	205.3	1	3.1	1.0	168.1
12/05/2023 10:31	209.0	126.9	204.3	1	4.0	1.0	168.1
12/05/2023 10:32	209.0	126.9	204.5	1	4.0	1.0	168.1
12/05/2023 10:33	209.0	126.9	205.1	1	4.0	1.0	168.1
12/05/2023 10:34	209.0	126.9	205.3	1	3.1	1.0	168.1
Valid Data Points:	65	65	65	65	65	65	65
Average:	209.0	126.9	205.8	1	3.3	1.0	162.1

1-Minute Data Report

From: 12/05/2023 11:10 **To:** 12/05/2023 12:14 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:50 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln StackFlow, kscfm 1 Minute(s)
12/05/2023 11:10	211.2	245.0
12/05/2023 11:11	211.0	245.4
12/05/2023 11:12	211.3	246.0
12/05/2023 11:13	211.0	245.9
12/05/2023 11:14	211.1	246.6
12/05/2023 11:15	211.0	246.8
12/05/2023 11:16	208.8	244.5
12/05/2023 11:17	206.7	242.3
12/05/2023 11:18	206.9	242.5
12/05/2023 11:19	206.4	242.0
12/05/2023 11:20	218.6	241.8
12/05/2023 11:21	237.3	242.1
12/05/2023 11:22	240.9	240.9
12/05/2023 11:23	234.4	240.4
12/05/2023 11:24	216.8	240.1
12/05/2023 11:25	207.0	238.5
12/05/2023 11:26	207.0	237.9
12/05/2023 11:27	206.9	237.3
12/05/2023 11:28	206.6	236.1
12/05/2023 11:29	206.8	236.1
12/05/2023 11:30	207.3	236.4
12/05/2023 11:31	206.8	236.1
12/05/2023 11:32	206.1	236.3
12/05/2023 11:33	206.0	237.3
12/05/2023 11:34	205.8	237.9
12/05/2023 11:35	205.5	238.4
12/05/2023 11:36	205.3	238.4
12/05/2023 11:37	204.4	237.7
12/05/2023 11:38	204.0	238.0
12/05/2023 11:39	204.2	238.6

1-Minute Data Report

From: 12/05/2023 11:10 **To:** 12/05/2023 12:14 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:50 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln StackFlow, kscfm 1 Minute(s)
12/05/2023 11:40	203.7	238.5
12/05/2023 11:41	204.1	239.3
12/05/2023 11:42	204.6	240.1
12/05/2023 11:43	204.3	239.2
12/05/2023 11:44	204.8	239.3
12/05/2023 11:45	205.6	239.4
12/05/2023 11:46	205.1	237.9
12/05/2023 11:47	205.3	237.9
12/05/2023 11:48	205.8	237.9
12/05/2023 11:49	205.5	237.0
12/05/2023 11:50	205.5	236.8
12/05/2023 11:51	205.8	236.6
12/05/2023 11:52	204.9	235.0
12/05/2023 11:53	204.5	234.3
12/05/2023 11:54	205.2	234.8
12/05/2023 11:55	204.7	234.2
12/05/2023 11:56	203.4	232.7
12/05/2023 11:57	203.4	232.5
12/05/2023 11:58	202.9	232.2
12/05/2023 11:59	202.0	231.4
12/05/2023 12:00	202.0	231.4
12/05/2023 12:01	201.5	230.8
12/05/2023 12:02	201.6	230.9
12/05/2023 12:03	201.7	231.0
12/05/2023 12:04	200.0	229.4
12/05/2023 12:05	199.8	229.1
12/05/2023 12:06	200.6	230.1
12/05/2023 12:07	200.8	230.3
12/05/2023 12:08	200.9	230.7
12/05/2023 12:09	201.6	232.3

1-Minute Data Report

From: 12/05/2023 11:10 **To:** 12/05/2023 12:14 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:50 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln StackFlow, kscfm 1 Minute(s)
12/05/2023 12:10	200.8	232.9
12/05/2023 12:11	200.2	233.3
12/05/2023 12:12	200.4	234.1
12/05/2023 12:13	200.3	234.3
12/05/2023 12:14	200.9	235.3
Valid Data Points:	57	65
Average:	204.7	237.2

1-Minute Data Report

From: 12/05/2023 11:10 **To:** 12/05/2023 12:14 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:41 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln KilnFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln Clinker, TonPerHr 1 Minute(s)	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln RawMillOn, TF 1 Minute(s)	No. 1 Cement Kiln CoalFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln TireFluff, TonPerHr 1 Minute(s)	No. 1 Cement Kiln UsedOil, GalPerMin 1 Minute(s)
12/05/2023 11:10	209.0	126.9	211.2	1	3.0	1.0	182.5
12/05/2023 11:11	209.0	126.9	211.0	1	3.0	1.0	182.5
12/05/2023 11:12	209.0	126.9	211.3	1	3.0	1.0	182.5
12/05/2023 11:13	209.0	126.9	211.0	1	3.0	1.0	182.5
12/05/2023 11:14	209.0	126.9	211.1	1	3.0	1.0	182.5
12/05/2023 11:15	209.0	126.9	211.0	1	3.0	1.0	182.5
12/05/2023 11:16	209.0	126.9	208.8	1	3.0	1.0	182.5
12/05/2023 11:17	209.0	126.9	206.7	1	3.0	1.0	182.5
12/05/2023 11:18	209.0	126.9	206.9	1	3.0	1.0	182.5
12/05/2023 11:19	209.0	126.9	206.4	1	3.0	1.0	182.5
12/05/2023 11:20	209.0	126.9	218.6	1	3.0	1.0	182.5
12/05/2023 11:21	209.0	126.9	237.3	1	3.0	1.0	182.5
12/05/2023 11:22	209.0	126.9	240.9	1	3.0	1.0	182.5
12/05/2023 11:23	209.0	126.9	234.4	1	3.5	1.0	182.5
12/05/2023 11:24	209.0	126.9	216.8	1	3.0	1.0	182.5
12/05/2023 11:25	209.0	126.9	207.0	1	3.0	1.0	182.5
12/05/2023 11:26	209.0	126.9	207.0	1	3.0	1.0	182.5
12/05/2023 11:27	209.0	126.9	206.9	1	3.4	1.0	182.5
12/05/2023 11:28	209.0	126.9	206.6	1	3.7	1.0	182.5
12/05/2023 11:29	209.0	126.9	206.8	1	4.0	1.0	182.5
12/05/2023 11:30	209.0	126.9	207.3	1	4.0	1.0	182.5
12/05/2023 11:31	209.0	126.9	206.8	1	4.0	1.0	182.5
12/05/2023 11:32	209.0	126.9	206.1	1	4.0	1.0	182.5
12/05/2023 11:33	209.0	126.9	206.0	1	4.0	1.0	182.5
12/05/2023 11:34	209.0	126.9	205.8	1	4.0	1.0	182.5
12/05/2023 11:35	209.0	126.9	205.5	1	3.5	1.0	182.5
12/05/2023 11:36	209.2	127.0	205.3	1	3.7	1.0	182.5
12/05/2023 11:37	209.0	126.9	204.4	1	4.0	1.0	182.5
12/05/2023 11:38	209.0	126.9	204.0	1	4.0	1.0	182.5

1-Minute Data Report

From: 12/05/2023 11:10 **To:** 12/05/2023 12:14 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:41 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln KilnFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln Clinker, TonPerHr 1 Minute(s)	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln RawMillOn, TF 1 Minute(s)	No. 1 Cement Kiln CoalFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln TireFluff, TonPerHr 1 Minute(s)	No. 1 Cement Kiln UsedOil, GalPerMin 1 Minute(s)
12/05/2023 11:39	209.0	126.9	204.2	1	3.3	1.0	182.5
12/05/2023 11:40	209.0	126.9	203.7	1	3.7	1.0	182.5
12/05/2023 11:41	209.0	126.9	204.1	1	3.3	1.0	182.5
12/05/2023 11:42	209.0	126.9	204.6	1	3.3	1.0	182.5
12/05/2023 11:43	209.0	126.9	204.3	1	3.9	1.0	182.5
12/05/2023 11:44	209.0	126.9	204.8	1	4.0	1.0	182.5
12/05/2023 11:45	209.0	126.9	205.6	1	4.0	1.0	182.5
12/05/2023 11:46	209.0	126.9	205.1	1	3.3	1.0	182.5
12/05/2023 11:47	209.0	126.9	205.3	1	3.3	1.0	182.5
12/05/2023 11:48	209.0	126.9	205.8	1	3.5	1.0	182.5
12/05/2023 11:49	209.0	126.9	205.5	1	4.0	1.0	182.5
12/05/2023 11:50	209.0	126.9	205.5	1	3.1	1.0	182.5
12/05/2023 11:51	209.0	126.9	205.8	1	3.1	1.0	182.5
12/05/2023 11:52	209.0	126.9	204.9	1	3.8	1.0	182.5
12/05/2023 11:53	209.0	126.9	204.5	1	3.8	1.0	182.5
12/05/2023 11:54	209.0	126.9	205.2	1	3.8	1.0	182.5
12/05/2023 11:55	209.0	126.9	204.7	1	4.0	1.0	182.5
12/05/2023 11:56	209.0	126.9	203.4	1	4.0	1.0	182.5
12/05/2023 11:57	209.0	126.9	203.4	1	4.0	1.0	182.5
12/05/2023 11:58	209.0	126.9	202.9	1	4.0	1.0	182.5
12/05/2023 11:59	209.0	126.9	202.0	1	4.0	1.0	182.5
12/05/2023 12:00	209.0	126.9	202.0	1	4.0	1.0	182.5
12/05/2023 12:01	209.0	126.9	201.5	1	3.8	1.0	176.1
12/05/2023 12:02	209.0	126.9	201.6	1	3.4	1.0	175.5
12/05/2023 12:03	209.0	126.9	201.7	1	3.6	1.0	175.5
12/05/2023 12:04	209.0	126.9	200.0	1	3.8	1.0	175.5
12/05/2023 12:05	209.0	126.9	199.8	1	3.3	1.0	175.5
12/05/2023 12:06	209.0	126.9	200.6	1	3.4	1.0	175.5
12/05/2023 12:07	209.0	126.9	200.8	1	3.5	1.0	175.5
12/05/2023 12:08	209.0	126.9	200.9	1	3.0	1.0	175.5

1-Minute Data Report

From: 12/05/2023 11:10 **To:** 12/05/2023 12:14 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:41 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln KilnFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln Clinker, TonPerHr 1 Minute(s)	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln RawMillOn, TF 1 Minute(s)	No. 1 Cement Kiln CoalFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln TireFluff, TonPerHr 1 Minute(s)	No. 1 Cement Kiln UsedOil, GalPerMin 1 Minute(s)
12/05/2023 12:09	209.0	126.9	201.6	1	3.0	1.0	175.5
12/05/2023 12:10	209.1	126.9	200.8	1	3.4	1.0	175.5
12/05/2023 12:11	209.0	126.9	200.2	1	3.0	1.0	175.5
12/05/2023 12:12	209.0	126.9	200.4	1	3.2	1.0	175.5
12/05/2023 12:13	209.0	126.9	200.3	1	3.2	1.0	175.5
12/05/2023 12:14	209.0	126.9	200.9	1	3.0	1.0	175.5
Valid Data Points:	65	65	57	65	65	65	65
Average:	209.0	126.9	204.7	1	3.5	1.0	181.0

1-Minute Data Report

From: 12/05/2023 13:00 **To:** 12/05/2023 14:03 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:50 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln StackFlow, kscfm 1 Minute(s)
12/05/2023 13:00	204.8	235.1
12/05/2023 13:01	204.5	235.6
12/05/2023 13:02	203.8	235.6
12/05/2023 13:03	204.7	236.6
12/05/2023 13:04	203.6	235.6
12/05/2023 13:05	203.4	236.0
12/05/2023 13:06	204.6	237.9
12/05/2023 13:07	204.2	237.7
12/05/2023 13:08	203.5	236.6
12/05/2023 13:09	203.3	235.8
12/05/2023 13:10	202.2	233.8
12/05/2023 13:11	202.3	233.6
12/05/2023 13:12	203.3	234.8
12/05/2023 13:13	203.6	235.1
12/05/2023 13:14	203.0	234.4
12/05/2023 13:15	203.0	234.1
12/05/2023 13:16	202.6	234.2
12/05/2023 13:17	202.6	235.0
12/05/2023 13:18	203.6	236.7
12/05/2023 13:19	203.6	236.7
12/05/2023 13:20	203.5	236.6
12/05/2023 13:21	203.7	236.9
12/05/2023 13:22	203.8	236.7
12/05/2023 13:23	204.5	237.2
12/05/2023 13:24	205.0	237.8
12/05/2023 13:25	204.4	236.9
12/05/2023 13:26	204.1	236.2
12/05/2023 13:27	204.6	236.8
12/05/2023 13:28	204.6	236.8
12/05/2023 13:29	204.9	237.2

1-Minute Data Report

From: 12/05/2023 13:00 **To:** 12/05/2023 14:03 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:50 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln StackFlow, kscfm 1 Minute(s)
12/05/2023 13:30	205.3	237.6
12/05/2023 13:31	205.1	236.8
12/05/2023 13:32	204.5	235.9
12/05/2023 13:33	204.8	236.0
12/05/2023 13:34	203.5	234.4
12/05/2023 13:35	202.9	233.5
12/05/2023 13:36	204.4	235.2
12/05/2023 13:37	205.1	236.6
12/05/2023 13:38	204.1	236.0
12/05/2023 13:39	204.0	235.8
12/05/2023 13:40	203.3	234.7
12/05/2023 13:41	202.6	234.0
12/05/2023 13:42	204.3	236.2
12/05/2023 13:43	205.0	237.3
12/05/2023 13:44	204.2	236.4
12/05/2023 13:45	203.6	235.4
12/05/2023 13:46	203.2	235.4
12/05/2023 13:47	203.3	236.4
12/05/2023 13:48	203.8	237.3
12/05/2023 13:49	204.2	238.0
12/05/2023 13:50	203.5	237.4
12/05/2023 13:51	203.2	236.8
12/05/2023 13:52	203.1	236.4
12/05/2023 13:53	203.2	236.8
12/05/2023 13:54	203.5	237.5
12/05/2023 13:55	203.3	237.2
12/05/2023 13:56	202.7	236.5
12/05/2023 13:57	203.1	237.3
12/05/2023 13:58	203.4	237.6
12/05/2023 13:59	202.5	237.1

1-Minute Data Report

From: 12/05/2023 13:00 **To:** 12/05/2023 14:03 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:50 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln StackFlow, kscfm 1 Minute(s)
12/05/2023 14:00	203.2	237.9
12/05/2023 14:01	203.6	238.1
12/05/2023 14:02	202.8	237.5
12/05/2023 14:03	203.7	238.2
Valid Data Points:	64	64
Average:	203.7	236.3

1-Minute Data Report

From: 12/05/2023 13:00 **To:** 12/05/2023 14:03 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:42 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln KilnFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln Clinker, TonPerHr 1 Minute(s)	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln RawMillOn, TF 1 Minute(s)	No. 1 Cement Kiln CoalFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln TireFluff, TonPerHr 1 Minute(s)	No. 1 Cement Kiln UsedOil, GalPerMin 1 Minute(s)
12/05/2023 13:00	209.0	126.9	204.8	1	3.0	1.0	175.5
12/05/2023 13:01	209.0	126.9	204.5	1	3.5	1.0	168.6
12/05/2023 13:02	209.0	126.9	203.8	1	3.3	1.0	167.2
12/05/2023 13:03	209.0	126.9	204.7	1	3.0	1.0	167.2
12/05/2023 13:04	209.0	126.9	203.6	1	3.0	1.0	167.2
12/05/2023 13:05	209.0	126.9	203.4	1	3.0	1.0	167.2
12/05/2023 13:06	209.0	126.9	204.6	1	3.0	1.0	167.2
12/05/2023 13:07	209.0	126.9	204.2	1	3.0	1.0	167.2
12/05/2023 13:08	210.0	127.5	203.5	1	3.0	1.0	167.2
12/05/2023 13:09	210.0	127.5	203.3	1	3.0	1.0	167.2
12/05/2023 13:10	210.0	127.5	202.2	1	3.0	1.0	167.2
12/05/2023 13:11	209.1	126.9	202.3	1	3.0	1.0	167.2
12/05/2023 13:12	209.1	126.9	203.3	1	3.0	1.0	167.2
12/05/2023 13:13	209.3	127.0	203.6	1	3.0	1.0	167.2
12/05/2023 13:14	209.0	126.9	203.0	1	3.0	1.0	167.2
12/05/2023 13:15	209.0	126.9	203.0	1	3.0	1.0	167.2
12/05/2023 13:16	209.0	126.9	202.6	1	3.0	1.0	167.2
12/05/2023 13:17	209.0	126.9	202.6	1	3.0	1.0	167.2
12/05/2023 13:18	209.0	126.9	203.6	1	3.0	1.0	167.2
12/05/2023 13:19	209.0	126.9	203.6	1	3.0	1.0	167.2
12/05/2023 13:20	209.0	126.9	203.5	1	3.0	1.0	167.2
12/05/2023 13:21	209.0	126.9	203.7	1	3.0	1.0	167.2
12/05/2023 13:22	210.0	127.5	203.8	1	3.8	1.0	167.2
12/05/2023 13:23	210.0	127.5	204.5	1	3.0	1.0	167.2
12/05/2023 13:24	210.0	127.5	205.0	1	3.8	1.0	167.2
12/05/2023 13:25	209.0	126.9	204.4	1	3.5	1.0	167.2
12/05/2023 13:26	209.0	126.9	204.1	1	3.3	1.0	167.2
12/05/2023 13:27	209.0	126.9	204.6	1	3.3	1.0	167.2
12/05/2023 13:28	209.8	127.3	204.6	1	4.0	1.0	167.2

1-Minute Data Report

From: 12/05/2023 13:00 **To:** 12/05/2023 14:03 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:42 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln KilnFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln Clinker, TonPerHr 1 Minute(s)	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln RawMillOn, TF 1 Minute(s)	No. 1 Cement Kiln CoalFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln TireFluff, TonPerHr 1 Minute(s)	No. 1 Cement Kiln UsedOil, GalPerMin 1 Minute(s)
12/05/2023 13:29	209.0	126.9	204.9	1	3.3	1.0	167.2
12/05/2023 13:30	209.0	126.9	205.3	1	3.3	1.0	167.2
12/05/2023 13:31	209.0	126.9	205.1	1	4.0	1.0	167.2
12/05/2023 13:32	209.0	126.9	204.5	1	3.3	1.0	167.2
12/05/2023 13:33	209.0	126.9	204.8	1	3.1	1.0	167.2
12/05/2023 13:34	209.0	126.9	203.5	1	4.0	1.0	167.2
12/05/2023 13:35	209.2	127.0	202.9	1	3.6	1.0	167.2
12/05/2023 13:36	209.0	126.9	204.4	1	3.0	1.0	167.2
12/05/2023 13:37	209.0	126.9	205.1	1	3.0	1.0	167.2
12/05/2023 13:38	209.0	126.9	204.1	1	3.0	1.0	167.2
12/05/2023 13:39	209.0	126.9	204.0	1	3.0	1.0	167.2
12/05/2023 13:40	209.0	126.9	203.3	1	3.0	1.0	167.2
12/05/2023 13:41	209.0	126.9	202.6	1	3.0	1.0	167.2
12/05/2023 13:42	209.0	126.9	204.3	1	3.0	1.0	167.2
12/05/2023 13:43	209.0	126.9	205.0	1	3.3	1.0	167.2
12/05/2023 13:44	209.0	126.9	204.2	1	4.0	1.0	167.2
12/05/2023 13:45	209.0	126.9	203.6	1	4.0	1.0	167.2
12/05/2023 13:46	209.0	126.9	203.2	1	4.0	1.0	167.2
12/05/2023 13:47	209.0	126.9	203.3	1	4.0	1.0	167.2
12/05/2023 13:48	209.0	126.9	203.8	1	3.4	1.0	167.2
12/05/2023 13:49	209.4	127.1	204.2	1	3.0	1.0	167.2
12/05/2023 13:50	210.0	127.5	203.5	1	3.0	1.0	167.2
12/05/2023 13:51	210.0	127.5	203.2	1	3.0	1.0	167.2
12/05/2023 13:52	209.7	127.3	203.1	1	3.0	1.0	167.2
12/05/2023 13:53	209.0	126.9	203.2	1	3.0	1.0	167.2
12/05/2023 13:54	209.0	126.9	203.5	1	3.0	1.0	167.2
12/05/2023 13:55	209.0	126.9	203.3	1	3.0	1.0	167.2
12/05/2023 13:56	209.0	126.9	202.7	1	3.0	1.0	167.2
12/05/2023 13:57	209.0	126.9	203.1	1	3.0	1.0	167.2
12/05/2023 13:58	209.0	126.9	203.4	1	3.0	1.0	167.2

1-Minute Data Report

From: 12/05/2023 13:00 **To:** 12/05/2023 14:03 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:42 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln KilnFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln Clinker, TonPerHr 1 Minute(s)	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln RawMillOn, TF 1 Minute(s)	No. 1 Cement Kiln CoalFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln TireFluff, TonPerHr 1 Minute(s)	No. 1 Cement Kiln UsedOil, GalPerMin 1 Minute(s)
12/05/2023 13:59	209.0	126.9	202.5	1	3.0	1.0	167.2
12/05/2023 14:00	209.0	126.9	203.2	1	3.0	1.0	167.2
12/05/2023 14:01	209.0	126.9	203.6	1	3.0	1.0	184.9
12/05/2023 14:02	209.0	126.9	202.8	1	3.0	1.0	188.4
12/05/2023 14:03	209.0	126.9	203.7	1	3.0	1.0	188.4
Valid Data Points:	64	64	64	64	64	64	64
Average:	209.2	127.0	203.7	1	3.2	1.0	168.3

1-Minute Data Report

From: 12/05/2023 15:40 **To:** 12/05/2023 16:45 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:52 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln StackFlow, kscfm 1 Minute(s)
12/05/2023 15:40	209.8	230.3
12/05/2023 15:41	209.2	229.4
12/05/2023 15:42	211.3	231.7
12/05/2023 15:43	214.4	235.1
12/05/2023 15:44	213.2	233.5
12/05/2023 15:45	212.3	232.8
12/05/2023 15:46	213.3	233.9
12/05/2023 15:47	211.6	232.0
12/05/2023 15:48	211.7	232.1
12/05/2023 15:49	214.1	235.0
12/05/2023 15:50	213.5	234.6
12/05/2023 15:51	210.6	231.7
12/05/2023 15:52	209.8	230.5
12/05/2023 15:53	209.4	230.1
12/05/2023 15:54	209.7	230.4
12/05/2023 15:55	209.8	230.3
12/05/2023 15:56	208.1	228.7
12/05/2023 15:57	208.2	228.8
12/05/2023 15:58	208.8	229.4
12/05/2023 15:59	208.5	229.1
12/05/2023 16:00	207.8	228.4
12/05/2023 16:01	208.8	229.4
12/05/2023 16:02	210.0	230.5
12/05/2023 16:03	210.9	231.8
12/05/2023 16:04	212.4	233.1
12/05/2023 16:05	212.9	233.7
12/05/2023 16:06	211.0	231.6
12/05/2023 16:07	209.3	229.8
12/05/2023 16:08	207.3	227.5
12/05/2023 16:09	207.7	228.2

1-Minute Data Report

From: 12/05/2023 15:40 **To:** 12/05/2023 16:45 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:52 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln StackFlow, kscfm 1 Minute(s)
12/05/2023 16:10	209.8	230.6
12/05/2023 16:11	210.1	230.9
12/05/2023 16:12	208.9	229.6
12/05/2023 16:13	209.5	230.2
12/05/2023 16:14	210.4	231.0
12/05/2023 16:15	209.6	230.1
12/05/2023 16:16	210.0	230.5
12/05/2023 16:17	209.6	230.1
12/05/2023 16:18	207.7	228.2
12/05/2023 16:19	207.9	228.5
12/05/2023 16:20	215.6	231.6
12/05/2023 16:21	228.3	233.2
12/05/2023 16:22	231.3	231.8
12/05/2023 16:23	225.3	229.0
12/05/2023 16:24	215.7	230.5
12/05/2023 16:25	212.1	233.1
12/05/2023 16:26	210.8	231.4
12/05/2023 16:27	208.6	229.0
12/05/2023 16:28	209.9	230.4
12/05/2023 16:29	212.0	232.7
12/05/2023 16:30	208.7	229.1
12/05/2023 16:31	208.2	228.5
12/05/2023 16:32	210.5	231.1
12/05/2023 16:33	210.3	230.9
12/05/2023 16:34	209.8	230.3
12/05/2023 16:35	210.0	230.5
12/05/2023 16:36	211.1	231.7
12/05/2023 16:37	212.4	233.2
12/05/2023 16:38	213.3	234.1
12/05/2023 16:39	213.3	234.1

1-Minute Data Report

From: 12/05/2023 15:40 **To:** 12/05/2023 16:45 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:52 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln StackFlow, kscfm 1 Minute(s)
12/05/2023 16:40	213.9	234.8
12/05/2023 16:41	213.4	234.0
12/05/2023 16:42	211.7	232.4
12/05/2023 16:43	210.8	231.4
12/05/2023 16:44	209.1	229.5
12/05/2023 16:45	210.2	230.7
Valid Data Points:	58	66
Average:	210.5	231.1

1-Minute Data Report

From: 12/05/2023 15:40 **To:** 12/05/2023 16:45 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:44 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln KilnFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln Clinker, TonPerHr 1 Minute(s)	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln RawMillOn, TF 1 Minute(s)	No. 1 Cement Kiln CoalFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln TireFluff, TonPerHr 1 Minute(s)	No. 1 Cement Kiln UsedOil, GalPerMin 1 Minute(s)
12/05/2023 15:40	209.0	126.9	209.8	0	3.6	1.0	182.4
12/05/2023 15:41	209.0	126.9	209.2	0	3.0	1.0	182.4
12/05/2023 15:42	209.0	126.9	211.3	0	3.0	1.0	182.4
12/05/2023 15:43	209.0	126.9	214.4	0	3.0	1.0	182.4
12/05/2023 15:44	209.0	126.9	213.2	0	3.3	1.0	182.4
12/05/2023 15:45	209.0	126.9	212.3	0	3.2	1.0	182.4
12/05/2023 15:46	209.0	126.9	213.3	0	4.0	1.0	182.4
12/05/2023 15:47	209.0	126.9	211.6	0	4.0	1.0	182.4
12/05/2023 15:48	209.0	126.9	211.7	0	3.0	1.0	182.4
12/05/2023 15:49	209.0	126.9	214.1	0	3.4	1.0	182.4
12/05/2023 15:50	209.8	127.3	213.5	0	3.0	1.0	182.4
12/05/2023 15:51	210.0	127.5	210.6	0	3.4	1.0	182.4
12/05/2023 15:52	210.0	127.5	209.8	0	3.3	1.0	182.4
12/05/2023 15:53	210.0	127.5	209.4	0	3.3	1.0	182.4
12/05/2023 15:54	209.3	127.0	209.7	0	3.4	1.0	182.4
12/05/2023 15:55	209.0	126.9	209.8	0	3.3	1.0	182.4
12/05/2023 15:56	209.1	126.9	208.1	0	3.5	1.0	182.4
12/05/2023 15:57	209.0	126.9	208.2	0	3.2	1.0	182.4
12/05/2023 15:58	209.0	126.9	208.8	0	3.6	1.0	182.4
12/05/2023 15:59	209.0	126.9	208.5	0	3.6	1.0	182.4
12/05/2023 16:00	209.5	127.2	207.8	0	3.6	1.0	182.4
12/05/2023 16:01	209.6	127.2	208.8	0	3.5	1.0	182.4
12/05/2023 16:02	209.6	127.2	210.0	0	3.9	1.0	174.6
12/05/2023 16:03	210.0	127.5	210.9	0	3.3	1.0	173.0
12/05/2023 16:04	209.4	127.1	212.4	0	3.0	1.0	173.0
12/05/2023 16:05	209.0	126.9	212.9	0	4.0	1.0	173.0
12/05/2023 16:06	209.0	126.9	211.0	0	4.0	1.0	173.0
12/05/2023 16:07	209.0	126.9	209.3	0	3.2	1.0	173.0
12/05/2023 16:08	209.0	126.9	207.3	0	3.7	1.0	173.0

1-Minute Data Report

From: 12/05/2023 15:40 **To:** 12/05/2023 16:45 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:44 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln KilnFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln Clinker, TonPerHr 1 Minute(s)	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln RawMillOn, TF 1 Minute(s)	No. 1 Cement Kiln CoalFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln TireFluff, TonPerHr 1 Minute(s)	No. 1 Cement Kiln UsedOil, GalPerMin 1 Minute(s)
12/05/2023 16:09	209.0	126.9	207.7	0	3.7	1.0	173.0
12/05/2023 16:10	209.0	126.9	209.8	0	3.9	1.0	173.0
12/05/2023 16:11	209.0	126.9	210.1	0	3.3	1.0	173.0
12/05/2023 16:12	209.0	126.9	208.9	0	3.3	1.0	173.0
12/05/2023 16:13	209.0	126.9	209.5	0	3.0	1.0	173.0
12/05/2023 16:14	209.0	126.9	210.4	0	3.8	1.0	173.0
12/05/2023 16:15	209.0	126.9	209.6	0	3.8	1.0	173.0
12/05/2023 16:16	209.0	126.9	210.0	0	3.0	1.0	173.0
12/05/2023 16:17	209.0	126.9	209.6	0	3.0	1.0	173.0
12/05/2023 16:18	209.0	126.9	207.7	0	3.0	1.0	173.0
12/05/2023 16:19	209.0	126.9	207.9	0	3.3	1.0	173.0
12/05/2023 16:20	209.0	126.9	215.6	0	3.0	1.0	173.0
12/05/2023 16:21	209.0	126.9	228.3	0	3.0	1.0	173.0
12/05/2023 16:22	209.3	127.0	231.3	0	3.0	1.0	173.0
12/05/2023 16:23	210.0	127.5	225.3	0	3.0	1.0	173.0
12/05/2023 16:24	210.0	127.5	215.7	0	3.0	1.0	173.0
12/05/2023 16:25	210.0	127.5	212.1	0	3.0	1.0	173.0
12/05/2023 16:26	209.7	127.3	210.8	0	3.0	1.0	173.0
12/05/2023 16:27	209.0	126.9	208.6	0	3.3	1.0	173.0
12/05/2023 16:28	209.0	126.9	209.9	0	3.3	1.0	173.0
12/05/2023 16:29	209.0	126.9	212.0	0	3.6	1.0	173.0
12/05/2023 16:30	209.0	126.9	208.7	0	3.0	1.0	173.0
12/05/2023 16:31	209.0	126.9	208.2	0	3.2	1.0	173.0
12/05/2023 16:32	209.0	126.9	210.5	0	3.2	1.0	173.0
12/05/2023 16:33	209.0	126.9	210.3	0	3.0	1.0	173.0
12/05/2023 16:34	209.0	126.9	209.8	0	3.8	1.0	173.0
12/05/2023 16:35	209.0	126.9	210.0	0	3.6	1.0	173.0
12/05/2023 16:36	209.0	126.9	211.1	0	4.0	1.0	173.0
12/05/2023 16:37	209.0	126.9	212.4	0	3.4	1.0	173.0
12/05/2023 16:38	209.0	126.9	213.3	0	3.8	1.0	173.0

1-Minute Data Report

From: 12/05/2023 15:40 **To:** 12/05/2023 16:45 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:44 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln KilnFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln Clinker, TonPerHr 1 Minute(s)	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln RawMillOn, TF 1 Minute(s)	No. 1 Cement Kiln CoalFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln TireFluff, TonPerHr 1 Minute(s)	No. 1 Cement Kiln UsedOil, GalPerMin 1 Minute(s)
12/05/2023 16:39	209.3	127.0	213.3	0	3.0	1.0	173.0
12/05/2023 16:40	209.0	126.9	213.9	0	4.0	1.0	173.0
12/05/2023 16:41	209.1	126.9	213.4	0	3.5	1.0	173.0
12/05/2023 16:42	209.0	126.9	211.7	0	4.0	1.0	173.0
12/05/2023 16:43	209.0	126.9	210.8	0	4.0	1.0	173.0
12/05/2023 16:44	209.0	126.9	209.1	0	3.1	1.0	173.0
12/05/2023 16:45	210.0	127.5	210.2	0	3.0	1.0	173.0
Valid Data Points:	66	66	58	66	66	66	66
Average:	209.2	127.0	210.5	0	3.4	1.0	176.2

1-Minute Data Report

From: 12/06/2023 09:20 **To:** 12/06/2023 10:23 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:45 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln KilnFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln Clinker, TonPerHr 1 Minute(s)	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln RawMillOn, TF 1 Minute(s)	No. 1 Cement Kiln CoalFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln TireFluff, TonPerHr 1 Minute(s)	No. 1 Cement Kiln UsedOil, GalPerMin 1 Minute(s)
12/06/2023 09:20	209.0	126.9	191.0	0	3.2	1.0	171.3
12/06/2023 09:21	209.0	126.9	191.6	0	3.0	1.0	171.3
12/06/2023 09:22	209.0	126.9	189.4	0	4.0	1.0	171.3
12/06/2023 09:23	209.0	126.9	187.3	0	4.0	1.0	171.3
12/06/2023 09:24	209.0	126.9	190.1	0	4.0	1.0	171.3
12/06/2023 09:25	209.0	126.9	191.8	0	4.0	1.0	171.3
12/06/2023 09:26	209.1	126.9	192.0	0	4.0	1.0	171.3
12/06/2023 09:27	209.0	126.9	192.1	0	3.8	1.0	171.3
12/06/2023 09:28	209.0	126.9	189.6	0	4.0	1.0	171.3
12/06/2023 09:29	209.0	126.9	190.4	0	4.0	1.0	171.3
12/06/2023 09:30	209.0	126.9	192.6	0	4.0	1.0	171.3
12/06/2023 09:31	209.0	126.9	192.9	0	4.0	1.0	171.3
12/06/2023 09:32	209.3	127.0	192.8	0	3.3	1.0	171.3
12/06/2023 09:33	209.3	127.0	190.9	0	3.3	1.0	171.3
12/06/2023 09:34	209.0	126.9	190.8	0	3.0	1.0	171.3
12/06/2023 09:35	209.0	126.9	193.3	0	3.3	1.0	171.3
12/06/2023 09:36	209.0	126.9	194.2	0	3.4	1.0	171.3
12/06/2023 09:37	209.0	126.9	194.1	0	3.8	1.0	171.3
12/06/2023 09:38	209.0	126.9	194.5	0	3.6	1.0	171.3
12/06/2023 09:39	210.0	127.5	191.7	0	3.7	1.0	171.3
12/06/2023 09:40	210.0	127.5	191.6	0	3.7	1.0	171.3
12/06/2023 09:41	210.0	127.5	194.6	0	4.0	1.0	171.3
12/06/2023 09:42	209.0	126.9	195.5	0	4.0	1.0	171.3
12/06/2023 09:43	209.0	126.9	194.6	0	4.0	1.0	171.3
12/06/2023 09:44	209.0	126.9	194.9	0	4.0	1.0	171.3
12/06/2023 09:45	209.0	126.9	194.8	0	4.0	1.0	171.3
12/06/2023 09:46	209.0	126.9	188.6	0	4.0	1.0	171.3
12/06/2023 09:47	209.0	126.9	188.1	0	4.0	1.0	171.3
12/06/2023 09:48	209.0	126.9	191.4	0	4.0	1.0	171.3

1-Minute Data Report

From: 12/06/2023 09:20 **To:** 12/06/2023 10:23 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:45 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln KilnFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln Clinker, TonPerHr 1 Minute(s)	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln RawMillOn, TF 1 Minute(s)	No. 1 Cement Kiln CoalFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln TireFluff, TonPerHr 1 Minute(s)	No. 1 Cement Kiln UsedOil, GalPerMin 1 Minute(s)
12/06/2023 09:49	209.0	126.9	190.3	0	4.0	1.0	171.3
12/06/2023 09:50	209.0	126.9	191.8	0	4.0	1.0	171.3
12/06/2023 09:51	209.0	126.9	195.0	0	4.0	1.0	171.3
12/06/2023 09:52	209.0	126.9	194.2	0	4.0	1.0	171.3
12/06/2023 09:53	209.0	126.9	191.3	0	3.2	1.0	171.3
12/06/2023 09:54	209.0	126.9	191.2	0	3.8	1.0	171.3
12/06/2023 09:55	209.0	126.9	194.4	0	4.0	1.0	171.3
12/06/2023 09:56	209.0	126.9	195.1	0	4.0	1.0	171.3
12/06/2023 09:57	209.1	126.9	195.5	0	4.0	1.0	171.3
12/06/2023 09:58	209.1	126.9	195.2	0	4.0	1.0	171.3
12/06/2023 09:59	209.0	126.9	194.1	0	4.0	1.0	171.3
12/06/2023 10:00	209.0	126.9	192.7	0	4.0	1.0	171.3
12/06/2023 10:01	209.0	126.9	192.6	0	3.5	1.0	224.0
12/06/2023 10:02	209.0	126.9	194.0	0	3.5	1.0	224.0
12/06/2023 10:03	209.0	126.9	194.0	0	4.0	1.0	228.8
12/06/2023 10:04	209.0	126.9	192.0	0	4.0	1.0	228.8
12/06/2023 10:05	209.0	126.9	190.9	0	4.0	1.0	228.8
12/06/2023 10:06	209.0	126.9	190.8	0	4.0	1.0	228.8
12/06/2023 10:07	209.0	126.9	191.0	0	4.0	1.0	228.8
12/06/2023 10:08	209.2	127.0	188.6	0	4.0	1.0	228.8
12/06/2023 10:09	209.2	127.0	189.7	0	4.0	1.0	228.8
12/06/2023 10:10	209.0	126.9	193.3	0	4.0	1.0	228.8
12/06/2023 10:11	209.0	126.9	190.8	0	4.0	1.0	228.8
12/06/2023 10:12	209.0	126.9	189.5	0	4.0	1.0	228.8
12/06/2023 10:13	209.0	126.9	189.6	0	3.8	1.0	228.8
12/06/2023 10:14	209.0	126.9	190.9	0	3.5	1.0	228.8
12/06/2023 10:15	209.0	126.9	191.3	0	4.0	1.0	228.8
12/06/2023 10:16	209.0	126.9	189.8	0	3.8	1.0	228.8
12/06/2023 10:17	209.0	126.9	191.5	0	4.0	1.0	228.8
12/06/2023 10:18	209.0	126.9	195.3	0	4.0	1.0	228.8

1-Minute Data Report

From: 12/06/2023 09:20 **To:** 12/06/2023 10:23 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:45 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln KilnFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln Clinker, TonPerHr 1 Minute(s)	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln RawMillOn, TF 1 Minute(s)	No. 1 Cement Kiln CoalFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln TireFluff, TonPerHr 1 Minute(s)	No. 1 Cement Kiln UsedOil, GalPerMin 1 Minute(s)
12/06/2023 10:19	209.0	126.9	192.3	0	4.0	1.0	228.8
12/06/2023 10:20	209.0	126.9	192.1	0	4.0	1.0	228.8
12/06/2023 10:21	209.0	126.9	195.0	0	3.9	1.0	228.8
12/06/2023 10:22	209.0	126.9	195.3	0	4.0	1.0	228.8
12/06/2023 10:23	209.0	126.9	194.4	0	4.0	1.0	228.8
Valid Data Points:	64	64	64	64	64	64	64
Average:	209.1	126.9	192.2	0	3.8	1.0	191.8

1-Minute Data Report

From: 12/06/2023 09:20 **To:** 12/06/2023 10:23 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:53 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln StackFlow, kscfm 1 Minute(s)
12/06/2023 09:20	191.0	215.6
12/06/2023 09:21	191.6	216.2
12/06/2023 09:22	189.4	213.5
12/06/2023 09:23	187.3	211.2
12/06/2023 09:24	190.1	213.8
12/06/2023 09:25	191.8	215.3
12/06/2023 09:26	192.0	215.7
12/06/2023 09:27	192.1	216.1
12/06/2023 09:28	189.6	213.3
12/06/2023 09:29	190.4	213.9
12/06/2023 09:30	192.6	216.4
12/06/2023 09:31	192.9	216.5
12/06/2023 09:32	192.8	215.9
12/06/2023 09:33	190.9	213.5
12/06/2023 09:34	190.8	213.9
12/06/2023 09:35	193.3	217.2
12/06/2023 09:36	194.2	218.4
12/06/2023 09:37	194.1	218.1
12/06/2023 09:38	194.5	218.5
12/06/2023 09:39	191.7	215.2
12/06/2023 09:40	191.6	214.6
12/06/2023 09:41	194.6	217.9
12/06/2023 09:42	195.5	218.9
12/06/2023 09:43	194.6	217.7
12/06/2023 09:44	194.9	217.8
12/06/2023 09:45	194.8	217.4
12/06/2023 09:46	188.6	210.3
12/06/2023 09:47	188.1	209.9
12/06/2023 09:48	191.4	213.8
12/06/2023 09:49	190.3	213.1

1-Minute Data Report

From: 12/06/2023 09:20 **To:** 12/06/2023 10:23 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:53 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln StackFlow, kscfm 1 Minute(s)
12/06/2023 09:50	191.8	215.5
12/06/2023 09:51	195.0	219.1
12/06/2023 09:52	194.2	218.5
12/06/2023 09:53	191.3	215.9
12/06/2023 09:54	191.2	216.1
12/06/2023 09:55	194.4	219.7
12/06/2023 09:56	195.1	220.5
12/06/2023 09:57	195.5	220.9
12/06/2023 09:58	195.2	220.3
12/06/2023 09:59	194.1	219.1
12/06/2023 10:00	192.7	217.2
12/06/2023 10:01	192.6	217.1
12/06/2023 10:02	194.0	219.0
12/06/2023 10:03	194.0	218.5
12/06/2023 10:04	192.0	215.7
12/06/2023 10:05	190.9	214.5
12/06/2023 10:06	190.8	214.6
12/06/2023 10:07	191.0	215.3
12/06/2023 10:08	188.6	212.6
12/06/2023 10:09	189.7	213.6
12/06/2023 10:10	193.3	217.7
12/06/2023 10:11	190.8	215.4
12/06/2023 10:12	189.5	213.9
12/06/2023 10:13	189.6	213.5
12/06/2023 10:14	190.9	214.7
12/06/2023 10:15	191.3	215.2
12/06/2023 10:16	189.8	213.5
12/06/2023 10:17	191.5	215.2
12/06/2023 10:18	195.3	219.2
12/06/2023 10:19	192.3	216.1

1-Minute Data Report

From: 12/06/2023 09:20 **To:** 12/06/2023 10:23 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:53 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln StackFlow, kscfm 1 Minute(s)
12/06/2023 10:20	192.1	216.3
12/06/2023 10:21	195.0	219.4
12/06/2023 10:22	195.3	219.0
12/06/2023 10:23	194.4	217.9
Valid Data Points:	64	64
Average:	192.2	216.1

1-Minute Data Report

From: 12/06/2023 11:10 **To:** 12/06/2023 12:14 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:46 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln KilnFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln Clinker, TonPerHr 1 Minute(s)	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln RawMillOn, TF 1 Minute(s)	No. 1 Cement Kiln CoalFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln TireFluff, TonPerHr 1 Minute(s)	No. 1 Cement Kiln UsedOil, GalPerMin 1 Minute(s)
12/06/2023 11:10	209.0	126.9	189.3	0	3.0	1.0	241.0
12/06/2023 11:11	209.0	126.9	193.6	0	3.0	1.0	241.0
12/06/2023 11:12	209.0	126.9	195.4	0	3.0	1.0	241.0
12/06/2023 11:13	209.0	126.9	192.6	0	3.0	1.0	241.0
12/06/2023 11:14	209.0	126.9	192.1	0	3.0	1.0	241.0
12/06/2023 11:15	209.0	126.9	193.9	0	3.0	1.0	241.0
12/06/2023 11:16	209.0	126.9	191.4	0	3.3	1.0	241.0
12/06/2023 11:17	209.0	126.9	189.7	0	3.1	1.0	241.0
12/06/2023 11:18	209.0	126.9	190.1	0	3.3	1.0	241.0
12/06/2023 11:19	209.0	126.9	192.7	0	3.4	1.0	241.0
12/06/2023 11:20	209.0	126.9	195.1	0	3.4	1.0	241.0
12/06/2023 11:21	209.0	126.9	193.7	0	3.2	1.0	241.0
12/06/2023 11:22	209.0	126.9	193.1	0	3.0	1.0	241.0
12/06/2023 11:23	209.0	126.9	193.8	0	3.0	1.0	241.0
12/06/2023 11:24	209.0	126.9	192.2	0	3.0	1.0	241.0
12/06/2023 11:25	209.0	126.9	192.7	0	3.0	1.0	241.0
12/06/2023 11:26	209.0	126.9	195.3	0	3.0	1.0	241.0
12/06/2023 11:27	209.0	126.9	192.4	0	3.3	1.0	241.0
12/06/2023 11:28	209.0	126.9	186.7	0	3.0	1.0	241.0
12/06/2023 11:29	209.0	126.9	184.5	0	3.0	1.0	241.0
12/06/2023 11:30	209.0	126.9	186.5	0	3.0	1.0	241.0
12/06/2023 11:31	209.0	126.9	190.7	0	3.0	1.0	241.0
12/06/2023 11:32	209.0	126.9	192.8	0	3.0	1.0	241.0
12/06/2023 11:33	209.0	126.9	195.2	0	3.0	1.0	241.0
12/06/2023 11:34	209.0	126.9	192.0	0	3.0	1.0	241.0
12/06/2023 11:35	209.0	126.9	189.6	0	3.0	1.0	241.0
12/06/2023 11:36	209.0	126.9	192.2	0	3.0	1.0	241.0
12/06/2023 11:37	209.0	126.9	191.8	0	3.0	1.0	241.0
12/06/2023 11:38	209.0	126.9	190.9	0	3.3	0.0	241.0

1-Minute Data Report

From: 12/06/2023 11:10 **To:** 12/06/2023 12:14 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:46 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln KilnFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln Clinker, TonPerHr 1 Minute(s)	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln RawMillOn, TF 1 Minute(s)	No. 1 Cement Kiln CoalFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln TireFluff, TonPerHr 1 Minute(s)	No. 1 Cement Kiln UsedOil, GalPerMin 1 Minute(s)
12/06/2023 11:39	209.0	126.9	192.7	0	3.4	0.0	241.0
12/06/2023 11:40	209.0	126.9	193.0	0	3.0	0.0	241.0
12/06/2023 11:41	209.0	126.9	193.4	0	3.0	0.0	241.0
12/06/2023 11:42	209.0	126.9	195.2	0	3.0	0.0	241.0
12/06/2023 11:43	209.0	126.9	193.3	0	3.0	0.0	241.0
12/06/2023 11:44	209.0	126.9	191.7	0	3.8	0.0	241.0
12/06/2023 11:45	209.1	126.9	190.2	0	3.0	0.0	241.0
12/06/2023 11:46	209.1	126.9	188.7	0	3.0	0.0	241.0
12/06/2023 11:47	209.0	126.9	187.1	0	3.0	1.1	241.0
12/06/2023 11:48	209.0	126.9	189.6	0	3.1	1.0	241.0
12/06/2023 11:49	209.0	126.9	190.3	0	4.0	1.0	241.0
12/06/2023 11:50	209.0	126.9	189.8	0	4.0	1.0	241.0
12/06/2023 11:51	209.0	126.9	194.1	0	3.4	1.0	241.0
12/06/2023 11:52	209.0	126.9	195.8	0	3.0	1.0	241.0
12/06/2023 11:53	209.0	126.9	195.4	0	3.0	1.3	241.0
12/06/2023 11:54	209.0	126.9	193.6	0	3.5	1.2	241.0
12/06/2023 11:55	209.0	126.9	193.8	0	3.0	0.8	241.0
12/06/2023 11:56	209.0	126.9	193.6	0	3.0	0.8	241.0
12/06/2023 11:57	209.0	126.9	192.1	0	3.0	0.6	241.0
12/06/2023 11:58	209.0	126.9	193.6	0	3.3	1.3	241.0
12/06/2023 11:59	209.0	126.9	194.9	0	3.0	1.0	241.0
12/06/2023 12:00	209.0	126.9	193.8	0	3.0	1.0	241.0
12/06/2023 12:01	209.0	126.9	193.2	0	3.0	1.8	236.1
12/06/2023 12:02	209.0	126.9	193.0	0	3.0	1.1	235.6
12/06/2023 12:03	209.0	126.9	195.0	0	3.0	1.3	235.6
12/06/2023 12:04	209.0	126.9	195.4	0	3.3	1.5	235.6
12/06/2023 12:05	209.0	126.9	191.9	0	3.3	1.3	235.6
12/06/2023 12:06	209.0	126.9	191.6	0	3.0	1.2	235.6
12/06/2023 12:07	209.0	126.9	193.9	0	3.0	1.0	235.6
12/06/2023 12:08	209.0	126.9	195.1	0	3.0	1.0	235.6

1-Minute Data Report

From: 12/06/2023 11:10 **To:** 12/06/2023 12:14 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:46 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln KilnFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln Clinker, TonPerHr 1 Minute(s)	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln RawMillOn, TF 1 Minute(s)	No. 1 Cement Kiln CoalFeed, TonPerHr 1 Minute(s)	No. 1 Cement Kiln TireFluff, TonPerHr 1 Minute(s)	No. 1 Cement Kiln UsedOil, GalPerMin 1 Minute(s)
12/06/2023 12:09	209.0	126.9	194.0	0	3.0	1.0	235.6
12/06/2023 12:10	209.0	126.9	193.1	0	3.0	1.2	235.6
12/06/2023 12:11	209.0	126.9	192.7	0	3.0	0.8	235.6
12/06/2023 12:12	209.0	126.9	191.0	0	3.8	0.8	235.6
12/06/2023 12:13	209.0	126.9	189.2	0	3.8	0.8	235.6
12/06/2023 12:14	209.0	126.9	192.0	0	3.1	1.0	235.6
Valid Data Points:	65	65	65	65	65	65	65
Average:	209.0	126.9	192.3	0	3.1	0.9	239.8

1-Minute Data Report

From: 12/06/2023 11:10 **To:** 12/06/2023 12:14 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:54 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln StackFlow, kscfm 1 Minute(s)
12/06/2023 11:10	189.3	214.1
12/06/2023 11:11	193.6	218.5
12/06/2023 11:12	195.4	220.0
12/06/2023 11:13	192.6	216.4
12/06/2023 11:14	192.1	215.8
12/06/2023 11:15	193.9	217.4
12/06/2023 11:16	191.4	214.8
12/06/2023 11:17	189.7	213.9
12/06/2023 11:18	190.1	214.6
12/06/2023 11:19	192.7	217.3
12/06/2023 11:20	195.1	220.0
12/06/2023 11:21	193.7	218.4
12/06/2023 11:22	193.1	217.5
12/06/2023 11:23	193.8	218.0
12/06/2023 11:24	192.2	216.2
12/06/2023 11:25	192.7	216.8
12/06/2023 11:26	195.3	220.2
12/06/2023 11:27	192.4	217.1
12/06/2023 11:28	186.7	211.2
12/06/2023 11:29	184.5	209.0
12/06/2023 11:30	186.5	211.2
12/06/2023 11:31	190.7	215.5
12/06/2023 11:32	192.8	217.9
12/06/2023 11:33	195.2	220.6
12/06/2023 11:34	192.0	217.0
12/06/2023 11:35	189.6	214.2
12/06/2023 11:36	192.2	216.9
12/06/2023 11:37	191.8	216.2
12/06/2023 11:38	190.9	215.2
12/06/2023 11:39	192.7	217.0

1-Minute Data Report

From: 12/06/2023 11:10 **To:** 12/06/2023 12:14 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:54 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln StackFlow, kscfm 1 Minute(s)
12/06/2023 11:40	193.0	216.8
12/06/2023 11:41	193.4	217.8
12/06/2023 11:42	195.2	220.1
12/06/2023 11:43	193.3	217.7
12/06/2023 11:44	191.7	216.1
12/06/2023 11:45	190.2	214.7
12/06/2023 11:46	188.7	213.0
12/06/2023 11:47	187.1	211.7
12/06/2023 11:48	189.6	215.0
12/06/2023 11:49	190.3	215.5
12/06/2023 11:50	189.8	215.0
12/06/2023 11:51	194.1	220.1
12/06/2023 11:52	195.8	221.7
12/06/2023 11:53	195.4	221.3
12/06/2023 11:54	193.6	219.0
12/06/2023 11:55	193.8	218.7
12/06/2023 11:56	193.6	218.5
12/06/2023 11:57	192.1	216.6
12/06/2023 11:58	193.6	218.0
12/06/2023 11:59	194.9	219.7
12/06/2023 12:00	193.8	218.5
12/06/2023 12:01	193.2	217.6
12/06/2023 12:02	193.0	217.3
12/06/2023 12:03	195.0	219.8
12/06/2023 12:04	195.4	220.0
12/06/2023 12:05	191.9	216.6
12/06/2023 12:06	191.6	216.5
12/06/2023 12:07	193.9	219.1
12/06/2023 12:08	195.1	220.7
12/06/2023 12:09	194.0	219.9

1-Minute Data Report

From: 12/06/2023 11:10 **To:** 12/06/2023 12:14 **Facility Name:** Miami Cement Plant
Generated: 12/06/2023 12:54 **Location:** Miami, Florida

Red = Sample Invalid

Date/Time	No. 1 Cement Kiln StackFlow, kdscfm 1 Minute(s)	No. 1 Cement Kiln StackFlow, kscfm 1 Minute(s)
12/06/2023 12:10	193.1	218.9
12/06/2023 12:11	192.7	218.7
12/06/2023 12:12	191.0	216.8
12/06/2023 12:13	189.2	214.8
12/06/2023 12:14	192.0	217.9
Valid Data Points:	65	65
Average:	192.3	217.1

Appendix C
Laboratory Analysis Data

Appendix C.1
EPA 26A Analyses

Montrose Air Quality Services, LLC
Plant City, FL

2007 Wood Ct #5, Plant City, FL 33563

Cemex-Brooksville

Client Project: 031486

Analytical Report
(1223-126)

EPA Method 26A

Hydrogen chloride, Hydrogen Fluoride, Chlorine

Enthalpy Analytical, LLC

Phone: (919) 850 - 4392 / Fax: (919) 850 - 9012 / www.enthalpy.com

800-1 Capitola Drive Durham, NC 27713-4385

I certify that to the best of my knowledge all analytical data presented in this report:

- Have been checked for completeness
- Are accurate, error-free, and legible
- Have been conducted in accordance with approved protocol, and that all deviations and analytical problems are summarized in the appropriate narrative(s)

This analytical report was prepared in Portable Document Format (.PDF). This report shall not be reproduced except in full without approval of the laboratory. This will provide assurance that parts of a report are not taken out of context.



QA Review Performed by – Jennifer Bowker

Report Issued: 1/2/24

ENTHALPY ANALYTICAL

Summary of Results

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Plant City, FL

Job No.: 1223-126-1 EPA Method 26A (Acid) Analysis

Client No.: 031486 Site: Cemex-Brooksville

Summary Table

Sample ID	Hydrogen Chloride Catch Weight (ug)	Hydrogen Fluoride Catch Weight (ug)
Kiln2 Mill Off R1A C3	5,728	49.4 J
Kiln2 Mill Off R1B C3	4,654	37.8 J
Kiln2 Mill Off R2A C3	6,015	31.2 J
Kiln2 Mill Off R2B C3	5,499	24.0 ND
Kiln2 Mill Off R3A C3	3,218	23.7 ND
Kiln2 Mill Off R3B C3	2,952	24.4 ND
Kiln2 Mill Off FB C3	16.0 ND	16.4 ND
Kiln2 Mill On R1A C3	736	26.4 ND
Kiln2 Mill On R1B C3	421	26.2 ND
Kiln2 Mill On R2A C3	118 J	25.8 ND
Kiln2 Mill On R2B C3	163 J	25.2 ND
Kiln2 Mill On R3A C3	42.1 J	26.1 ND
Kiln2 Mill On R3B C3	24.7 ND	25.3 ND
Kiln2 Mill On FB C3	16.5 ND	16.8 ND
Kiln1 Mill On R1A C3	123 J	41.1 J
Kiln1 Mill On R1B C3	156 J	105 J
Kiln1 Mill On R2A C3	70.1 J	17.4 ND
Kiln1 Mill On R2B C3	123 J	39.1 J
Kiln1 Mill On R3A C3	30.6 J	18.4 ND
Kiln1 Mill On R3B C3	36.4 J	24.2 J
Kiln1 Mill On FB C3	15.5 ND	15.9 ND
RB DI	10.1 ND	10.4 ND
RB H2SO4	15.2 ND	15.5 ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Plant City, FL

Job No.: 1223-126-2 EPA Method 26A (Alkaline) Analysis

Client No.: 031486 Site: Cemex-Brooksville

Summary Table

Sample ID	Chlorine Catch Weight (ug)
Kiln2 Mill Off R1A C4	23.7 J
Kiln2 Mill Off R1B C4	33.6 J
Kiln2 Mill Off R2A C4	18.9 J
Kiln2 Mill Off R2B C4	21.7 J
Kiln2 Mill Off R3A C4	35.1 J
Kiln2 Mill Off R3B C4	17.3 J
Kiln2 Mill Off FB C4	68.9 J
Kiln2 Mill On R1A C4	18.9 J
Kiln2 Mill On R1B C4	43.7 J
Kiln2 Mill On R2A C4	18.1 J
Kiln2 Mill On R2B C4	19.4 J
Kiln2 Mill On R3A C4	18.2 J
Kiln2 Mill On R3B C4	21.2 J
Kiln2 Mill On FB C4	48.4 J
Kiln1 Mill On R1A C4	59.3 J
Kiln1 Mill On R1B C4	74.0 J
Kiln1 Mill On R2A C4	52.1 J
Kiln1 Mill On R2B C4	405
Kiln1 Mill On R3A C4	29.5 J
Kiln1 Mill On R3B C4	33.6 J
Kiln1 Mill On FB C4	45.9 J
RB DI	12.1 J
RB NaOH	42.7 J

Results

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Plant City, FL

Job No.: 1223-126-1 EPA Method 26A (Acid) Analysis

Client No.: 031486 Site: Cemex-Brooksville

Hydrogen Chloride as Chloride

Sample ID	Filename #1	Filename #2	MDL (ug/mL)	Curve Min. (ug/mL)	Curve Max. (ug/mL)	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc. # 1 (ug/mL)	Conc. # 2 (ug/mL)	%diff. conc.	Avg. Conc. (ug/mL)	DF	Liquid Vol. (mL)	Conv. Factor	Catch Weight (ug)	Flag	pH
Kiln2 Mill Off R1A C3	019	020	0.0500	0.500	30.0	4.80	4.80	0.0	12.4	12.4	0.2	12.4	1.00	450	1.03	5,728		1
Kiln2 Mill Off R1B C3	025	026	0.0500	0.500	30.0	4.80	4.80	0.0	10.2	10.3	0.1	10.3	1.00	441	1.03	4,654		1
Kiln2 Mill Off R2A C3	027	028	0.0500	0.500	30.0	4.81	4.81	0.0	12.6	12.6	0.0	12.6	1.00	465	1.03	6,015		1
Kiln2 Mill Off R2B C3	029	030	0.0500	0.500	30.0	4.81	4.80	0.0	11.8	11.7	0.2	11.8	1.00	455	1.03	5,499		1
Kiln2 Mill Off R3A C3	031	032	0.0500	0.500	30.0	4.80	4.80	0.0	6.97	6.94	0.2	6.95	1.00	450	1.03	3,218		1
Kiln2 Mill Off R3B C3	033	034	0.0500	0.500	30.0	4.80	4.80	0.0	6.18	6.22	0.3	6.20	1.00	463	1.03	2,952		1
Kiln2 Mill Off FB C3	035	036	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	312	1.03	16.0	ND	1
Kiln2 Mill On R1A C3	037	038	0.0500	0.500	30.0	4.80	4.80	0.0	1.43	1.42	0.3	1.43	1.00	501	1.03	736		1
Kiln2 Mill On R1B C3	019	020	0.0500	0.500	30.0	4.79	4.80	0.0	0.826	0.821	0.3	0.823	1.00	497	1.03	421		1
Kiln2 Mill On R2A C3	047	048	0.0500	0.500	30.0	4.79	4.80	0.0	0.235	0.234	0.2	0.234	1.00	490	1.03	118	J	1
Kiln2 Mill On R2B C3	049	050	0.0500	0.500	30.0	4.79	4.79	0.0	0.334	0.328	0.8	0.331	1.00	478	1.03	163	J	1
Kiln2 Mill On R3A C3	051	052	0.0500	0.500	30.0	4.79	4.79	0.0	0.0824	0.0827	0.2	0.0826	1.00	496	1.03	42.1	J	1
Kiln2 Mill On R3B C3	053	054	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	480	1.03	24.7	ND	1
Kiln2 Mill On FB C3	055	056	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	320	1.03	16.5	ND	1
Kiln1 Mill On R1A C3	057	058	0.0500	0.500	30.0	4.79	4.79	0.0	0.348	0.347	0.1	0.348	1.00	344	1.03	123	J	1
Kiln1 Mill On R1B C3	059	060	0.0500	0.500	30.0	4.79	4.79	0.0	0.446	0.442	0.5	0.444	1.00	341	1.03	156	J	1
Kiln1 Mill On R2A C3	065	066	0.0500	0.500	30.0	4.79	4.79	0.0	0.209	0.205	1.0	0.207	1.00	330	1.03	70.1	J	1
Kiln1 Mill On R2B C3	067	068	0.0500	0.500	30.0	4.79	4.79	0.0	0.351	0.353	0.3	0.352	1.00	340	1.03	123	J	1
Kiln1 Mill On R3A C3	069	070	0.0500	0.500	30.0	4.79	4.79	0.0	0.0845	0.0853	0.5	0.0849	1.00	350	1.03	30.6	J	1
Kiln1 Mill On R3B C3	071	072	0.0500	0.500	30.0	4.79	4.79	0.0	0.0975	0.0961	0.7	0.0968	1.00	366	1.03	36.4	J	1
Kiln1 Mill On FB C3	073	074	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	302	1.03	15.5	ND	1
RB DI	075	076	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	197	1.03	10.1	ND	5
RB H2SO4	077	078	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	295	1.03	15.2	ND	1

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Plant City, FL

Job No.: 1223-126-1 EPA Method 26A (Acid) Analysis

Client No.: 031486 Site: Cemex-Brooksville

Hydrogen Fluoride as Fluoride

Sample ID	Filename #1	Filename #2	MDL (ug/mL)	Curve Min. (ug/mL)	Curve Max. (ug/mL)	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc. # 1 (ug/mL)	Conc. # 2 (ug/mL)	%diff. conc.	Avg. Conc. (ug/mL)	DF	Liquid Vol. (mL)	Conv. Factor	Catch Weight (ug)	Flag	pH
Kiln2 Mill Off R1A C3	019	020	0.0500	0.500	30.0	3.31	3.31	0.1	0.0852	0.123	18.2	0.104	1.00	450	1.05	49.4	J	1
Kiln2 Mill Off R1B C3	025	026	0.0500	0.500	30.0	3.31	3.31	0.0	0.0814	0.0814	0.0	0.0814	1.00	441	1.05	37.8	J	1
Kiln2 Mill Off R2A C3	027	028	0.0500	0.500	30.0	3.31	3.31	0.0	0.0632	0.0642	0.8	0.0637	1.00	465	1.05	31.2	J	1
Kiln2 Mill Off R2B C3	029	030	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	455	1.05	24.0	ND	1
Kiln2 Mill Off R3A C3	031	032	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	450	1.05	23.7	ND	1
Kiln2 Mill Off R3B C3	033	034	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	463	1.05	24.4	ND	1
Kiln2 Mill Off FB C3	035	036	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	312	1.05	16.4	ND	1
Kiln2 Mill On R1A C3	037	038	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	501	1.05	26.4	ND	1
Kiln2 Mill On R1B C3	019	020	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	497	1.05	26.2	ND	1
Kiln2 Mill On R2A C3	047	048	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	490	1.05	25.8	ND	1
Kiln2 Mill On R2B C3	049	050	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	478	1.05	25.2	ND	1
Kiln2 Mill On R3A C3	051	052	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	496	1.05	26.1	ND	1
Kiln2 Mill On R3B C3	053	054	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	480	1.05	25.3	ND	1
Kiln2 Mill On FB C3	055	056	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	320	1.05	16.8	ND	1
Kiln1 Mill On R1A C3	057	058	0.0500	0.500	30.0	3.33	3.33	0.0	0.114	0.113	0.7	0.114	1.00	344	1.05	41.1	J	1
Kiln1 Mill On R1B C3	059	060	0.0500	0.500	30.0	3.30	3.30	0.0	0.289	0.295	1.0	0.292	1.00	341	1.05	105	J	1
Kiln1 Mill On R2A C3	065	066	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	330	1.05	17.4	ND	1
Kiln1 Mill On R2B C3	067	068	0.0500	0.500	30.0	3.30	3.30	0.0	0.108	0.111	1.3	0.109	1.00	340	1.05	39.1	J	1
Kiln1 Mill On R3A C3	069	070	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	350	1.05	18.4	ND	1
Kiln1 Mill On R3B C3	071	072	0.0500	0.500	30.0	3.31	3.31	0.0	0.0641	0.0614	2.1	0.0628	1.00	366	1.05	24.2	J	1
Kiln1 Mill On FB C3	073	074	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	302	1.05	15.9	ND	1
RB DI	075	076	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	197	1.05	10.4	ND	5
RB H2SO4	077	078	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	295	1.05	15.5	ND	1

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Plant City, FL

Job No.: 1223-126-1 EPA Method 26A (Acid) Analysis

Client No.: 031486 Site: Cemex-Brooksville

Matrix Spike Recovery

Enthalpy Sample ID	Compound	Filename #1	Filename #2	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc. # 1 (ug/mL)	Conc. # 2 (ug/mL)	%diff. conc.	Avg. Conc. (ug/mL)	DF	Vol. (mL)	Catch Weight (ug)	Flag
1223-126.MS-Kiln2 Off R1A.HCl	Chloride	021	022	4.81	4.81	0.0	17.1	17.1	0.0	17.1	1	0.800	13.7	
										Native Amt (ug)			9.41	
										Spiked Amt (ug)			4.00	
										Recovery (%)			107.3	
1223-126.MS-Kiln2 Off R1A.HCl	Fluoride	021	022	3.29	3.29	0.0	4.95	4.96	0.1	4.96	1	0.800	3.97	
										Native Amt (ug)			0.0792	
										Spiked Amt (ug)			4.00	
										Recovery (%)			97.2	
1223-126.MSD-Kiln2 Off R1A.HCl	Chloride	023	024	4.81	4.81	0.0	17.0	17.0	0.2	17.0	1	0.800	13.6	
										Native Amt (ug)			9.41	
										Spiked Amt (ug)			4.00	
										Recovery (%)			104.8	
1223-126.MSD-Kiln2 Off R1A.HCl	Fluoride	023	024	3.29	3.29	0.1	4.89	4.88	0.2	4.89	1	0.800	3.91	
										Native Amt (ug)			0.0792	
										Spiked Amt (ug)			4.00	
										Recovery (%)			95.7	
1223-126.MS-Kiln2 On R1A.HCl	Chloride	041	042	4.80	4.80	0.0	6.36	6.40	0.3	6.38	1	0.800	5.11	
										Native Amt (ug)			1.09	
										Spiked Amt (ug)			4.00	
										Recovery (%)			100.5	
1223-126.MS-Kiln2 On R1A.HCl	Fluoride	041	042	3.29	3.29	0.1	4.88	4.89	0.1	4.88	1	0.800	3.91	
										Native Amt (ug)			0	
										Spiked Amt (ug)			4.00	
										Recovery (%)			97.7	
1223-126.MSD-Kiln2 On R1A.HCl	Chloride	043	044	4.80	4.80	0.0	6.41	6.43	0.2	6.42	1	0.800	5.14	
										Native Amt (ug)			1.09	
										Spiked Amt (ug)			4.00	
										Recovery (%)			101.3	
1223-126.MSD-Kiln2 On R1A.HCl	Fluoride	043	044	3.29	3.29	0.1	4.96	4.97	0.1	4.97	1	0.800	3.97	
										Native Amt (ug)			0	
										Spiked Amt (ug)			4.00	
										Recovery (%)			99.3	

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Plant City, FL

Job No.: 1223-126-2 EPA Method 26A (Alkaline) Analysis

Client No.: 031486 Site: Cemex-Brooksville

Chlorine as Chloride

Sample ID	Filename #1	Filename #2	MDL (ug/mL)	Curve Min. (ug/mL)	Curve Max. (ug/mL)	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc. # 1 (ug/mL)	Conc. # 2 (ug/mL)	%diff. conc.	Avg. Conc. (ug/mL)	DF	Liquid Vol. (mL)	Conv. Factor	Catch Weight (ug)	Flag	pH
Kiln2 Mill Off R1A C4	056	057	0.0500	0.500	30.0	1.82	1.83	0.3	0.0716	0.0712	0.3	0.0714	1.00	332	1.00	23.7	J	8
Kiln2 Mill Off R1B C4	062	063	0.0500	0.500	30.0	1.80	1.80	0.0	0.111	0.109	0.7	0.110	1.00	305	1.00	33.6	J	10
Kiln2 Mill Off R2A C4	068	069	0.0500	0.500	30.0	1.81	1.81	0.2	0.0589	0.0591	0.2	0.0590	1.00	320	1.00	18.9	J	8
Kiln2 Mill Off R2B C4	070	071	0.0500	0.500	30.0	1.82	1.82	0.0	0.0713	0.0711	0.1	0.0712	1.00	305	1.00	21.7	J	8
Kiln2 Mill Off R3A C4	072	073	0.0500	0.500	30.0	1.82	1.83	0.1	0.104	0.109	2.4	0.107	1.00	328	1.00	35.1	J	8
Kiln2 Mill Off R3B C4	074	075	0.0500	0.500	30.0	1.80	1.79	0.3	0.0547	0.0553	0.6	0.0550	1.00	315	1.00	17.3	J	9
Kiln2 Mill Off FB C4	076	077	0.0500	0.500	30.0	1.78	1.78	0.1	0.223	0.224	0.2	0.224	1.00	308	1.00	68.9	J	13
Kiln2 Mill On R1A C4	078	079	0.0500	0.500	30.0	1.81	1.81	0.1	0.0589	0.0590	0.1	0.0590	1.00	321	1.00	18.9	J	8
Kiln2 Mill On R1B C4	084	085	0.0500	0.500	30.0	1.83	1.83	0.1	0.135	0.132	1.2	0.134	1.00	327	1.00	43.7	J	8
Kiln2 Mill On R2A C4	086	087	0.0500	0.500	30.0	1.81	1.82	0.1	0.0582	0.0580	0.2	0.0581	1.00	311	1.00	18.1	J	8
Kiln2 Mill On R2B C4	090	091	0.0500	0.500	30.0	1.82	1.82	0.1	0.0636	0.0613	1.9	0.0625	1.00	310	1.00	19.4	J	8
Kiln2 Mill On R3A C4	092	093	0.0500	0.500	30.0	1.81	1.81	0.0	0.0591	0.0574	1.4	0.0582	1.00	313	1.00	18.2	J	8
Kiln2 Mill On R3B C4	094	095	0.0500	0.500	30.0	1.82	1.83	0.2	0.0691	0.0701	0.7	0.0696	1.00	305	1.00	21.2	J	9

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Plant City, FL

Job No.: 1223-126-2 EPA Method 26A (Alkaline) Analysis

Client No.: 031486 Site: Cemex-Brooksville

Chlorine as Chloride

Sample ID	Filename #1	Filename #2	MDL (ug/mL)	Curve Min. (ug/mL)	Curve Max. (ug/mL)	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc. # 1 (ug/mL)	Conc. # 2 (ug/mL)	%diff. conc.	Avg. Conc. (ug/mL)	DF	Liquid Vol. (mL)	Conv. Factor	Catch Weight (ug)	Flag	pH
Kiln2 Mill On FB C4	096	097	0.0500	0.500	30.0	1.78	1.78	0.0	0.165	0.163	0.6	0.164	1.00	295	1.00	48.4	J	13
Kiln1 Mill On R1A C4	098	099	0.0500	0.500	30.0	1.84	1.85	0.2	0.193	0.197	1.0	0.195	1.00	304	1.00	59.3	J	9
Kiln1 Mill On R1B C4	100	101	0.0500	0.500	30.0	1.85	1.85	0.0	0.223	0.226	0.7	0.224	1.00	330	1.00	74.0	J	8
Kiln1 Mill On R2A C4	102	103	0.0500	0.500	30.0	1.84	1.84	0.0	0.154	0.161	2.0	0.158	1.00	331	1.00	52.1	J	8
Kiln1 Mill On R2B C4	104	105	0.0500	0.500	30.0	1.85	1.86	0.1	1.30	1.31	0.3	1.31	1.00	310	1.00	405		9
Kiln1 Mill On R3A C4	106	107	0.0500	0.500	30.0	1.83	1.90	1.9	0.0952	0.0962	0.5	0.0957	1.00	308	1.00	29.5	J	8
Kiln1 Mill On R3B C4	108	109	0.0500	0.500	30.0	1.83	1.84	0.4	0.105	0.109	1.8	0.107	1.00	314	1.00	33.6	J	8
Kiln1 Mill On FB C4	114	115	0.0500	0.500	30.0	1.78	1.78	0.1	0.155	0.153	0.8	0.154	1.00	298	1.00	45.9	J	14
RB DI	116	117	0.0500	0.500	30.0	1.83	1.82	0.1	0.0612	0.0619	0.6	0.0616	1.00	197	1.00	12.1	J	5
RB NaOH	118	119	0.0500	0.500	30.0	1.78	1.78	0.0	0.142	0.143	0.4	0.143	1.00	299	1.00	42.7	J	13

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Plant City, FL

Job No.: 1223-126-2 EPA Method 26A (Alkaline) Analysis

Client No.: 031486 Site: Cemex-Brooksville

Matrix Spike Recovery

Enthalpy Sample ID	Compound	Filename #1	Filename #2	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc. # 1 (ug/mL)	Conc. # 2 (ug/mL)	%diff. conc.	Avg. Conc. (ug/mL)	DF	Vol. (mL)	Catch Weight (ug)	Flag
1223-126.MS-Kiln2 Off R1A.Cl	Chloride	058	059	1.86	1.86	0.0	4.71	4.72	0.1	4.71	1	0.800	3.77	
												Native Amt (ug)	0.0542	
												Spiked Amt (ug)	4.00	
												Recovery (%)	92.9	
1223-126.MSD-Kiln2 Off R1A.Cl	Chloride	060	061	1.85	1.85	0.0	4.79	4.79	0.0	4.79	1	0.800	3.83	
												Native Amt (ug)	0.0542	
												Spiked Amt (ug)	4.00	
												Recovery (%)	94.5	
1223-126.MS-Kiln2 On R1A.Cl	Chloride	080	081	1.86	1.85	0.2	4.69	4.70	0.0	4.70	1	0.800	3.76	
												Native Amt (ug)	0.0448	
												Spiked Amt (ug)	4.00	
												Recovery (%)	92.8	
1223-126.MSD-Kiln2 On R1A.Cl	Chloride	082	083	1.85	1.86	0.1	4.64	4.64	0.0	4.64	1	0.800	3.71	
												Native Amt (ug)	0.0448	
												Spiked Amt (ug)	4.00	
												Recovery (%)	91.7	

Narrative Summary

Enthalpy Analytical Narrative Summary

Company **Job No.** **Client ID.**	**Montrose Air Quality Services, LLC - Plant City, FL** **1223-126 EPA Method 26A (Acid) Analysis** **031486 Site: Cemex-Brooksville**
Custody	**Alyssa Miller received the samples on December 15, 2023 at 17.6 °C after being relinquished by Montrose Air Quality Services, LLC - Plant City, FL. The samples were received in good condition.** **Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.**
Analysis	**The samples were analyzed for chloride and fluoride using the analytical procedures in Section 11.0 of EPA Method 26A, Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources Isokinetic Method.** **All sample aliquots and standards are prepared, stored and analyzed using high-density polyethylene containers. Client samples are retained in the container as received.** **Sample catch weight results were determined using the sample volumes measured by the laboratory.** **The Dionex Ion Chromatograph "Raphael" equipped with a Conductivity Detector was used for these analyses.**
Calibration	**The calibration curves are included in the Raw Data section of this report. A quadratic curve type was used instead of the method-specified linear curve.**
Chrom. Conditions	**The acquisition method AS22 ASAP new was used for the Chloride and Fluoride analyses and may be available upon request.**

Enthalpy Analytical Narrative Summary

Company **Job No.** **Client ID.**	**Montrose Air Quality Services, LLC - Plant City, FL** **1223-126 EPA Method 26A (Acid) Analysis** **031486 Site: Cemex-Brooksville**

QC Notes	**Some samples were analyzed within the 28-day holding time specified by the method. Samples Kiln2 Off FB, Kiln2 On R1A, Kiln2 On R1B, Kiln2 On R2A, Kiln2 On R2B, Kiln2 On R3A, Kiln2 On R3B, Kiln2 On FB, Kiln1 On R1A, Kiln1 On R1B, Kiln1 On R2A, Kiln1 On R2B, Kiln1 On R3A, Kiln1 On R3B, Kiln1 On FB, RB DI, RB H2SO4 were not analyzed within the 30-day window specified by the method.** **The analyses of the laboratory reagent blanks did not contain chloride at concentrations greater than the LOQ.** **The analyses of the laboratory reagent blanks did not contain fluoride at concentrations greater than the LOQ.** **The analyses of the field reagent blanks did not contain chloride at concentrations greater than the LOQ.** **The analyses of the field reagent blanks did not contain fluoride at concentrations greater than the LOQ.** **Duplicate matrix spikes were prepared using aliquots of Kiln2 Mill Off R1A C3 and met method spike recovery criteria of 80-120%.** **Duplicate matrix spikes were prepared using aliquots of Kiln2 Mill On R1A C3 and met method spike recovery criteria of 80-120%.** **The analysis of second source standards also served as laboratory control samples and met the laboratory acceptance criteria of ±5% of the tag value.**

Reporting Notes	**The samples were analyzed chloride and fluoride but the results have been reported as hydrogen chloride and hydrogen fluoride. The results were converted using factors of 1.028 and 1.053 respectively to account for the additional hydrogen mass.** **These analyses met the requirements of the TNI Standard. Any deviations from the requirements of the reference method or TNI Standard have been stated above.** **The results presented in this report are representative of the samples as provided to the laboratory.**

Enthalpy Analytical Narrative Summary

Company **Job No.** **Client ID.**	**Montrose Air Quality Services, LLC - Plant City, FL** **1223-126 EPA Method 26A (Alkaline) Analysis** **031486 Site: Cemex-Brooksville**
Custody	**Alyssa Miller received the samples on December 15, 2023 at 17.6 °C after being relinquished by Montrose Air Quality Services, LLC - Plant City, FL. The samples were received in good condition.** **Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.**
Analysis	**The samples were analyzed for chloride using the analytical procedures in Section 11.0 of EPA Method 26A, Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources Isokinetic Method.** **All sample aliquots and standards are prepared, stored and analyzed using high-density polyethylene containers. Client samples are retained in the container as received.** **Sample catch weight results were determined using the sample volumes measured by the laboratory.** **The Dionex Ion Chromatograph "Raphael" equipped with a Conductivity Detector was used for these analyses.**
Calibration	**The calibration curves are included in the Raw Data section of this report. A quadratic curve type was used instead of the method-specified linear curve.**
Chrom. Conditions	**The acquisition method AS22 FAST ASAP Base2 was used for the chloride analyses and may be available upon request.**
QC Notes	**The samples were analyzed within the 28-day holding time specified by the method.** **The analyses of the laboratory reagent blanks did not contain chlorine at concentrations greater than the LOQ.** **The analyses of the field reagent blanks did not contain chlorine at concentrations greater than the LOQ.** **Duplicate matrix spikes were prepared using aliquots of Kiln2 Mill Off R1A C4 and met method spike recovery criteria of 80-120%.** **Duplicate matrix spikes were prepared using aliquots of Kiln2 Mill On R1A C4 and met method spike recovery criteria of 80-120%.** **The analysis of second source standards also served as laboratory control samples and met the laboratory acceptance criteria of ±5% of the tag value.**

Enthalpy Analytical Narrative Summary

Company **Job No.** **Client ID.**	**Montrose Air Quality Services, LLC - Plant City, FL** **1223-126 EPA Method 26A (Alkaline) Analysis** **031486 Site: Cemex-Brooksville**

Reporting Notes	**The samples were analyzed for chloride but are reported as chlorine. No conversion factor was needed as the masses are the same for these forms in solution.** **These analyses met the requirements of the TNI Standard. Any deviations from the requirements of the reference method or TNI Standard have been stated above.** **The results presented in this report are representative of the samples as provided to the laboratory.**

General Reporting Notes

The following are general reporting notes that are applicable to all Enthalpy Analytical, LLC data reports, unless specifically noted otherwise.

- Any analysis which refers to the method as ***"Type"*** represents a planned deviation from the reference method. For instance a Hydrogen Sulfide assay from a Tedlar bag would be labeled as "EPA Method 16-Type" because Tedlar bags are not mentioned as one of the collection options in EPA Method 16.

- The acronym ***MDL*** represents the Minimum Detection Limit. Below this value the laboratory cannot determine the presence of the analyte of interest reliably.

- The acronym ***LOQ*** represents the Limit of Quantification. Below this value the laboratory cannot quantitate the analyte of interest within the criteria of the method.

- The acronym ***ND*** following a value indicates a non-detect or analytical result below the MDL.

- The letter ***J*** in the Qualifier or Flag column in the results indicates that the value is between the MDL and the LOQ. The laboratory can positively identify the analyte of interest as present, but the value should be considered an estimate.

- The letter ***E*** in the Qualifier or Flag column indicates an analytical result exceeding 100% of the highest calibration point. The associated value should be considered as an estimate.

- Sample results are presented 'as measured' for single injection methodologies, or an average value if multiple injections are made. If all injections are below the MDL, the sample is considered non-detect and the ND value is presented. If one, but not all, are below the MDL, the MDL value is used for any injections that are below the MDL. For example, if the MDL is 0.500 and LOQ is 1.00, and the instrument measures 0.355, 0.620, and 0.442 - the result reported is the average of 0.500, 0.620, and 0.500 - - - i.e. 0.540 with a J flag.

- When a spike recovery (Bag Spike, Collocated Spike Train, or liquid matrix spike) is being calculated, the native (unspiked) sample result is used in the calculations, as long as the value is above the MDL. If a sample is ND, then 0 is used as the native amount (not the MDL value).

- The acronym ***DF*** represents Dilution Factor. This number represents dilution of the sample during the preparation and/or analysis process. The analytical result taken from a laboratory instrument is multiplied by the DF to determine the final undiluted sample results.

- The addition of ***MS*** to the Sample ID represents a Matrix Spike. An aliquot of an actual sample is spiked with a known amount of analyte so that a percent recovery value can be determined. The MS analysis indicates what effect the sample matrix may have on the target analyte, i.e. whether or not anything in the sample matrix interferes with the analysis of the analyte(s).

General Reporting Notes
(continued)

- The addition of ***MSD*** to the Sample ID represents a Matrix Spike Duplicate. Prepared in the same manner as a MS, the use of duplicate matrix spikes allows further confirmation of laboratory quality by showing the consistency of results gained by performing the same steps multiple times.

- The addition of ***LD*** to the Sample ID represents a Laboratory Duplicate. The analyst prepares an additional aliquot of sample for testing and the results of the duplicate analysis are compared to the initial result. The result should have a difference value of within 10% of the initial result (if the results of the original analysis are greater than the LOQ).

- The addition of ***AD*** to the Sample ID represents an Alternate Dilution. The analyst prepares an additional aliquot at a different dilution factor (usually double the initial factor). This analysis helps confirm that no additional compound is present and coeluting or sharing absorbance with the analyte of interest, as they would have a different response/absorbance than the analyte of interest.

- The Sample ID ***LCS*** represents a Laboratory Control Sample. Clean matrix, similar to the client sample matrix, prepared and analyzed by the laboratory using the same reagents, spiking standards and procedures used for the client samples. The LCS is used to assess the control of the laboratory's analytical system. Whenever spikes are prepared for our client projects, two spikes are retained as LCSs. The LCSs are labeled with the associated project number and kept in-house at the appropriate temperature conditions. When the project samples are received for analysis, the LCSs are analyzed to confirm that the analyte could be recovered from the media, separate from the samples which were used on the project and which may have been affected by source matrix, sample collection, and/or sample transport.

- **Significant Figures**: Where the reported value is much greater than unity (1.00) in the units expressed, the number is rounded to a whole number of units, rather than to 3 significant figures. For example, a value of 10,456.45 ug catch is rounded to 10,456 ug. There are five significant digits displayed, but no confidence should be placed on more than two significant digits. In the case of small numbers, generally 3 significant figures are presented, but still only 2 should be used with confidence. Many neat materials are only certified to 3 digits, and as the mathematically correct final result is always 1 digit less than all its pre-cursors - 2 significant figures are what are most defensible.

- **Manual Integration**: The data systems used for processing will flag manually integrated peaks with an "M". There are several reasons a peak may be manually integrated. These reasons will be identified by the following two letter designations on sample chromatograms, if provided in the report. The peak was ***not integrated*** by the software **"NI"**, the peak was ***integrated incorrectly*** by the software **"II"** or the ***wrong peak*** was integrated by the software **"WP"**. These codes will accompany the analyst's manual integration stamp placed next to the compound name on the chromatogram.

Sample Custody

MONTROSE ENVIRONMENTAL

Chain of Custody

Page ____ of ____

Project Information

Date 11/30/23 Project # 03148B

Customer/Facility Cemex - Brooksville

Unit ID/Sample Location Kiln 2

Sample Custodian David Capers

Montrose Contact Information

Project Manager Todd Gregg

Email togregg@montrose-env.com

Phone (865) 250-9067

Distict Office

Lab Information

Lab Enthalpy

Contact Ashley Miller

Phone

Turn Around Time

Analyses Requested

Sample ID	Sample Collection Date	Sample Collection Time	Sample Description / Comments	Sample Containers #	Sample Containers Type	M-26A
M26A-Run 1A-Mill Off	11/30/23	11:50	Acid Imp = Cont. 3 / Alkaline Imp = Cont. 4	2	Poly	✓
M26A-Run 1B-Mill Off	11/30/23	11:50	Acid Imp = Cont 3 / Alkaline Imp = Cont. 4	2	Poly	✓
M26A-Run 2A-Mill Off	11/30/23	13:30	Acid Imp = Cont. 3 / Alkaline Imp = Cont 4	2	Poly	✓
M26A-Run 2B-Mill Off	11/30/23	13:30	Acid Imp - Cont 3 / Alkaline Imp = Cont. 4	2	Poly	✓
M26A-Run 3A-Mill Off	11/30/23	15:30	Acid Imp - Cont 3 / Alkaline Imp: Cont 4	2	Poly	✓
M26A-Run 3B-Mill off	11/30/23	15:30	Acid Imp Cont 3 / Alkaline Imp Cont 4	2	Poly	✓
M26A-Field Blank-Mill off	11/30/23	11:50	Acid Imp = Cont. 3 / Alkaline Imp = Cont. 4	2	Poly	
M26A-Run 1A-Mill On	11/30/23	18:30	Acid Imp = Cont. 3 / Alkaline Imp = Cont. 4	2	Poly	✓
M26A-Run 1B-Mill On	11/30/23	18:30	Acid Imp = Cont. 3 / Alkaline Imp = Cont. 4	2	Poly	✓
M26A-Run 2A-Mill On	12/1/23	11:50	Acid Imp = Cont. 3 / Alkaline Imp = Cont. 4	2	Poly	✓
M26A-Run 2B-Mill On	12/1/23	11:50	Acid Imp = Cont. 3 / Alkaline Imp = Cont. 4	2	Poly	✓
M26A-Run 3A-Mill On	12/1/23	13:45	Acid Imp = Cont. 3 / Alkaline Imp = Cont. 4	2	Poly	✓
M26A-Run 3B-Mill On	12/1/23	13:45	Acid Imp = Cont. 3 / Alkaline Imp = Cont. 4	2	Poly	✓
M-26A-Field Blank-Mill On	12/1/23	11:45	Acid Imp = Cont. 3 / Alkaline Imp = Cont. 4	2	Poly	

Custody Record

Relinquished By			Received By		
Print Jose Medina	Date 12/14/23		Print Alyssa M Miller	Date	
Sign	Time 1231		Sign Alyssa M Miller	Time	
Print	Date		Print	Date	
Sign	Time		Sign	Time	
Print	Date		Pring	Date	
Sign	Time		Sign	Time	

Special Handling Instructions

17.6°C Raylen 2 good condition AMM 12-15-23

Special Laboratory Instructions

001AS-QMS-FM-229

370 of 1237

SE010AS-031486-RT-2611-R1

MONTROSE ENVIRONMENTAL

Chain of Custody

Page ____ of ____

Project Information

Date 11/29/23 Project # 031486
Customer/Facility Cemex - Brooksville
Unit ID/Sample Location Kiln 1
Sample Custodian David Capers

Montrose Contact Information

Project Manager Todd Gregg
Email tagregg@montrose-env.com
Phone (865) 250-9067
Distict Office

Lab Information

Lab Eurofins
Contact Ashley Miller
Phone
Turn Around Time

Analyses Requested

M-26A

Sample ID	Sample Collection Date	Sample Collection Time	Sample Description / Comments	Sample Containers #	Sample Containers Type	M-26A
M26A-Run 1A-Mill On	11/29/23	12:30	Acid Impingers = Cont 3 Alkaline Impingers = Cont 4	2	Poly	✓
M26A-Run 1B-Mill On	11/29/23	12:30	Acid Impingers = Cont 3 Alkaline Impingers = Cont 4	2	Poly	✓
M26A-Run 2A-Mill On	11/29/23	14:00	Acid Impingers = Cont 3 Alkaline Impingers = Cont 4	2	Poly	✓
M26A-Run 2B-Mill On	11/29/23	14:00	Acid Impingers = Cont 3 Alkaline Impingers = Cont 4	2	Poly	✓
M26A-Run 3A-Mill On	11/29/23	16:00	Acid Impingers = Cont 3 Alkaline Impingers = Cont 4	2	Poly	✓
M26A-Run 3B-Mill On	11/29/23	16:00	Acid Impingers = Cont 3 Alkaline Impingers = Cont 4	2	Poly	✓
				~~2~~	~~Poly~~	
M26A-Field Blank-Mill On	11/29/23	13:00	Acid Imp. Cont. 3 / Alkaline Imp. = Cont 4	2	Poly	
M26A-DI Reagent Blank	11/29/23	13:00	DI Water	1	Poly	
M26A-H_2SO_4 Reagent	11/29/23	13:00	0.1 N H_2SO_4	1	Poly	
M26A-NaOH Reagent	11/29/23	13:00	0.1 N NaOH	1	Poly	

Custody Record

Reliquished By	Date	Time	Received By	Date	Time
Print Josey Mechin	12/14/23	1011	Print Alyssa M Miller	12.15.23	1015
Sign			Sign Alyssa M Miller		
Print			Print		
Sign			Sign		
Print			Pring		
Sign			Sign		

Special Handling Instructions
17.6°C Raytek 2
good condition
AMM3 12.15.23

Special Laboratory Instructions

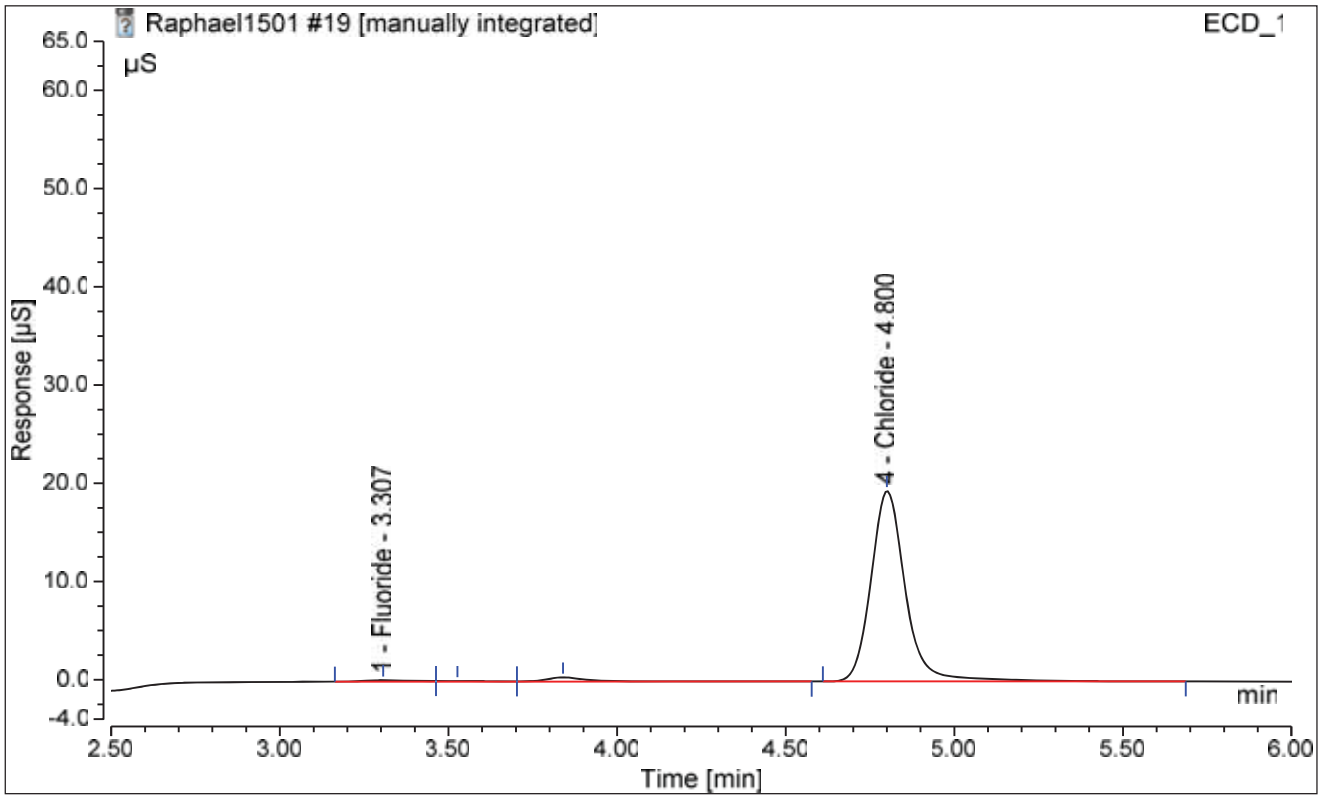
001AS-QMS-FM-229

371 of 1237
SE010AS-031486-RT-2611-R1

Raw Data

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R1A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 19:35**	Run Time:	**14.50**

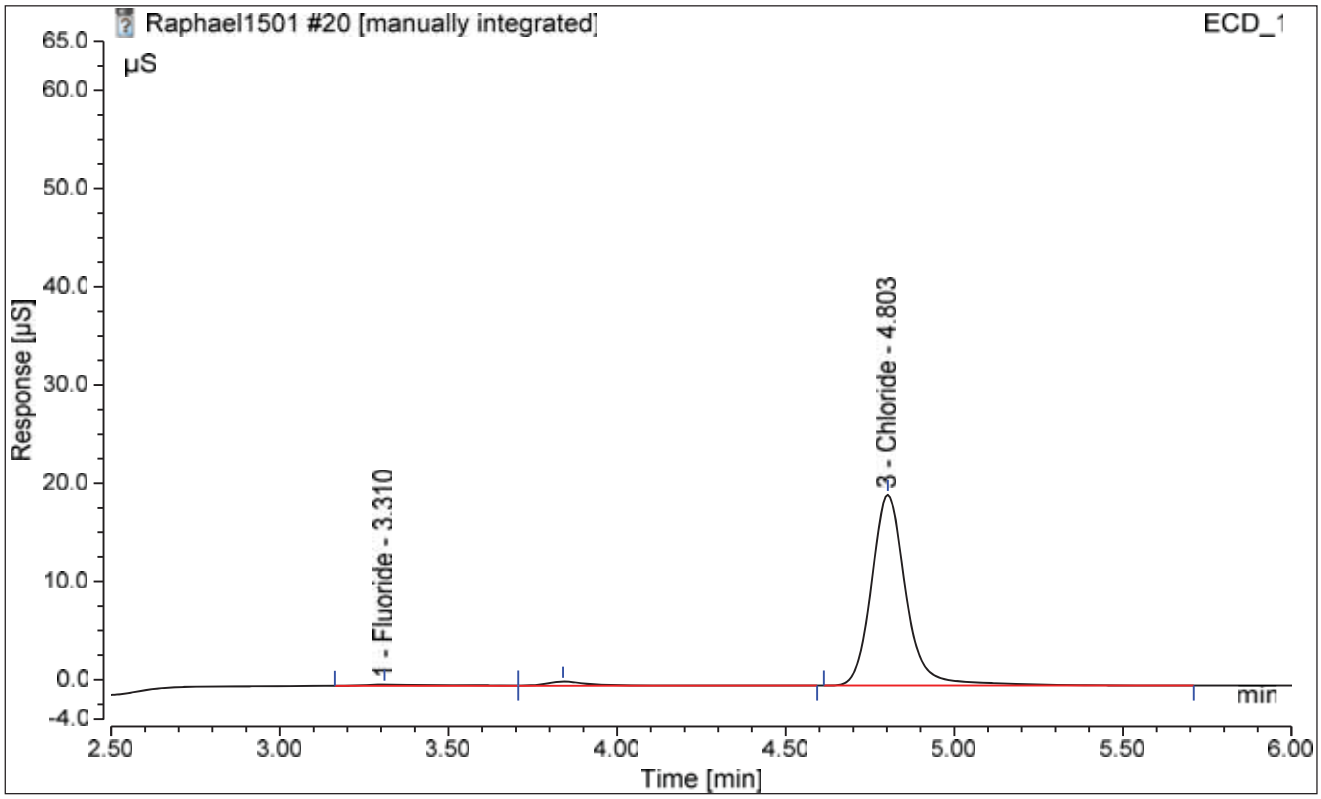


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.31	Fluoride	0.023	0.144	0.08521	FALSE	TRUE
4	4.80	Chloride	2.296	19.402	12.35232	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R1A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 19:51**	Run Time:	**14.50**

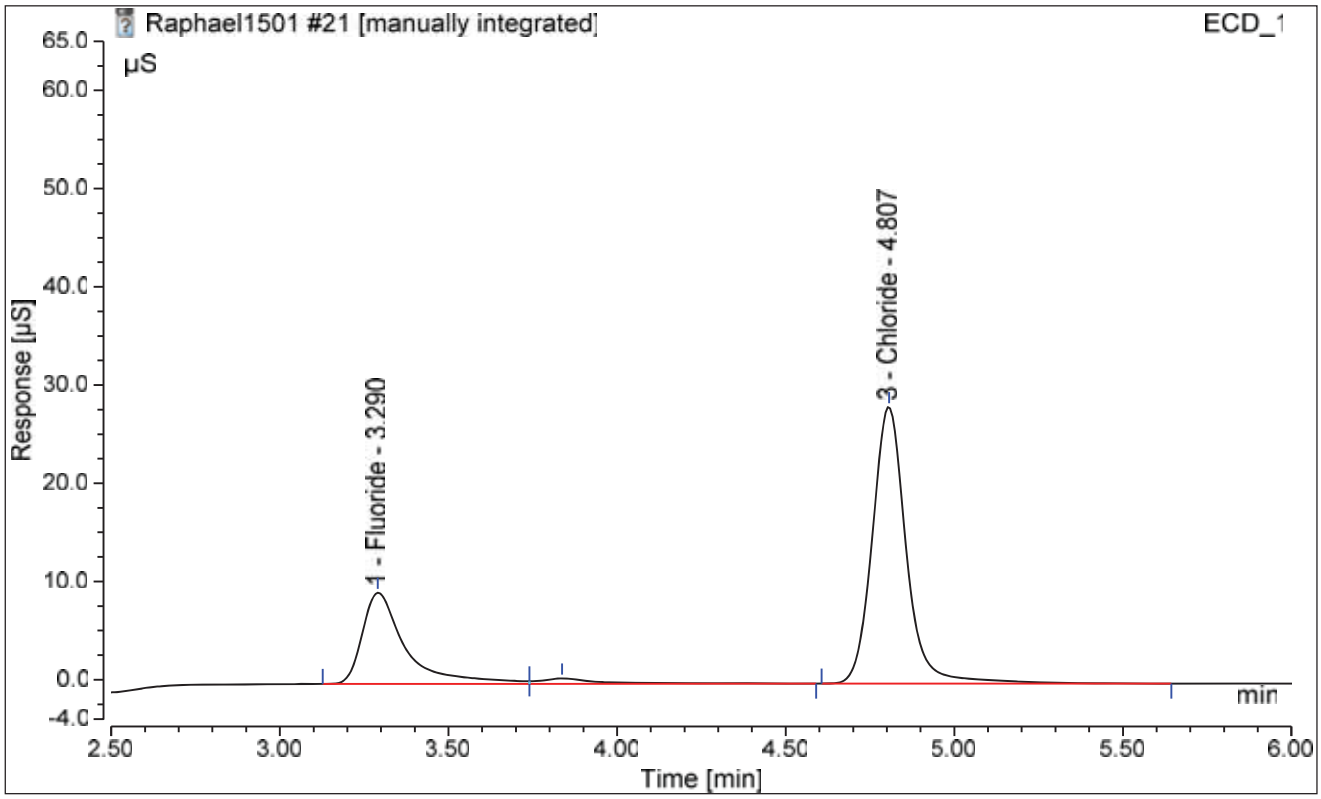


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.31	Fluoride	0.033	0.135	0.12318	FALSE	TRUE
3	4.80	Chloride	2.305	19.425	12.39988	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.MS-Kiln2 Off R1A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 20:07**	Run Time:	**14.50**

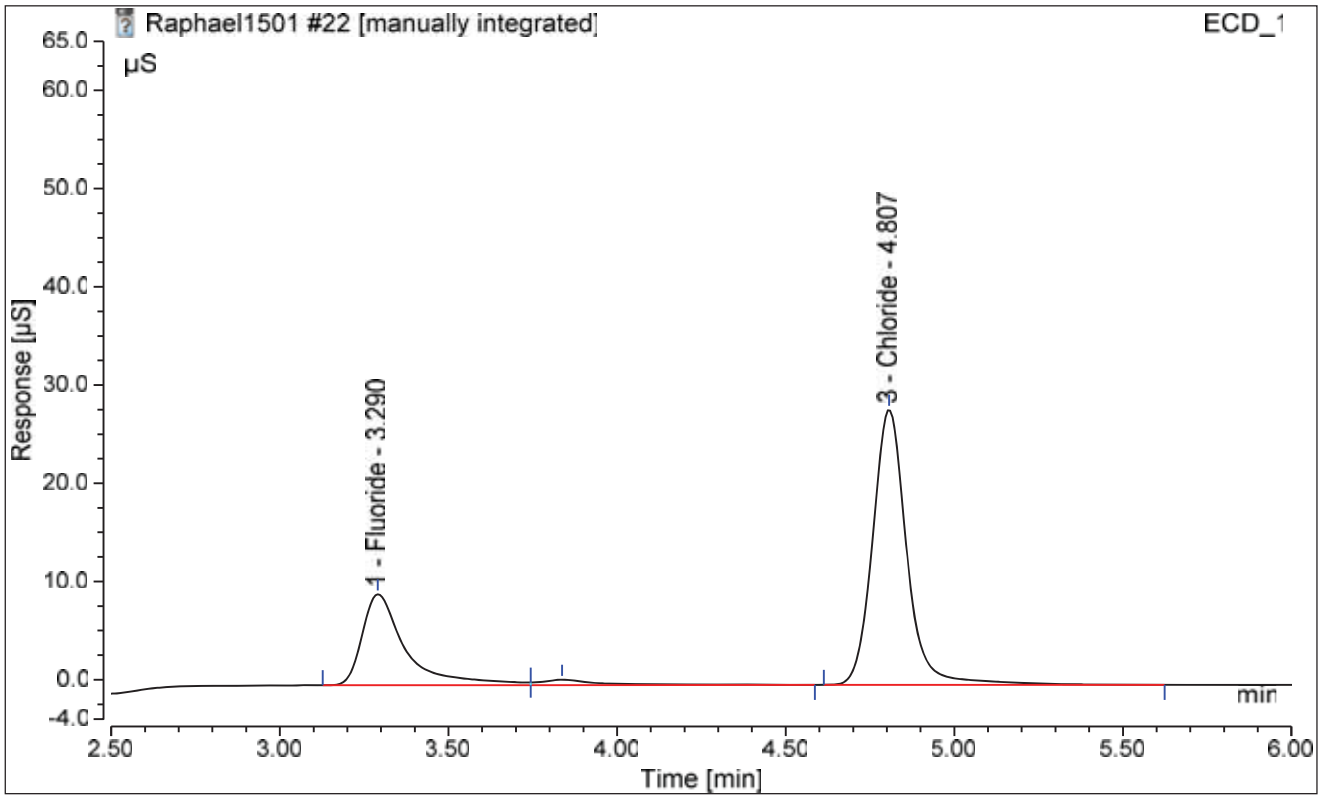


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	1.374	9.279	4.95232	FALSE	TRUE
3	4.81	Chloride	3.281	28.158	17.12968	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.MS-Kiln2 Off R1A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 20:23**	Run Time:	**14.50**

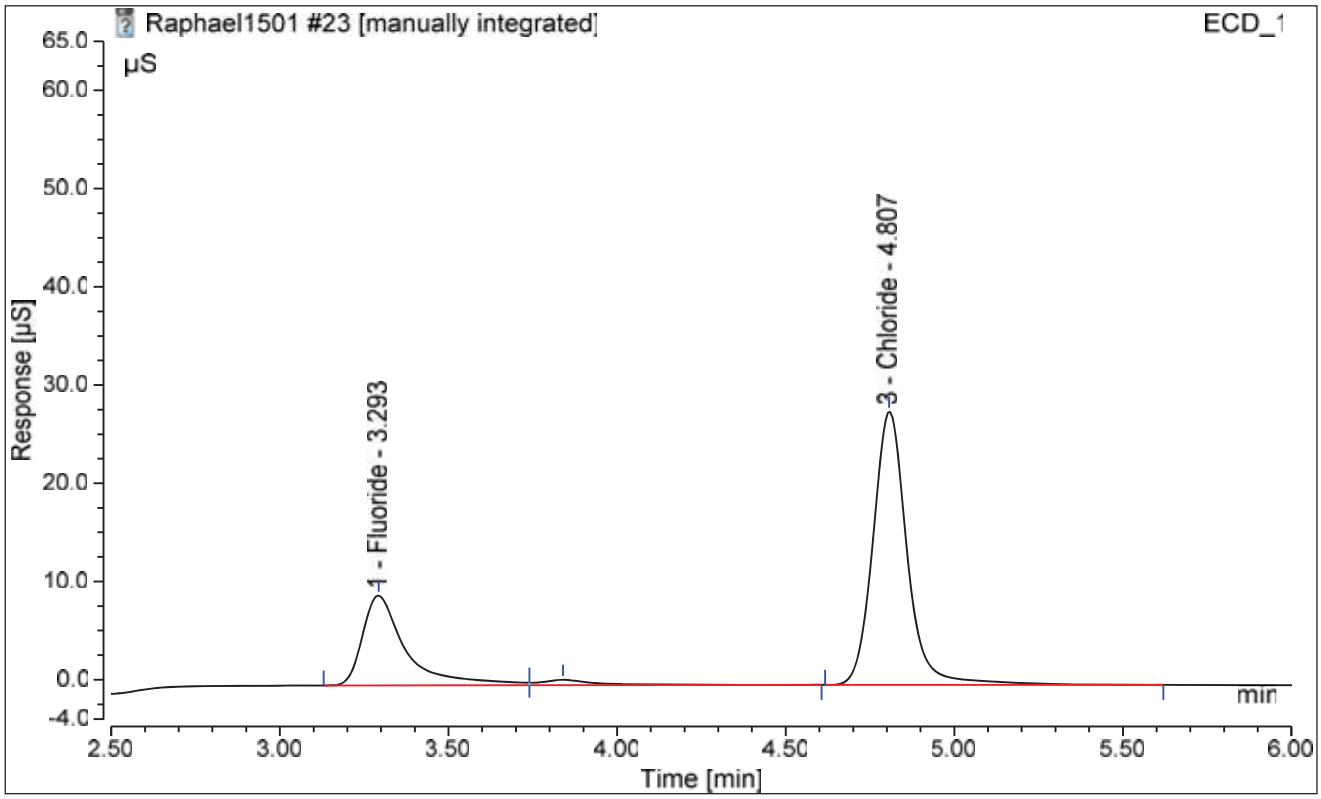


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	1.377	9.266	4.96173	FALSE	TRUE
3	4.81	Chloride	3.277	28.012	17.11259	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.MSD-Kiln2 Off R1A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 20:39**	Run Time:	**14.50**

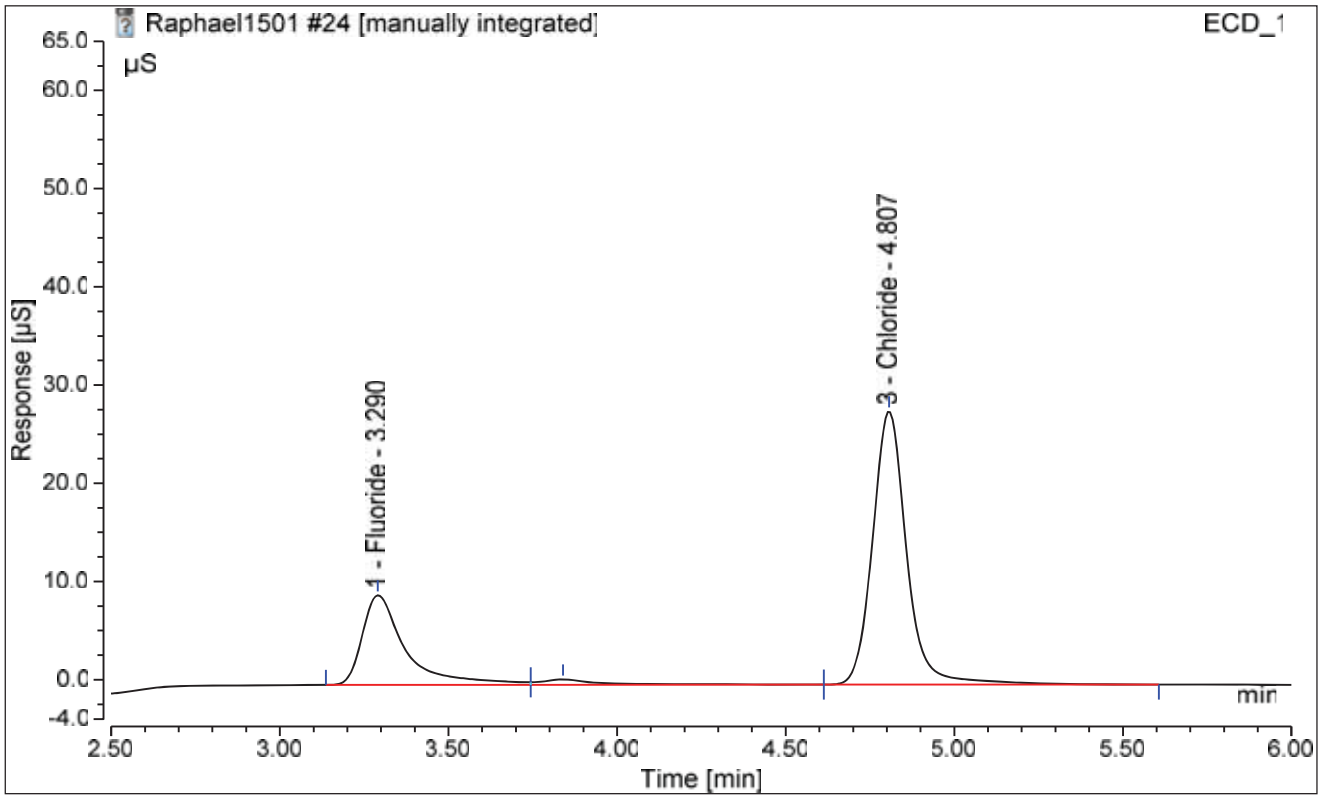


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	1.358	9.132	4.89312	FALSE	TRUE
3	4.81	Chloride	3.260	27.830	17.02943	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.MSD-Kiln2 Off R1A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 20:55**	Run Time:	**14.50**

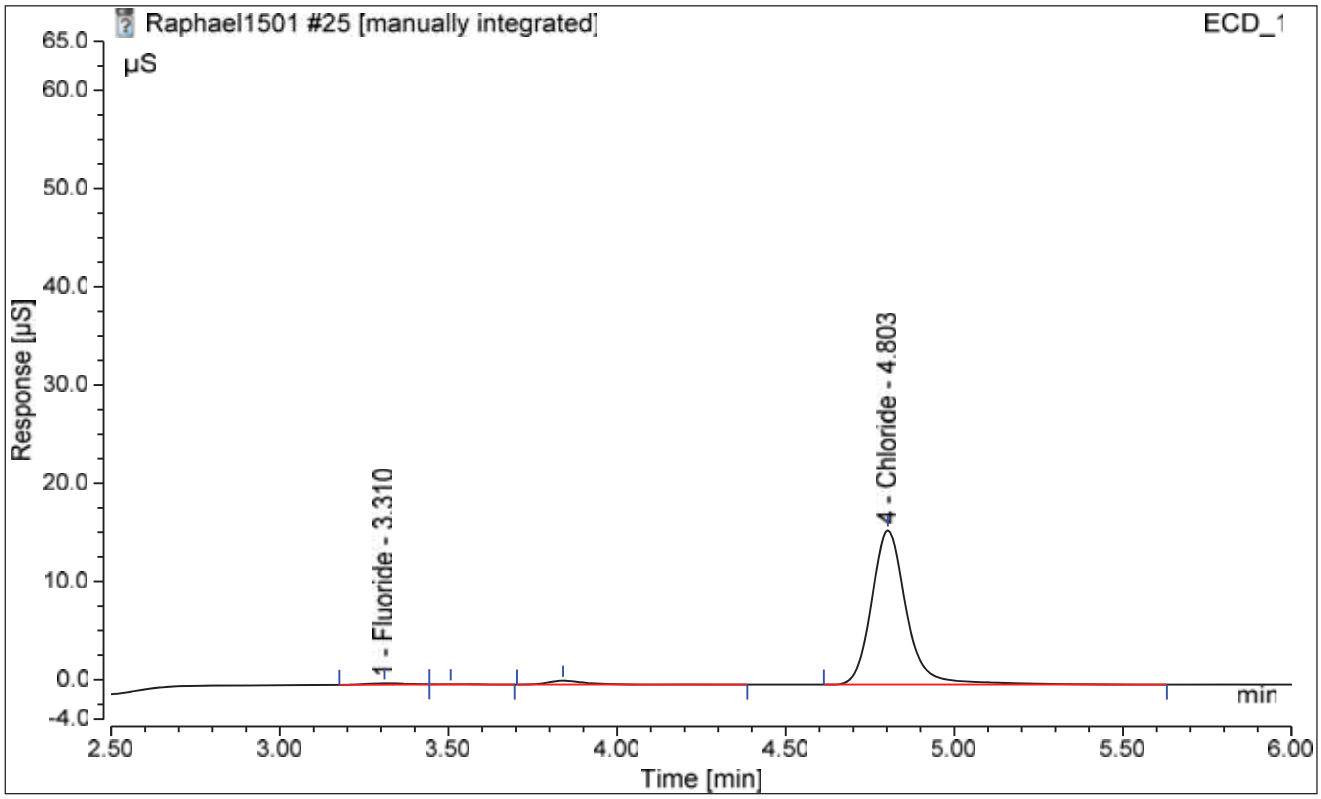


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	1.353	9.118	4.87705	FALSE	TRUE
3	4.81	Chloride	3.245	27.822	16.96184	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R1B.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 21:11**	Run Time:	**14.50**

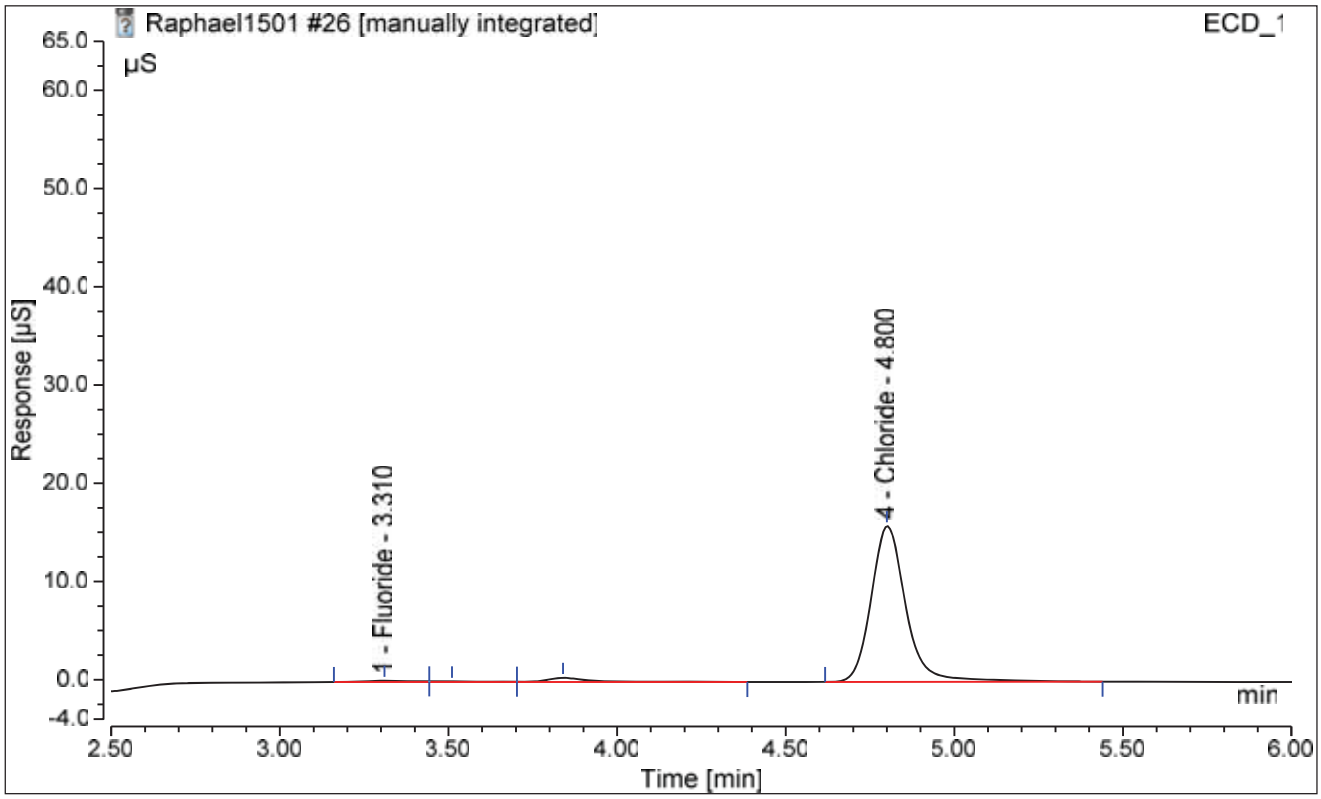


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.31	Fluoride	0.022	0.148	0.08139	FALSE	TRUE
4	4.80	Chloride	1.882	15.719	10.24684	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R1B.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 21:28**	Run Time:	**14.50**

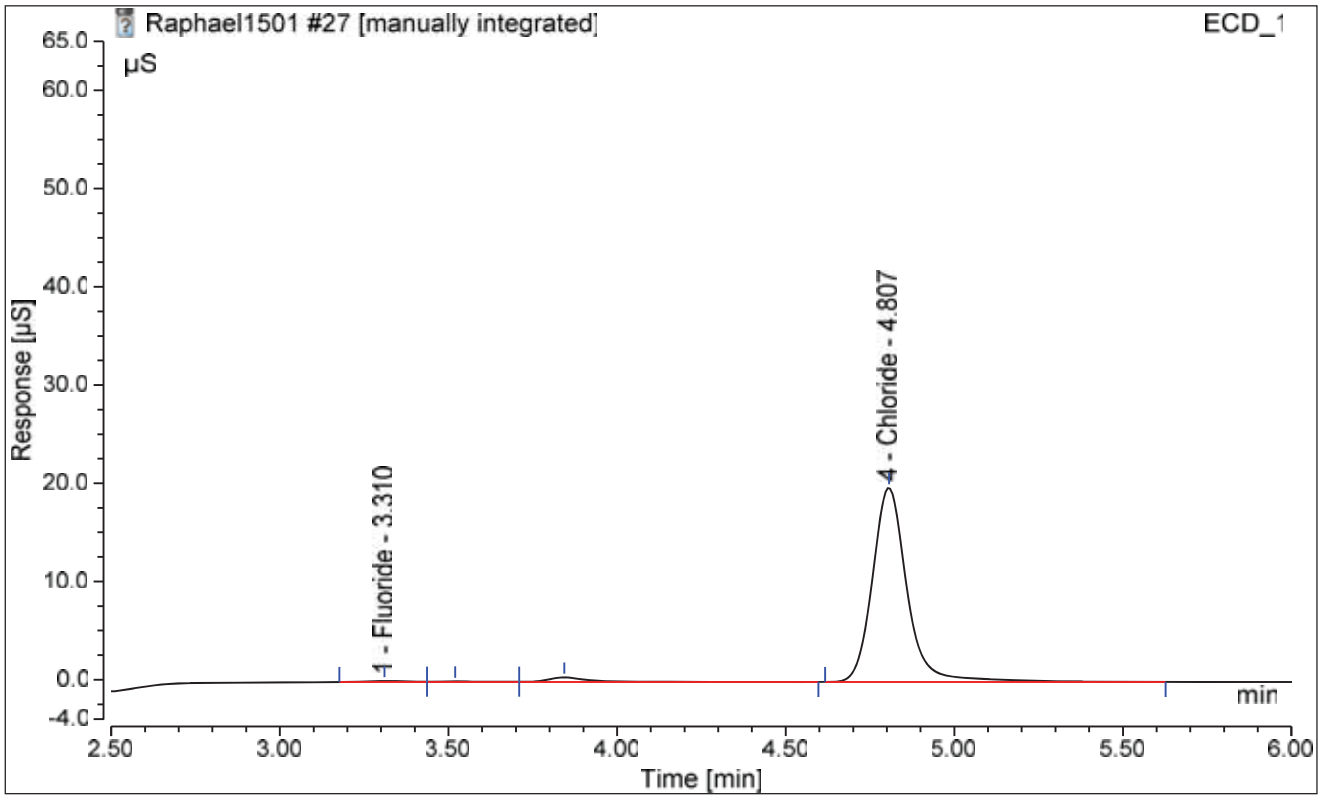


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.31	Fluoride	0.022	0.141	0.08142	FALSE	TRUE
4	4.80	Chloride	1.888	15.849	10.27654	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R2A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 21:44**	Run Time:	**14.50**

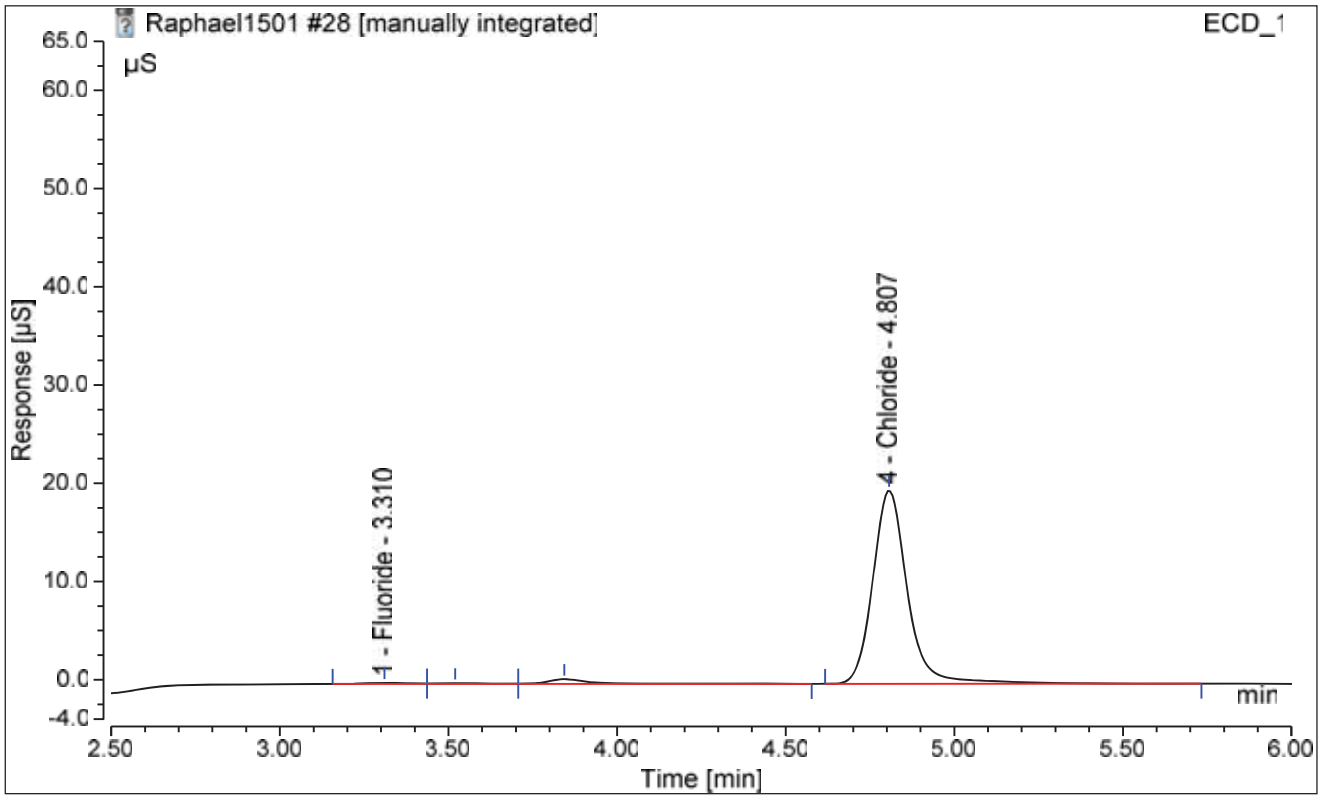


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.31	Fluoride	0.017	0.114	0.06322	FALSE	TRUE
4	4.81	Chloride	2.341	19.756	12.57996	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R2A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 22:00**	Run Time:	**14.50**

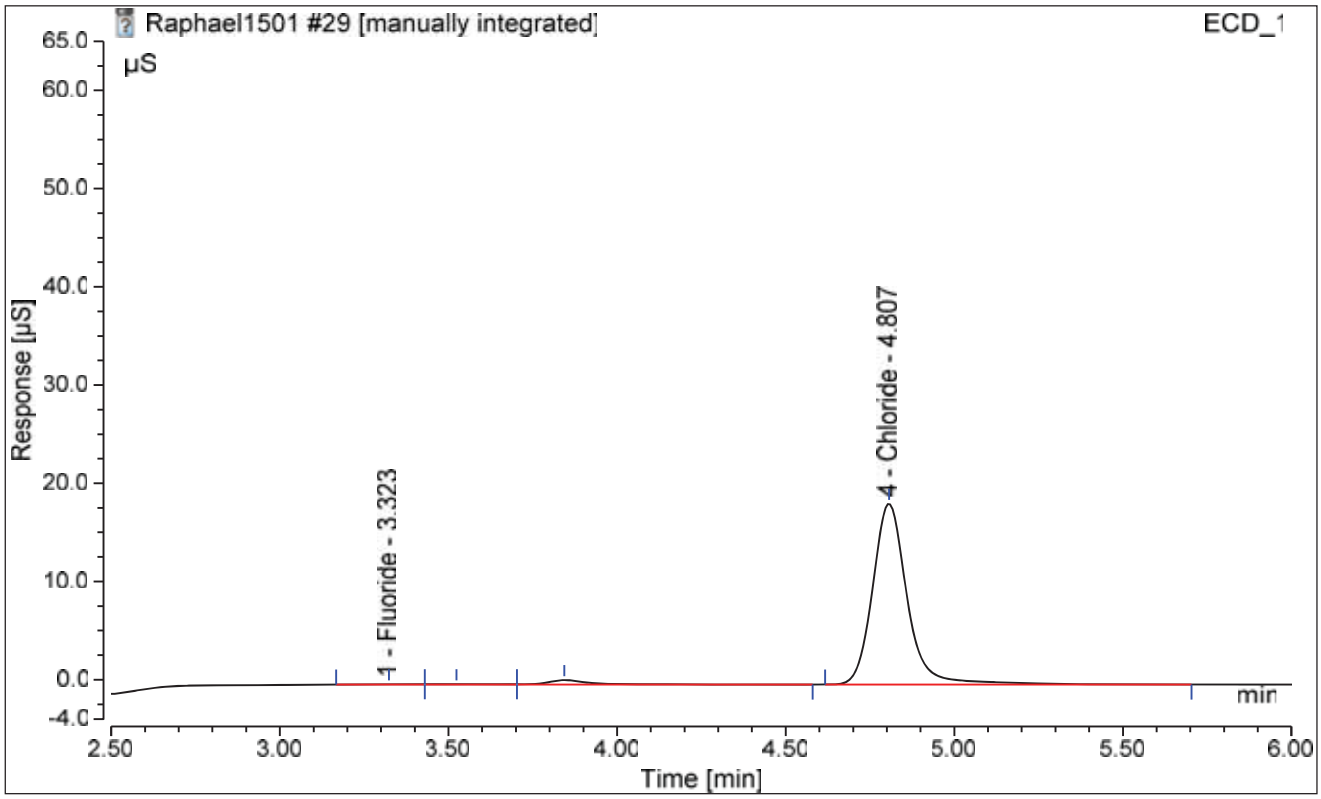


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.31	Fluoride	0.017	0.114	0.06422	FALSE	TRUE
4	4.81	Chloride	2.340	19.674	12.57491	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R2B.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 22:16**	Run Time:	**14.50**

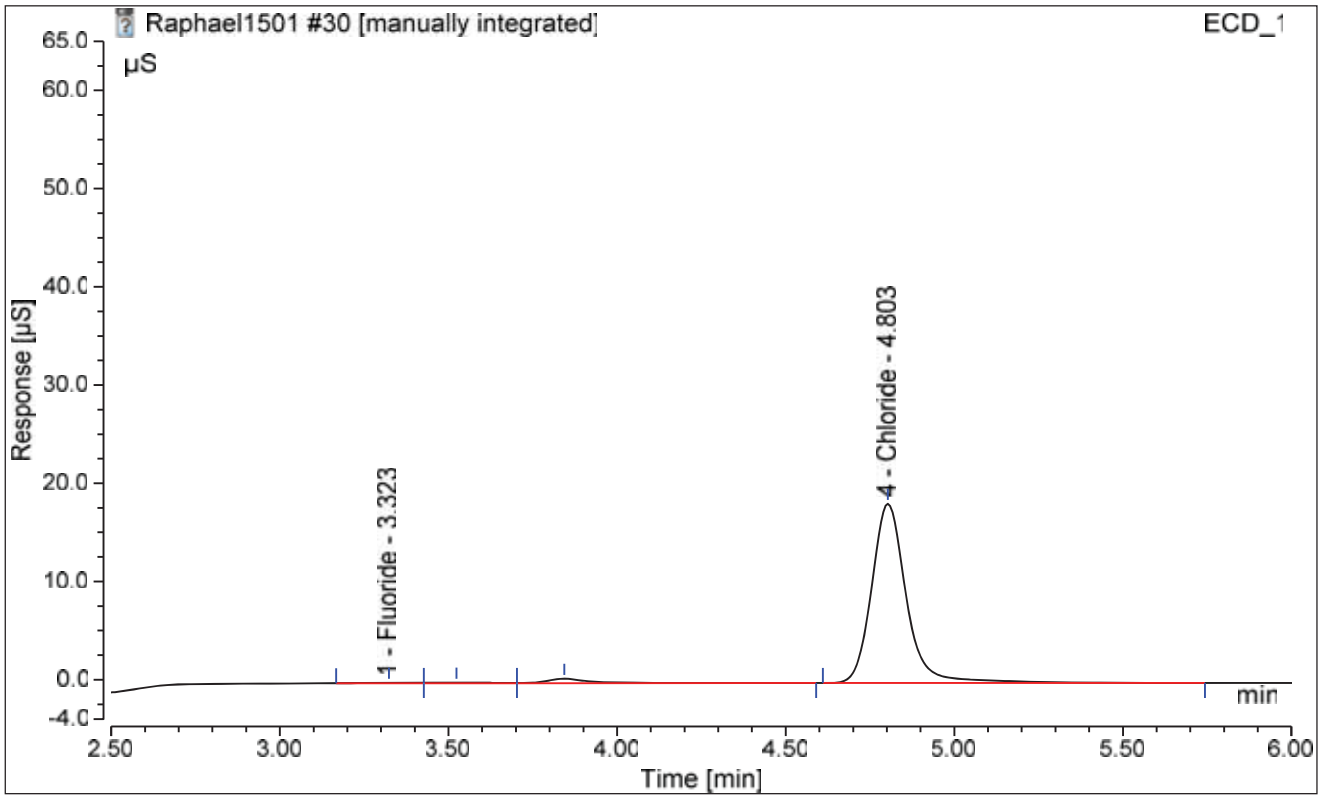


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.009	0.056	0.03363	FALSE	TRUE
4	4.81	Chloride	2.182	18.412	11.78064	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R2B.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 22:32**	Run Time:	**14.50**

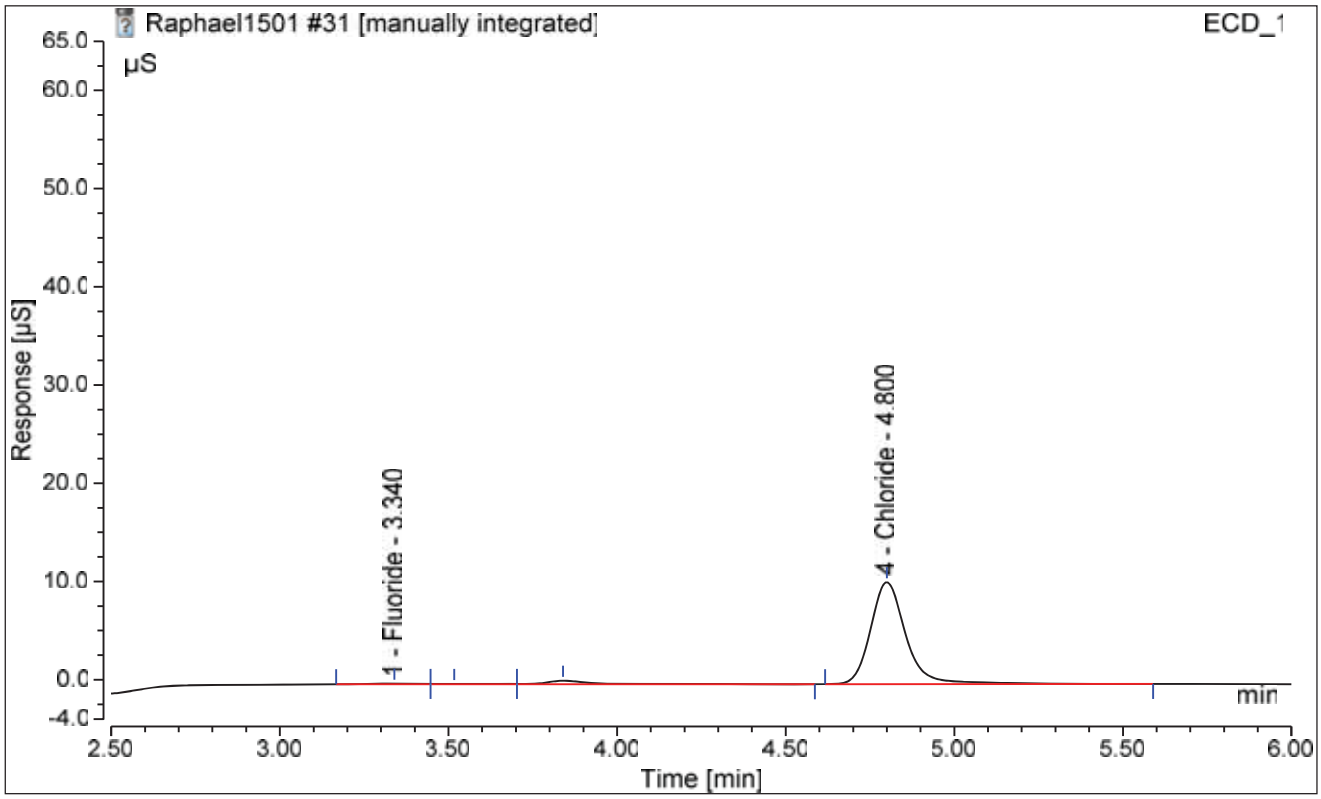


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.009	0.057	0.03408	FALSE	TRUE
4	4.80	Chloride	2.171	18.260	11.72419	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R3A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 22:48**	Run Time:	**14.50**

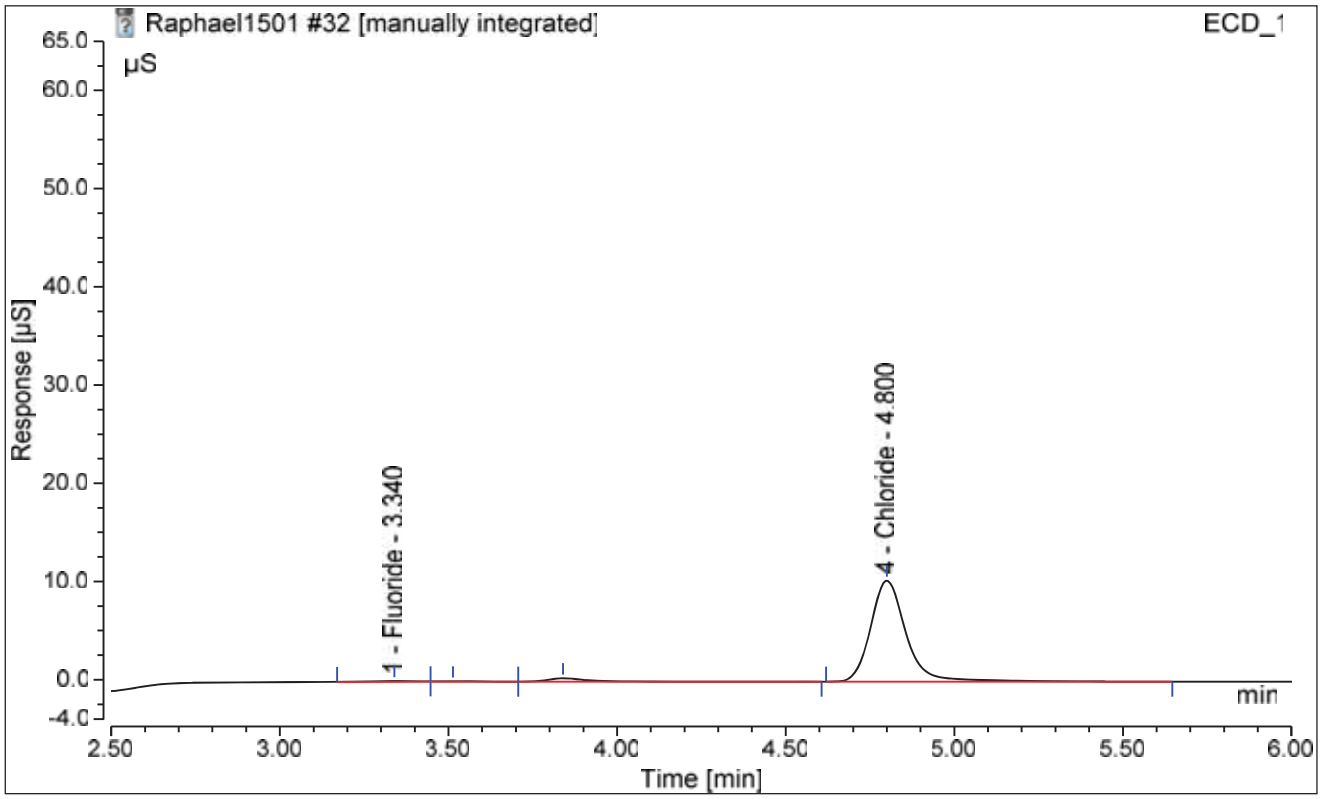


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.34	Fluoride	0.012	0.075	0.04415	FALSE	TRUE
4	4.80	Chloride	1.259	10.376	6.96603	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R3A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 23:04**	Run Time:	**14.50**

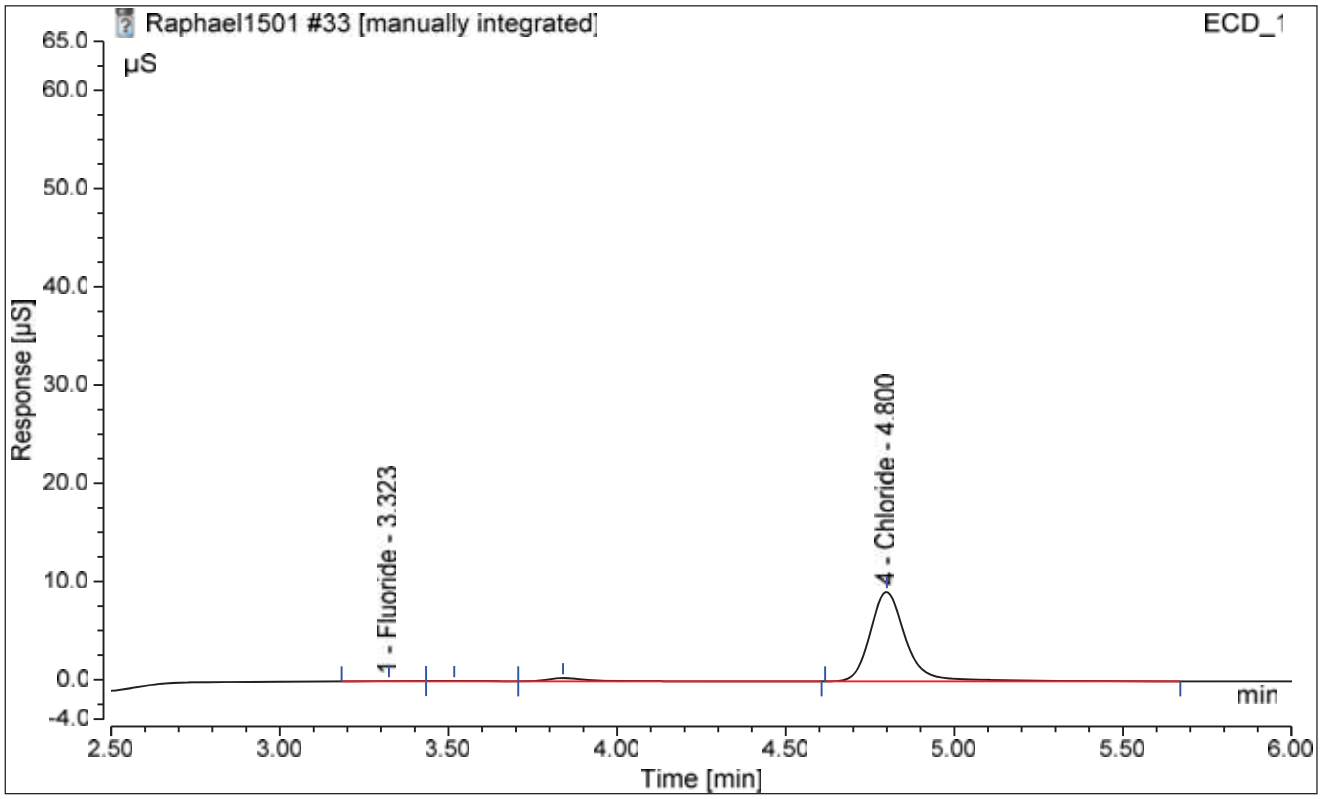


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.34	Fluoride	0.012	0.075	0.04384	FALSE	TRUE
4	4.80	Chloride	1.254	10.293	6.93975	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R3B.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 23:20**	Run Time:	**14.50**

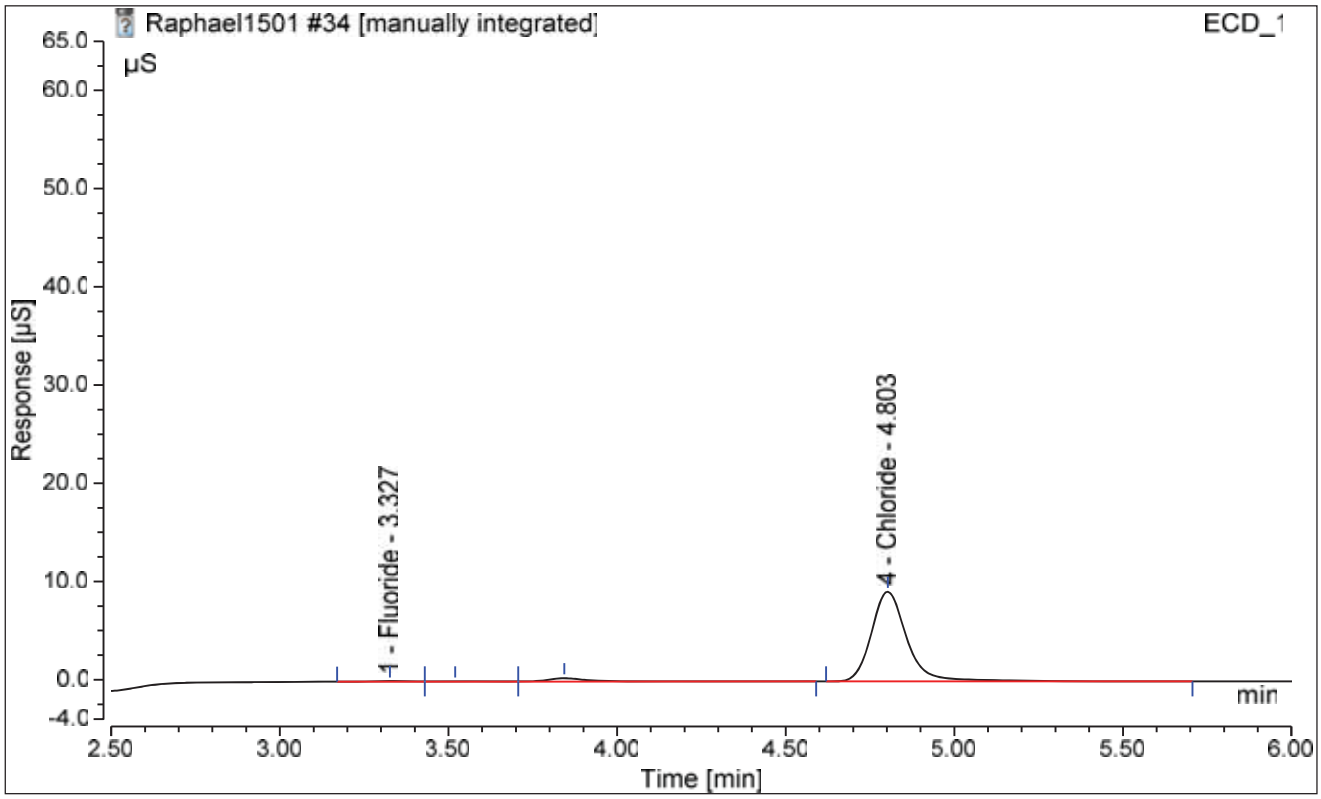


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.007	0.047	0.02833	FALSE	TRUE
4	4.80	Chloride	1.114	9.099	6.18012	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R3B.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 23:36**	Run Time:	**14.50**

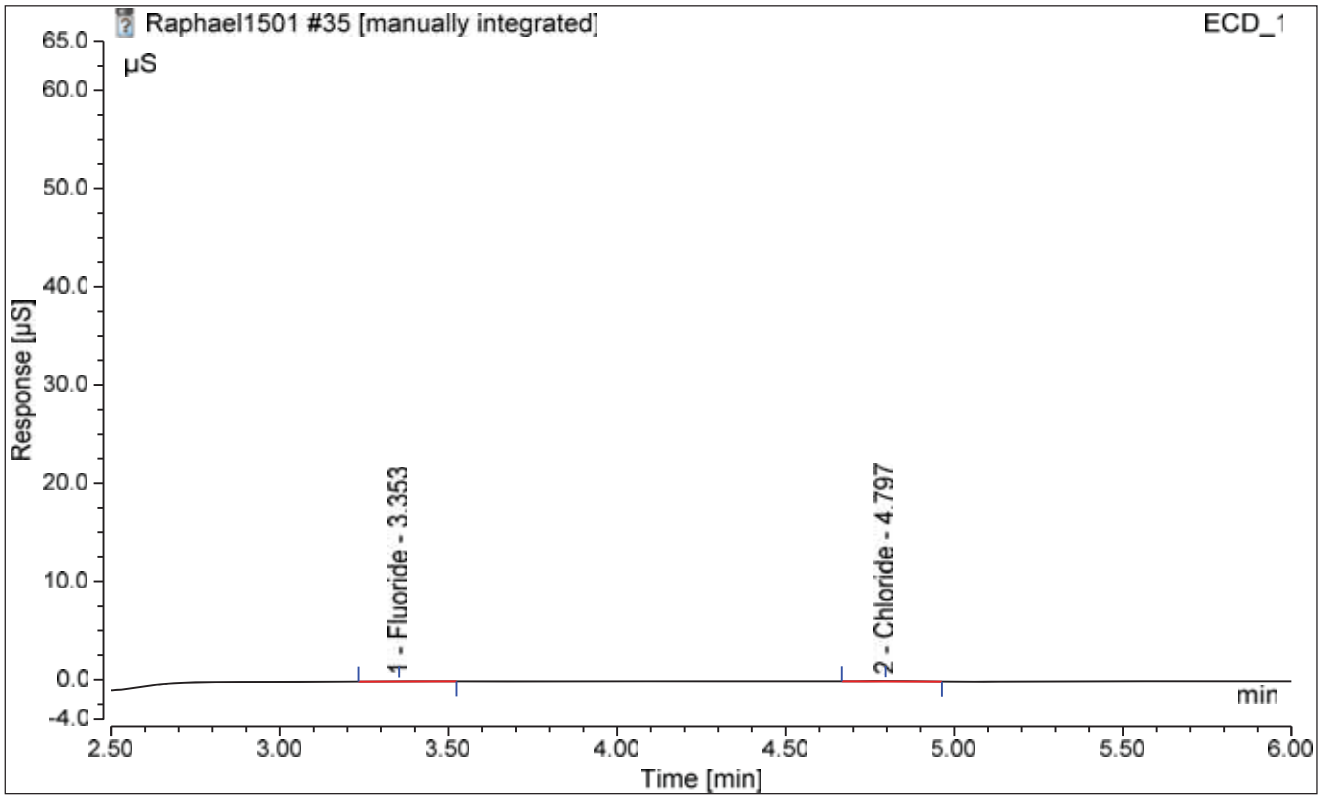


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.008	0.048	0.02945	FALSE	TRUE
4	4.80	Chloride	1.120	9.137	6.21705	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off FB.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 23:52**	Run Time:	**14.50**

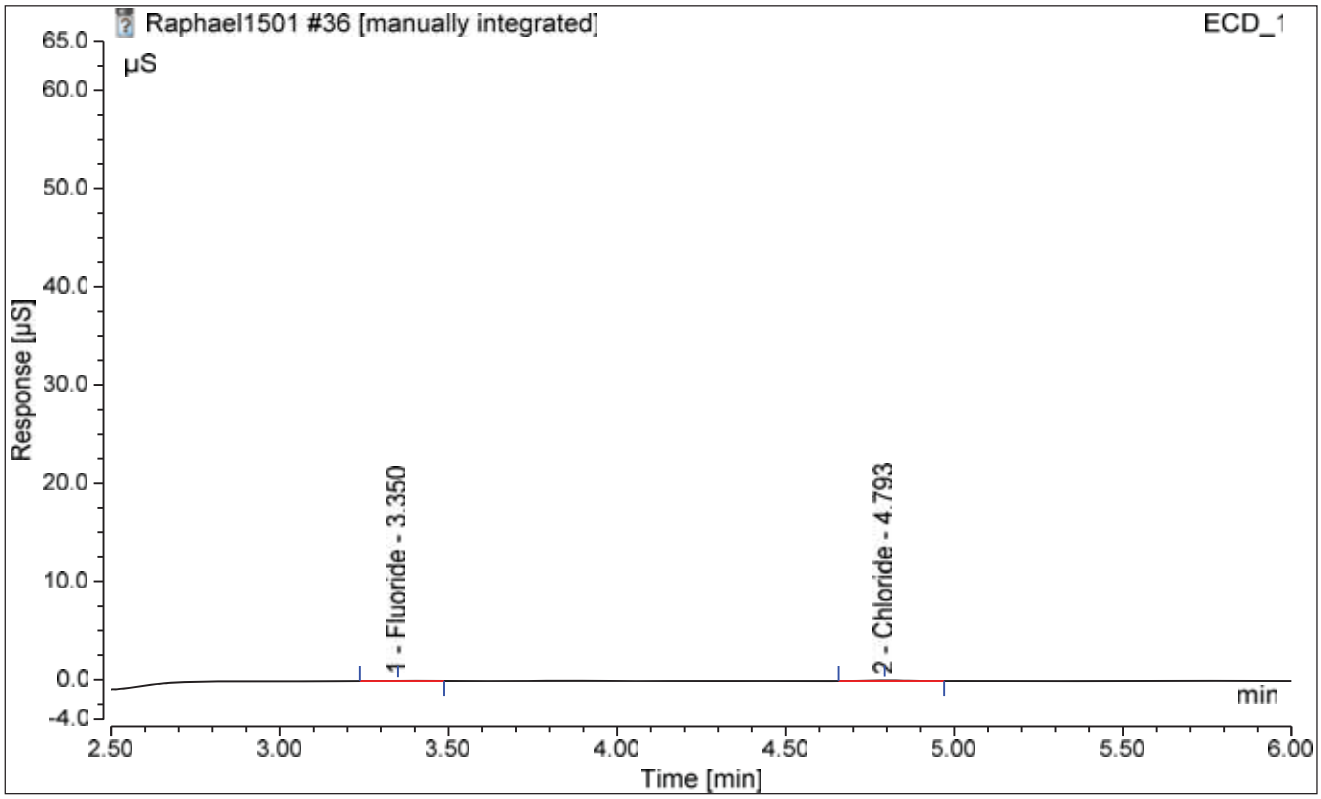


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.35	Fluoride	0.002	0.016	0.01006	FALSE	TRUE
2	4.80	Chloride	0.007	0.057	n.a.	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off FB.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 00:09**	Run Time:	**14.50**

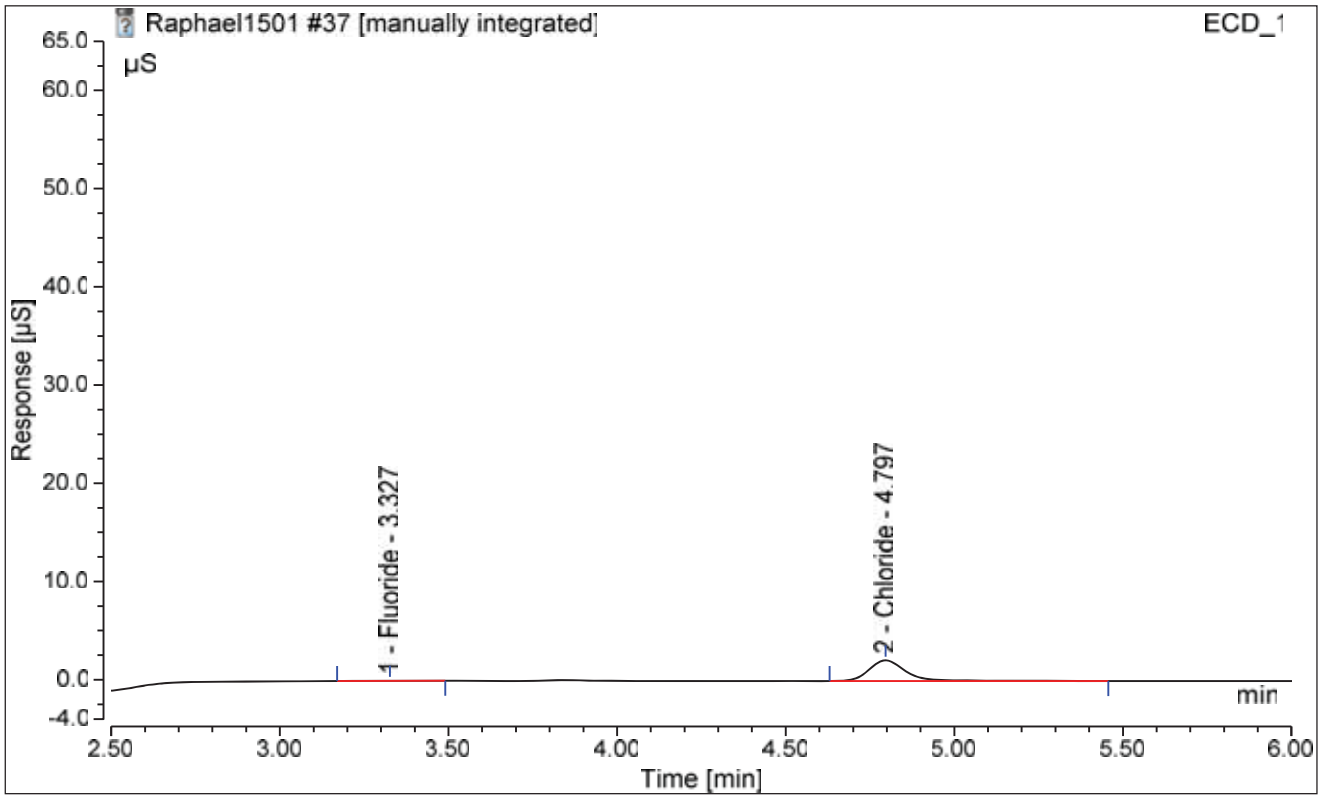


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.35	Fluoride	0.002	0.015	0.00880	FALSE	TRUE
2	4.79	Chloride	0.007	0.056	n.a.	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R1A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 00:25**	Run Time:	**14.50**

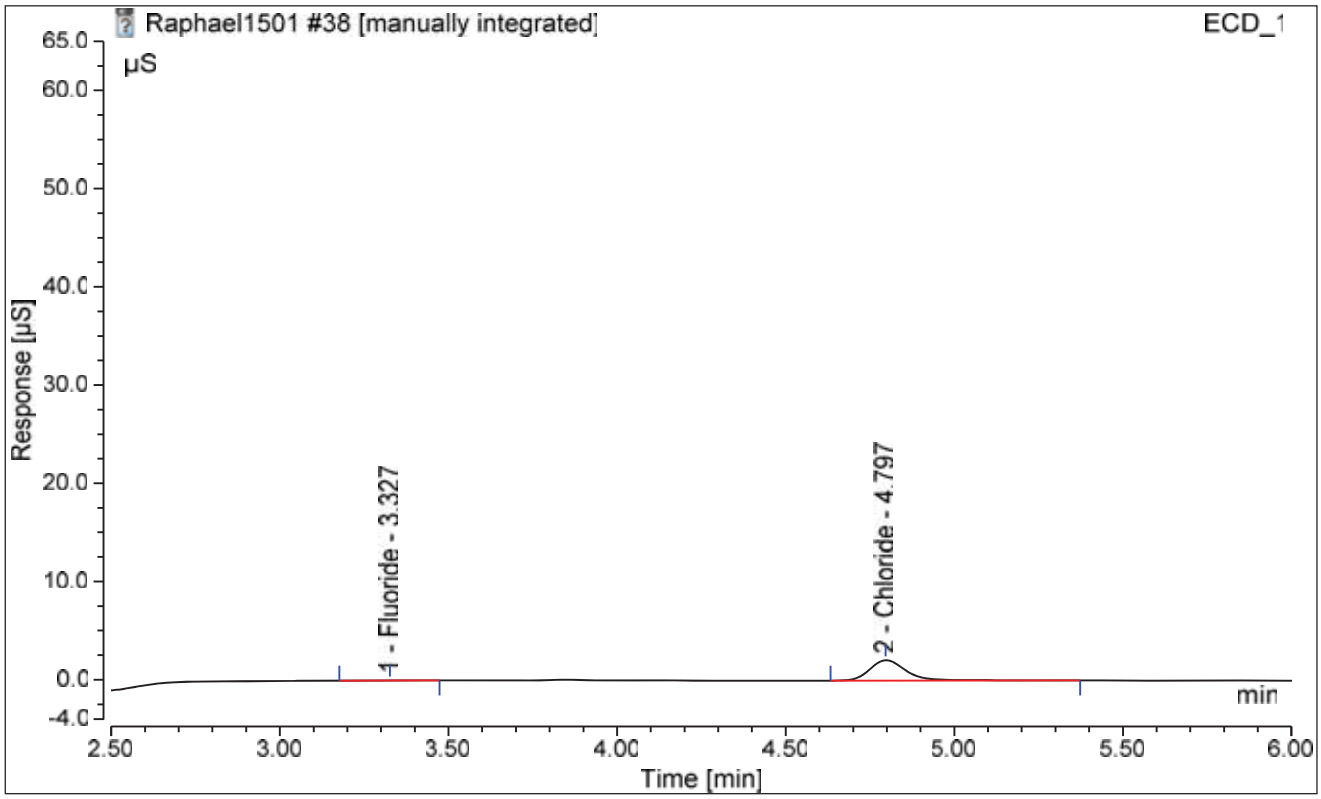


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.003	0.025	0.01437	FALSE	TRUE
2	4.80	Chloride	0.262	2.093	1.43229	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R1A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 00:41**	Run Time:	**14.50**

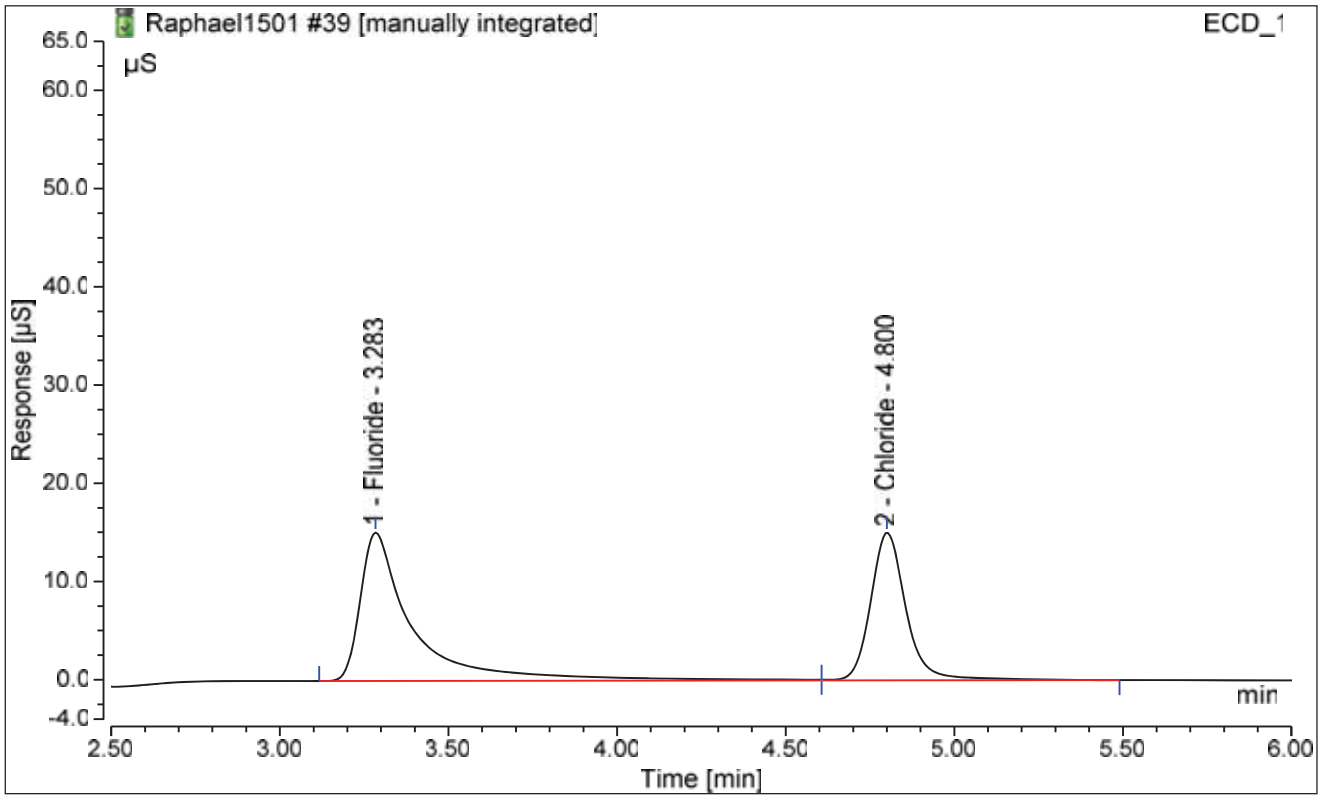


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.003	0.024	0.01355	FALSE	TRUE
2	4.80	Chloride	0.260	2.078	1.42482	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 00:57**	Run Time:	**14.50**

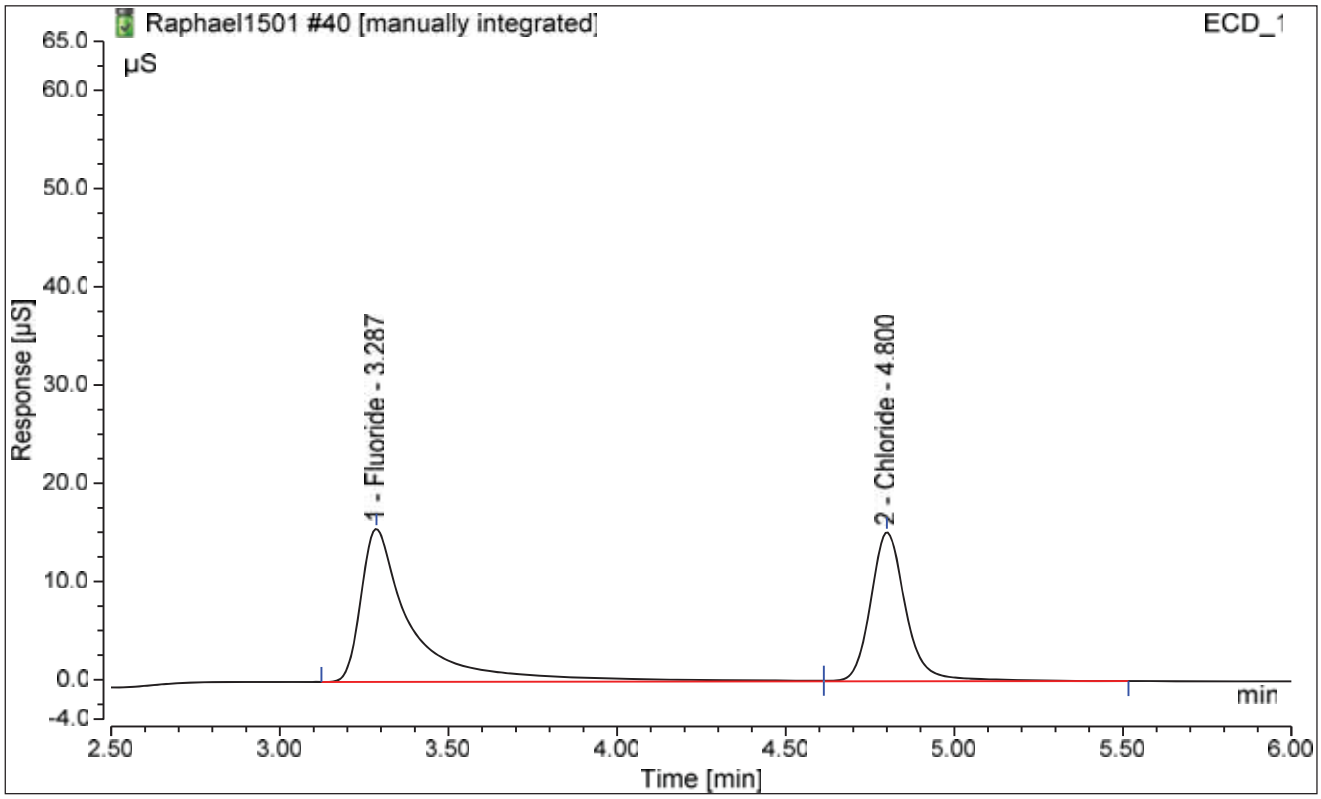


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	2.742	15.095	9.79246	FALSE	TRUE
2	4.80	Chloride	1.825	15.035	9.95118	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 01:13**	Run Time:	**14.50**

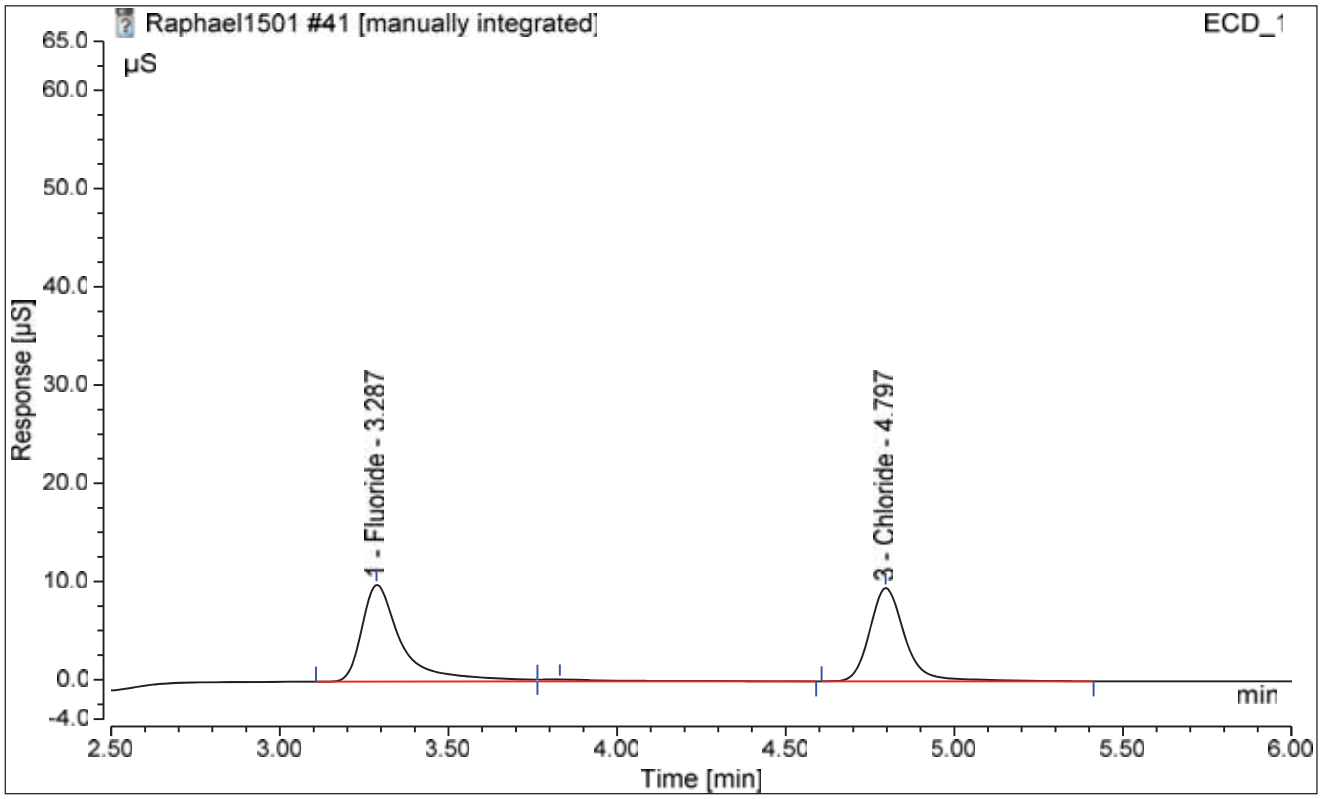


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	2.769	15.573	9.88701	FALSE	TRUE
2	4.80	Chloride	1.839	15.170	10.02661	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.MS-Kiln2 On R1A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 01:29**	Run Time:	**14.50**

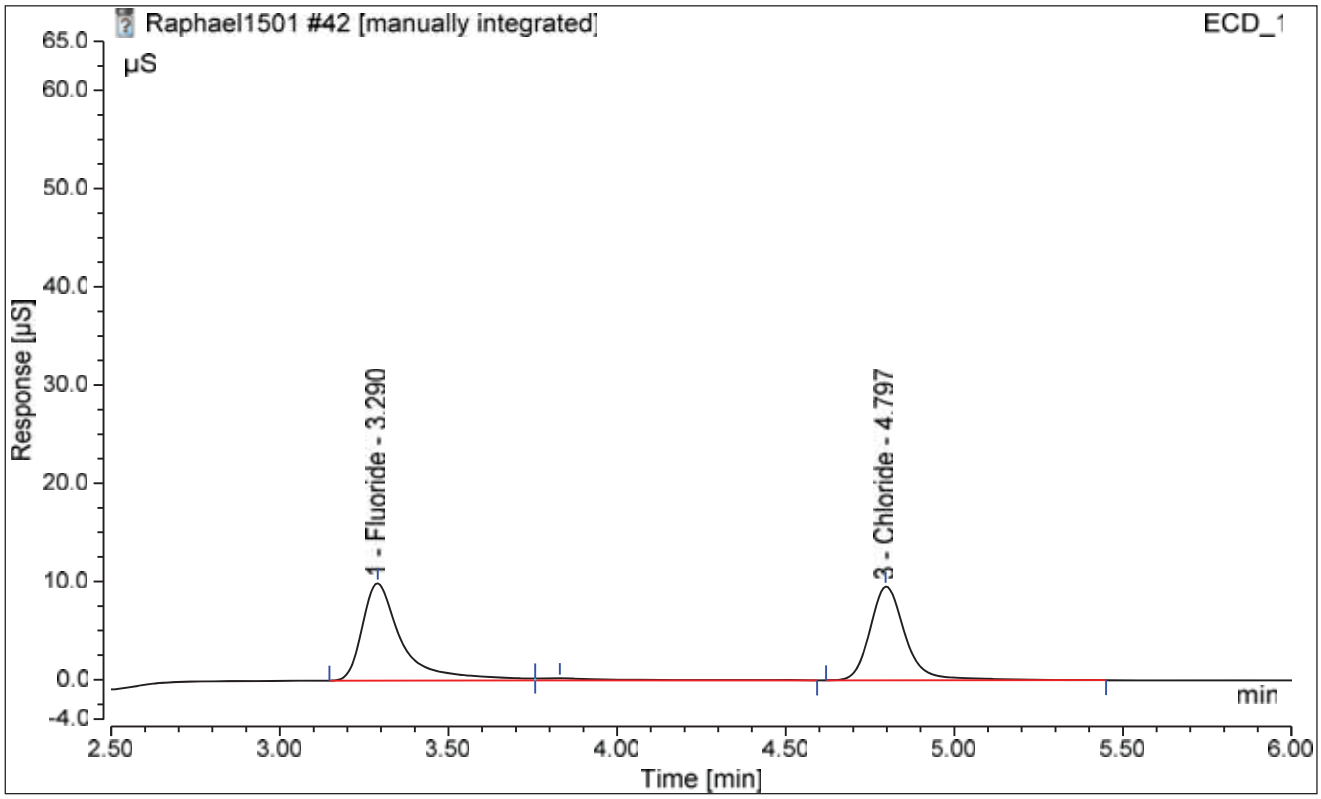


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	1.354	9.854	4.88132	FALSE	TRUE
3	4.80	Chloride	1.148	9.492	6.36400	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.MS-Kiln2 On R1A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 01:45**	Run Time:	**14.50**

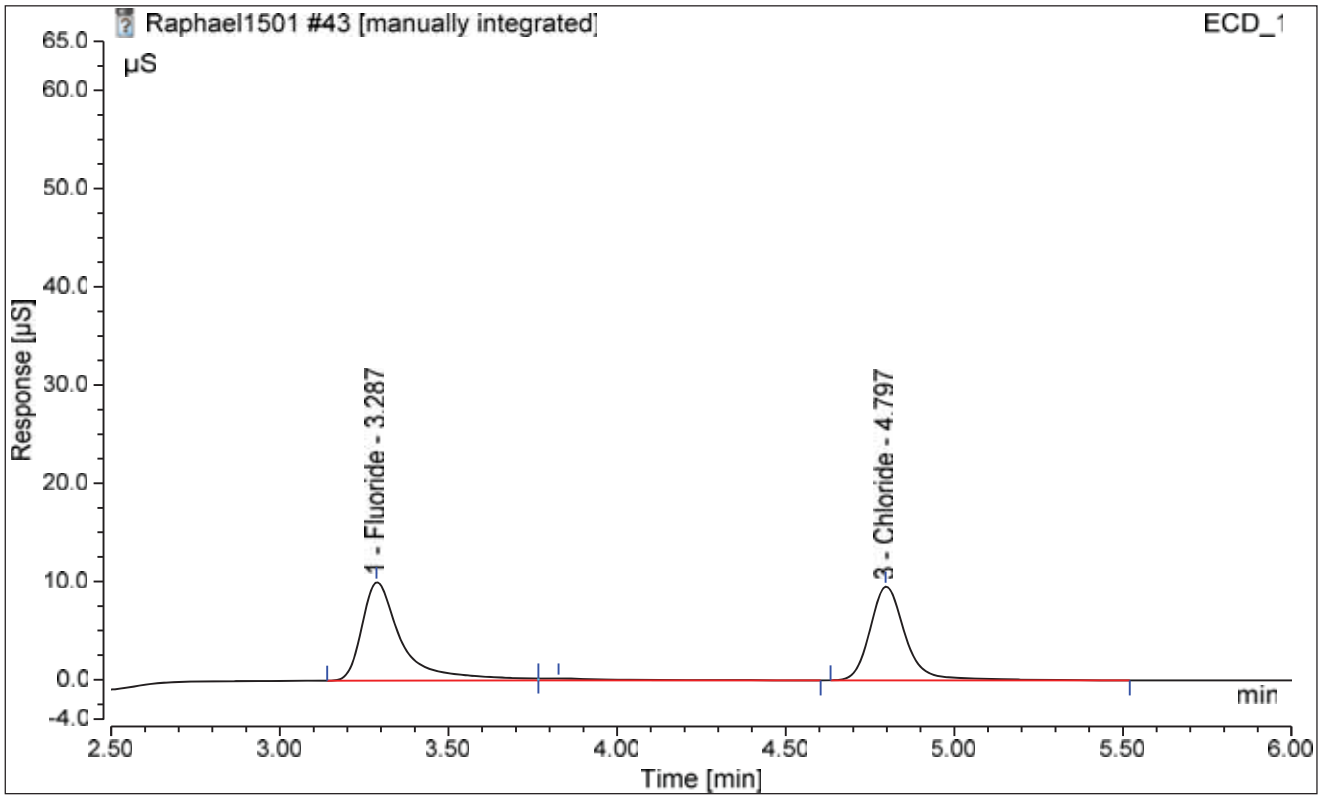


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	1.356	9.887	4.88792	FALSE	TRUE
3	4.80	Chloride	1.155	9.545	6.40473	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.MSD-Kiln2 On R1A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 02:01**	Run Time:	**14.50**

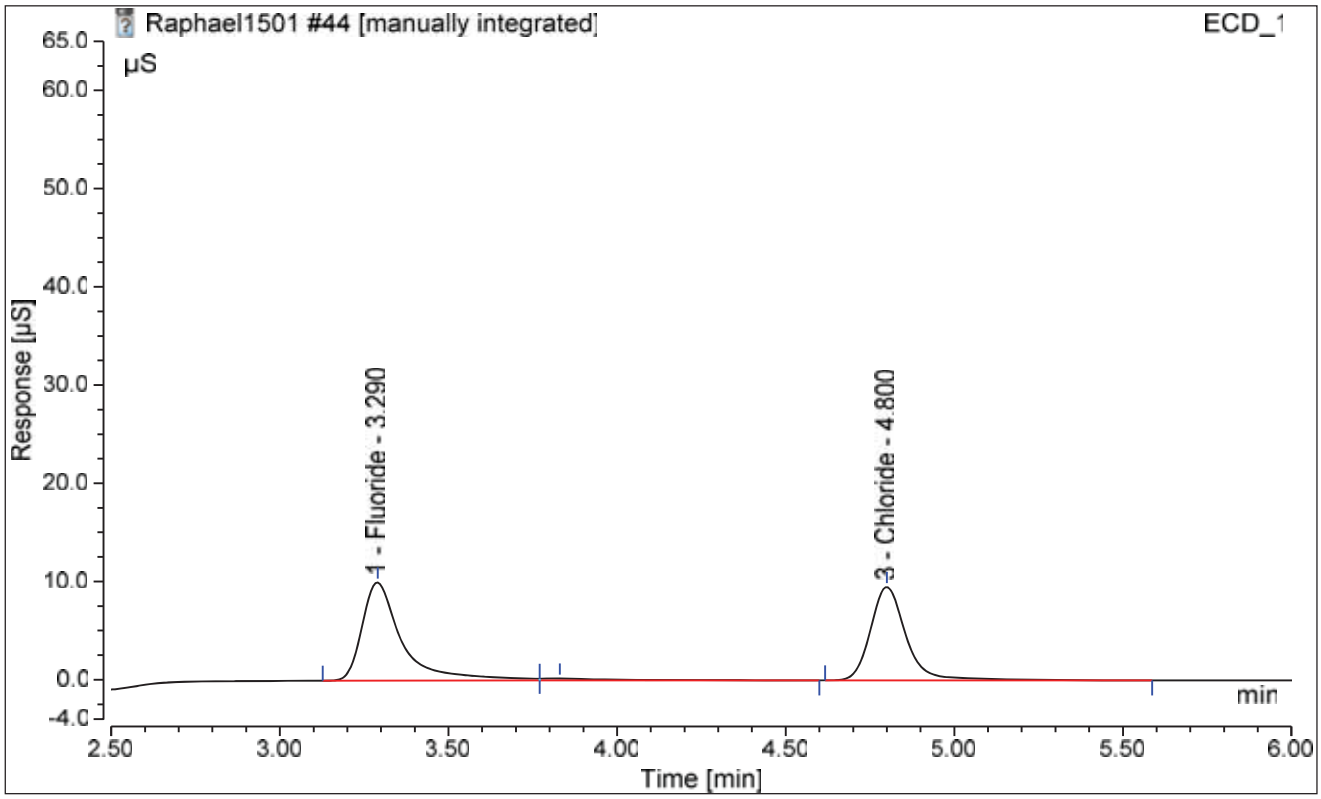


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	1.377	10.015	4.96119	FALSE	TRUE
3	4.80	Chloride	1.157	9.530	6.41223	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.MSD-Kiln2 On R1A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 02:17**	Run Time:	**14.50**

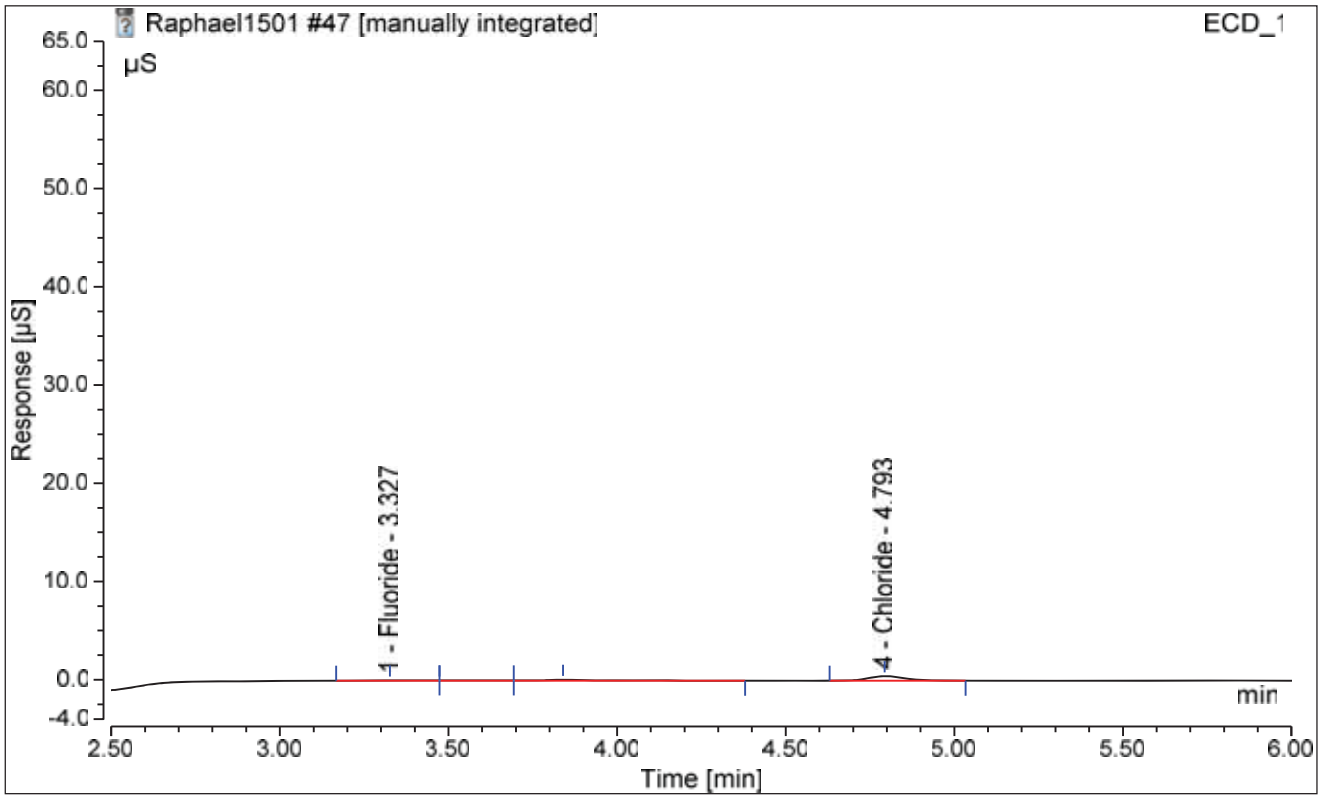


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	1.379	9.997	4.97112	FALSE	TRUE
3	4.80	Chloride	1.161	9.512	6.43439	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R2A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 03:06**	Run Time:	**14.50**

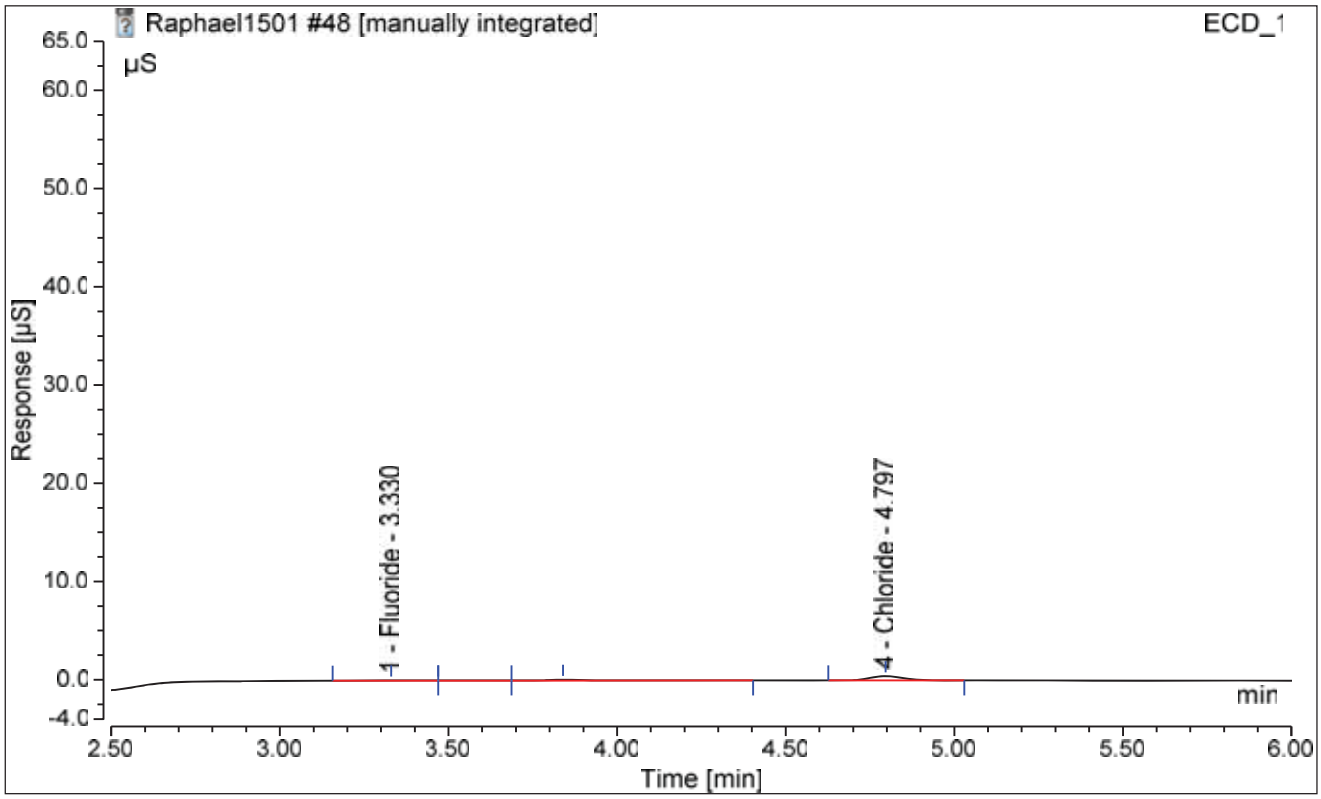


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.007	0.039	0.02769	FALSE	TRUE
4	4.79	Chloride	0.054	0.453	0.23460	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R2A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 03:22**	Run Time:	**14.50**

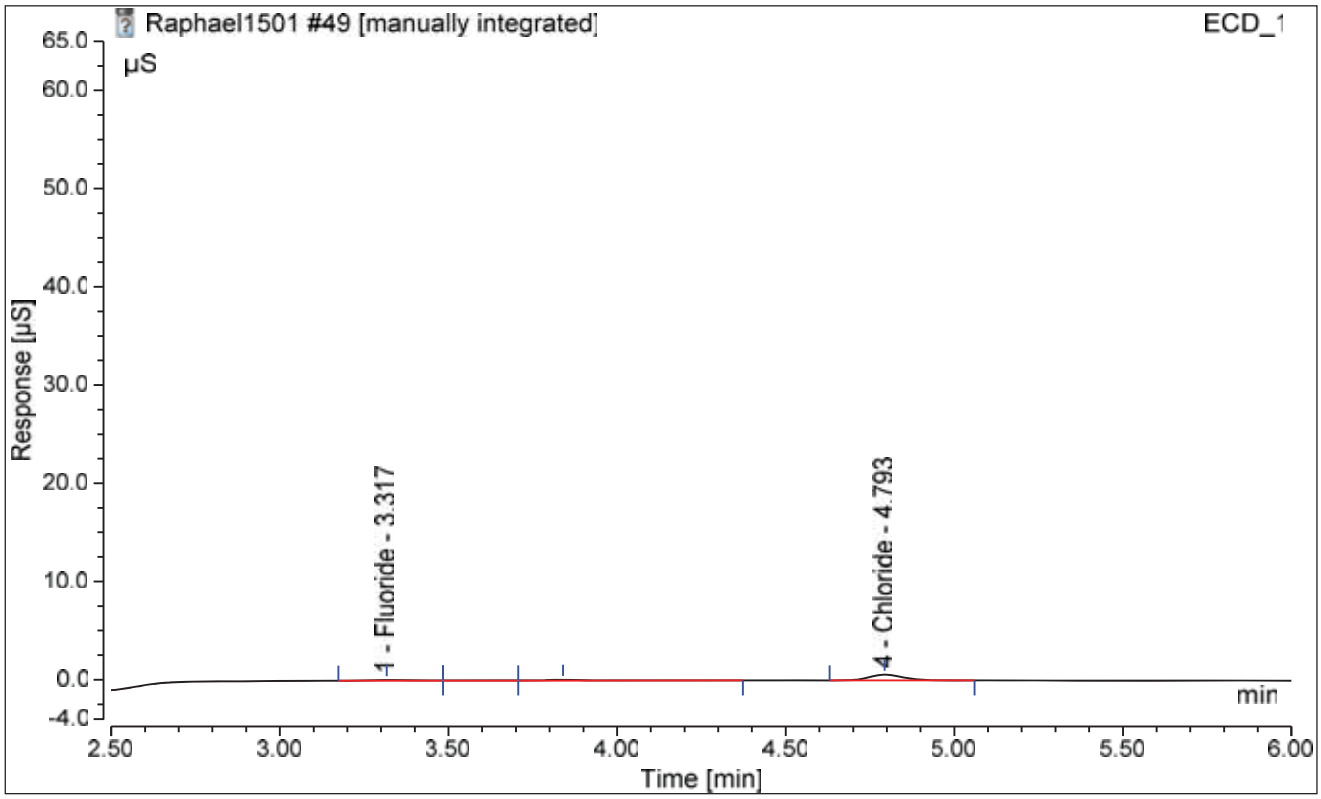


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.007	0.037	0.02622	FALSE	TRUE
4	4.80	Chloride	0.054	0.451	0.23378	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R2B.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 03:38**	Run Time:	**14.50**

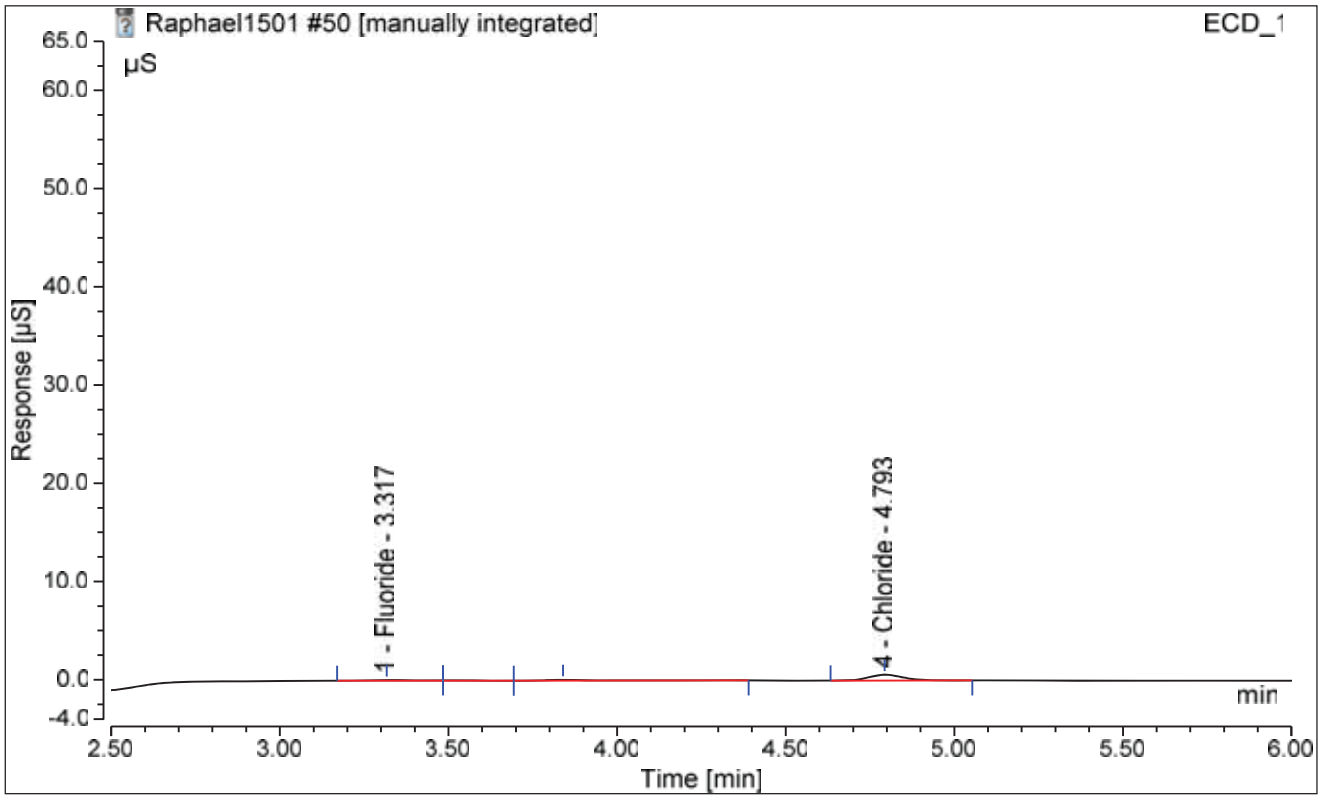


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.010	0.059	0.03942	FALSE	TRUE
4	4.79	Chloride	0.071	0.592	0.33371	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R2B.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 03:54**	Run Time:	**14.50**

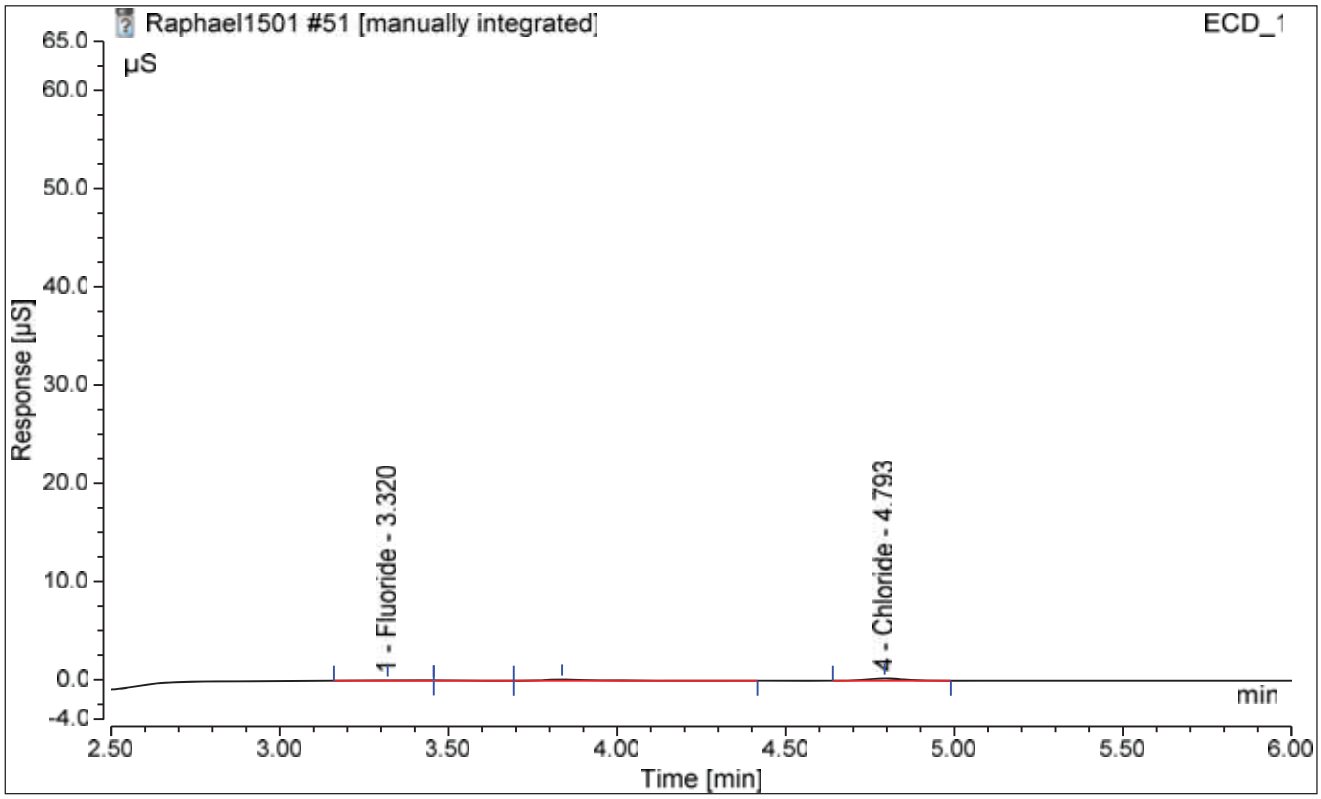


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.010	0.058	0.03802	FALSE	TRUE
4	4.79	Chloride	0.070	0.588	0.32848	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R3A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 04:10**	Run Time:	**14.50**

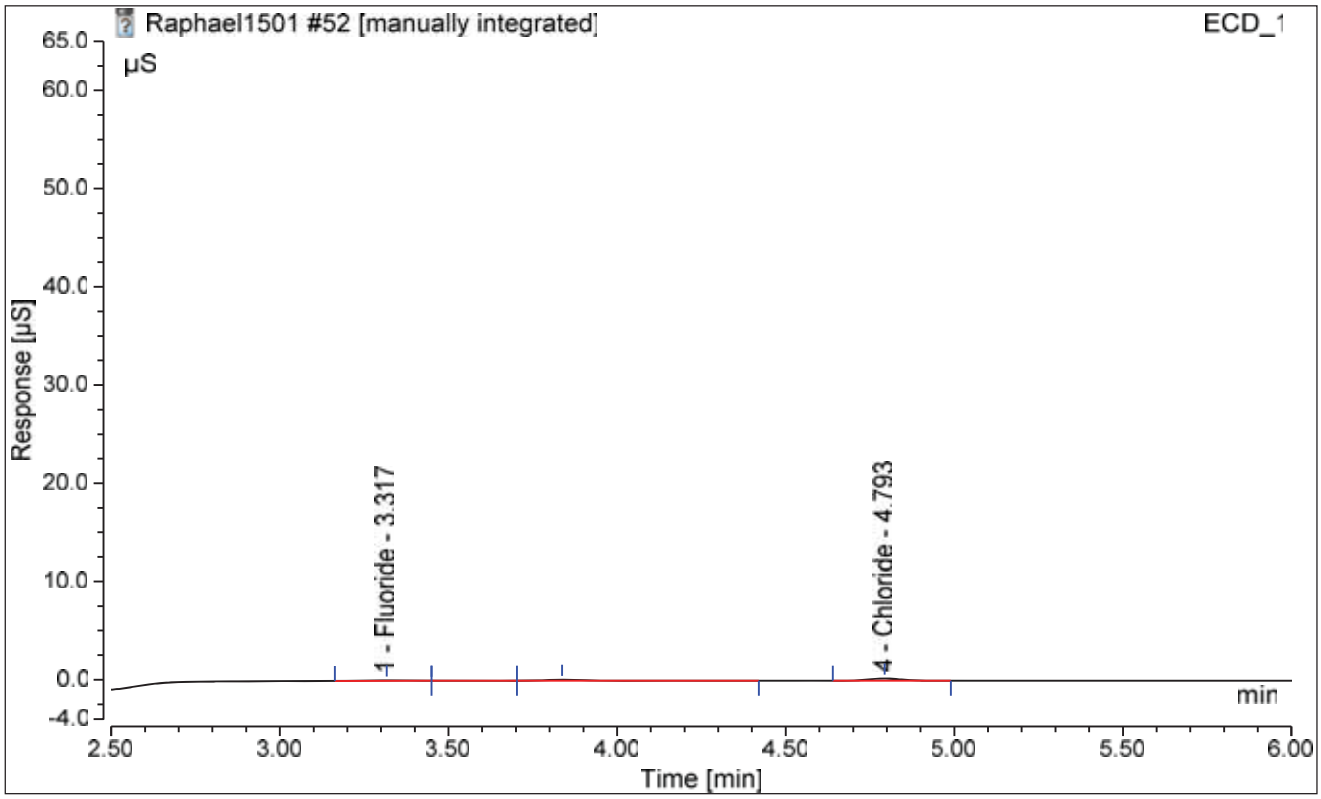


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.009	0.052	0.03313	FALSE	TRUE
4	4.79	Chloride	0.027	0.234	0.08243	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R3A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 04:26**	Run Time:	**14.50**

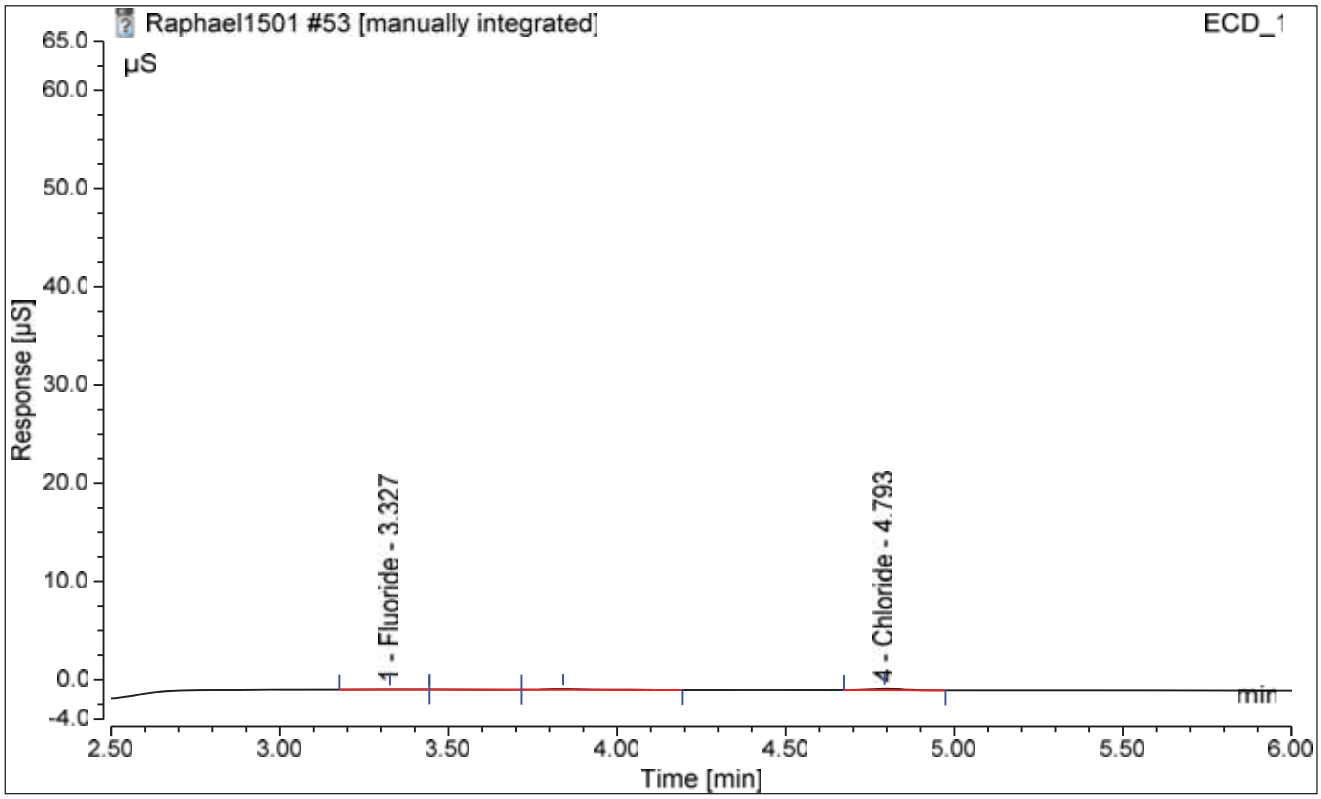


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.008	0.051	0.03215	FALSE	TRUE
4	4.79	Chloride	0.028	0.234	0.08269	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R3B.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 04:42**	Run Time:	**14.50**

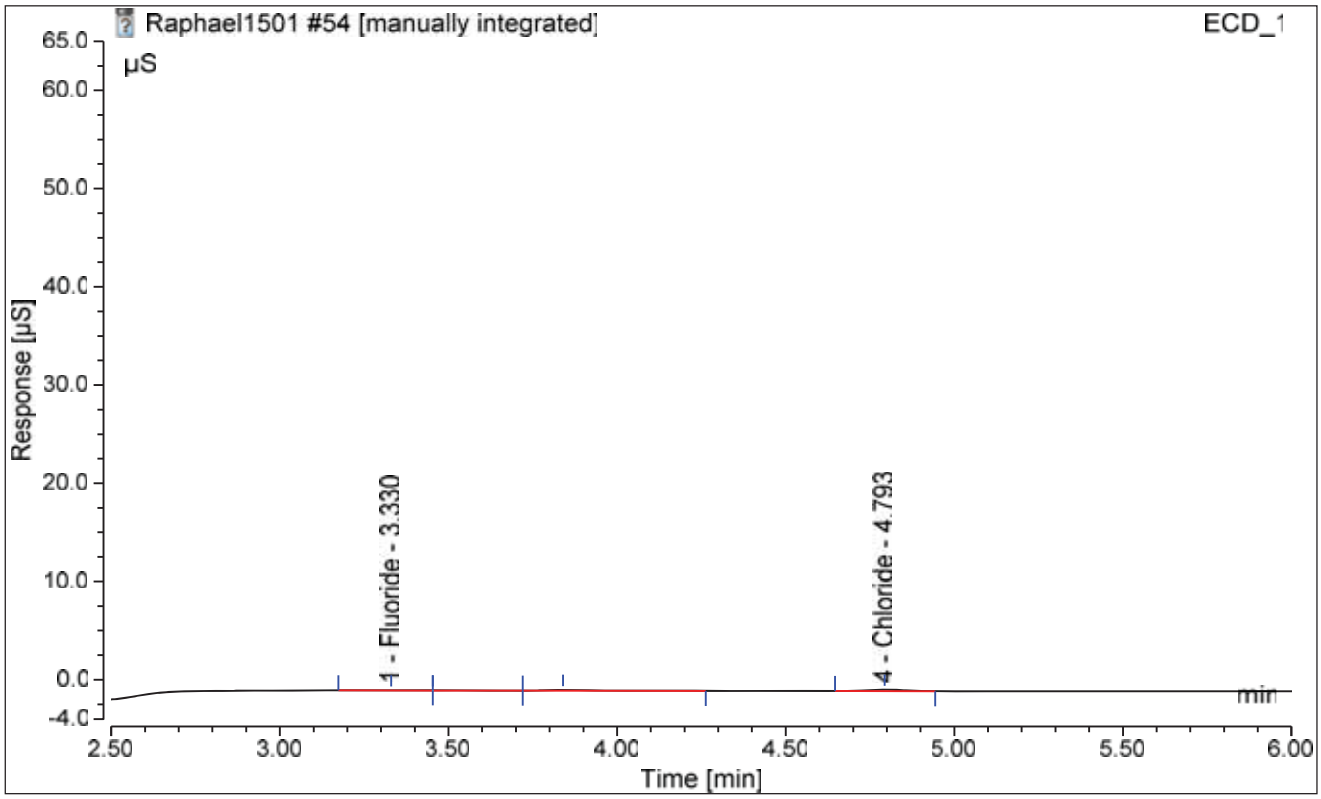


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.004	0.026	0.01702	FALSE	TRUE
4	4.79	Chloride	0.017	0.148	0.02178	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R3B.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 04:58**	Run Time:	**14.50**

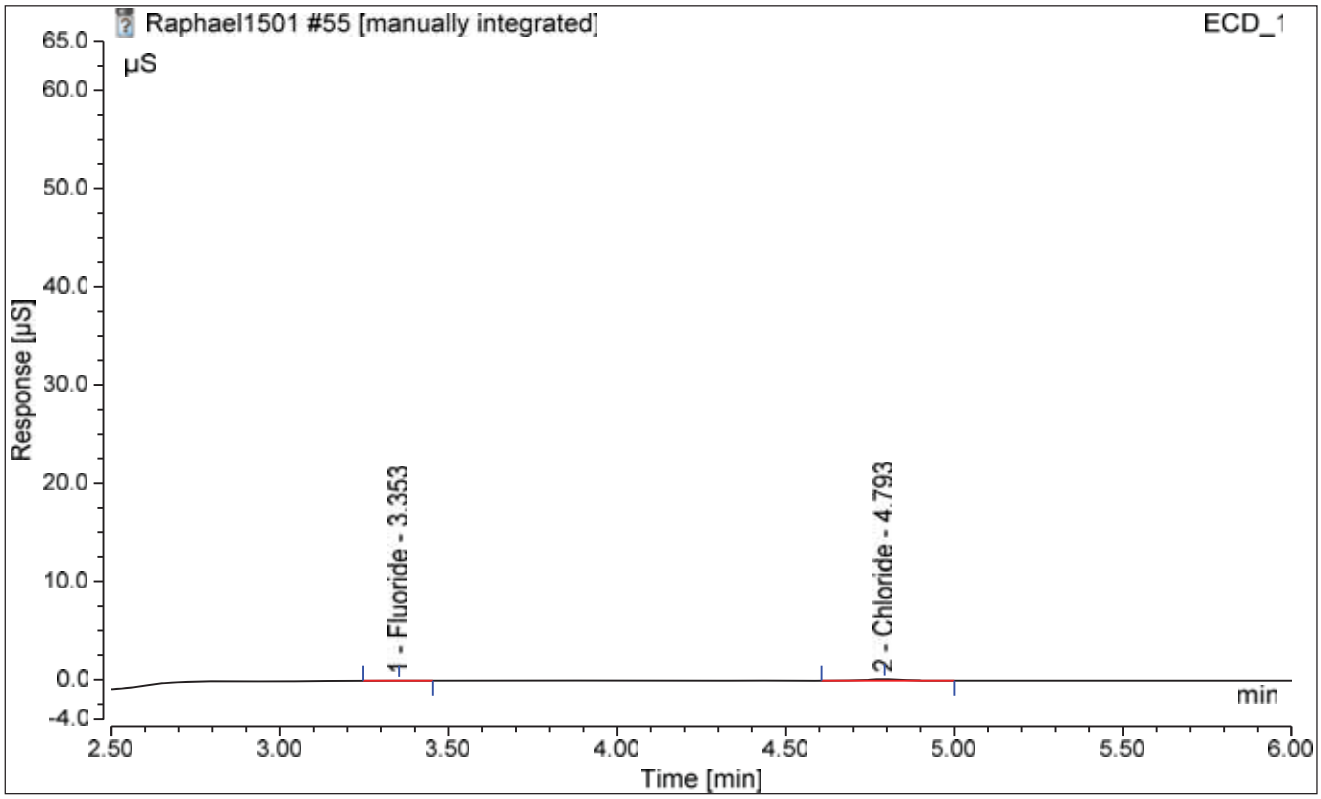


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.005	0.028	0.01903	FALSE	TRUE
4	4.79	Chloride	0.017	0.148	0.02245	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On FB.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 05:15**	Run Time:	**14.50**

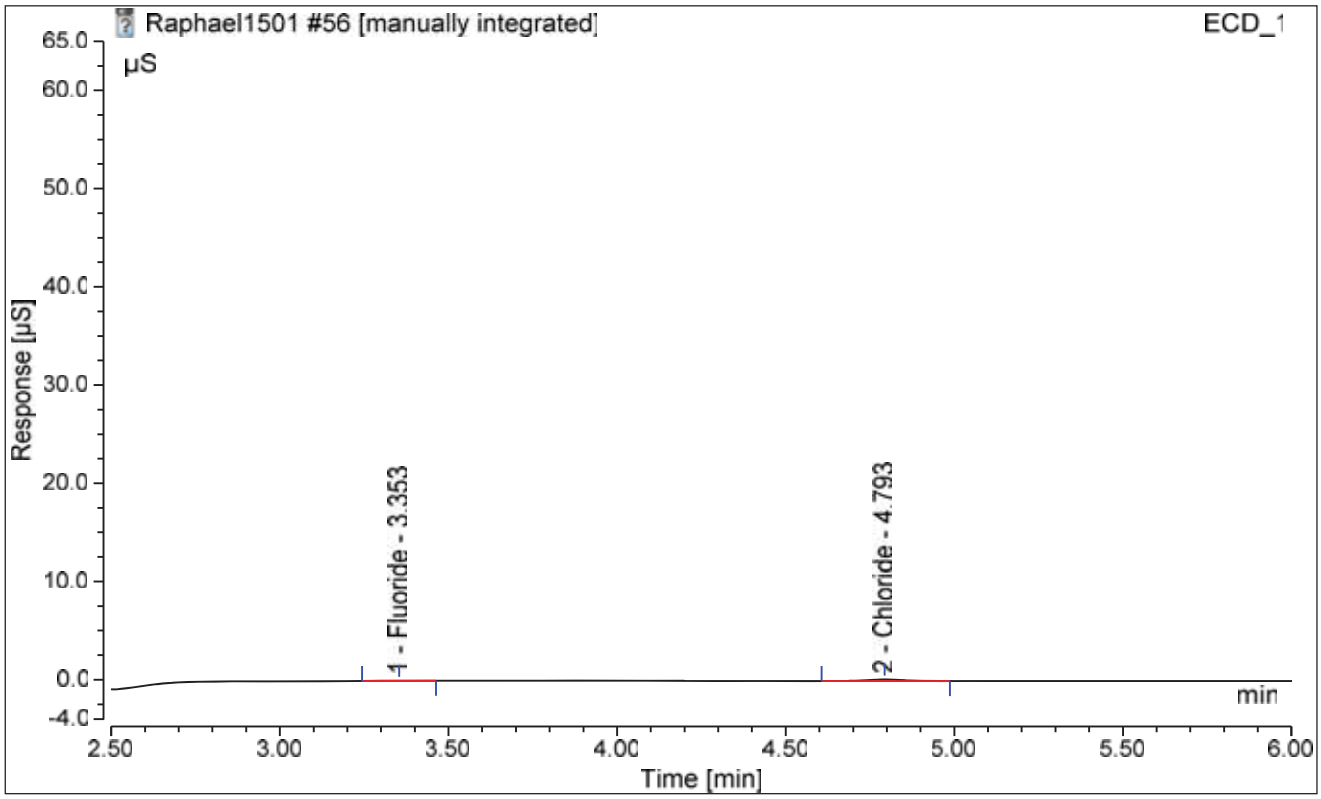


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.35	Fluoride	0.002	0.018	0.00936	FALSE	TRUE
2	4.79	Chloride	0.018	0.149	0.02783	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On FB.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 05:31**	Run Time:	**14.50**

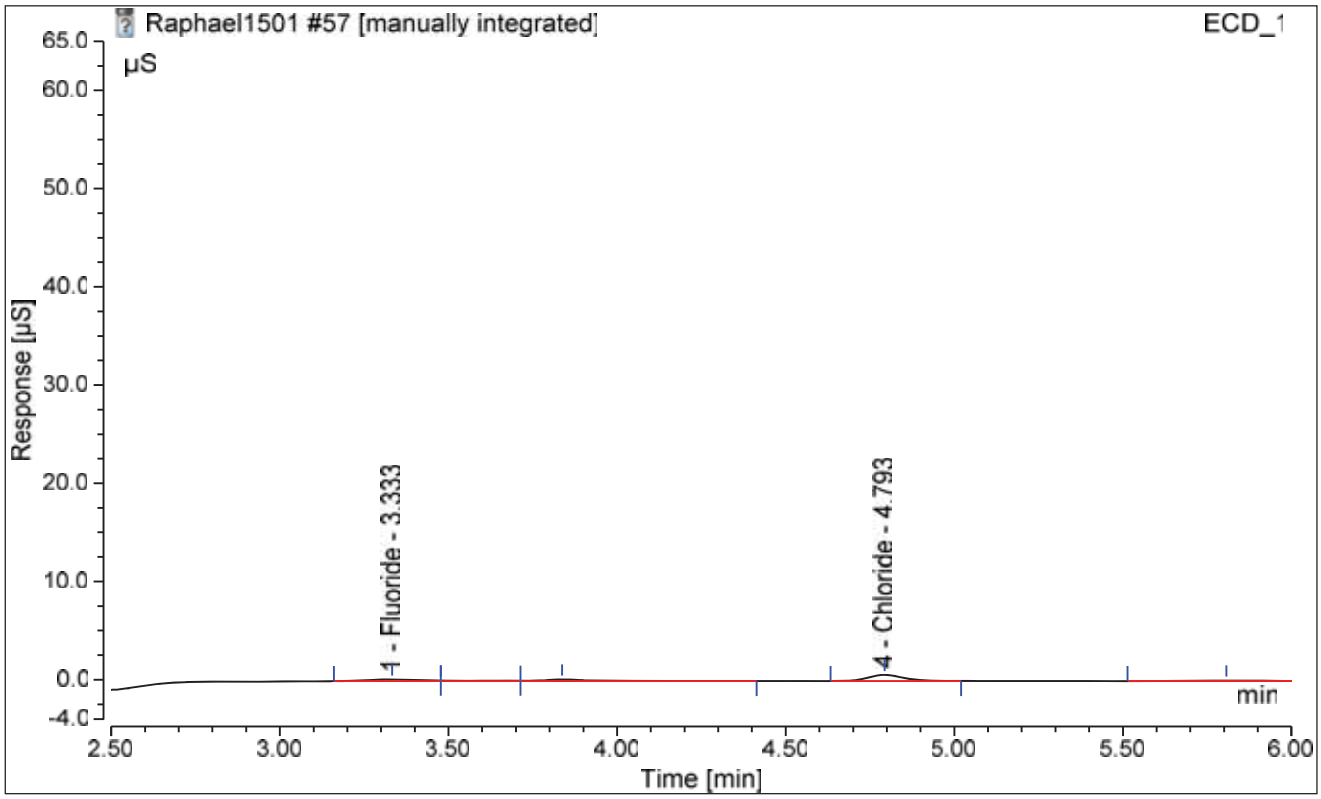


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.35	Fluoride	0.002	0.019	0.00989	FALSE	TRUE
2	4.79	Chloride	0.018	0.147	0.02509	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R1A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 05:47**	Run Time:	**14.50**

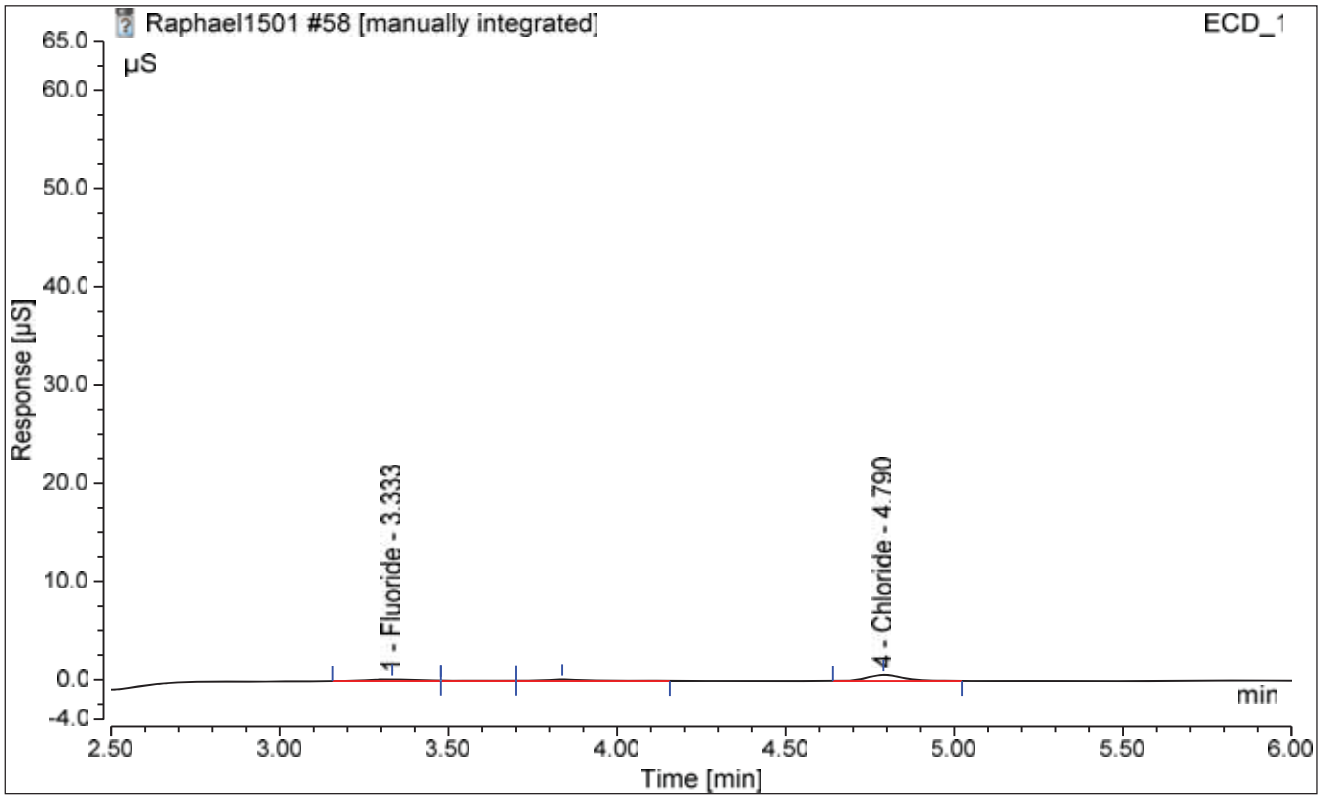


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.031	0.182	0.11435	FALSE	TRUE
4	4.79	Chloride	0.073	0.612	0.34837	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R1A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 06:03**	Run Time:	**14.50**

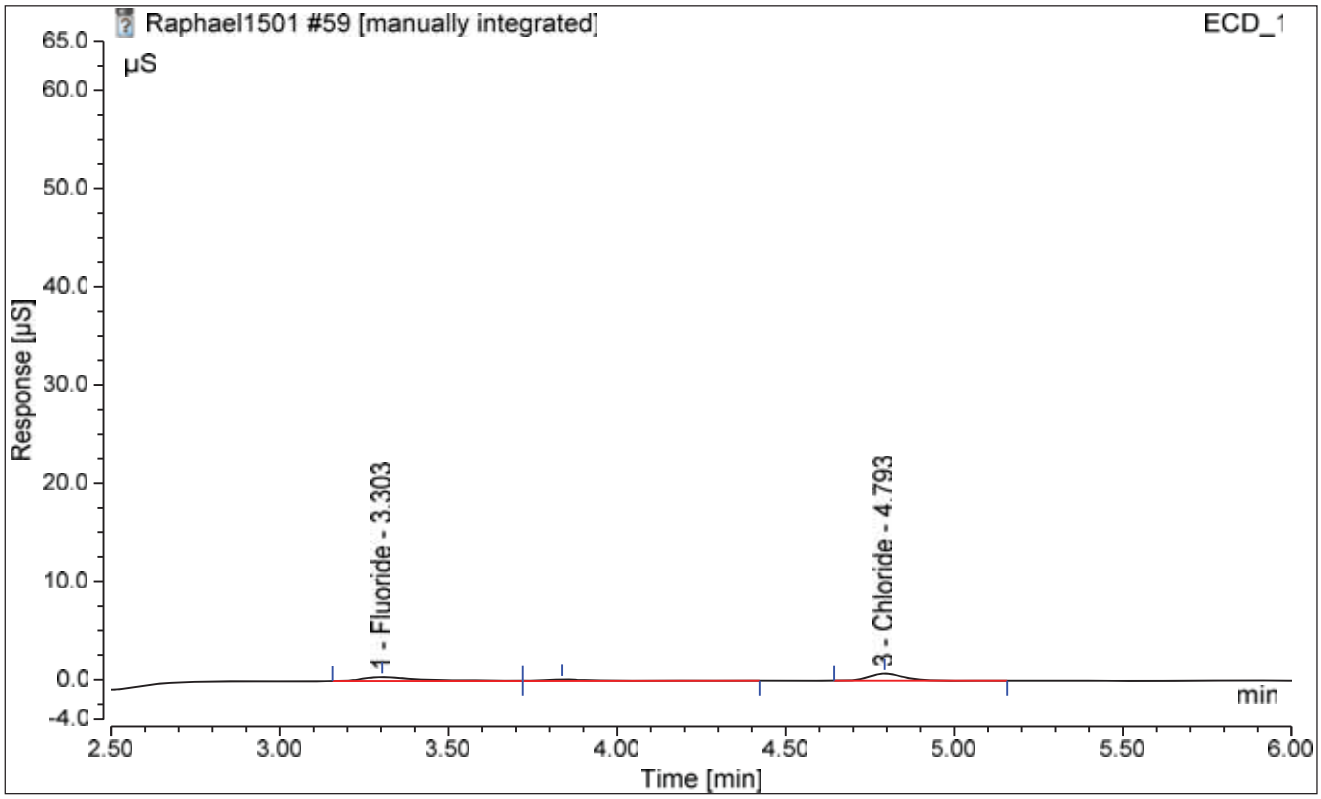


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.030	0.180	0.11276	FALSE	TRUE
4	4.79	Chloride	0.073	0.613	0.34737	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R1B.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 06:19**	Run Time:	**14.50**

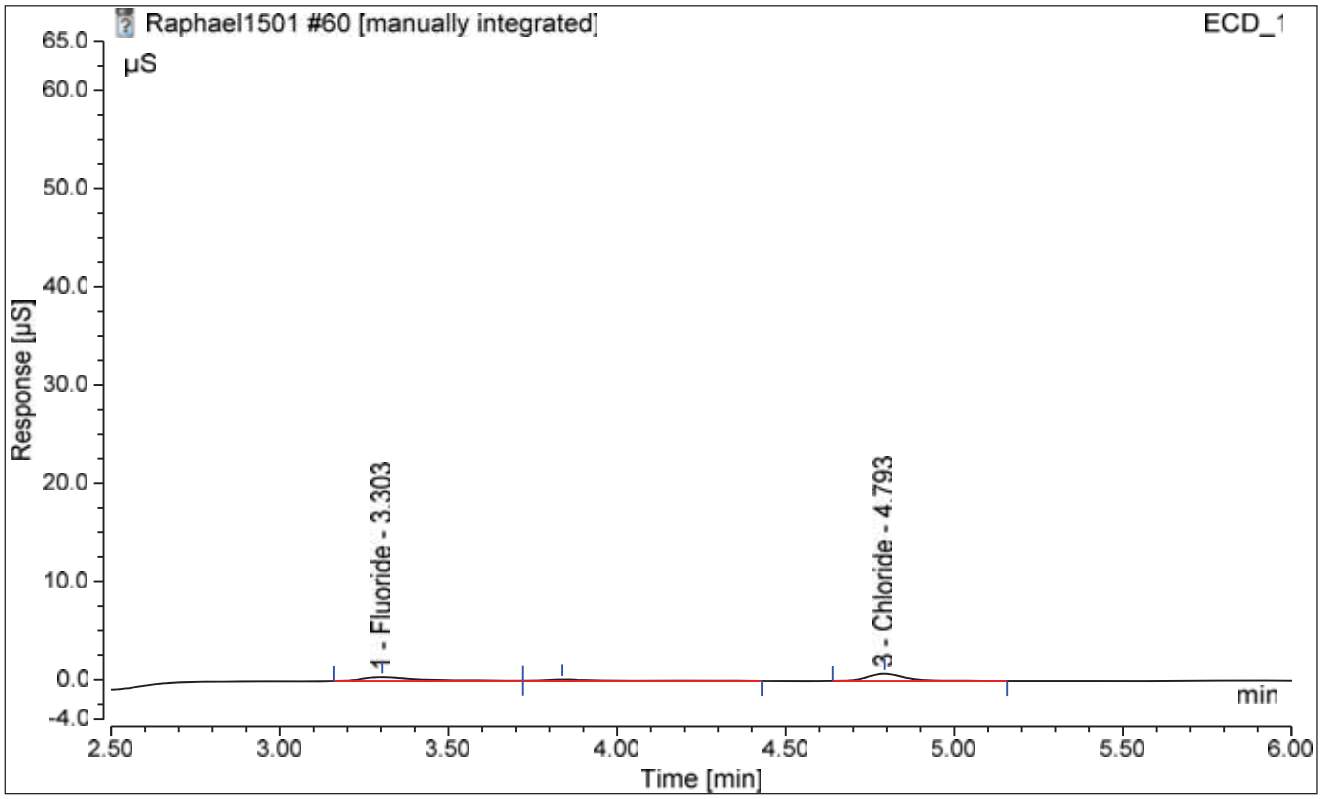


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.30	Fluoride	0.079	0.402	0.28905	FALSE	TRUE
3	4.79	Chloride	0.090	0.742	0.44650	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R1B.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 06:35**	Run Time:	**14.50**

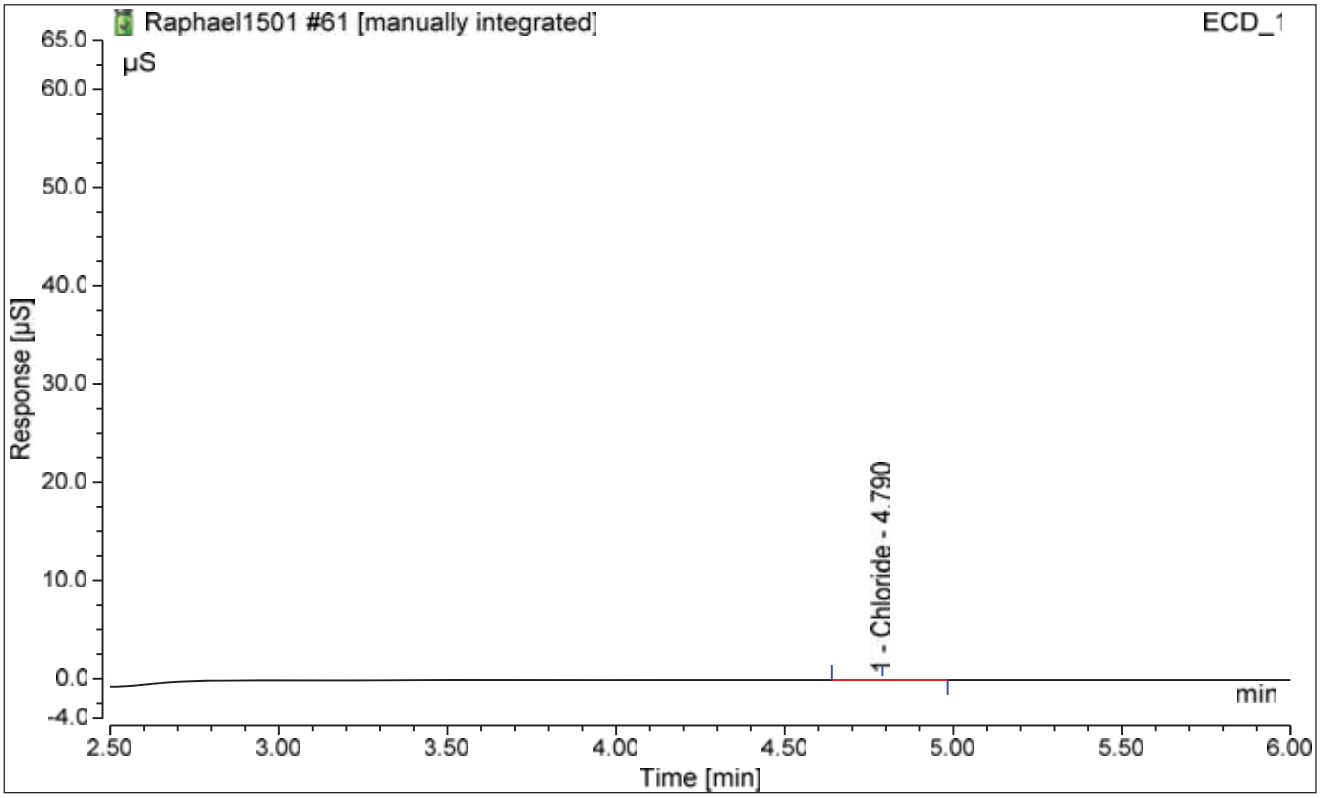


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.30	Fluoride	0.081	0.405	0.29495	FALSE	TRUE
3	4.79	Chloride	0.090	0.739	0.44248	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 06:51**	Run Time:	**14.50**

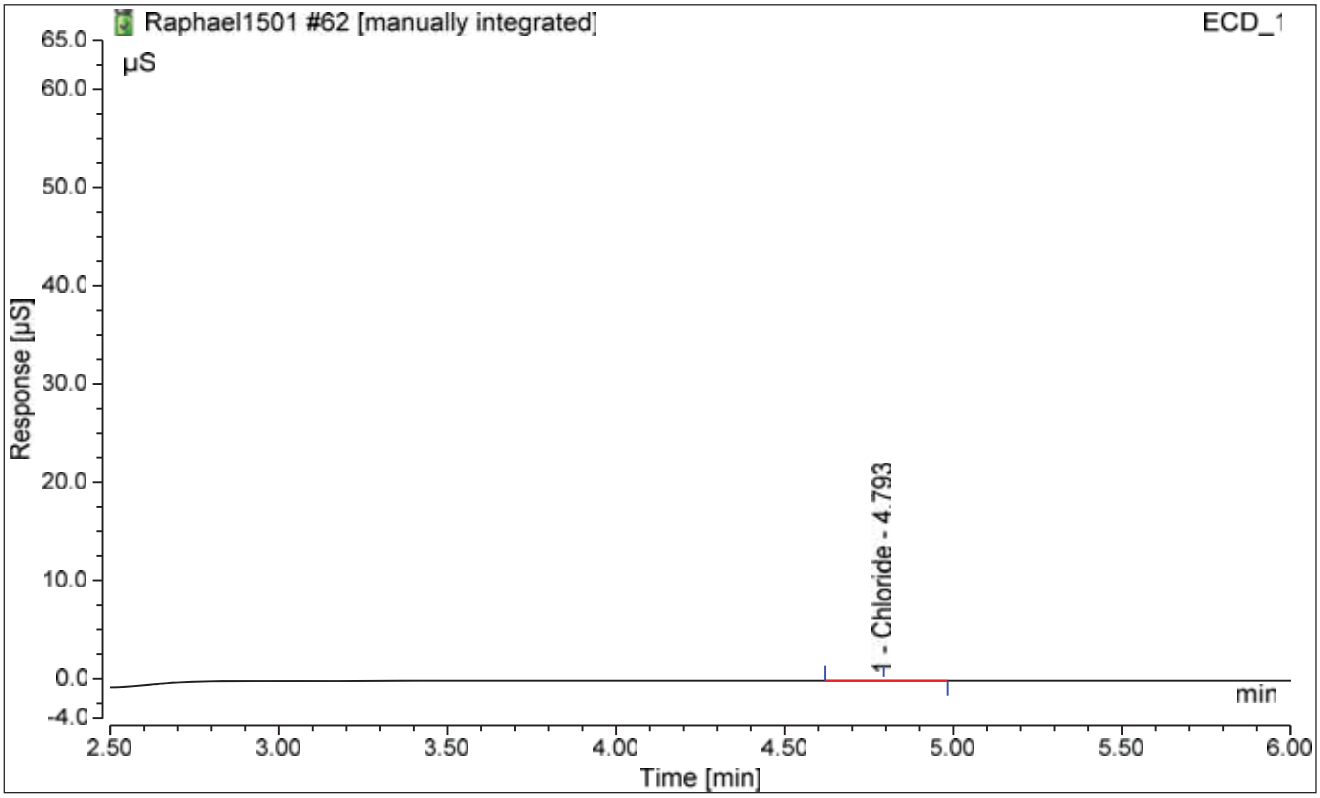


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	4.79	Chloride	0.002	0.014	n.a.	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 07:07**	Run Time:	**14.50**

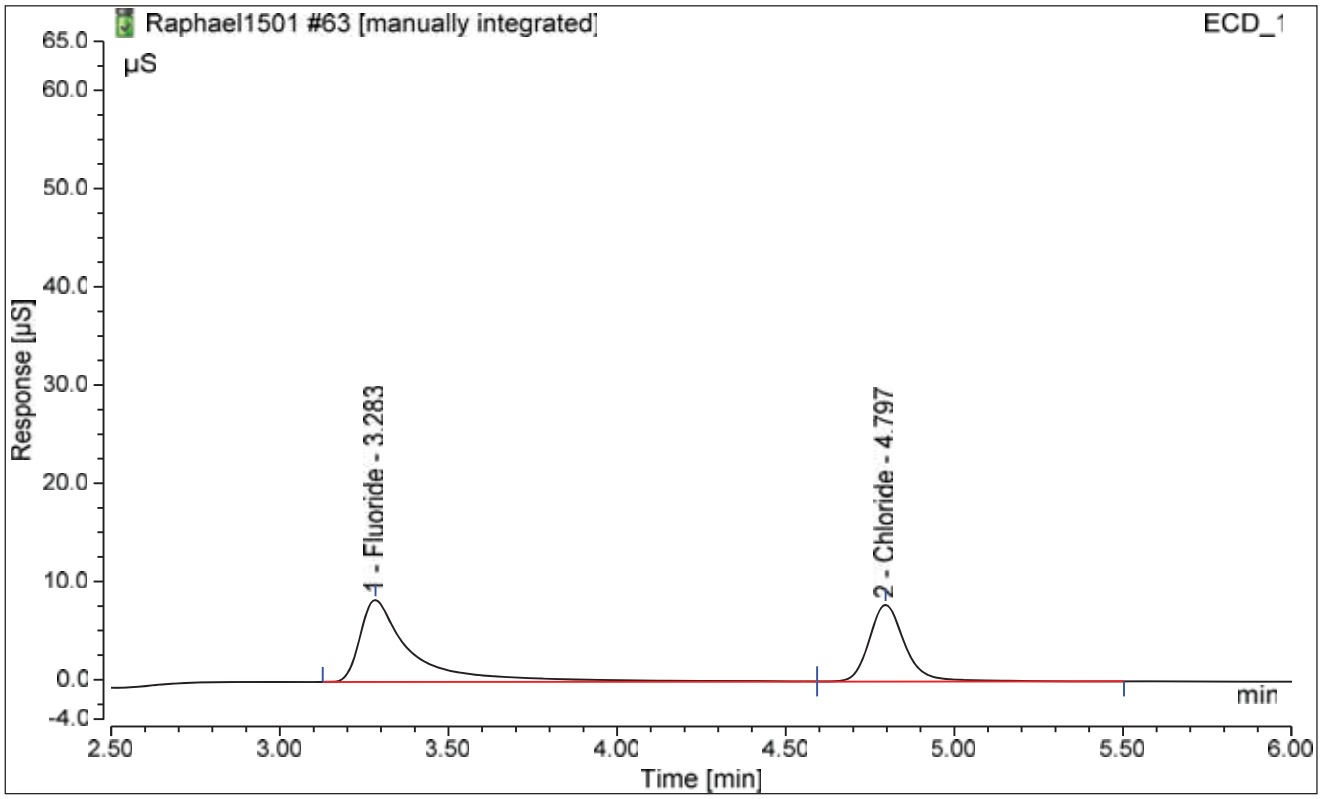


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	4.79	Chloride	0.002	0.015	n.a.	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 07:23**	Run Time:	**14.50**

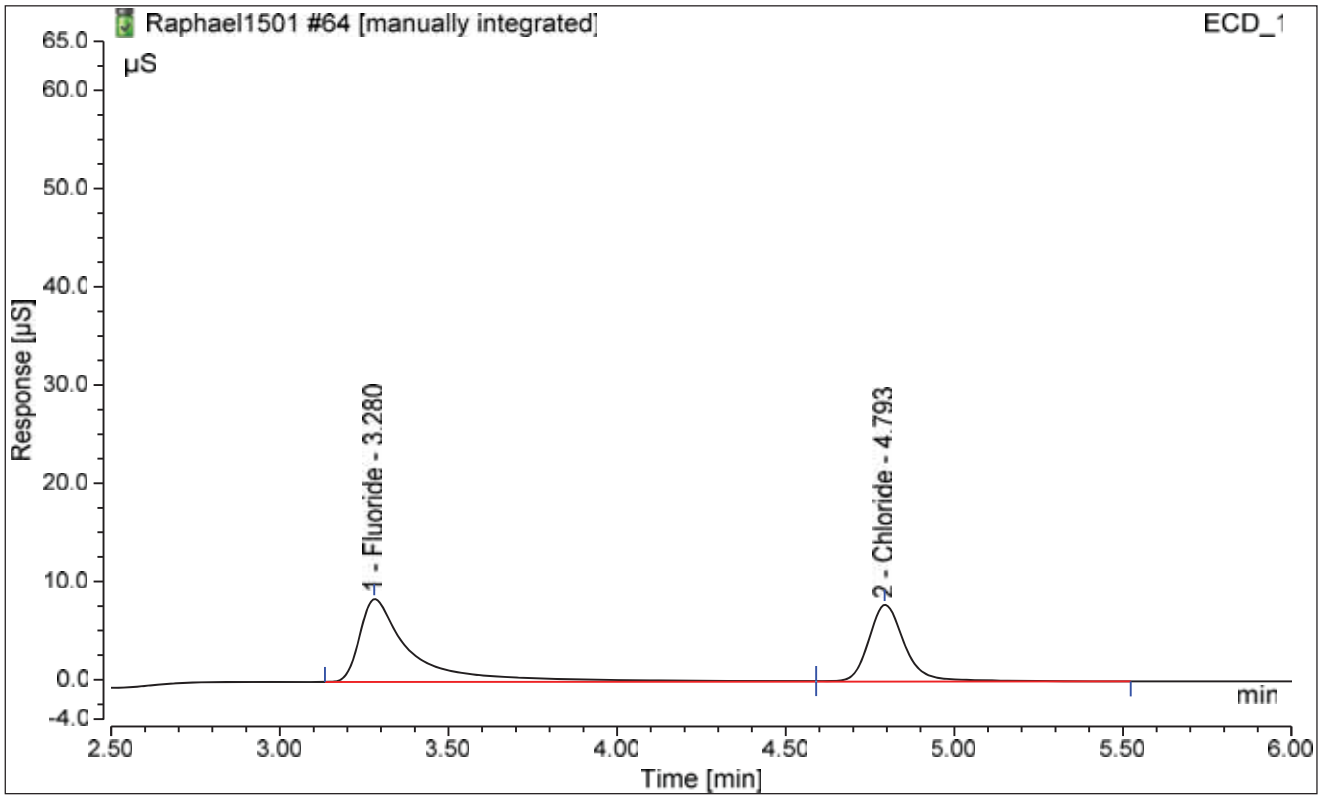


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	1.509	8.328	5.43224	FALSE	TRUE
2	4.80	Chloride	0.964	7.826	5.36649	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 07:40**	Run Time:	**14.50**

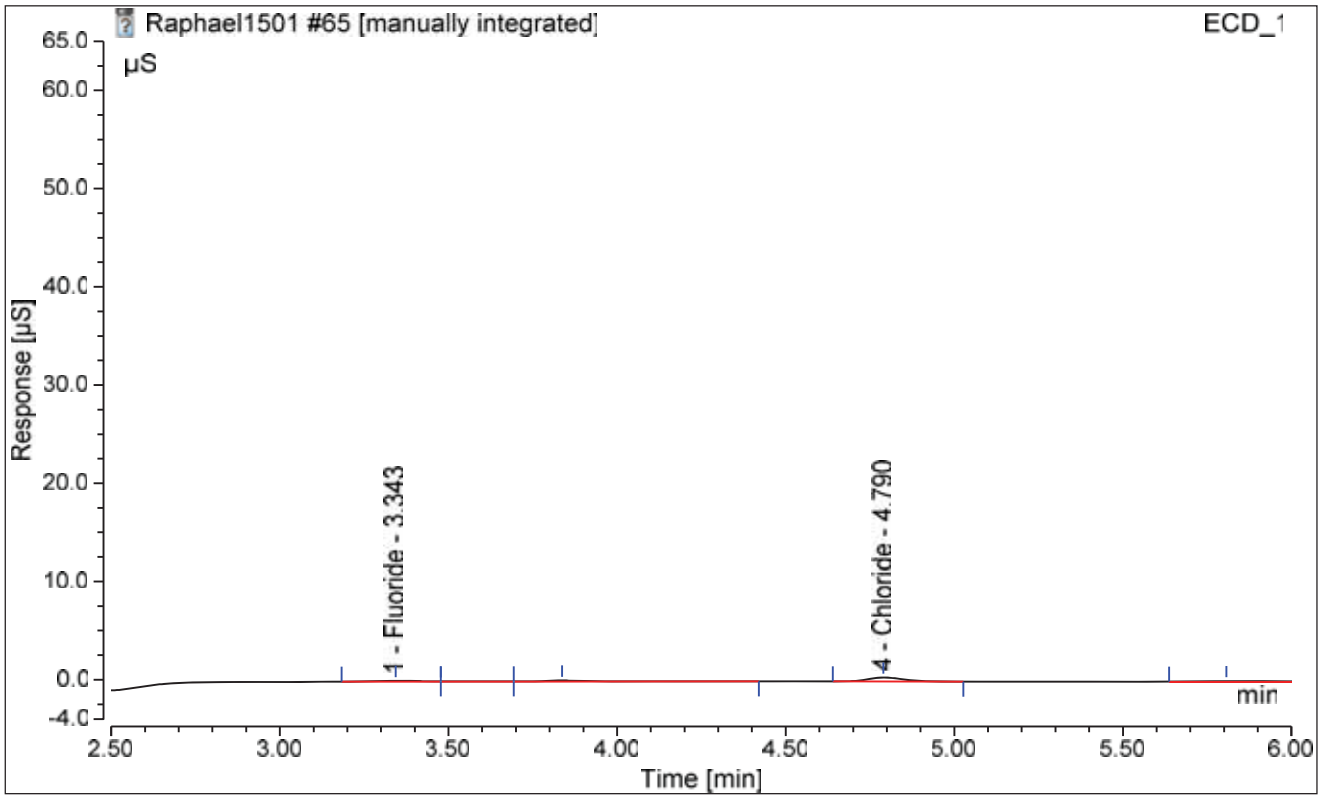


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	1.522	8.427	5.47812	FALSE	TRUE
2	4.79	Chloride	0.964	7.812	5.36560	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R2A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 07:56**	Run Time:	**14.50**

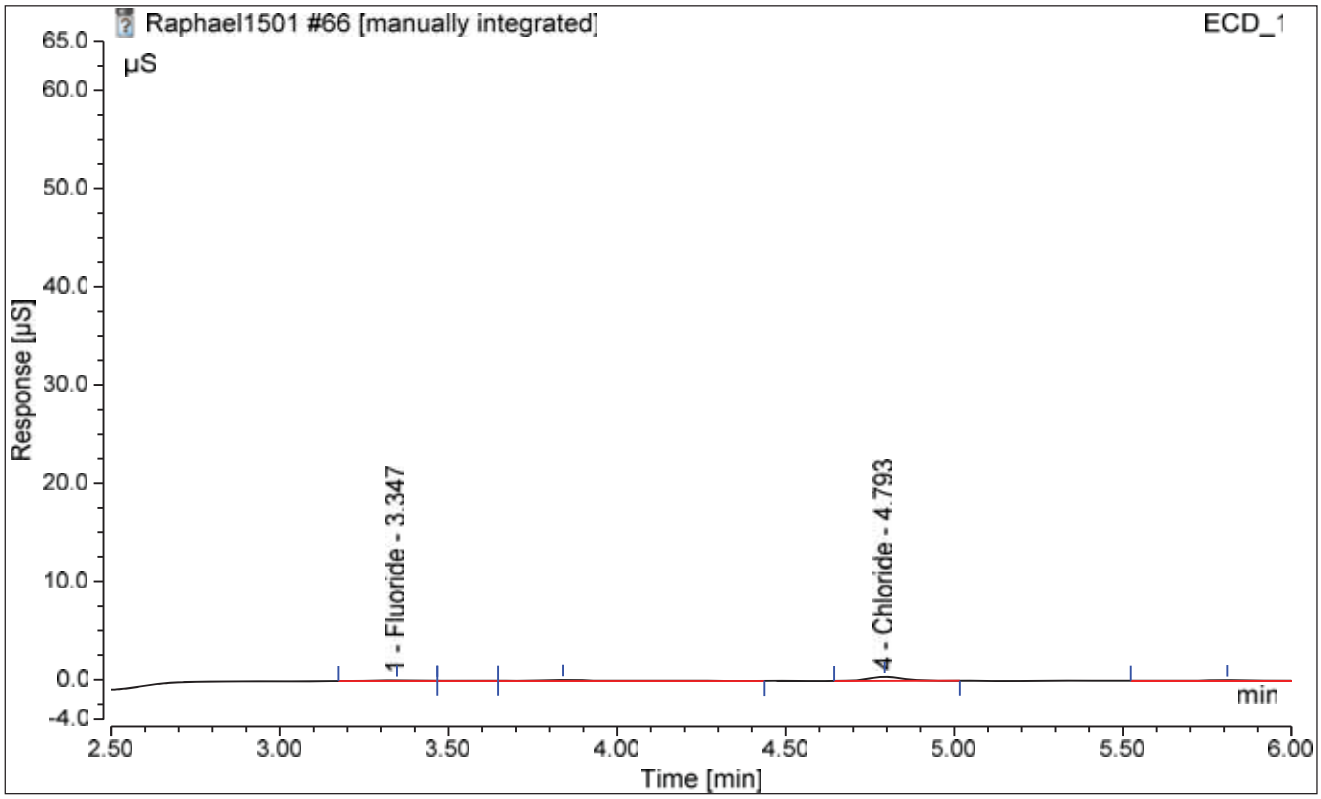


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.34	Fluoride	0.013	0.081	0.04958	FALSE	TRUE
4	4.79	Chloride	0.049	0.410	0.20877	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R2A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 08:12**	Run Time:	**14.50**

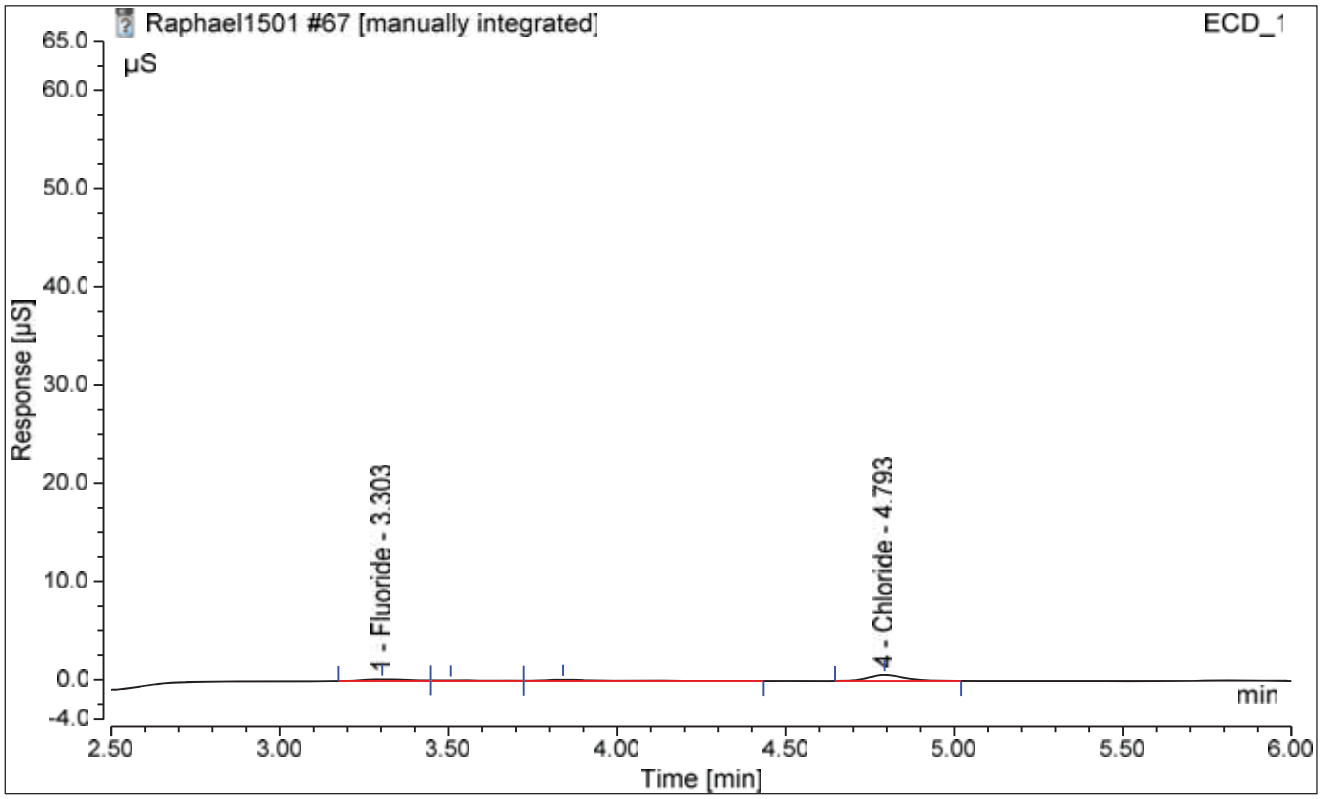


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.35	Fluoride	0.011	0.072	0.04357	FALSE	TRUE
4	4.79	Chloride	0.049	0.408	0.20454	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R2B.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 08:28**	Run Time:	**14.50**

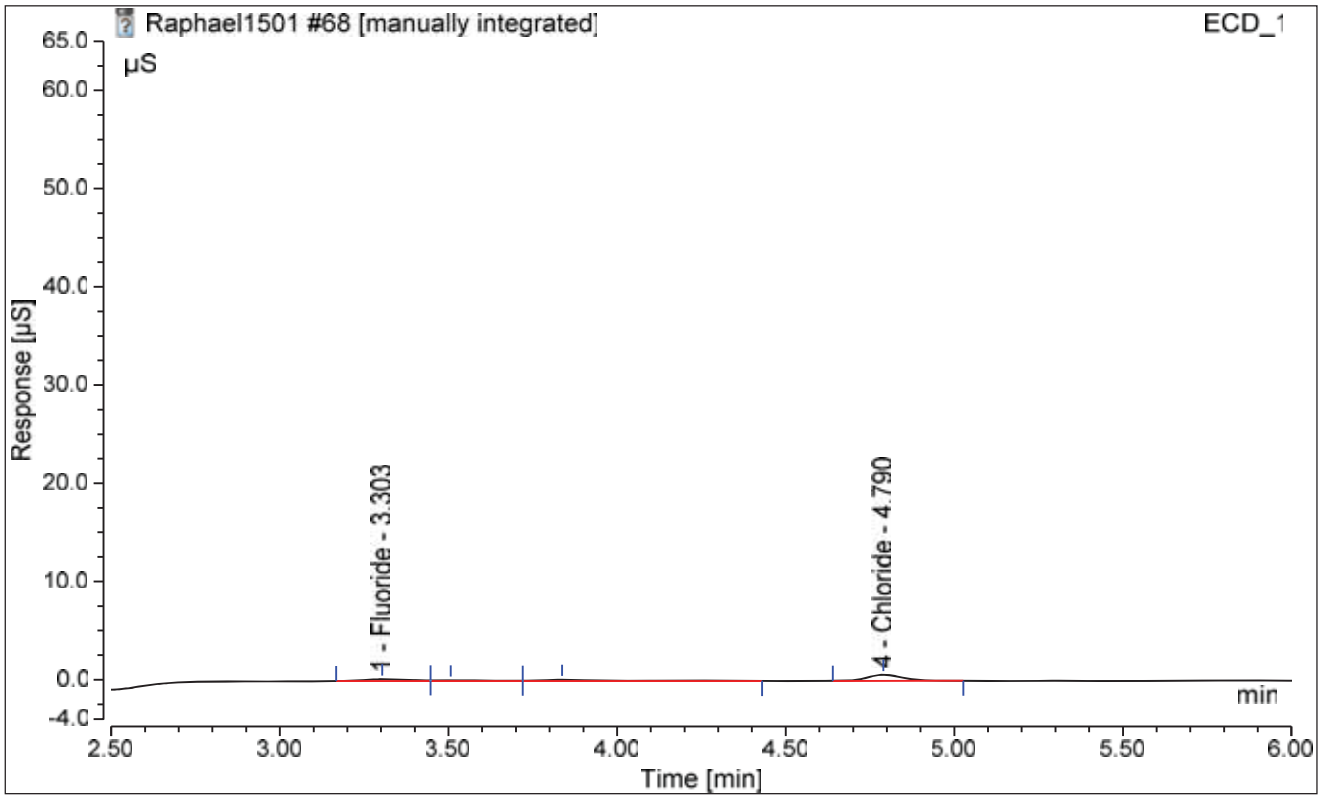


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.30	Fluoride	0.029	0.186	0.10765	FALSE	TRUE
4	4.79	Chloride	0.074	0.617	0.35059	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R2B.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 08:44**	Run Time:	**14.50**

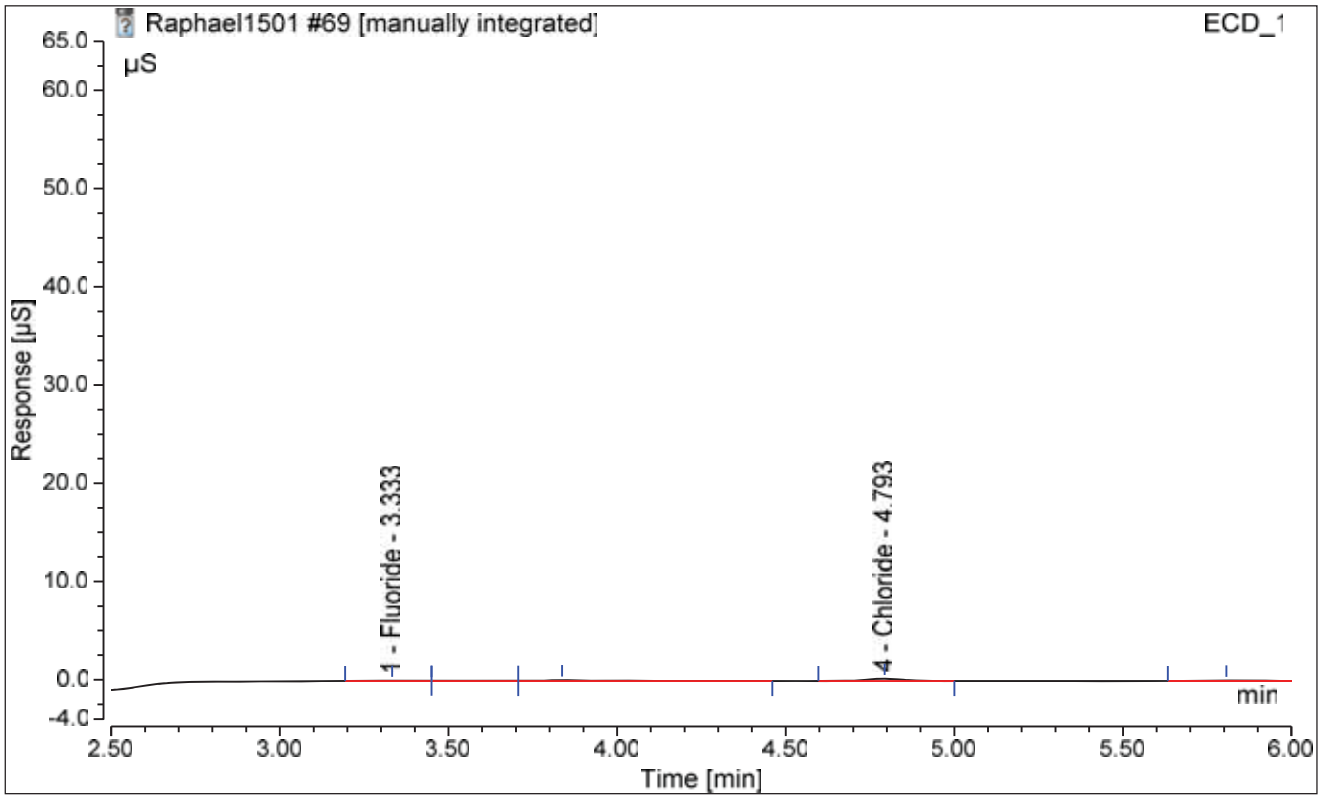


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.30	Fluoride	0.030	0.189	0.11054	FALSE	TRUE
4	4.79	Chloride	0.074	0.621	0.35290	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R3A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 09:00**	Run Time:	**14.50**

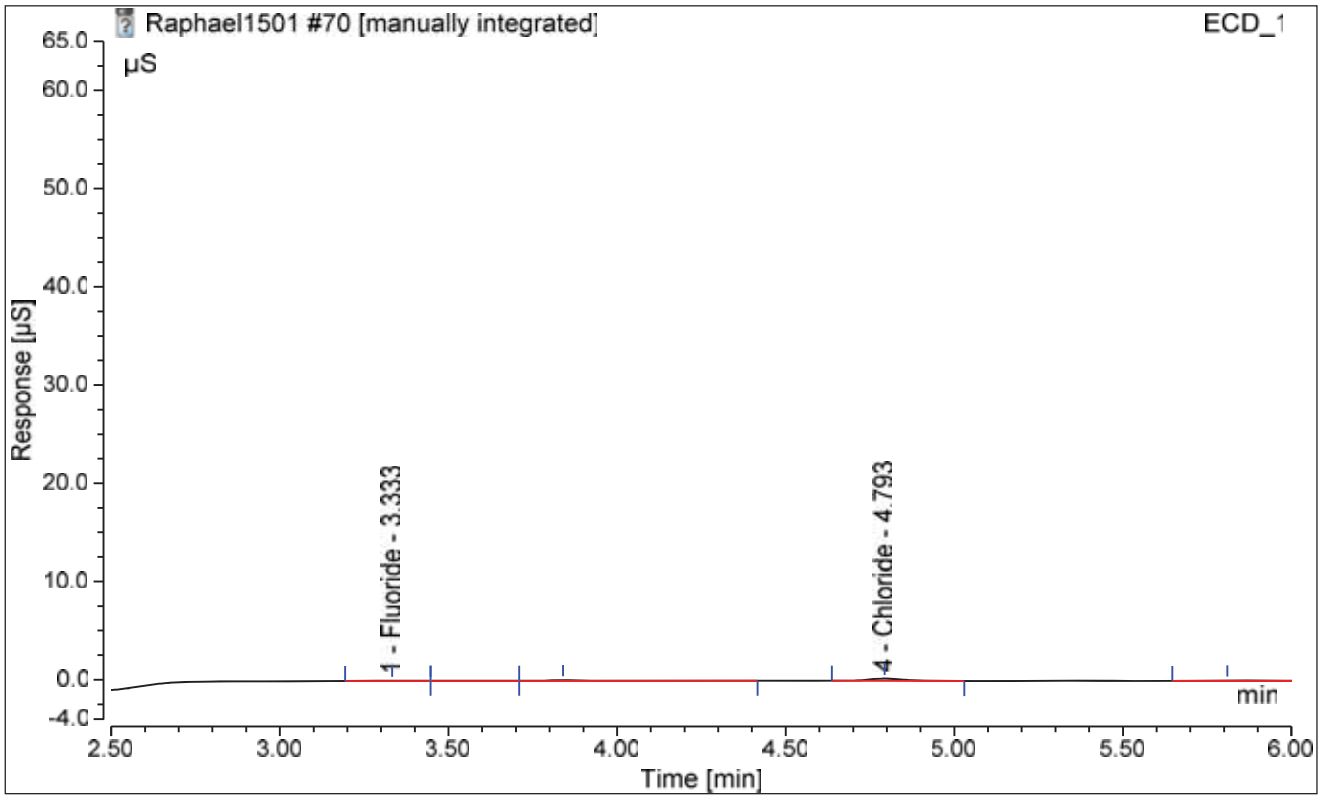


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.006	0.038	0.02492	FALSE	TRUE
4	4.79	Chloride	0.028	0.233	0.08455	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R3A.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 09:16**	Run Time:	**14.50**

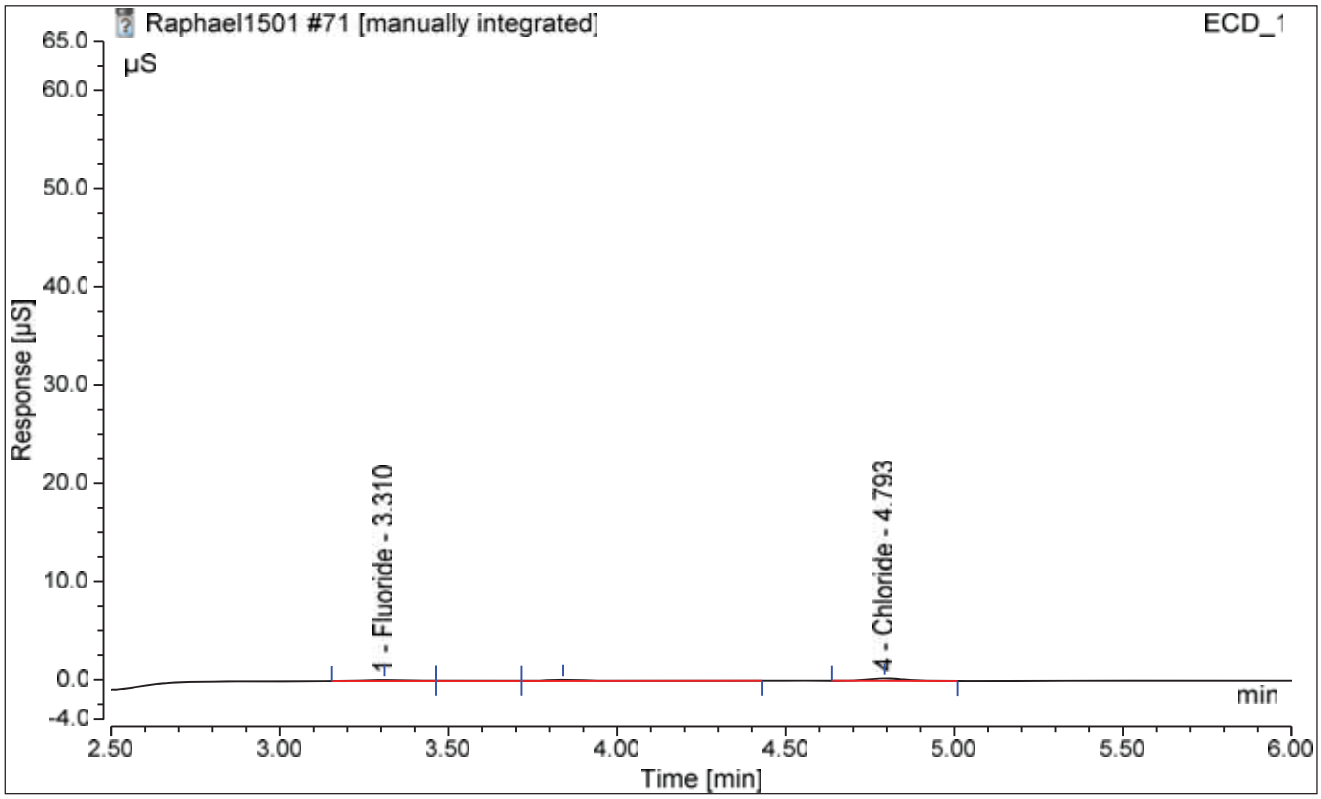


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.006	0.036	0.02274	FALSE	TRUE
4	4.79	Chloride	0.028	0.233	0.08532	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R3B.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 09:32**	Run Time:	**14.50**

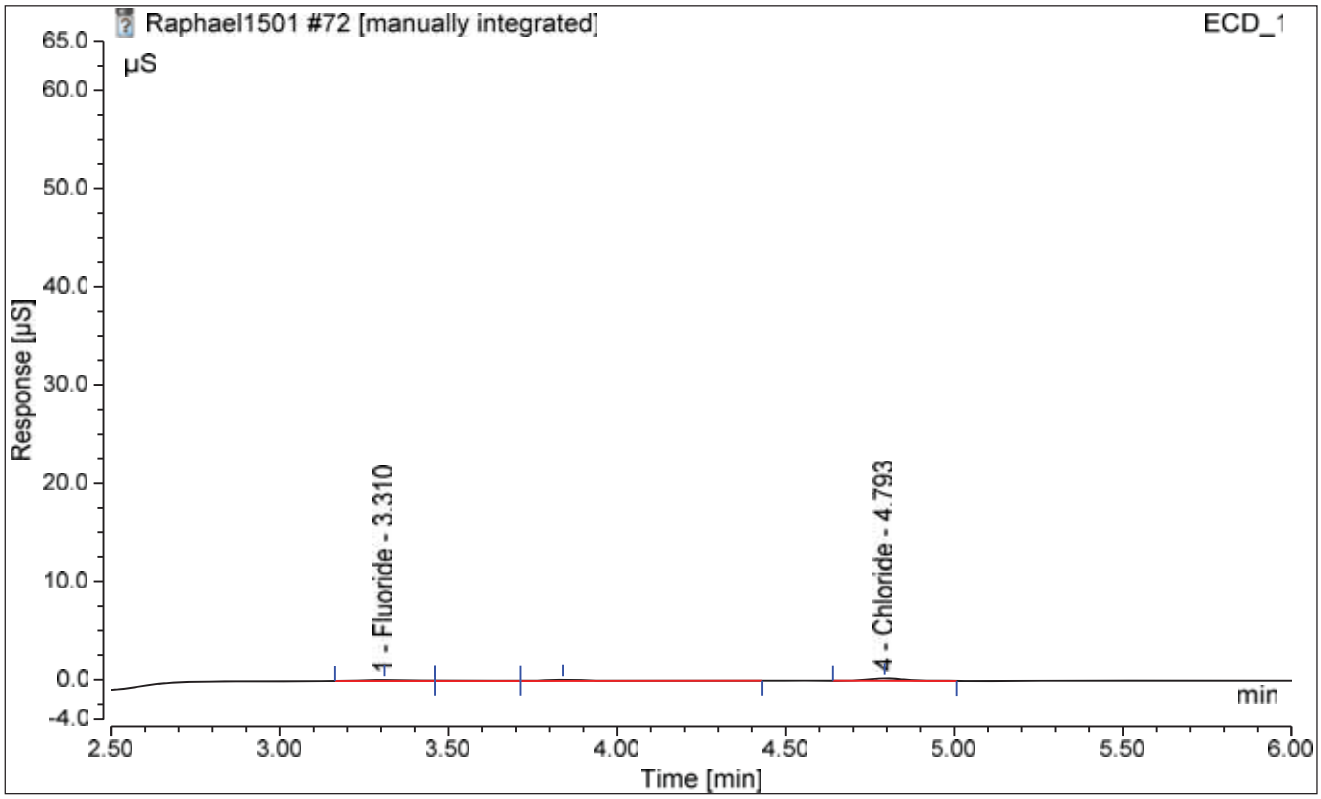


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.31	Fluoride	0.017	0.102	0.06411	FALSE	TRUE
4	4.79	Chloride	0.030	0.251	0.09747	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R3B.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 09:48**	Run Time:	**14.50**

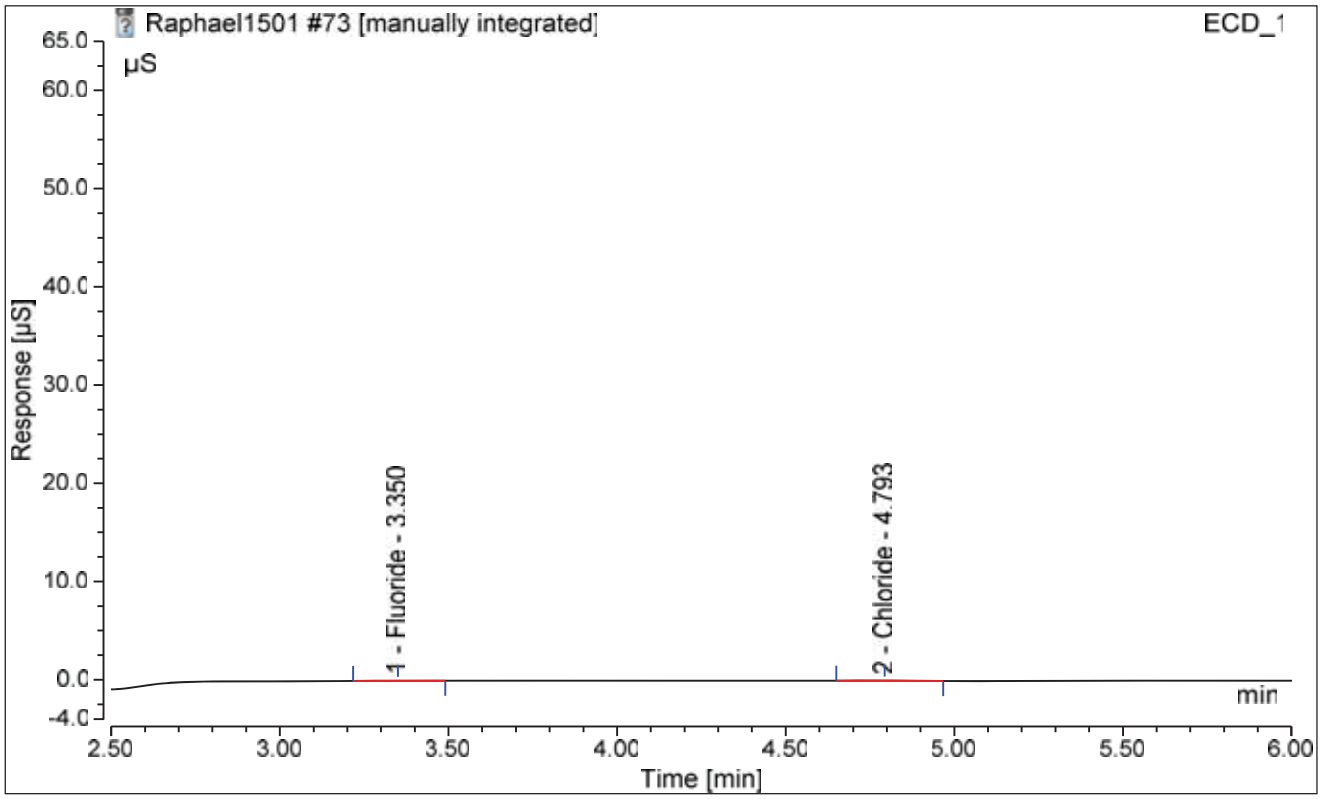


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.31	Fluoride	0.016	0.099	0.06142	FALSE	TRUE
4	4.79	Chloride	0.030	0.252	0.09609	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On FB.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 10:05**	Run Time:	**14.50**

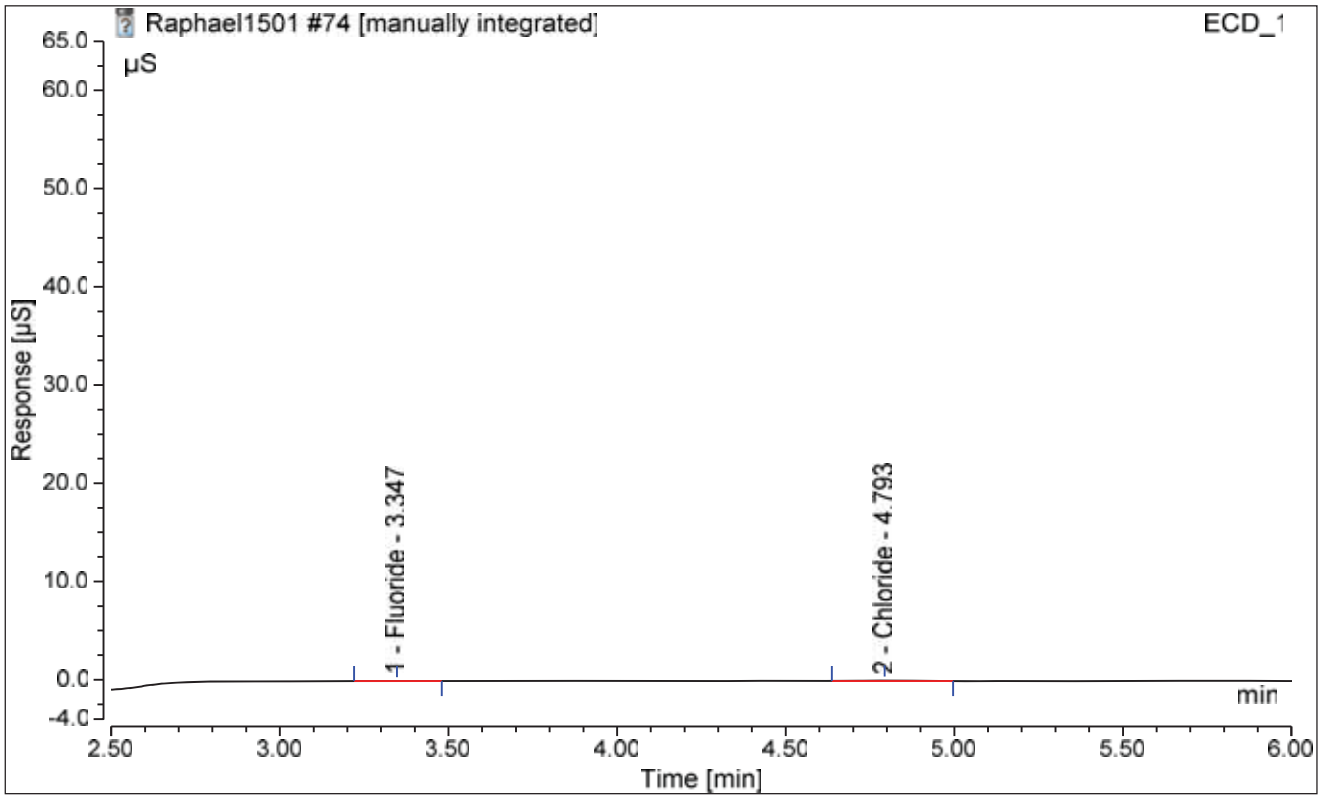


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.35	Fluoride	0.002	0.013	0.00841	FALSE	TRUE
2	4.79	Chloride	0.006	0.053	n.a.	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On FB.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 10:21**	Run Time:	**14.50**

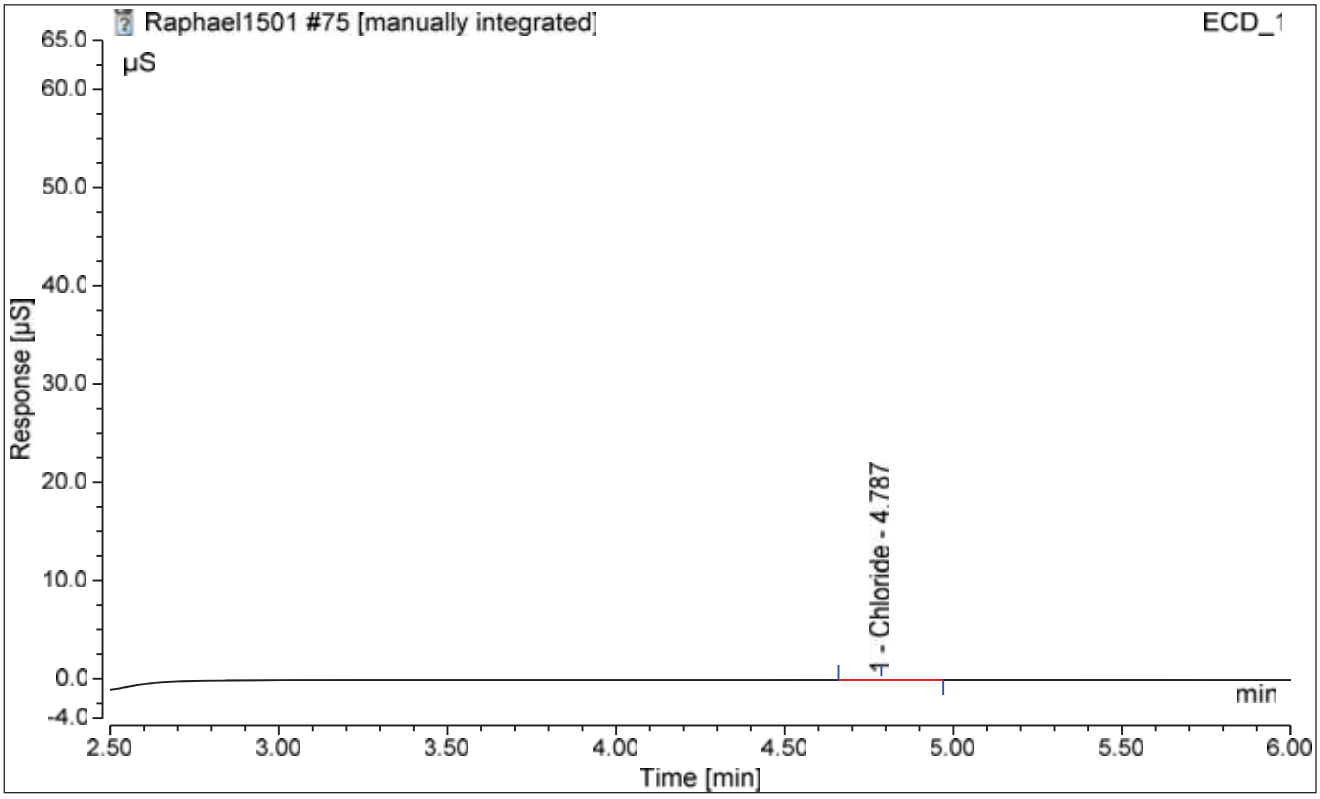


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.35	Fluoride	0.002	0.013	0.00804	FALSE	TRUE
2	4.79	Chloride	0.006	0.054	n.a.	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.RB DI.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 10:37**	Run Time:	**14.50**

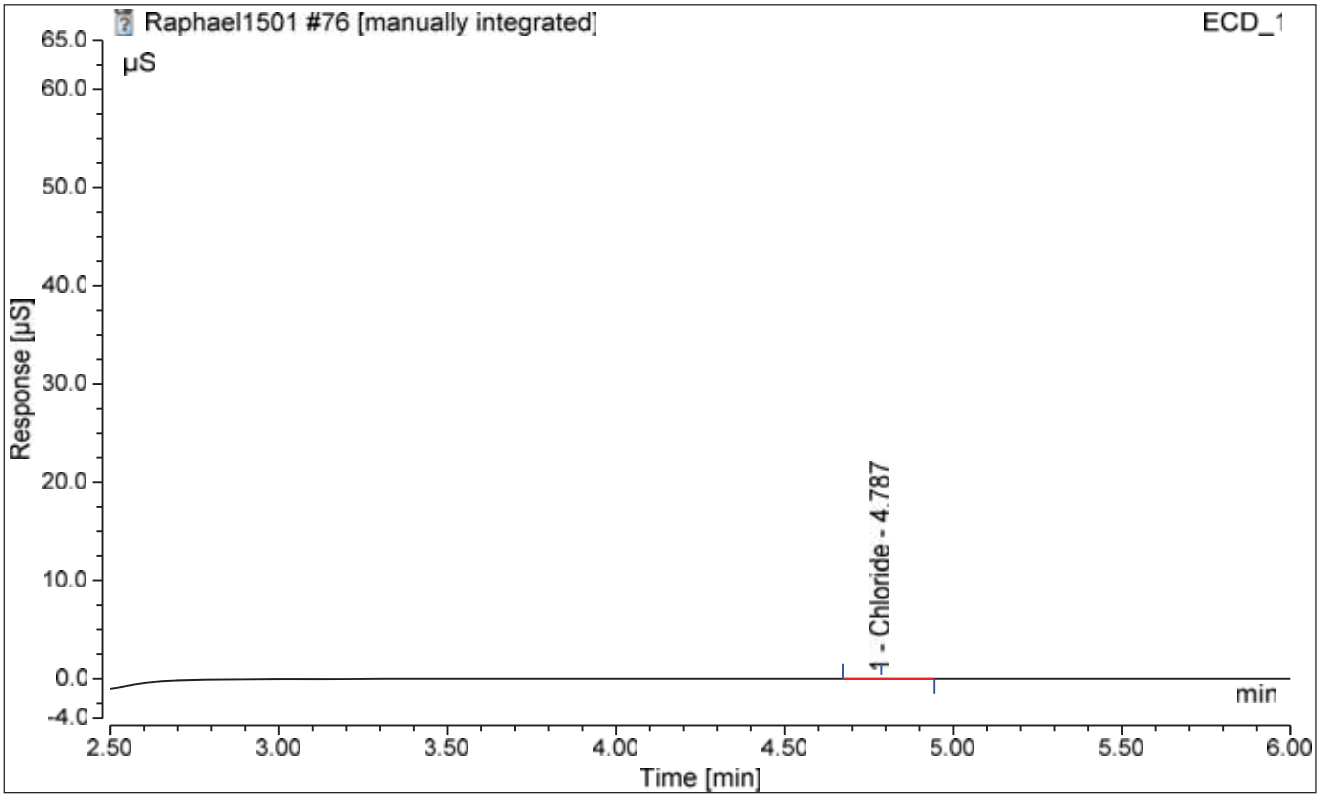


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	4.79	Chloride	0.001	0.011	n.a.	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.RB DI.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 10:53**	Run Time:	**14.50**

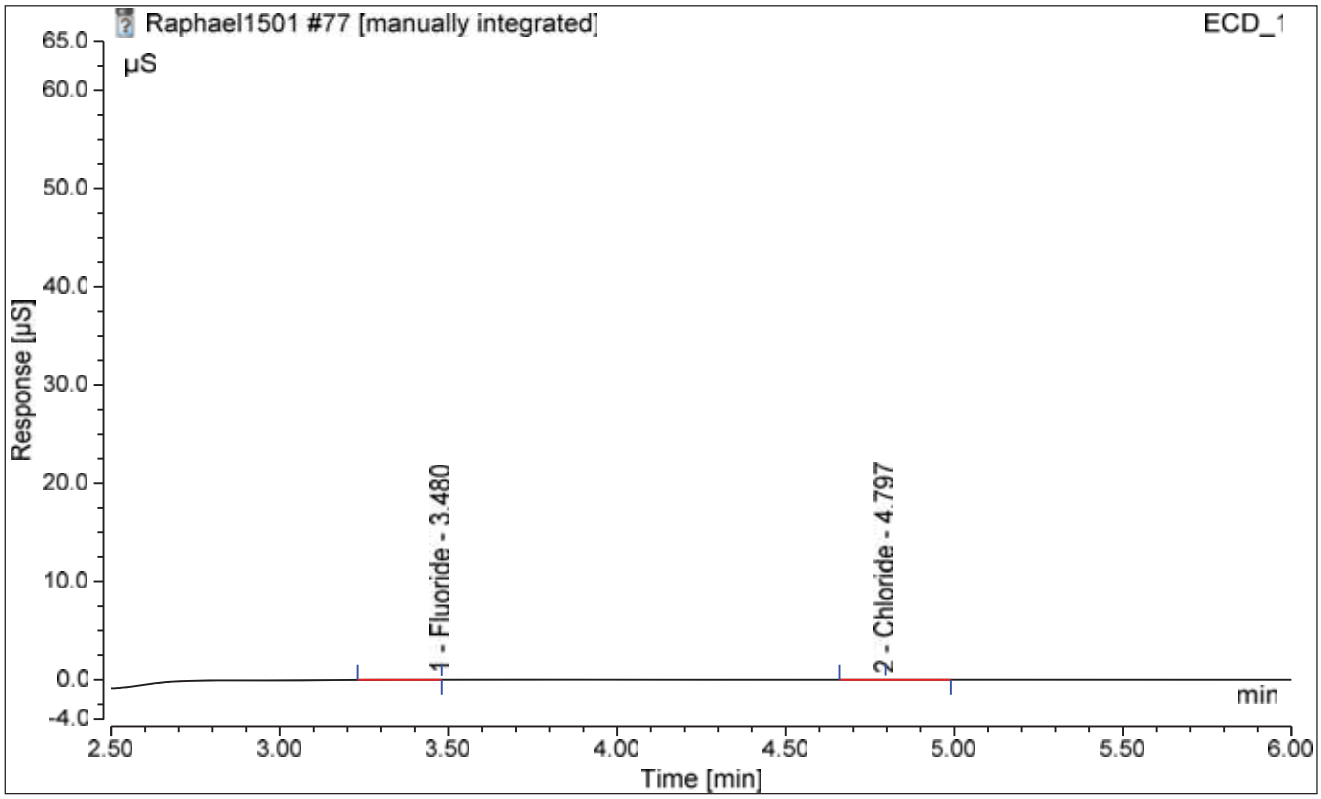


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	4.79	Chloride	0.001	0.010	n.a.	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.RB H2SO4.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 11:09**	Run Time:	**14.50**

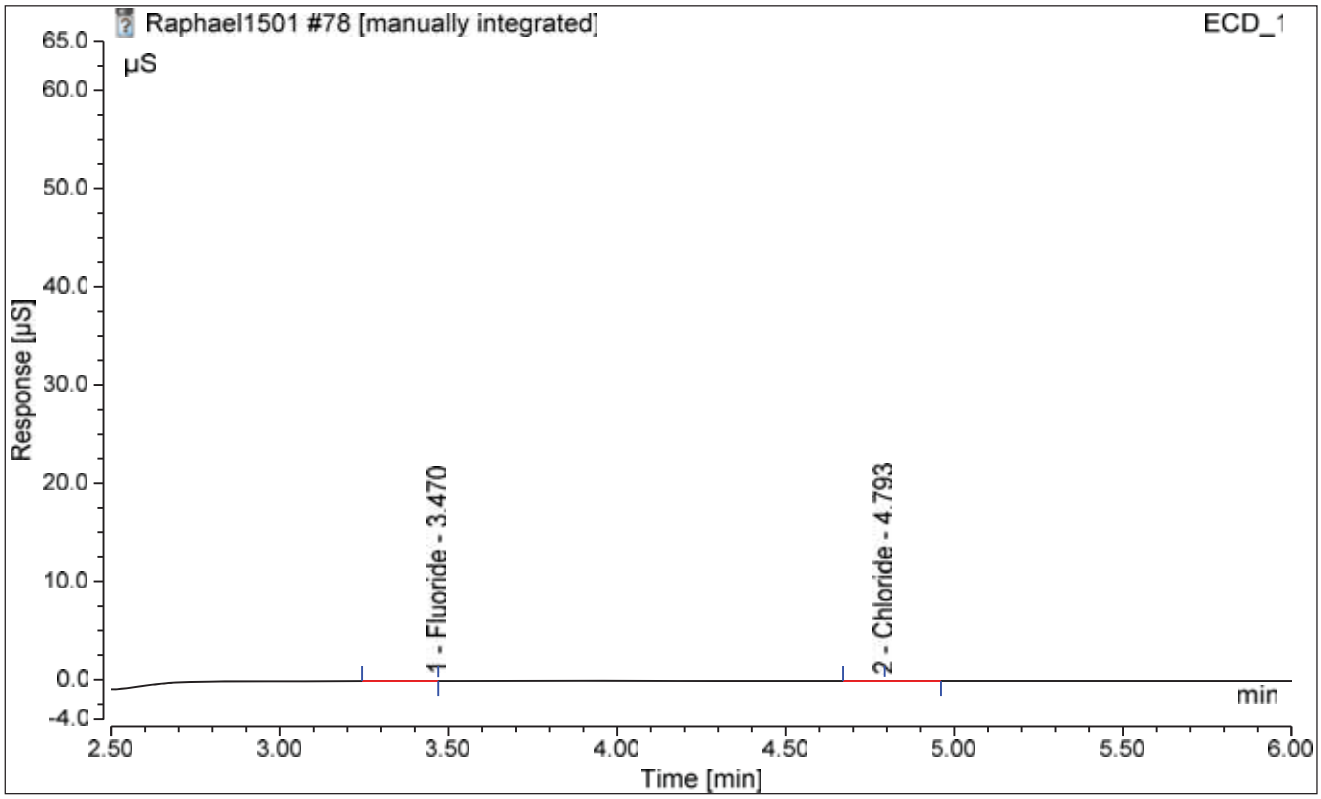


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.48	Fluoride	0.001	0.000	0.00549	FALSE	TRUE
2	4.80	Chloride	0.003	0.023	n.a.	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.RB H2SO4.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 11:25**	Run Time:	**14.50**

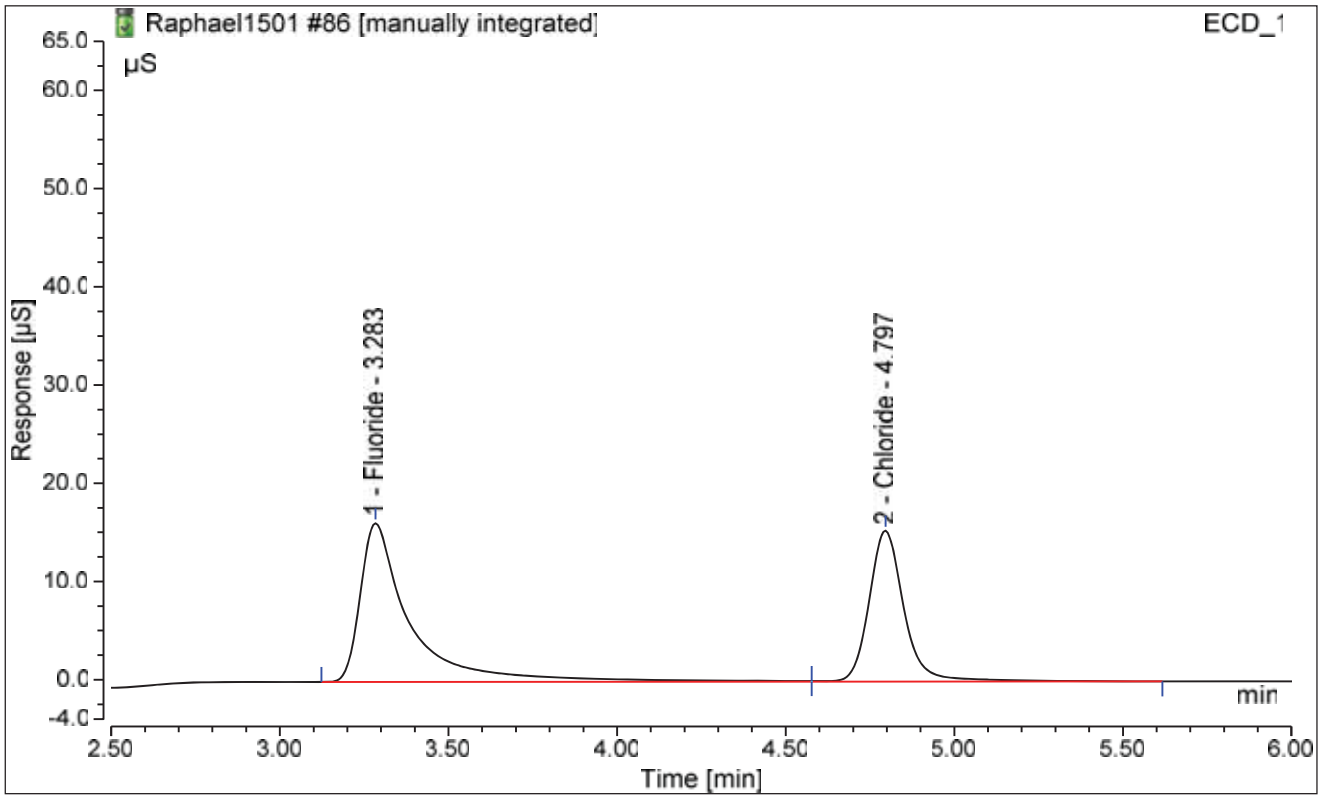


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.47	Fluoride	0.001	0.000	0.00489	FALSE	TRUE
2	4.79	Chloride	0.003	0.022	n.a.	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 15:21**	Run Time:	**14.50**

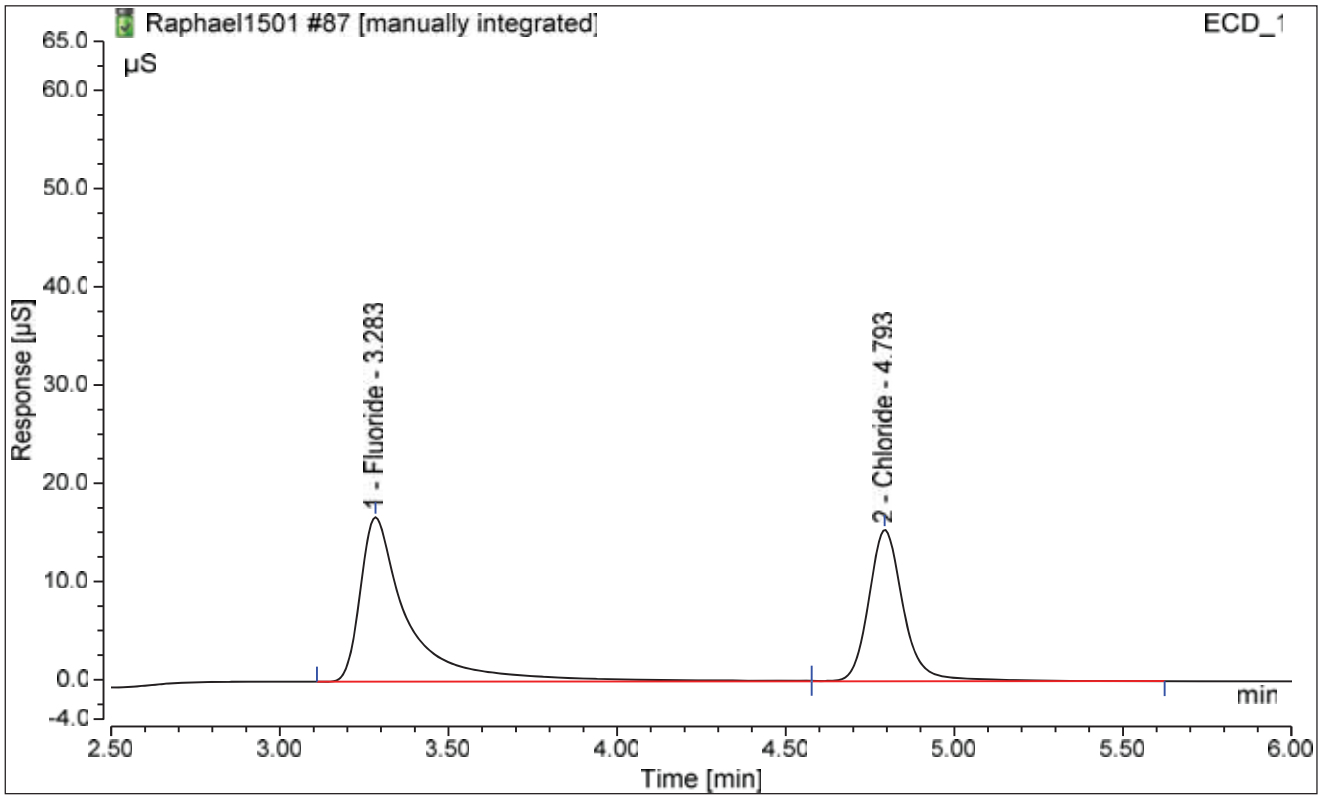


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	2.784	16.162	9.93614	FALSE	TRUE
2	4.80	Chloride	1.835	15.365	10.00512	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 15:37**	Run Time:	**14.50**



Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	2.799	16.734	9.98941	FALSE	TRUE
2	4.79	Chloride	1.845	15.422	10.05668	FALSE	TRUE

Calibration Table

No.	Injection Name	Inject Time	Pos.	Level	Ref.Amount	Calibration Point Status	Dil.Factor	Volume	Ref.Amount	Calibration Point Status
					µg/mL ECD_1 Chloride	ECD_1 Chloride		µL	µg/mL ECD_1 Fluoride	ECD_1 Fluoride
3	HPLCStds1652 #6	27/Dec/2023 15:17	GA6	06	30.0000	Ok	1.0000	25.00	30.0000	Ok
4	HPLCStds1652 #6	27/Dec/2023 15:33	GA6	06	30.0000	Ok	1.0000	25.00	30.0000	Ok
5	HPLCStds1652 #5	27/Dec/2023 15:49	GA5	05	15.0000	Ok	1.0000	25.00	15.0000	Ok
6	HPLCStds1652 #5	27/Dec/2023 16:05	GA5	05	15.0000	Ok	1.0000	25.00	15.0000	Ok
7	HPLCStds1652 #4	27/Dec/2023 16:22	GA4	04	10.0000	Ok	1.0000	25.00	10.0000	Ok
8	HPLCStds1652 #4	27/Dec/2023 16:38	GA4	04	10.0000	Ok	1.0000	25.00	10.0000	Ok
9	HPLCStds1652 #3	27/Dec/2023 16:54	GA3	03	5.0000	Ok	1.0000	25.00	5.0000	Ok
10	HPLCStds1652 #3	27/Dec/2023 17:10	GA3	03	5.0000	Ok	1.0000	25.00	5.0000	Ok
11	HPLCStds1652 #2	27/Dec/2023 17:26	GA2	02	1.0000	Ok	1.0000	25.00	1.0000	Ok
12	HPLCStds1652 #2	27/Dec/2023 17:42	GA2	02	1.0000	Ok	1.0000	25.00	1.0000	Ok
13	HPLCStds1652 #1	27/Dec/2023 17:58	GA1	01	0.5000	Ok	1.0000	25.00	0.5000	Ok
14	HPLCStds1652 #1	27/Dec/2023 18:14	GA1	01	0.5000	Ok	1.0000	25.00	0.5000	Ok
118	HPLCStds1652 #6	28/Dec/2023 23:56	GA6	06	30.0000	Ok	1.0000	25.00	30.0000	Ok
119	HPLCStds1652 #6	29/Dec/2023 00:12	GA6	06	30.0000	Ok	1.0000	25.00	30.0000	Ok
120	HPLCStds1652 #5	29/Dec/2023 00:28	GA5	05	15.0000	Ok	1.0000	25.00	15.0000	Ok
121	HPLCStds1652 #5	29/Dec/2023 00:45	GA5	05	15.0000	Ok	1.0000	25.00	15.0000	Ok
122	HPLCStds1652 #4	29/Dec/2023 01:01	GA4	04	10.0000	Ok	1.0000	25.00	10.0000	Ok
123	HPLCStds1652 #4	29/Dec/2023 01:17	GA4	04	10.0000	Ok	1.0000	25.00	10.0000	Ok
124	HPLCStds1652 #3	29/Dec/2023 01:33	GA3	03	5.0000	Ok	1.0000	25.00	5.0000	Ok
125	HPLCStds1652 #3	29/Dec/2023 01:49	GA3	03	5.0000	Ok	1.0000	25.00	5.0000	Ok
126	HPLCStds1652 #2	29/Dec/2023 02:05	GA2	02	1.0000	Ok	1.0000	25.00	1.0000	Ok
127	HPLCStds1652 #2	29/Dec/2023 02:21	GA2	02	1.0000	Ok	1.0000	25.00	1.0000	Ok
128	HPLCStds1652 #1	29/Dec/2023 02:37	GA1	01	0.5000	Ok	1.0000	25.00	0.5000	Ok
129	HPLCStds1652 #1	29/Dec/2023 02:53	GA1	01	0.5000	Ok	1.0000	25.00	0.5000	Ok

Detection Parameters

Ret. Time min	Param. Name	Param. Value	Inj. Type	Channel
Always	Baseline Noise Auto Range	On	Any	All Channels
Always	Cobra Smoothing Width	Auto	Any	All Channels
Always	Consider Void Peak	Off	Any	All Channels
0.000	Maximum Rider Ratio	10 [%]	Any	All Channels
0.000	Tailing Sensitivity Factor	0.100 [%]	Any	All Channels
0.000	Inhibit Integration	On	Any	All Channels
0.000	Minimum Area	Auto	Any	All Channels
3.004	Inhibit Integration	Off	Any	All Channels
6.333	Inhibit Integration	On	Any	All Channels

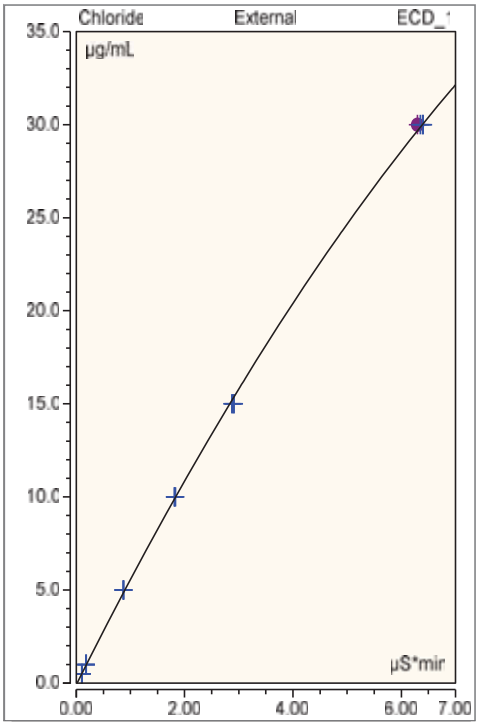
Calibration Batch Report

Sequence:	Raphael1501	*Injection Volume:*	25.00
Instrument Method:	AS22 ASAP new	*Operator:*	searundhati
Inj. Date / Time:	27-Dec-2023 / 15:17	*Run Time:*	14.5

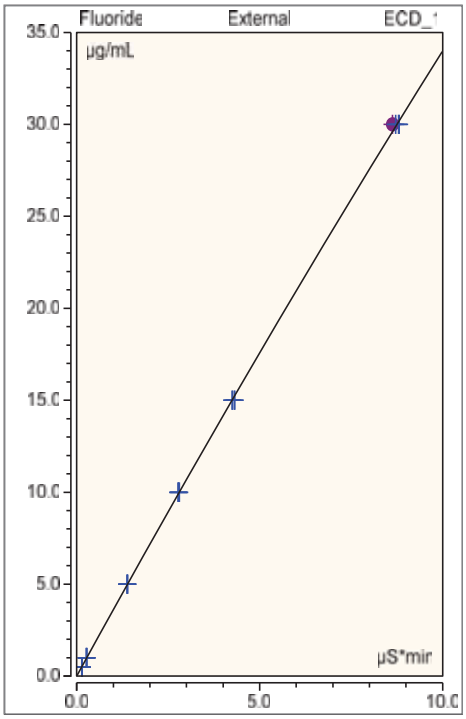
Calibration Summary

Peak Name	Eval.Type	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
Fluoride	Area	Quad, WithOffset, 1/A	24.000	0.002	3.635	-0.024	99.988
Chloride	Area	Quad, WithOffset, 1/A	24.000	-0.077	5.811	-0.173	99.971
		AVERAGE:		-0.0376	4.7229	-0.0982	99.9799

Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount µg/mL ECD_1
	Chloride	Chloride	Chloride	Chloride
HPLCStds1652 #6	4.820	6.301	54.813	29.682
HPLCStds1652 #6	4.820	6.352	55.559	29.869
HPLCStds1652 #5	4.803	2.885	24.612	15.251
HPLCStds1652 #5	4.803	2.874	24.511	15.198
HPLCStds1652 #4	4.797	1.816	15.160	9.905
HPLCStds1652 #4	4.797	1.816	15.169	9.908
HPLCStds1652 #3	4.793	0.870	7.034	4.847
HPLCStds1652 #3	4.793	0.869	6.972	4.843
HPLCStds1652 #2	4.790	0.181	1.361	0.969
HPLCStds1652 #2	4.790	0.181	1.357	0.967
HPLCStds1652 #1	4.790	0.104	0.781	0.526
HPLCStds1652 #1	4.787	0.104	0.775	0.525
HPLCStds1652 #6	4.820	6.394	55.348	30.018
HPLCStds1652 #6	4.820	6.406	55.348	30.061
HPLCStds1652 #5	4.807	2.908	24.333	15.360
HPLCStds1652 #5	4.810	2.913	24.425	15.386
HPLCStds1652 #4	4.803	1.833	15.031	9.996
HPLCStds1652 #4	4.803	1.816	15.027	9.908
HPLCStds1652 #3	4.797	0.875	6.932	4.875
HPLCStds1652 #3	4.800	0.872	6.932	4.859
HPLCStds1652 #2	4.793	0.180	1.347	0.962
HPLCStds1652 #2	4.793	0.182	1.349	0.973
HPLCStds1652 #1	4.793	0.105	0.764	0.530
HPLCStds1652 #1	4.793	0.103	0.762	0.522

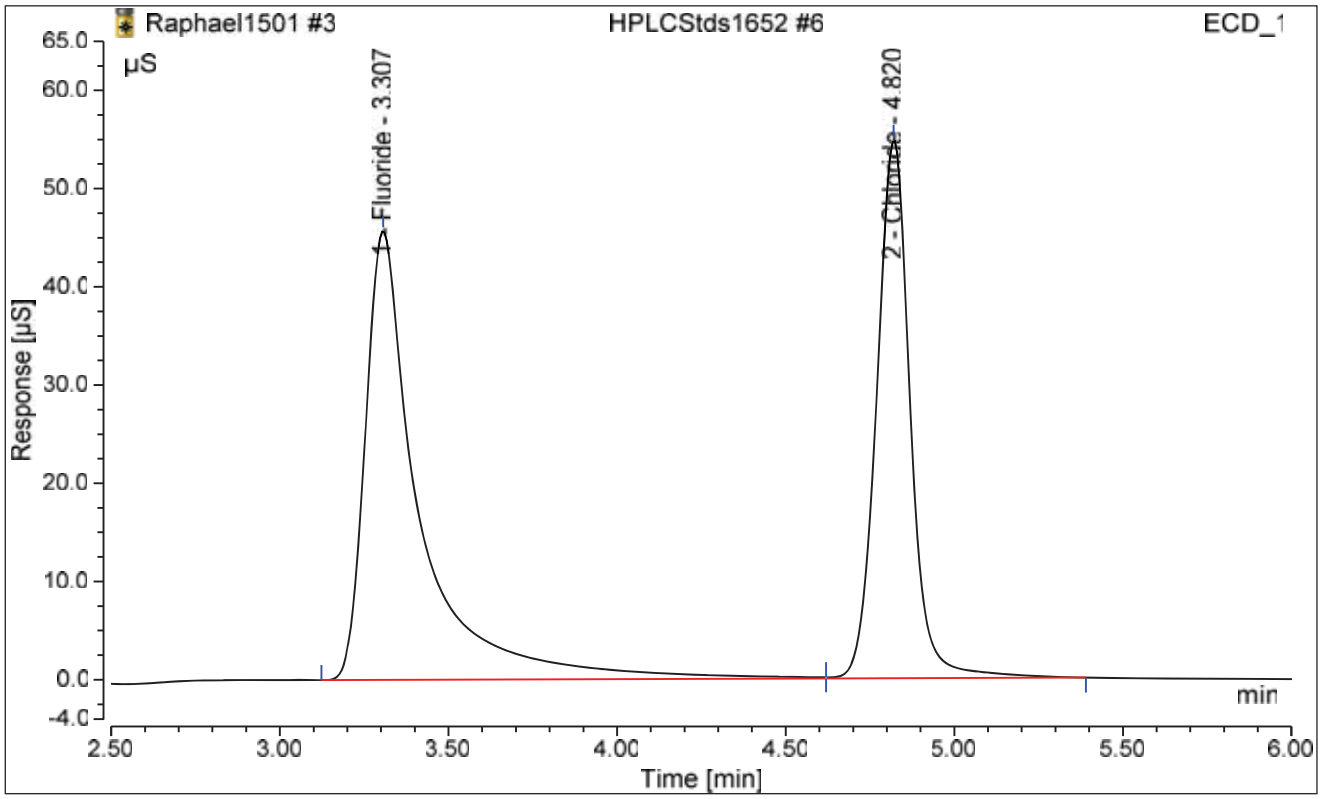


Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount µg/mL ECD_1
	Fluoride	Fluoride	Fluoride	Fluoride
HPLCStds1652 #6	3.307	8.632	45.699	29.610
HPLCStds1652 #6	3.307	8.714	48.446	29.874
HPLCStds1652 #5	3.293	4.248	22.654	15.016
HPLCStds1652 #5	3.293	4.254	23.399	15.037
HPLCStds1652 #4	3.287	2.769	14.746	9.886
HPLCStds1652 #4	3.287	2.778	15.155	9.918
HPLCStds1652 #3	3.283	1.388	6.859	5.002
HPLCStds1652 #3	3.287	1.384	6.961	4.986
HPLCStds1652 #2	3.290	0.270	1.201	0.984
HPLCStds1652 #2	3.290	0.269	1.210	0.977
HPLCStds1652 #1	3.293	0.142	0.614	0.519
HPLCStds1652 #1	3.293	0.142	0.612	0.518
HPLCStds1652 #6	3.303	8.793	59.108	30.127
HPLCStds1652 #6	3.303	8.815	59.660	30.198
HPLCStds1652 #5	3.290	4.308	28.368	15.222
HPLCStds1652 #5	3.290	4.319	28.617	15.260
HPLCStds1652 #4	3.283	2.803	17.772	10.004
HPLCStds1652 #4	3.283	2.791	17.886	9.961
HPLCStds1652 #3	3.280	1.377	7.936	4.964
HPLCStds1652 #3	3.283	1.377	7.972	4.963
HPLCStds1652 #2	3.283	0.264	1.337	0.959
HPLCStds1652 #2	3.283	0.266	1.335	0.965
HPLCStds1652 #1	3.290	0.141	0.662	0.512
HPLCStds1652 #1	3.290	0.141	0.664	0.513



Peak Analysis Report

Sample Name:	**HPLCStds1652 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 15:17**	Run Time:	**14.50**

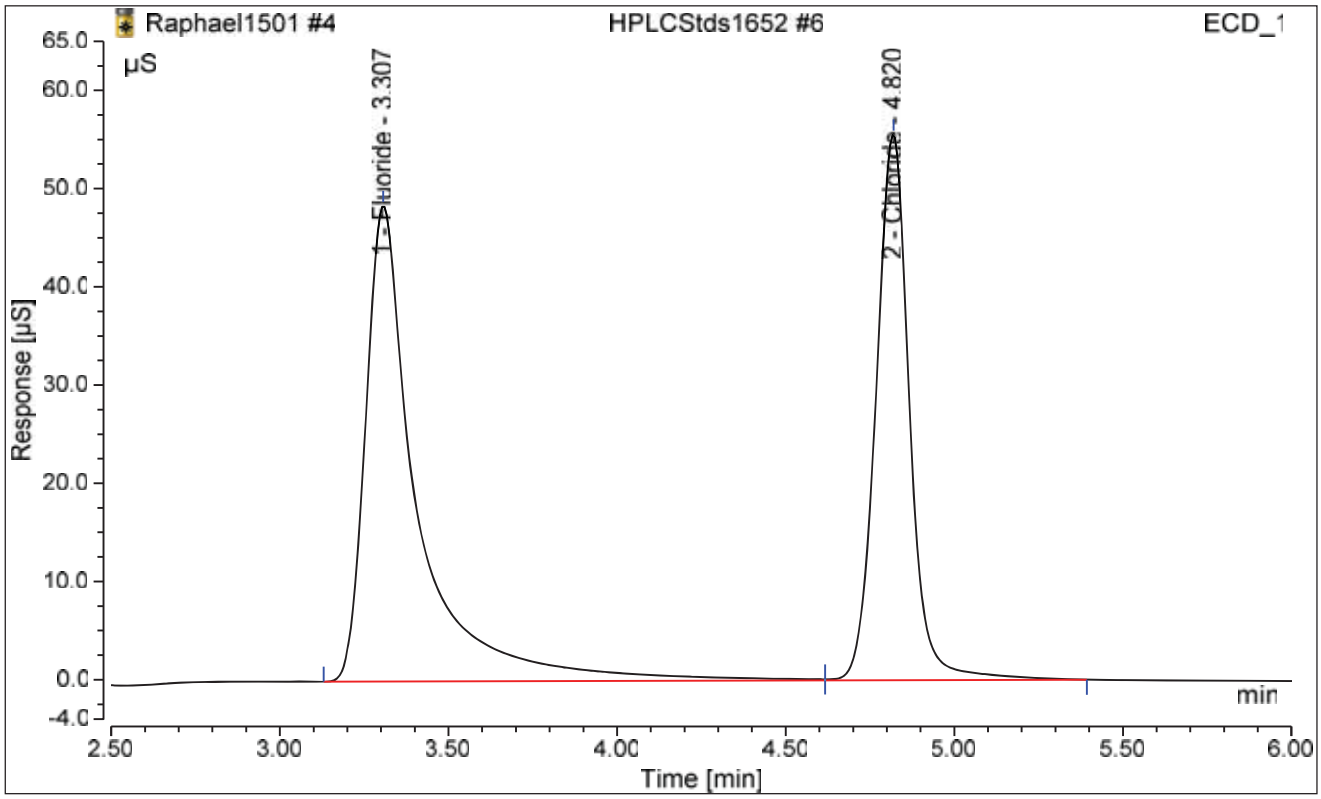


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.31	Fluoride	8.632	45.699	29.61046	FALSE	FALSE
2	4.82	Chloride	6.301	54.813	29.68243	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 15:33**	Run Time:	**14.50**

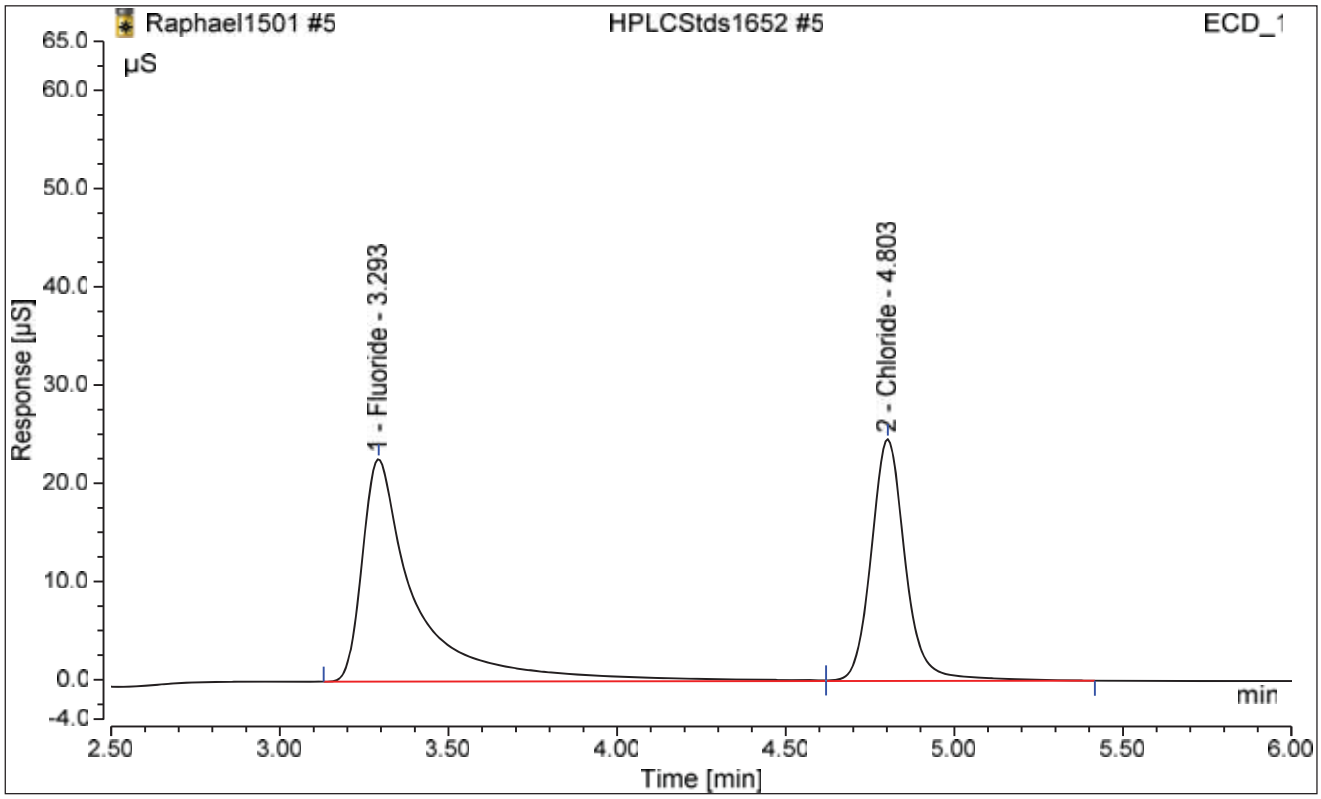


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.31	Fluoride	8.714	48.446	29.87426	FALSE	FALSE
2	4.82	Chloride	6.352	55.559	29.86919	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 15:49**	Run Time:	**14.50**

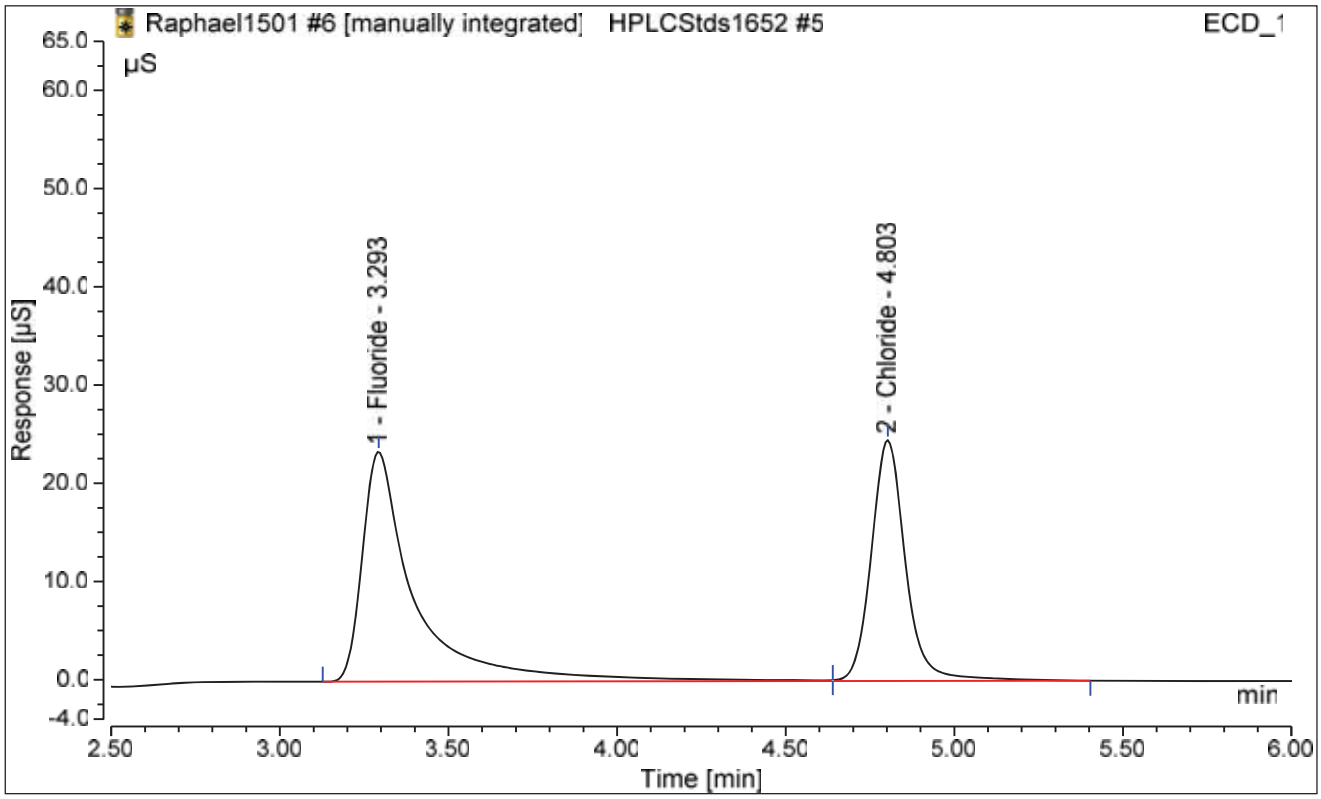


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	4.248	22.654	15.01633	FALSE	FALSE
2	4.80	Chloride	2.885	24.612	15.25084	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 16:05**	Run Time:	**14.50**

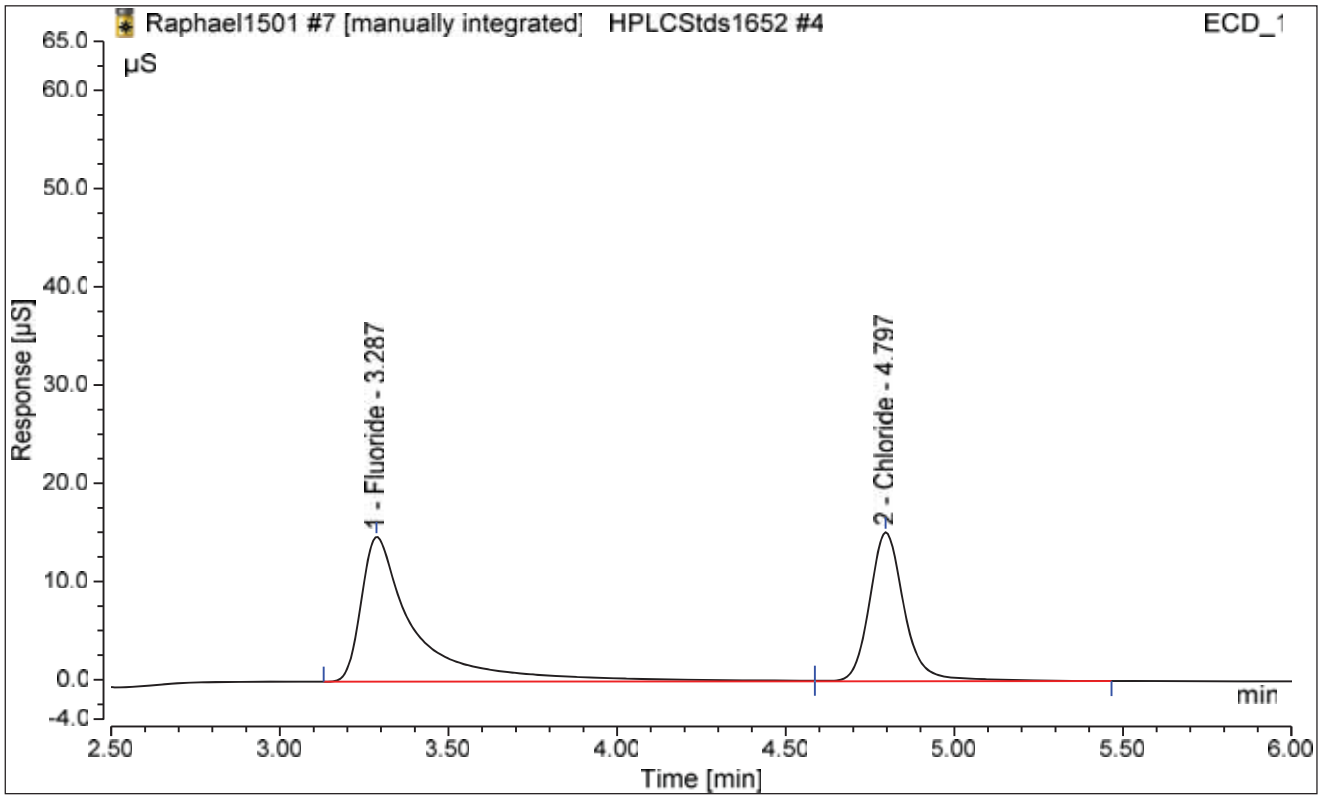


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	4.254	23.399	15.03719	FALSE	TRUE
2	4.80	Chloride	2.874	24.511	15.19777	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 16:22**	Run Time:	**14.50**

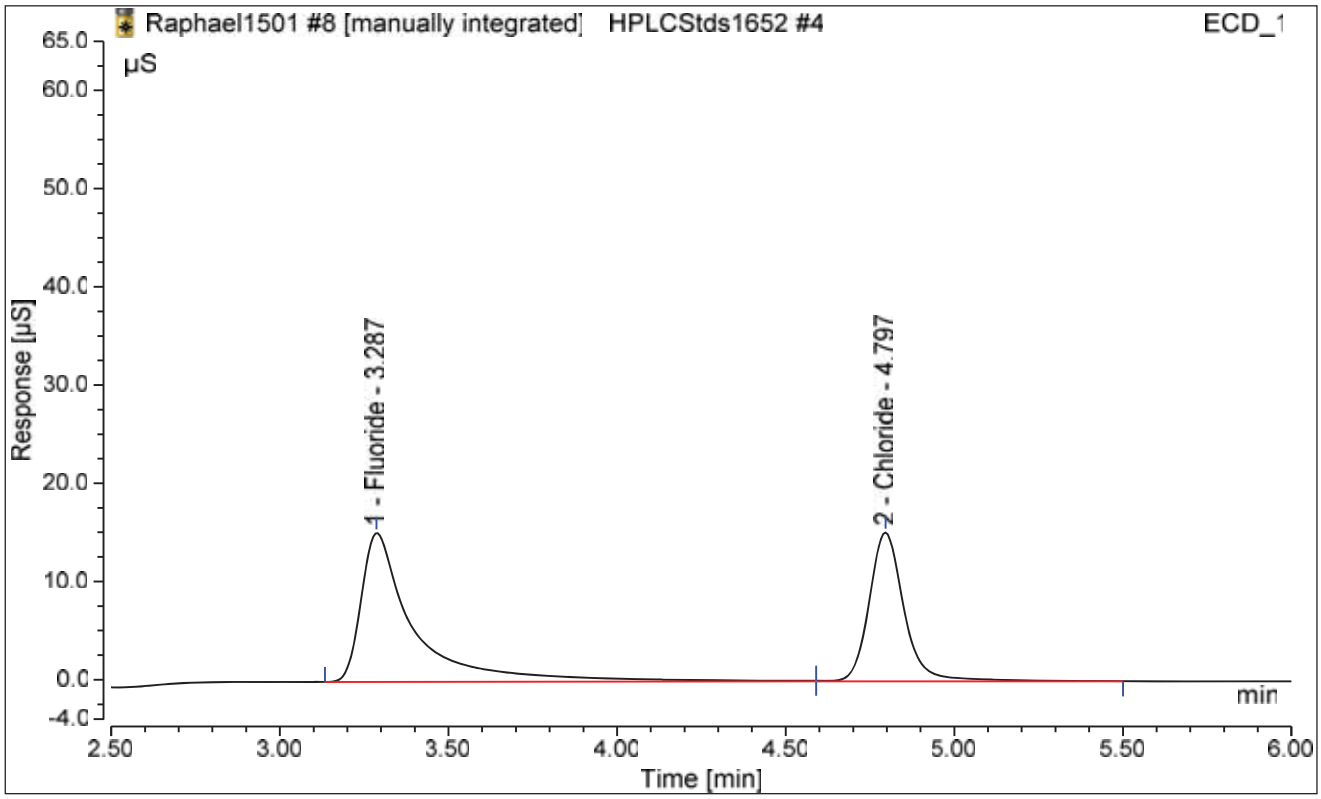


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	2.769	14.746	9.88593	FALSE	TRUE
2	4.80	Chloride	1.816	15.160	9.90519	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 16:38**	Run Time:	**14.50**

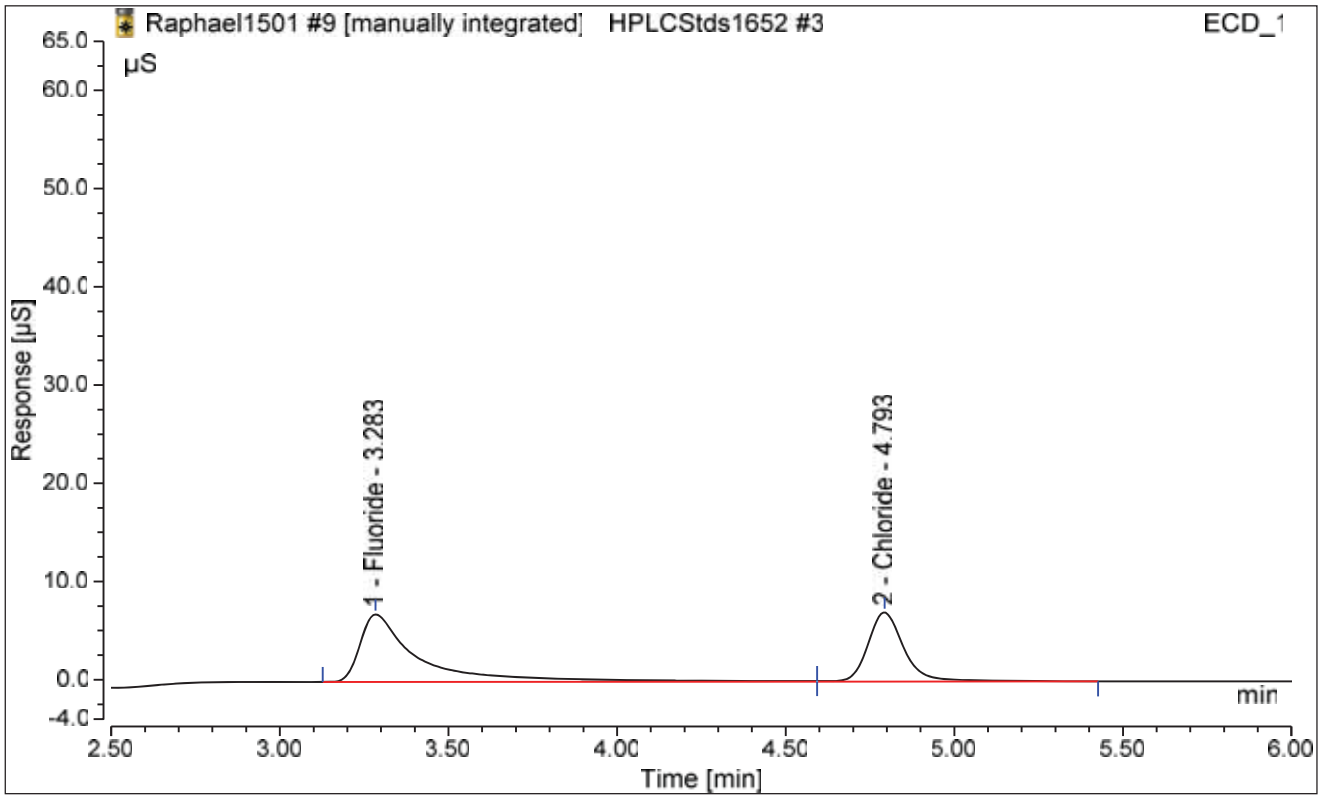


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	2.778	15.155	9.91767	FALSE	TRUE
2	4.80	Chloride	1.816	15.169	9.90806	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 16:54**	Run Time:	**14.50**

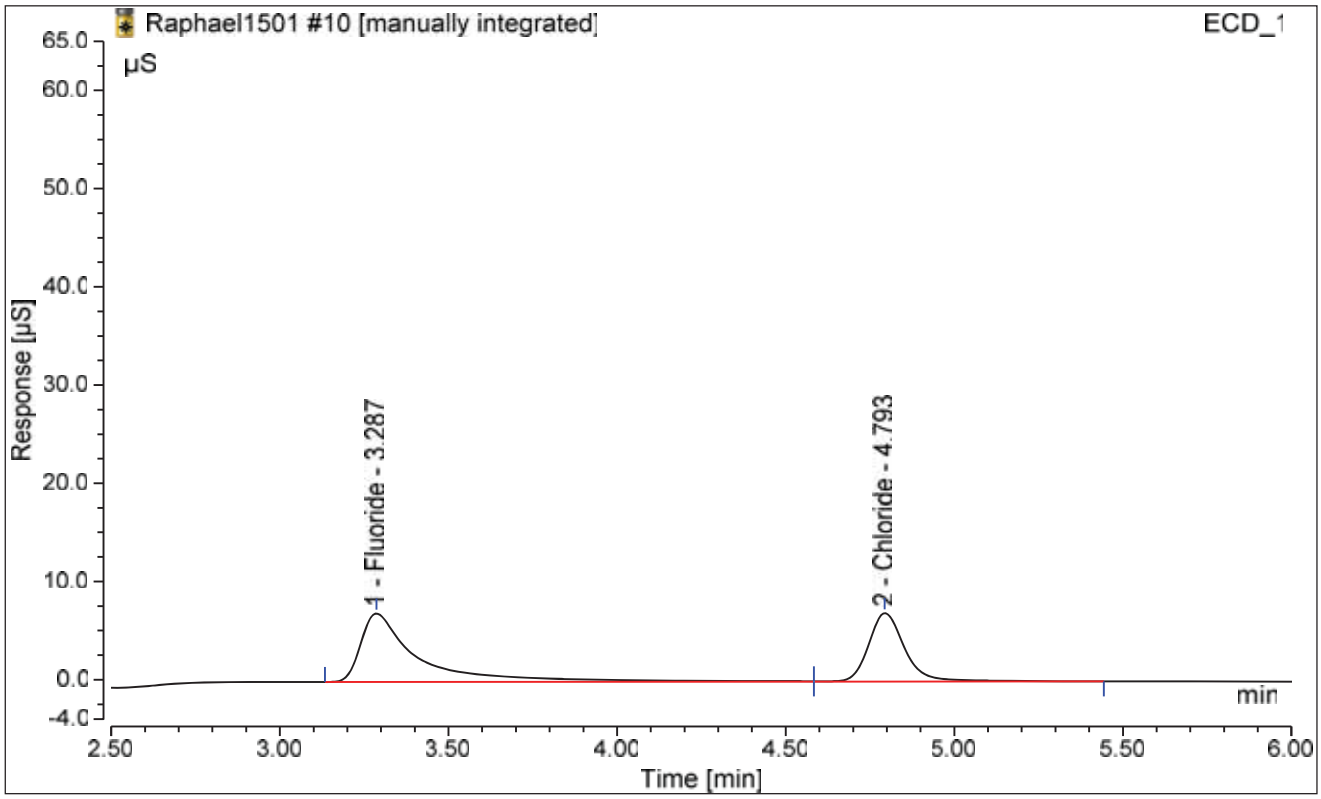


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	1.388	6.859	5.00192	FALSE	TRUE
2	4.79	Chloride	0.870	7.034	4.84676	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 17:10**	Run Time:	**14.50**

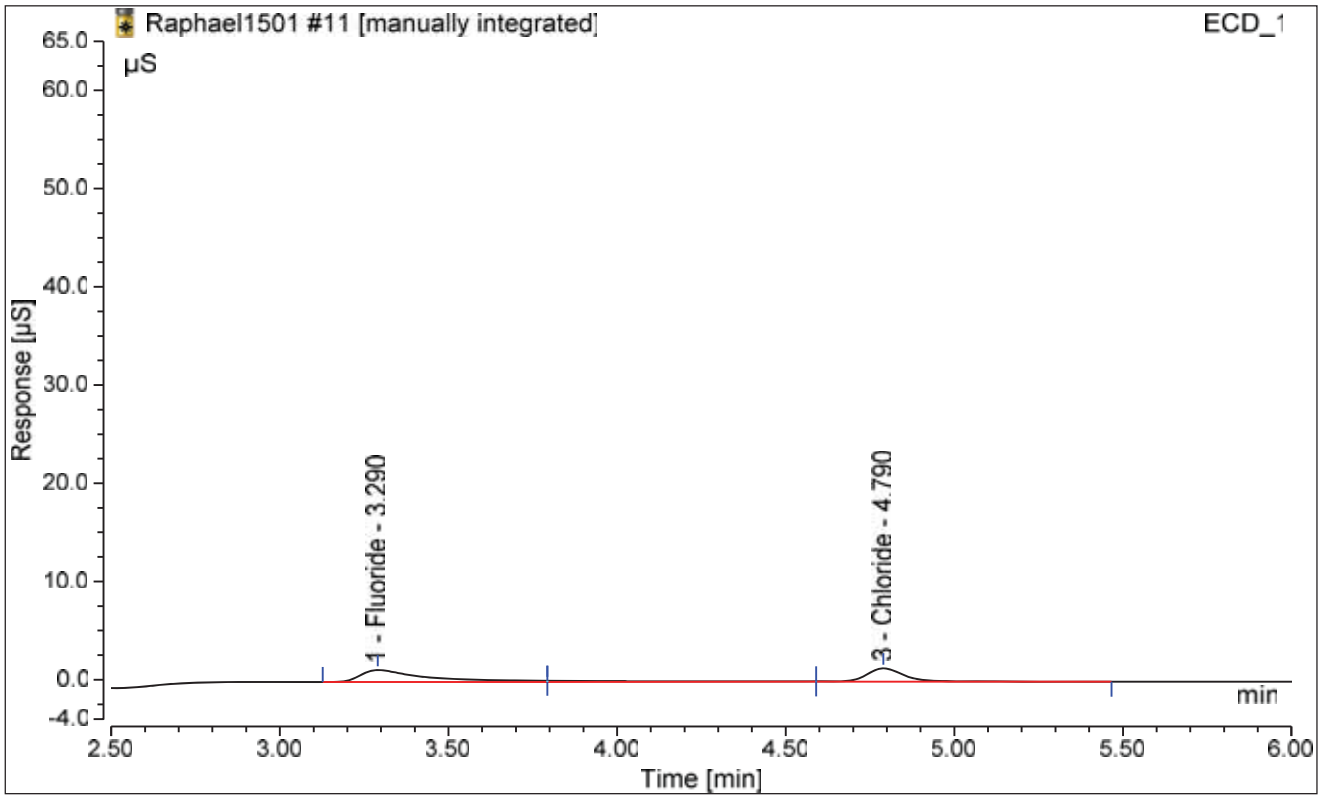


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	1.384	6.961	4.98582	FALSE	TRUE
2	4.79	Chloride	0.869	6.972	4.84325	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 17:26**	Run Time:	**14.50**

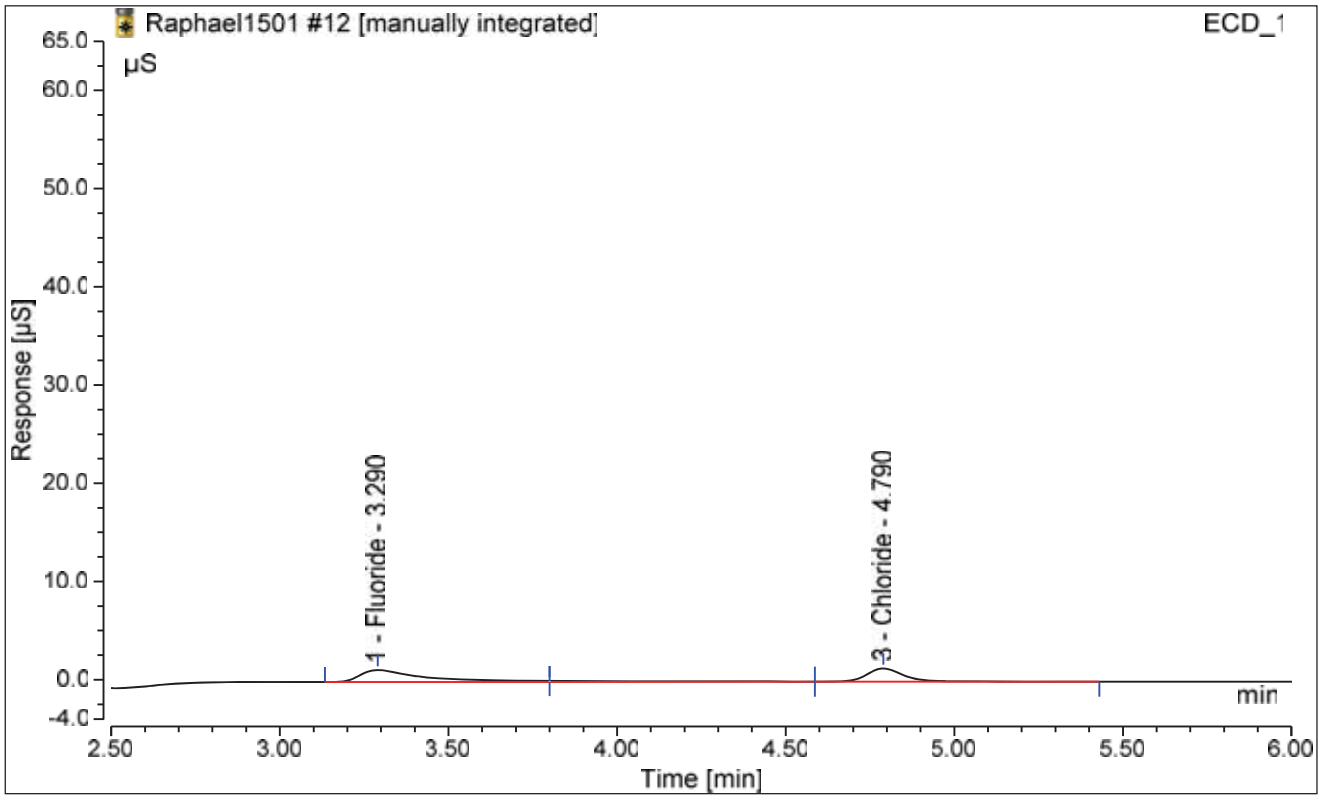


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	0.270	1.201	0.98352	FALSE	TRUE
3	4.79	Chloride	0.181	1.361	0.96924	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 17:42**	Run Time:	**14.50**

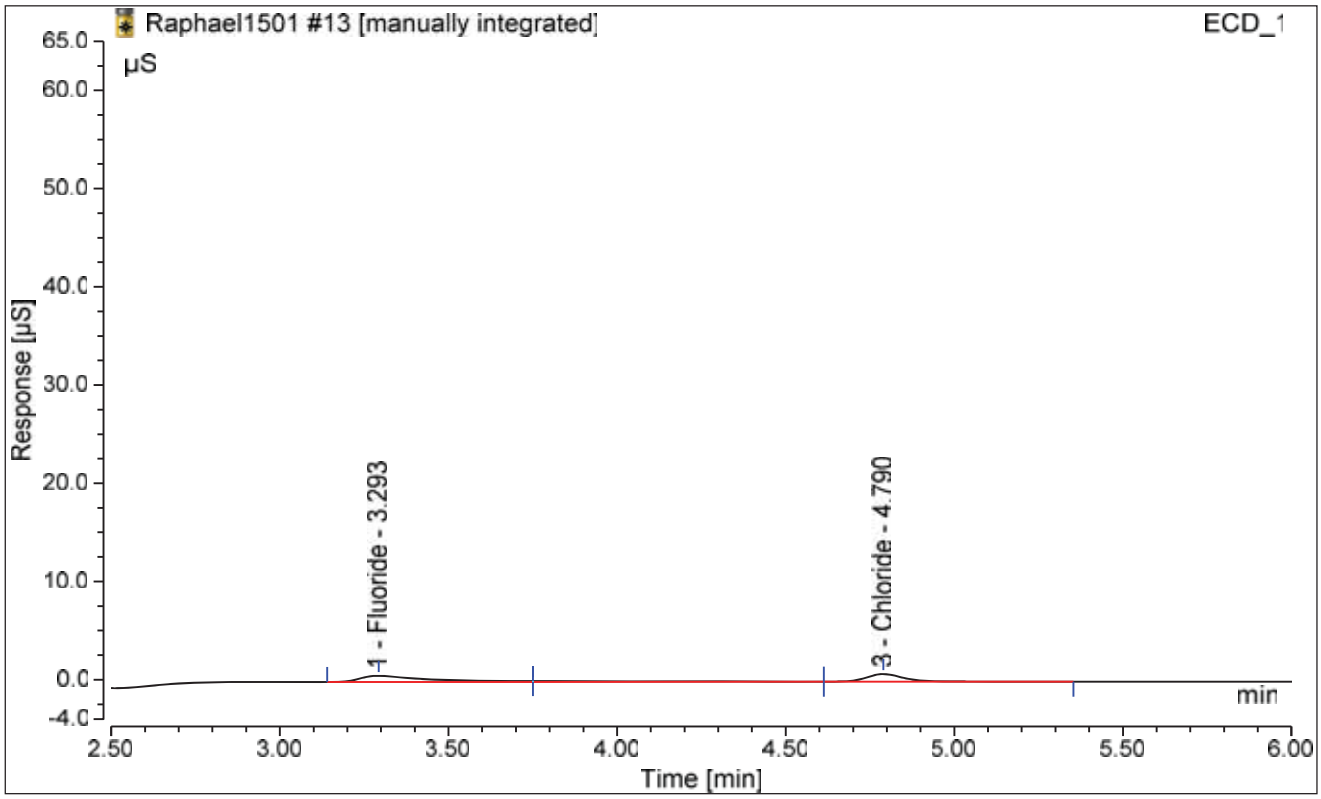


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	0.269	1.210	0.97700	FALSE	TRUE
3	4.79	Chloride	0.181	1.357	0.96692	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 17:58**	Run Time:	**14.50**

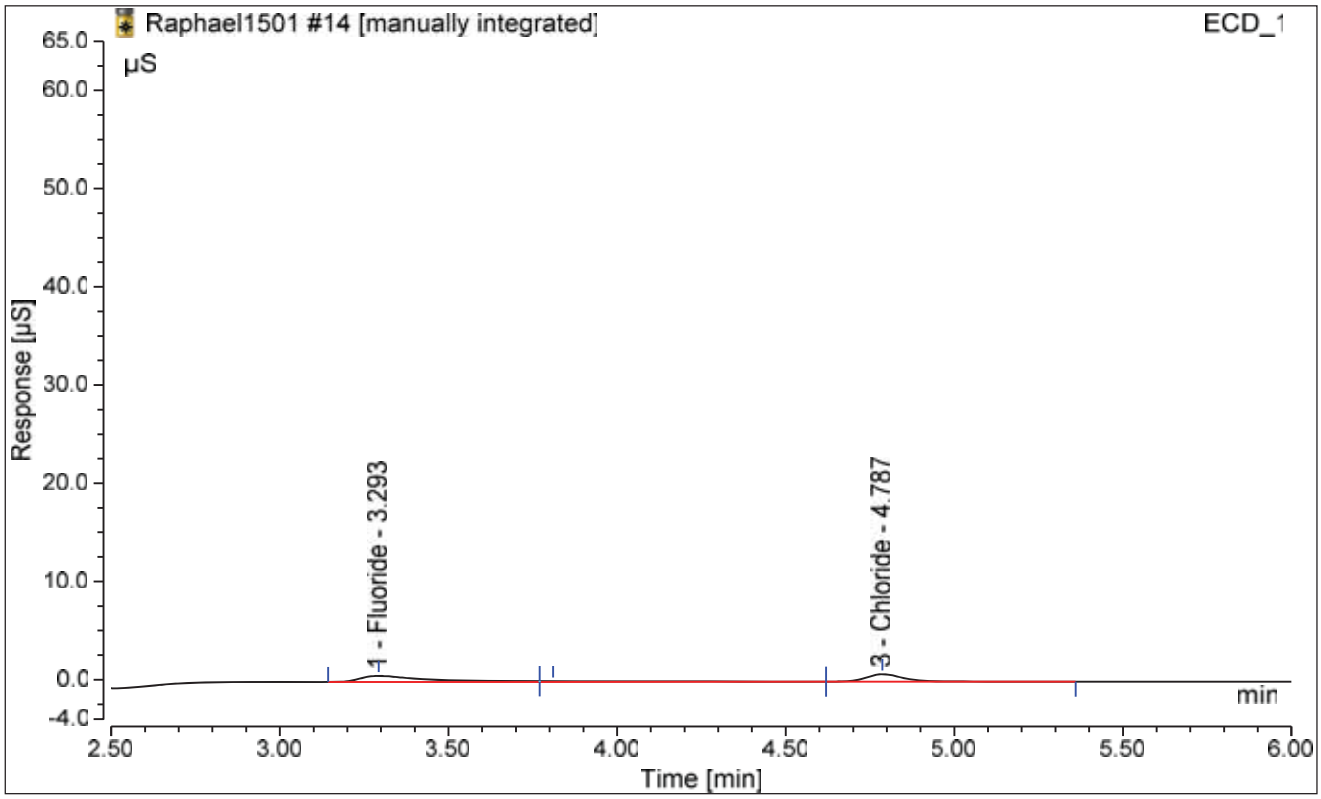


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	0.142	0.614	0.51917	FALSE	TRUE
3	4.79	Chloride	0.104	0.781	0.52576	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 18:14**	Run Time:	**14.50**

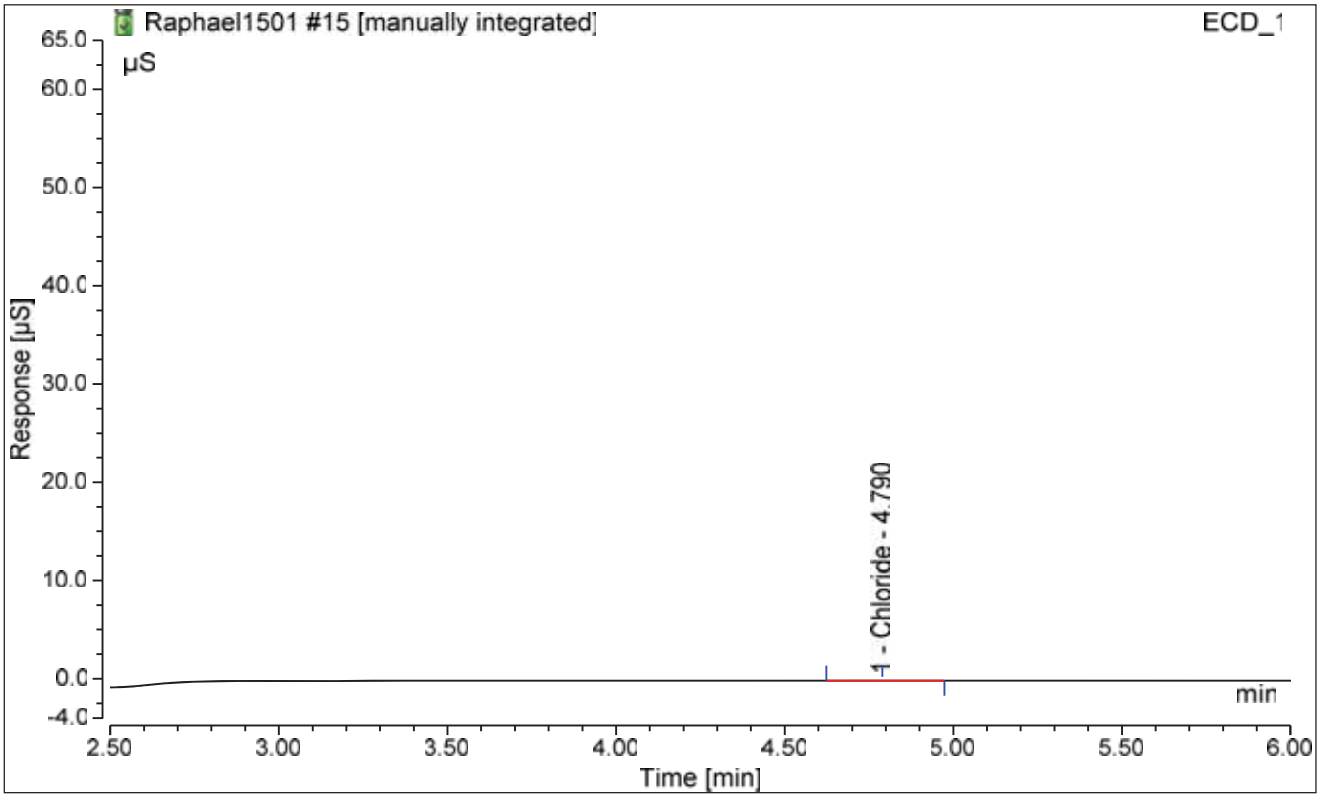


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	0.142	0.612	0.51778	FALSE	TRUE
3	4.79	Chloride	0.104	0.775	0.52478	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 18:30**	Run Time:	**14.50**

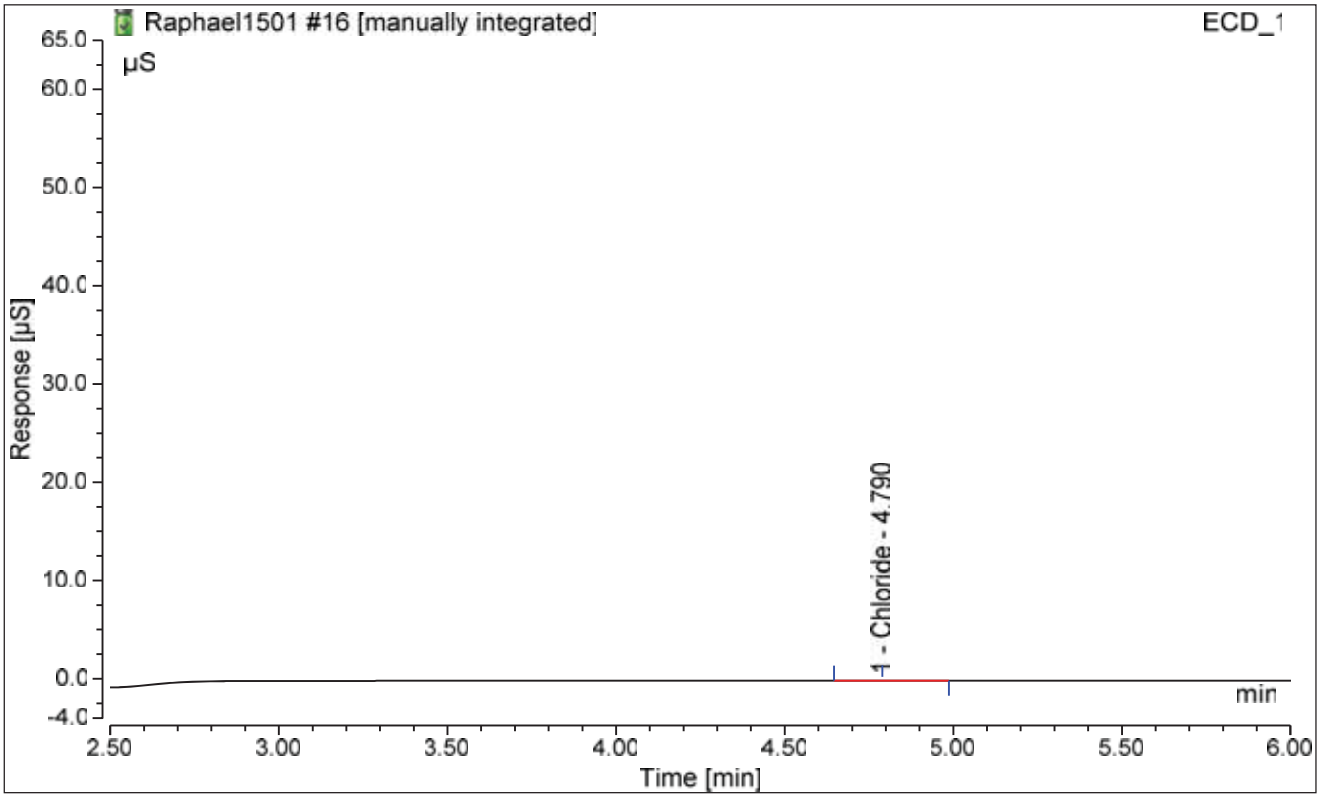


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	4.79	Chloride	0.002	0.015	n.a.	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 18:47**	Run Time:	**14.50**

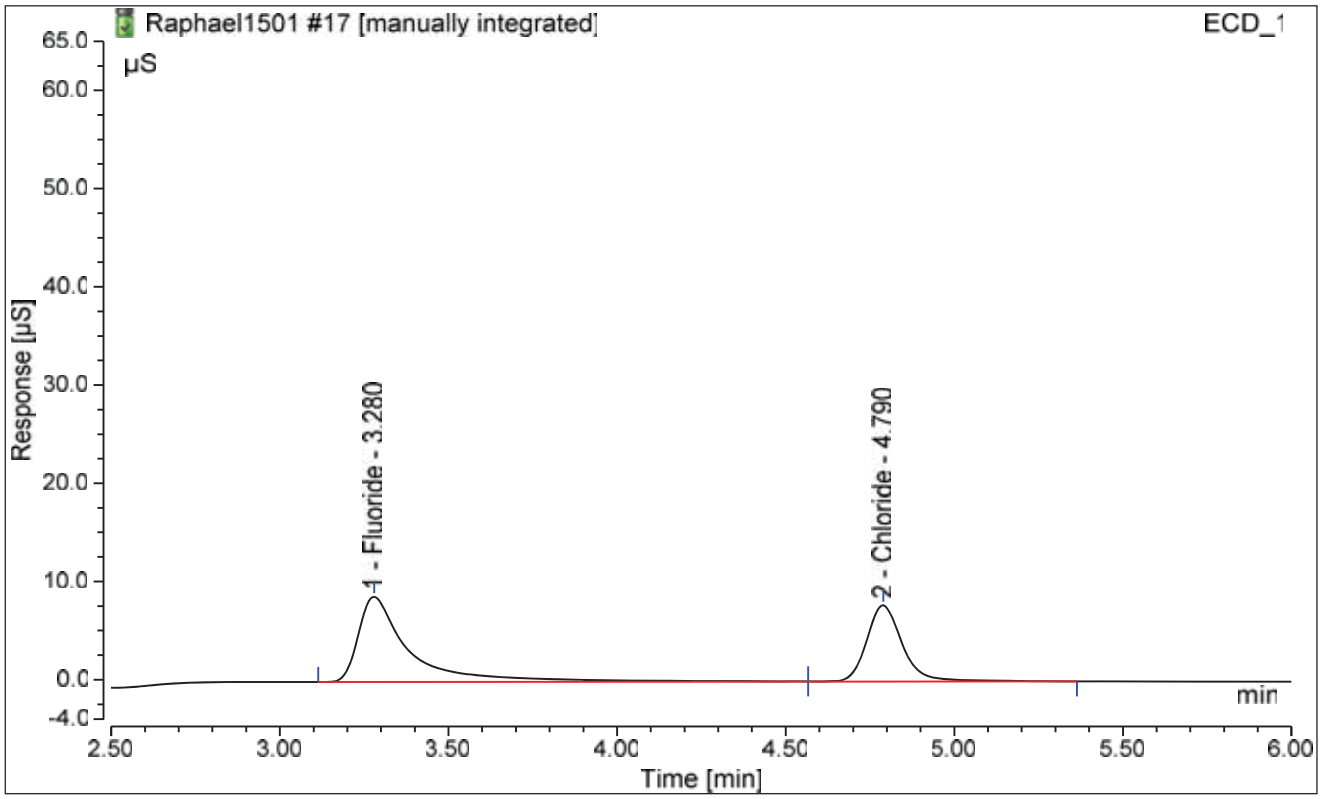


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	4.79	Chloride	0.002	0.014	n.a.	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 19:03**	Run Time:	**14.50**

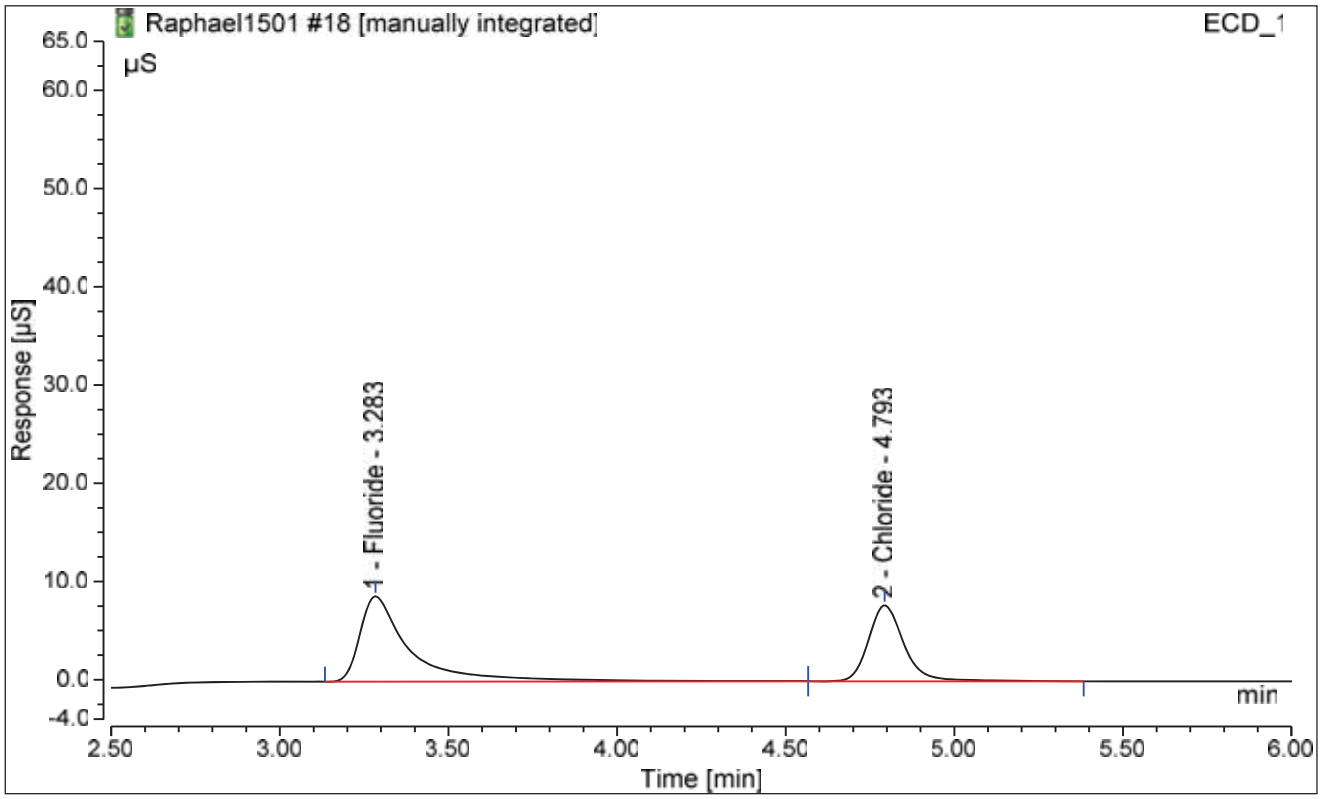


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	1.533	8.673	5.52019	FALSE	TRUE
2	4.79	Chloride	0.954	7.766	5.30901	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 19:19**	Run Time:	**14.50**

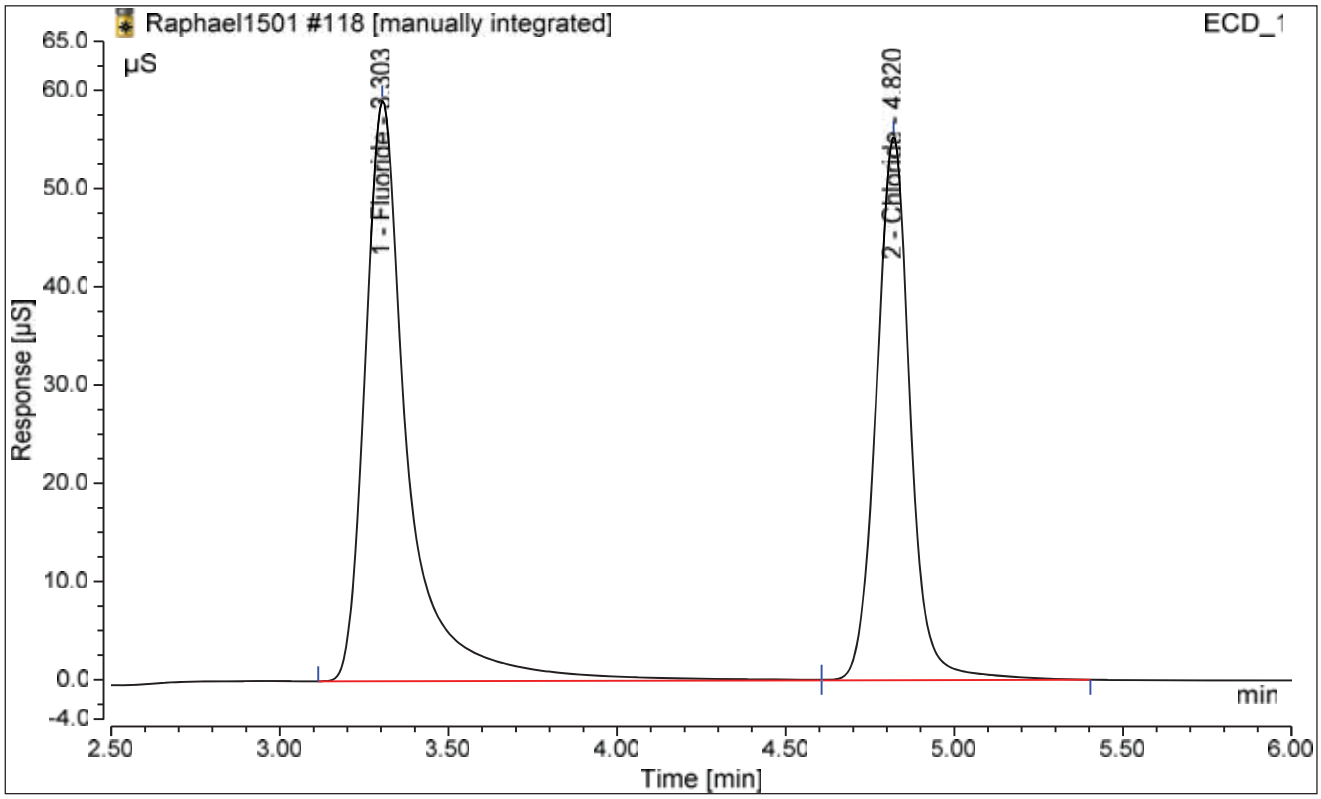


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	1.526	8.693	5.49362	FALSE	TRUE
2	4.79	Chloride	0.951	7.744	5.29222	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 23:56**	Run Time:	**14.50**

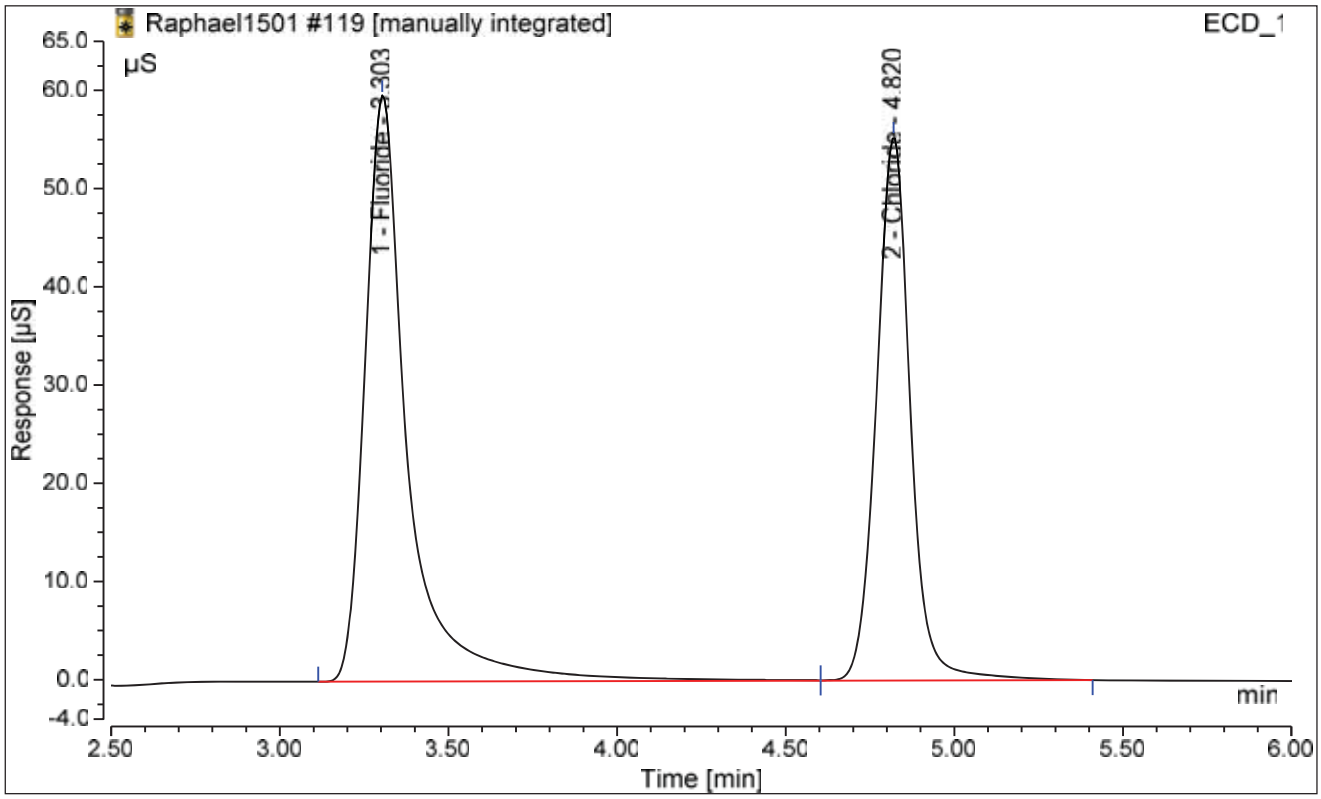


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.30	Fluoride	8.793	59.108	30.12721	FALSE	TRUE
2	4.82	Chloride	6.394	55.348	30.01845	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 00:12**	Run Time:	**14.50**

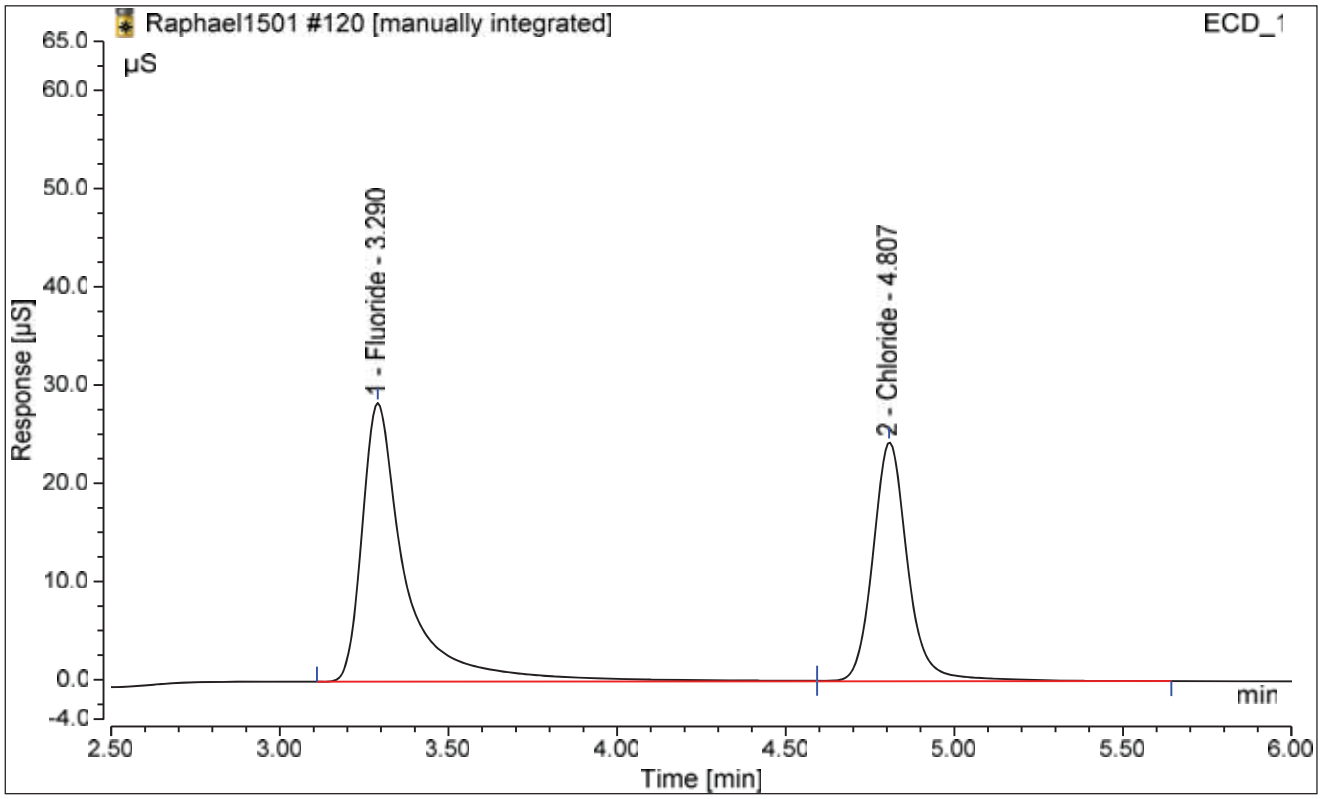


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.30	Fluoride	8.815	59.660	30.19756	FALSE	TRUE
2	4.82	Chloride	6.406	55.348	30.06136	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 00:28**	Run Time:	**14.50**

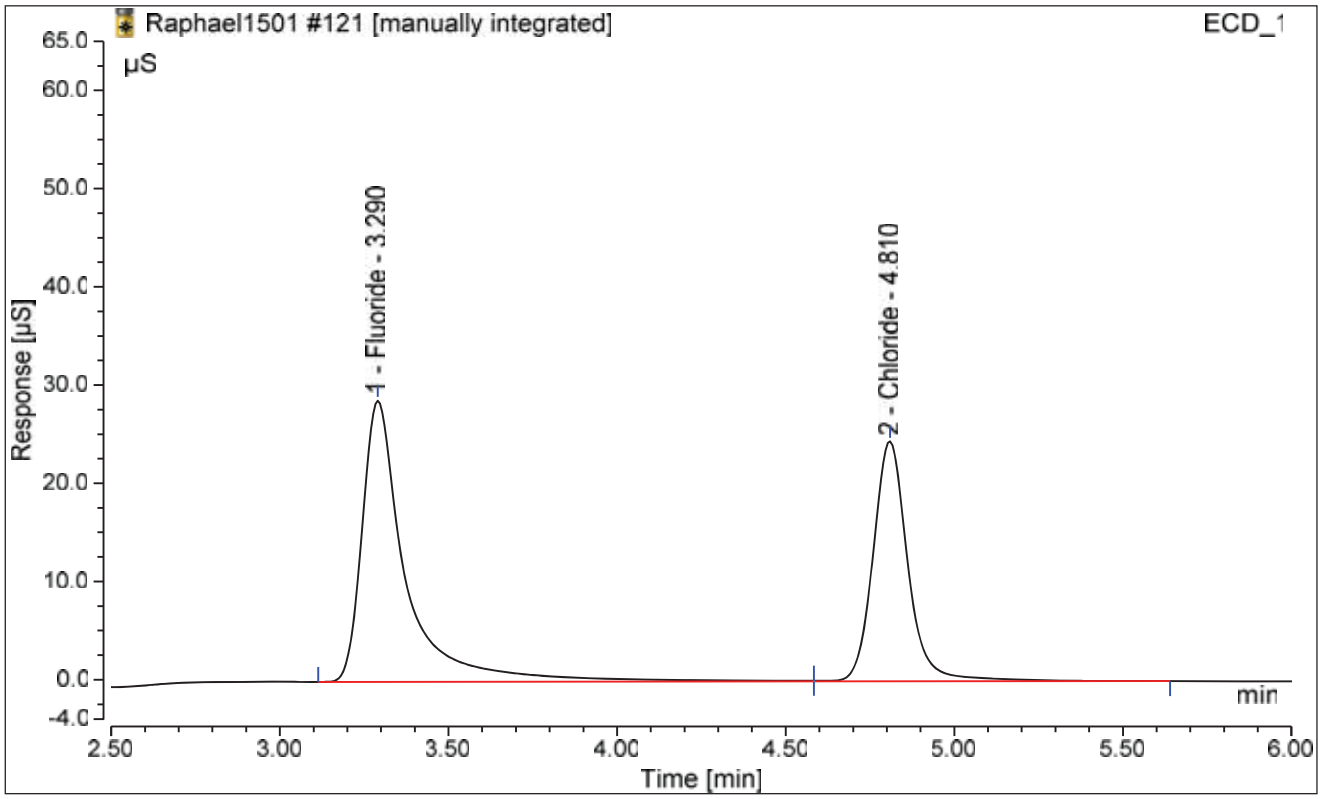


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	4.308	28.368	15.22158	FALSE	TRUE
2	4.81	Chloride	2.908	24.333	15.36033	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 00:45**	Run Time:	**14.50**

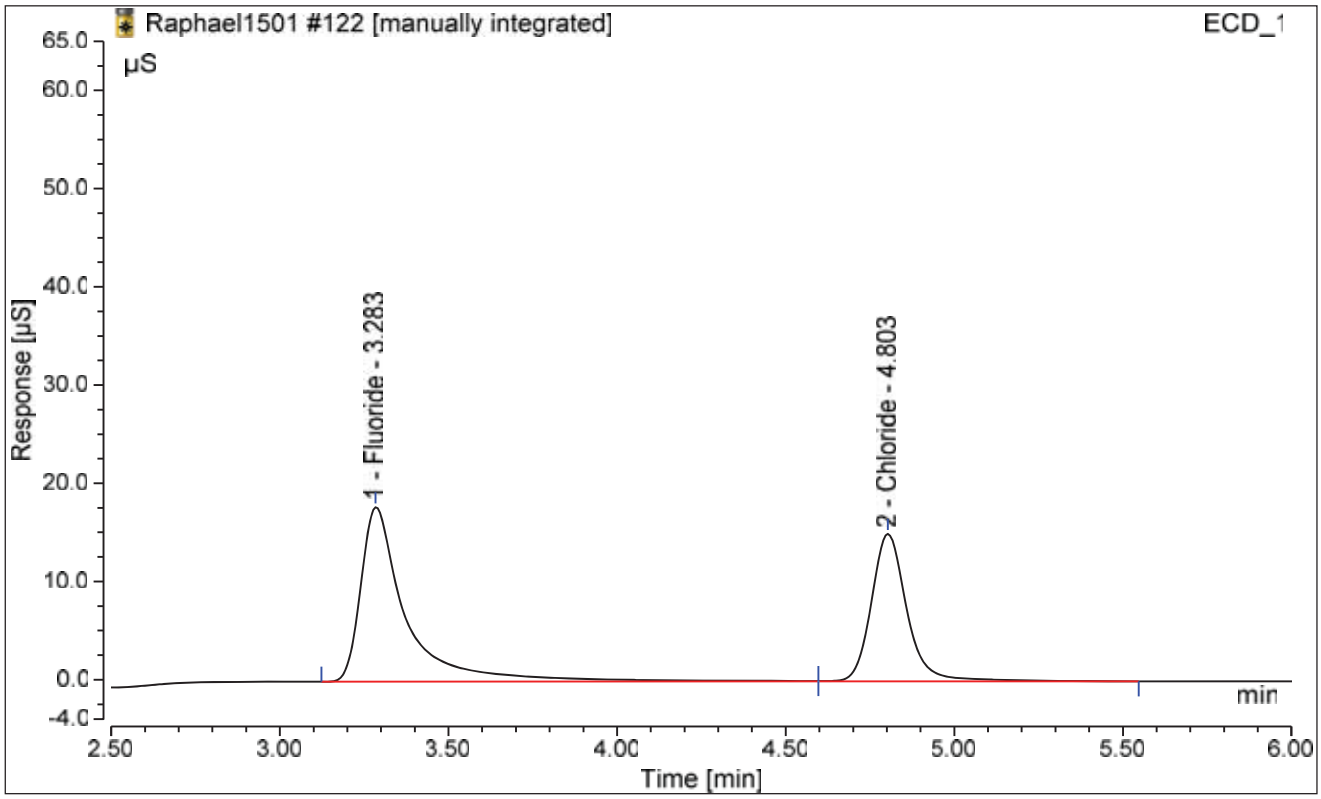


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	4.319	28.617	15.26029	FALSE	TRUE
2	4.81	Chloride	2.913	24.425	15.38628	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 01:01**	Run Time:	**14.50**

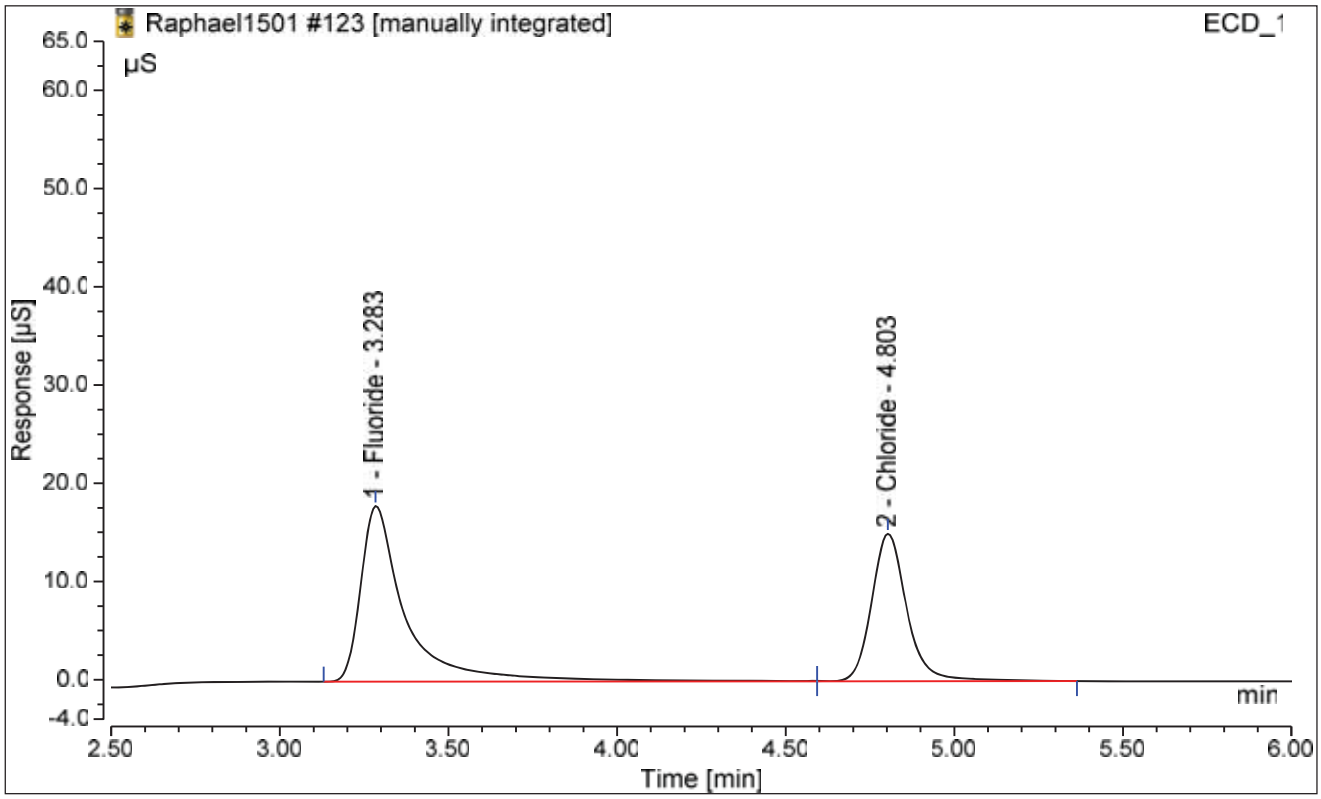


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	2.803	17.772	10.00440	FALSE	TRUE
2	4.80	Chloride	1.833	15.031	9.99632	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 01:17**	Run Time:	**14.50**

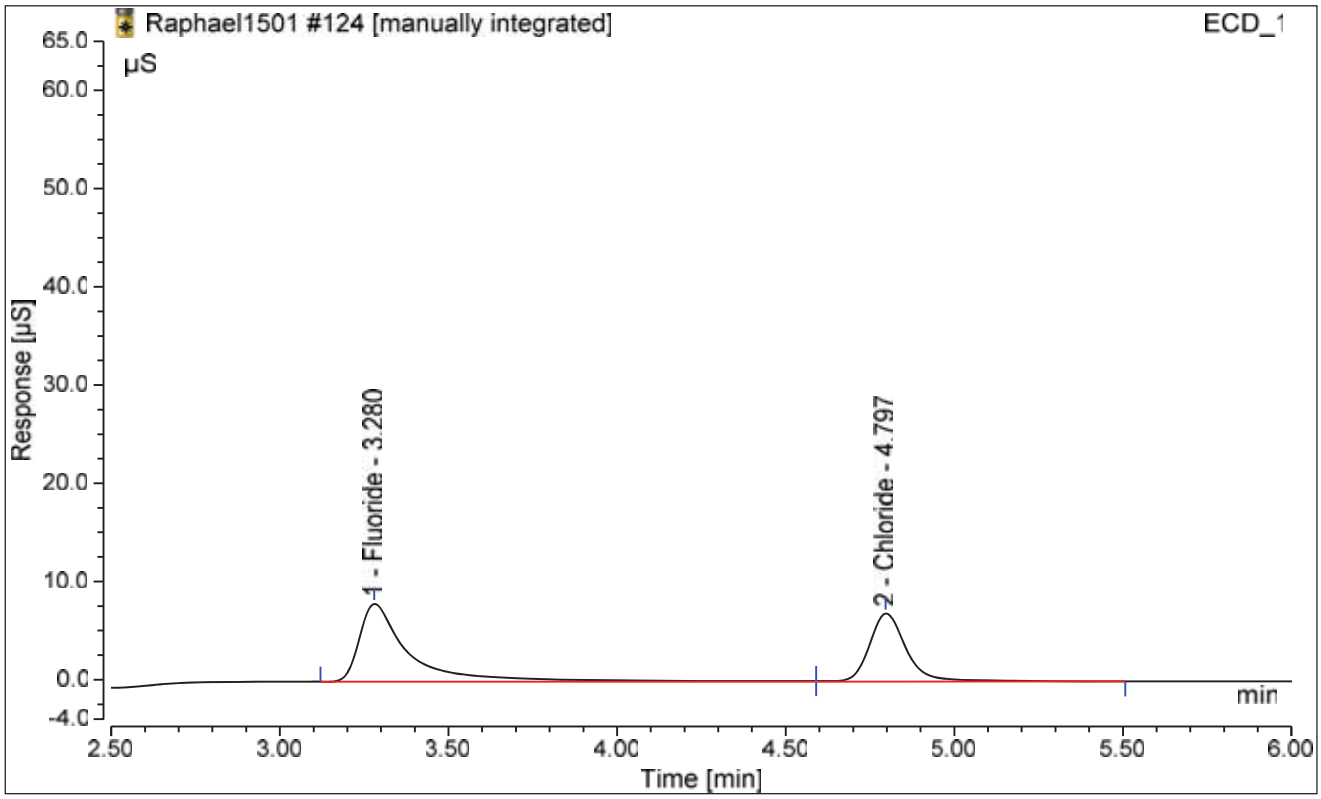


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	2.791	17.886	9.96095	FALSE	TRUE
2	4.80	Chloride	1.816	15.027	9.90814	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 01:33**	Run Time:	**14.50**

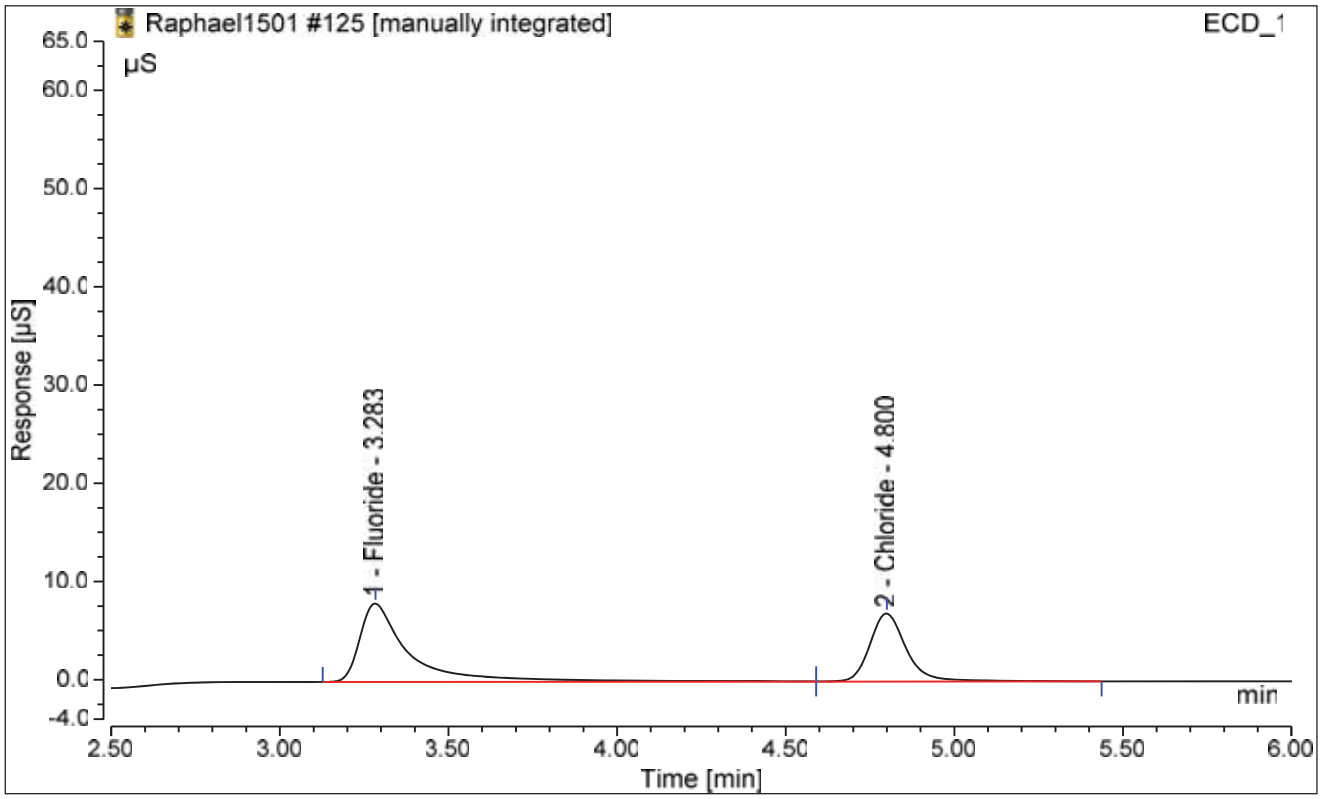


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	1.377	7.936	4.96383	FALSE	TRUE
2	4.80	Chloride	0.875	6.932	4.87453	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 01:49**	Run Time:	**14.50**

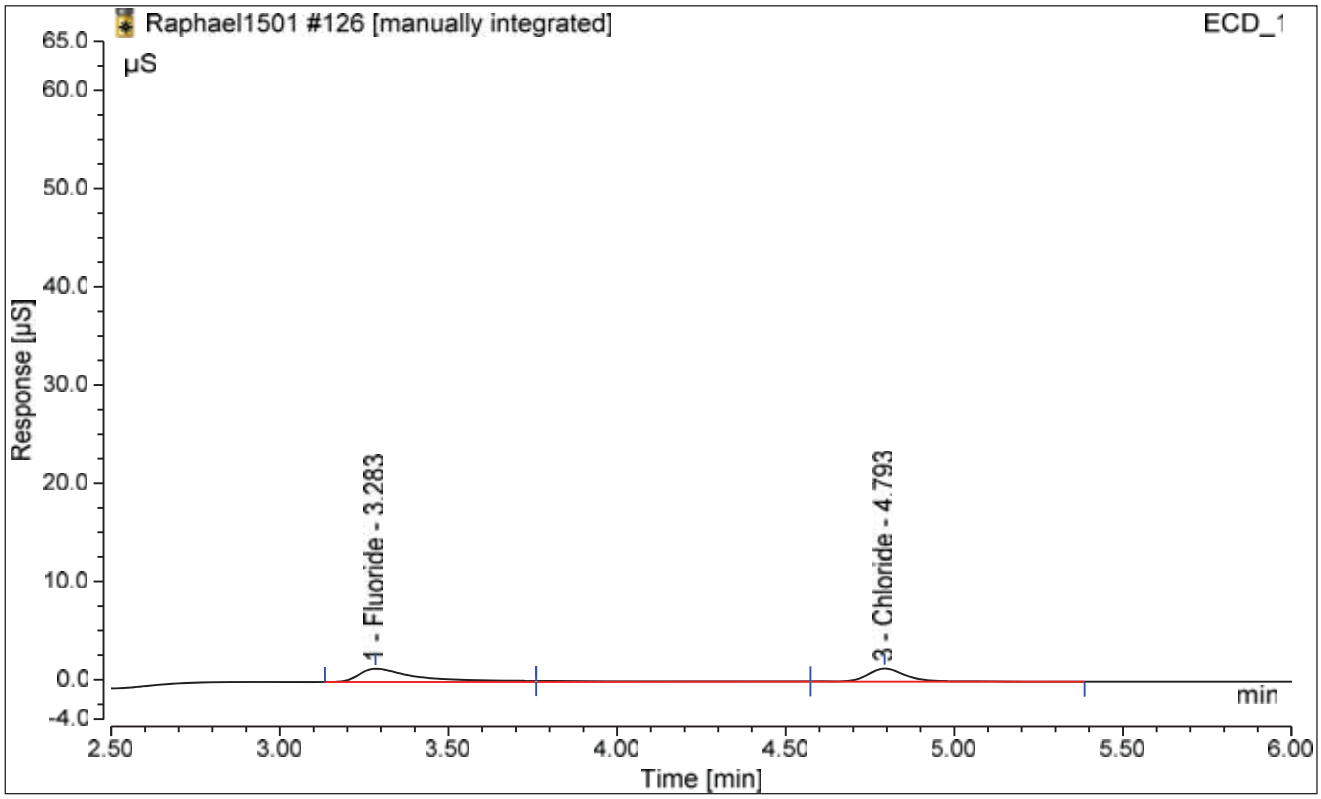


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	1.377	7.972	4.96278	FALSE	TRUE
2	4.80	Chloride	0.872	6.932	4.85908	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 02:05**	Run Time:	**14.50**

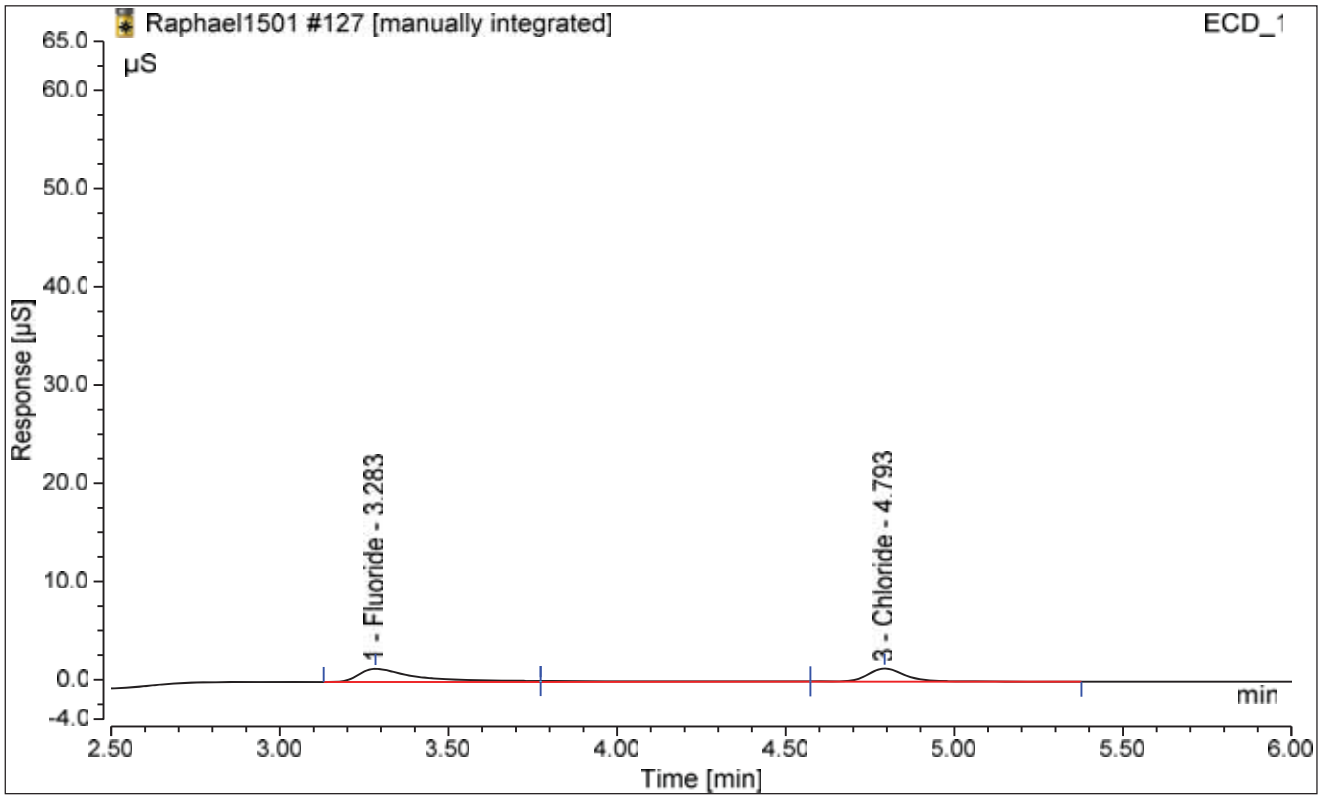


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	0.264	1.337	0.95933	FALSE	TRUE
3	4.79	Chloride	0.180	1.347	0.96245	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 02:21**	Run Time:	**14.50**

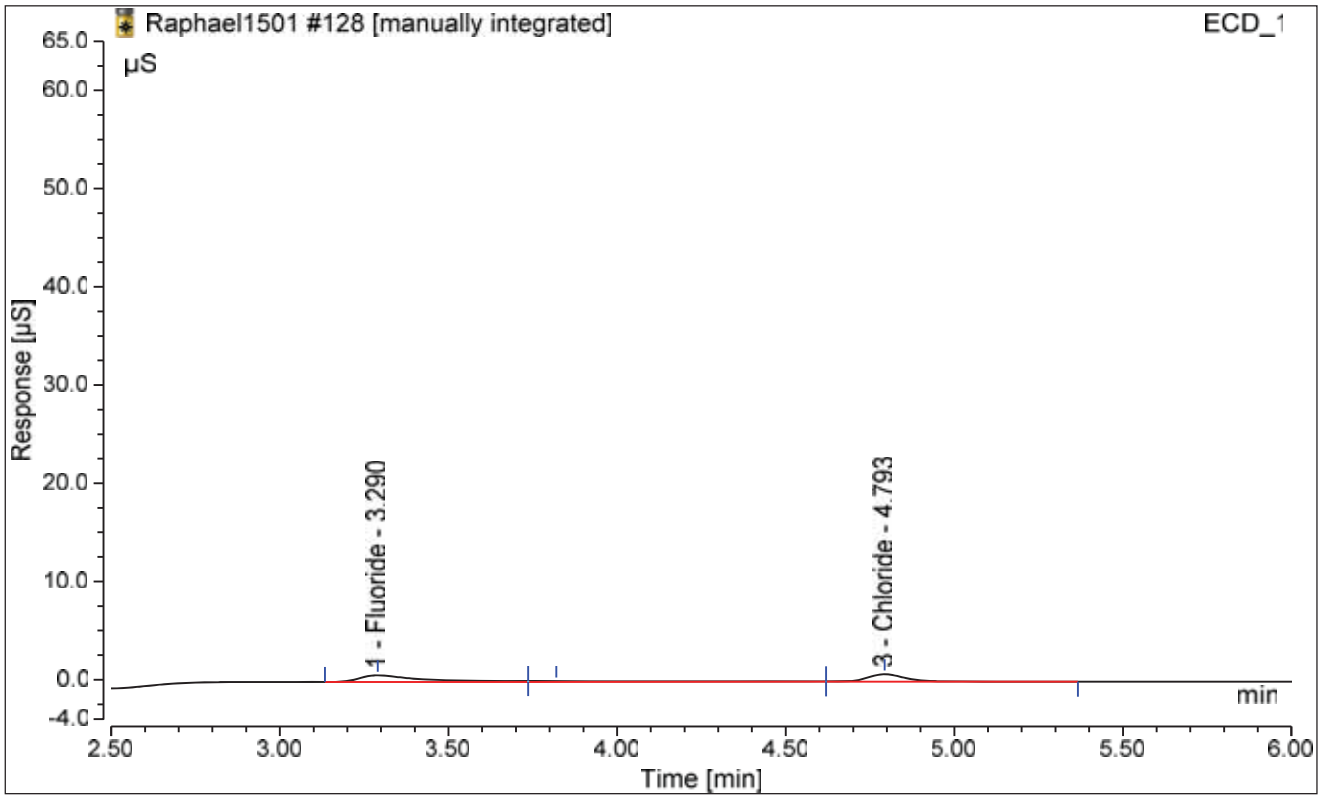


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	0.266	1.335	0.96542	FALSE	TRUE
3	4.79	Chloride	0.182	1.349	0.97279	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 02:37**	Run Time:	**14.50**

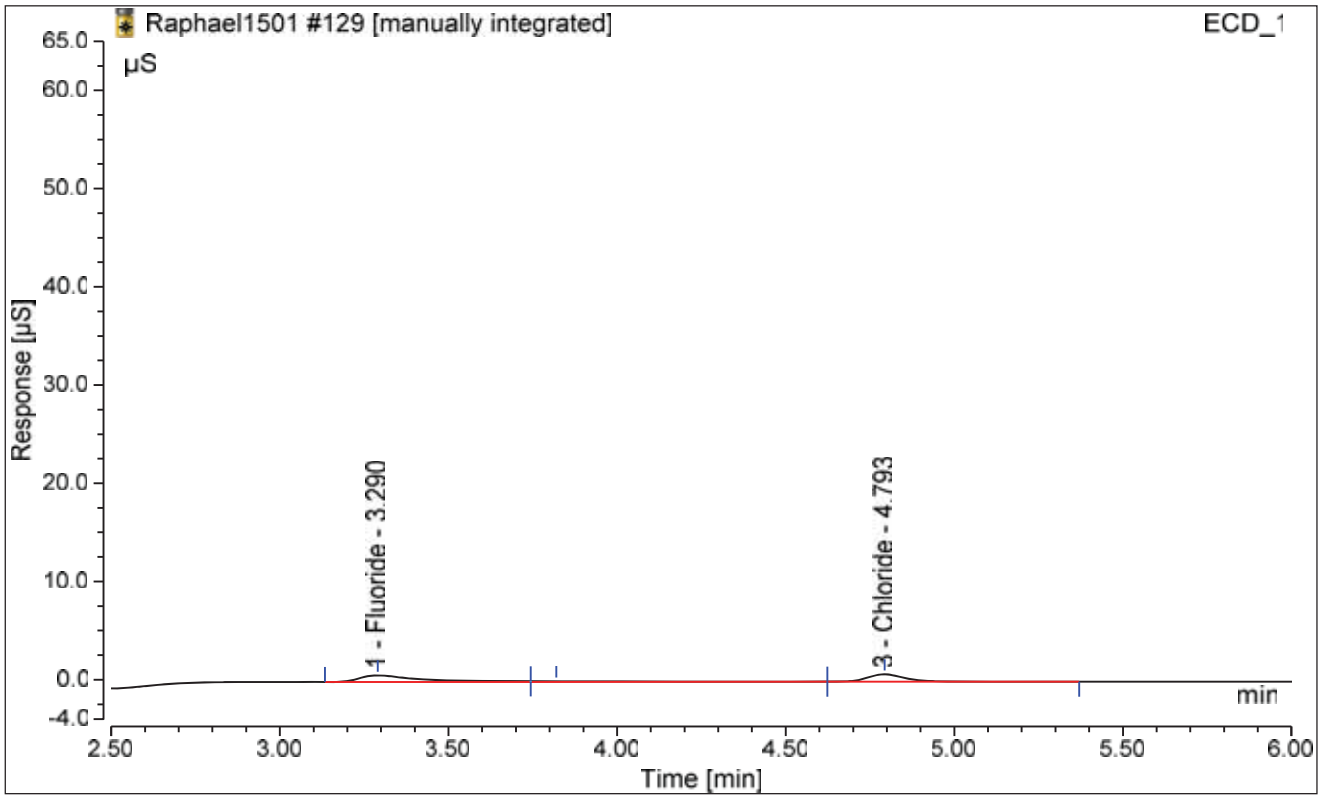


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	0.141	0.662	0.51245	FALSE	TRUE
3	4.79	Chloride	0.105	0.764	0.52959	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 02:53**	Run Time:	**14.50**

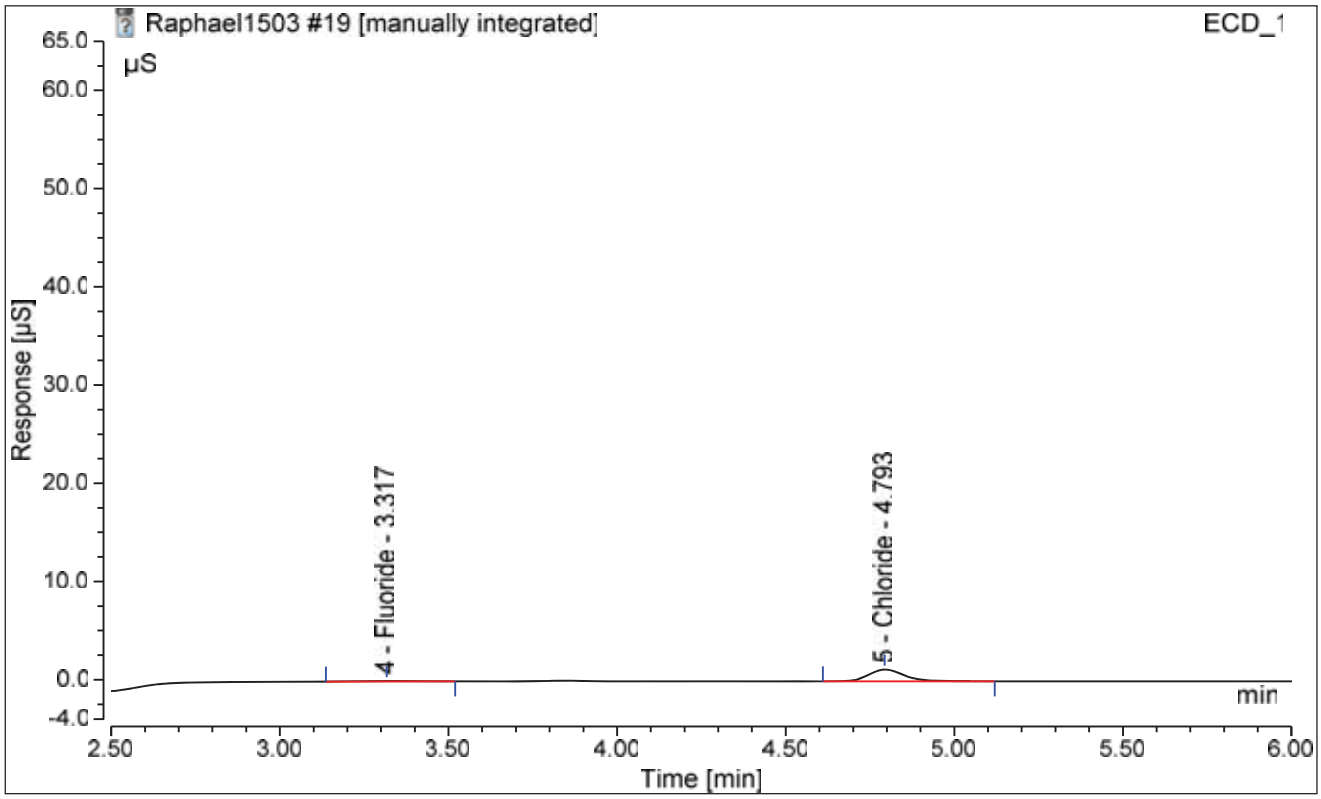


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	0.141	0.664	0.51340	FALSE	TRUE
3	4.79	Chloride	0.103	0.762	0.52222	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R1B.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 21:06**	Run Time:	**14.50**

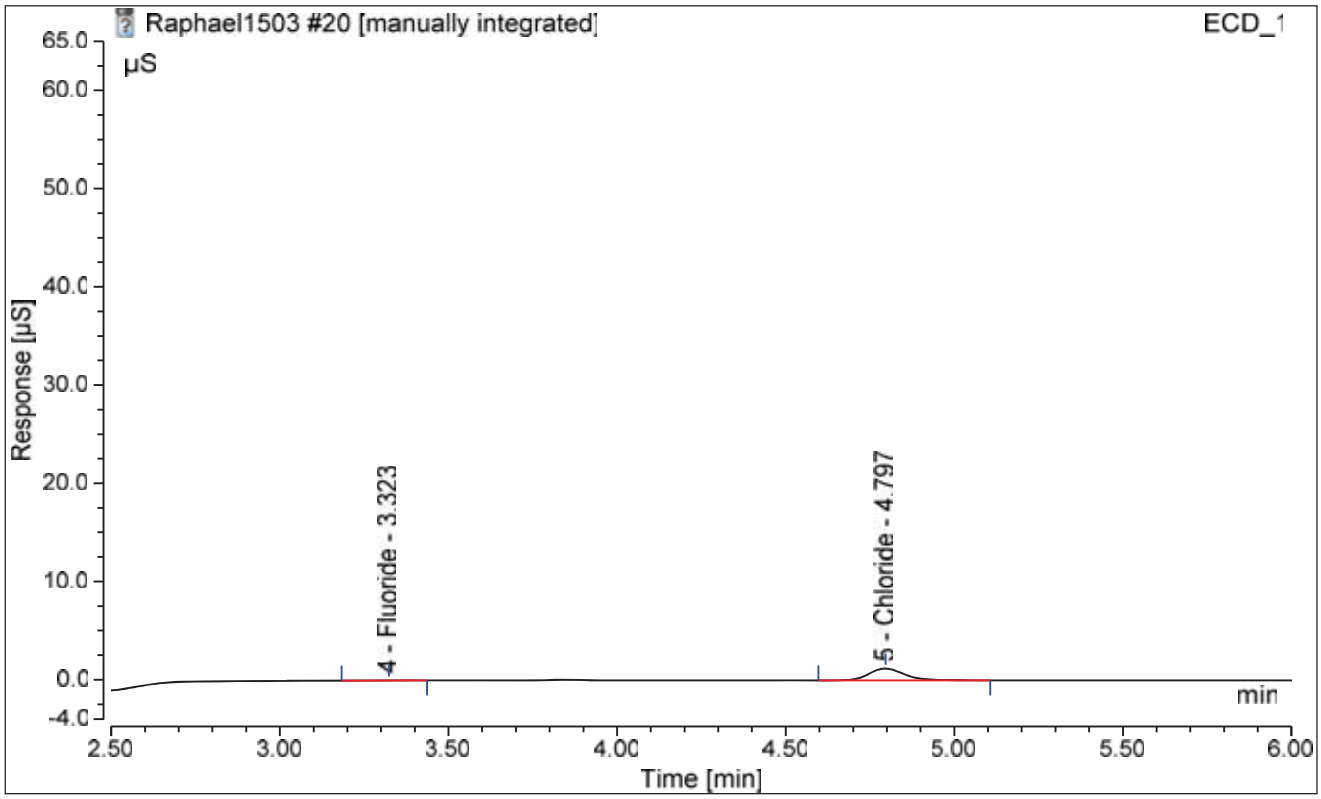


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
4	3.32	Fluoride	0.006	0.042	n.a.	FALSE	TRUE
5	4.79	Chloride	0.147	1.210	0.82588	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R1B.HCl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 21:22**	Run Time:	**14.50**

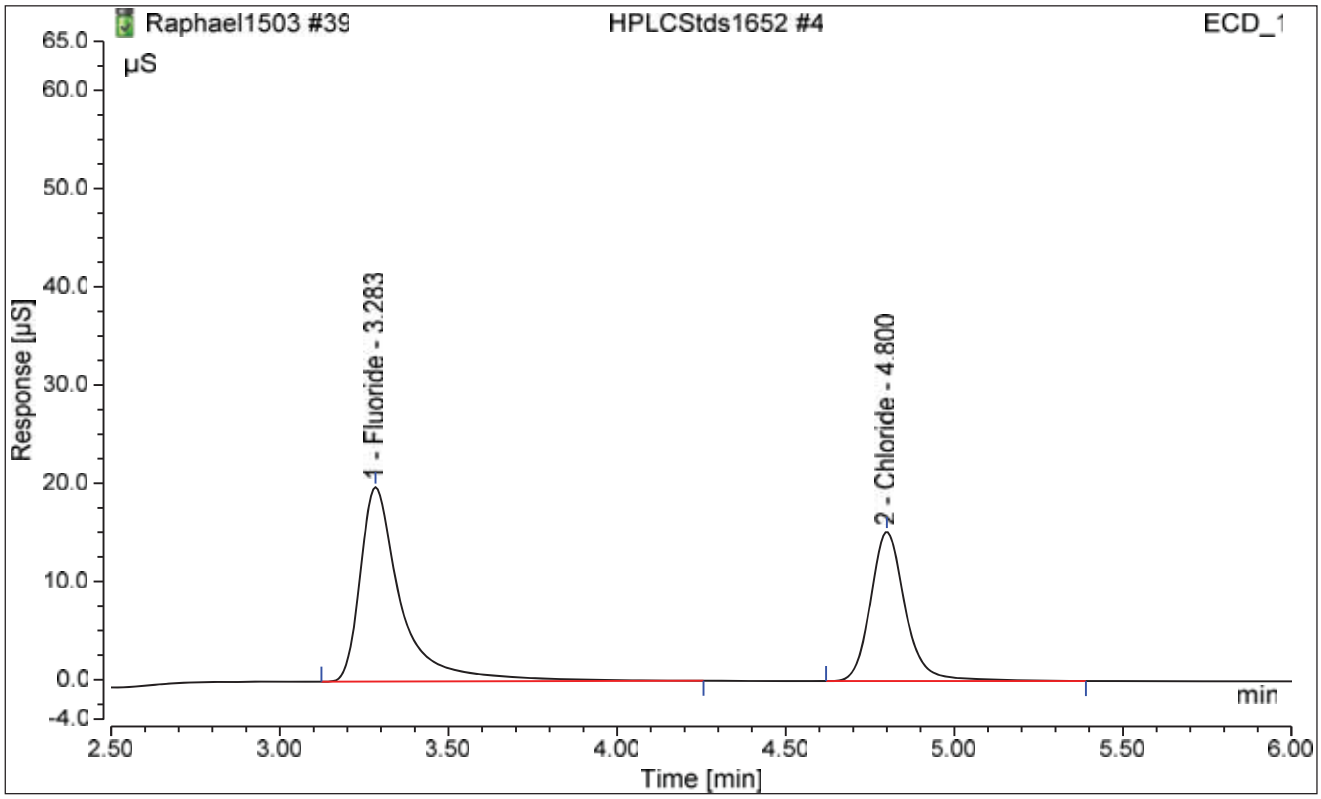


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
4	3.32	Fluoride	0.003	0.024	n.a.	FALSE	TRUE
5	4.80	Chloride	0.146	1.212	0.82102	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 02:28**	Run Time:	**14.50**

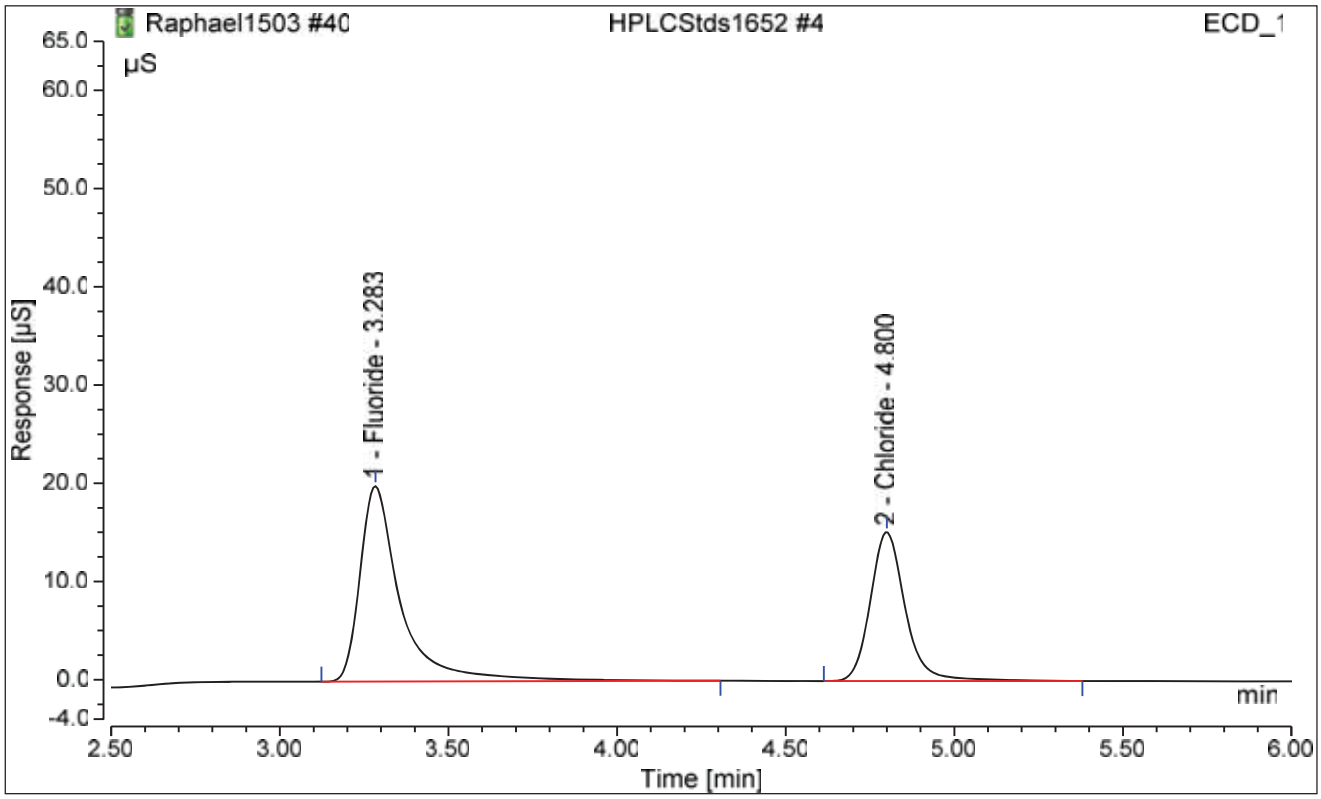


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	2.790	19.793	9.81918	FALSE	FALSE
2	4.80	Chloride	1.810	15.193	9.82649	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 02:44**	Run Time:	**14.50**



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	2.801	19.899	9.85616	FALSE	FALSE
2	4.80	Chloride	1.812	15.171	9.83664	FALSE	FALSE

Calibration Table

No.	Injection Name	Inject Time	Pos.	Level	Ref.Amount	Calibration Point Status	Dil.Factor	Volume	Ref.Amount	Calibration Point Status
					µg/mL ECD_1 Chloride	ECD_1 Chloride		µL	µg/mL ECD_1 Fluoride	ECD_1 Fluoride
3	HPLCStds1652 #6	29/Dec/2023 16:48	GA6	06	30.0000	Ok	1.0000	25.00	30.0000	Ok
4	HPLCStds1652 #6	29/Dec/2023 17:04	GA6	06	30.0000	Ok	1.0000	25.00	30.0000	Ok
5	HPLCStds1652 #5	29/Dec/2023 17:21	GA5	05	15.0000	Ok	1.0000	25.00	15.0000	Ok
6	HPLCStds1652 #5	29/Dec/2023 17:37	GA5	05	15.0000	Ok	1.0000	25.00	15.0000	Ok
7	HPLCStds1652 #4	29/Dec/2023 17:53	GA4	04	10.0000	Ok	1.0000	25.00	10.0000	Ok
8	HPLCStds1652 #4	29/Dec/2023 18:09	GA4	04	10.0000	Ok	1.0000	25.00	10.0000	Ok
9	HPLCStds1652 #3	29/Dec/2023 18:25	GA3	03	5.0000	Ok	1.0000	25.00	5.0000	Ok
10	HPLCStds1652 #3	29/Dec/2023 18:41	GA3	03	5.0000	Ok	1.0000	25.00	5.0000	Ok
11	HPLCStds1652 #2	29/Dec/2023 18:57	GA2	02	1.0000	Ok	1.0000	25.00	1.0000	Ok
12	HPLCStds1652 #2	29/Dec/2023 19:13	GA2	02	1.0000	Ok	1.0000	25.00	1.0000	Ok
13	HPLCStds1652 #1	29/Dec/2023 19:29	GA1	01	0.5000	Ok	1.0000	25.00	0.5000	Ok
14	HPLCStds1652 #1	29/Dec/2023 19:46	GA1	01	0.5000	Ok	1.0000	25.00	0.5000	Ok
55	HPLCStds1652 #6	30/Dec/2023 06:46	GA6	06	30.0000	Ok	1.0000	25.00	30.0000	Ok
56	HPLCStds1652 #6	30/Dec/2023 07:02	GA6	06	30.0000	Ok	1.0000	25.00	30.0000	Ok
57	HPLCStds1652 #5	30/Dec/2023 07:18	GA5	05	15.0000	Ok	1.0000	25.00	15.0000	Ok
58	HPLCStds1652 #5	30/Dec/2023 07:34	GA5	05	15.0000	Ok	1.0000	25.00	15.0000	Ok
59	HPLCStds1652 #4	30/Dec/2023 07:50	GA4	04	10.0000	Ok	1.0000	25.00	10.0000	Ok
60	HPLCStds1652 #4	30/Dec/2023 08:06	GA4	04	10.0000	Ok	1.0000	25.00	10.0000	Ok
61	HPLCStds1652 #3	30/Dec/2023 08:22	GA3	03	5.0000	Ok	1.0000	25.00	5.0000	Ok
62	HPLCStds1652 #3	30/Dec/2023 08:39	GA3	03	5.0000	Ok	1.0000	25.00	5.0000	Ok
63	HPLCStds1652 #2	30/Dec/2023 08:55	GA2	02	1.0000	Ok	1.0000	25.00	1.0000	Ok
64	HPLCStds1652 #2	30/Dec/2023 09:11	GA2	02	1.0000	Ok	1.0000	25.00	1.0000	Ok
65	HPLCStds1652 #1	30/Dec/2023 09:27	GA1	01	0.5000	Ok	1.0000	25.00	0.5000	Ok
66	HPLCStds1652 #1	30/Dec/2023 09:43	GA1	01	0.5000	Ok	1.0000	25.00	0.5000	Ok

Detection Parameters

Ret. Time min	Param. Name	Param. Value	Inj. Type	Channel
Always	Baseline Noise Auto Range	On	Any	All Channels
Always	Cobra Smoothing Width	Auto	Any	All Channels
Always	Consider Void Peak	Off	Any	All Channels
0.000	Maximum Rider Ratio	10 [%]	Any	All Channels
0.000	Tailing Sensitivity Factor	0.100 [%]	Any	All Channels
0.000	Inhibit Integration	On	Any	All Channels
0.000	Minimum Area	Auto	Any	All Channels
3.030	Inhibit Integration	Off	Any	All Channels
7.174	Inhibit Integration	On	Any	All Channels

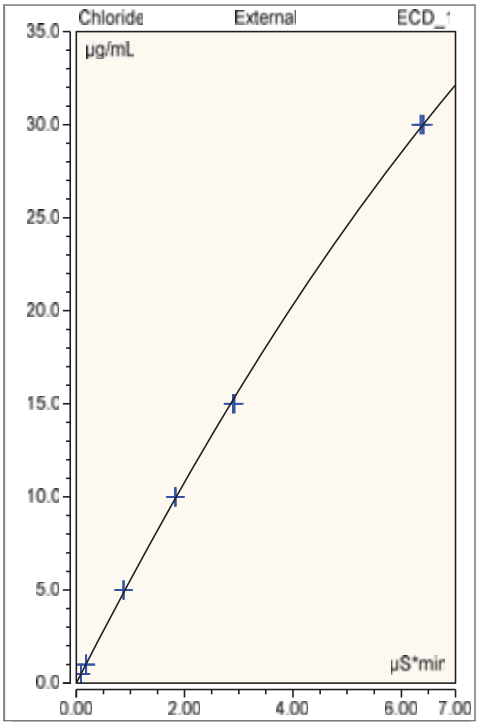
Calibration Batch Report

Sequence:	Raphael1503	*Injection Volume:*	25.00
Instrument Method:	AS22 ASAP new	*Operator:*	searundhati
Inj. Date / Time:	29-Dec-2023 / 21:06	*Run Time:*	14.5

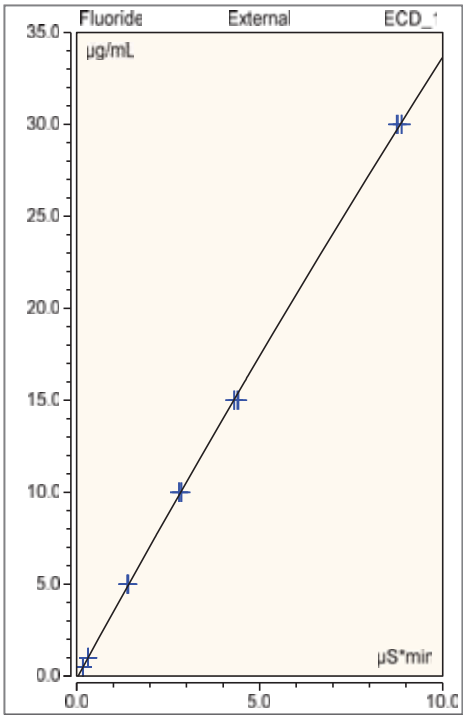
Calibration Summary

Peak Name	Eval.Type	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
Fluoride	Area	Quad, WithOffset, 1/A	24.000	-0.115	3.632	-0.026	99.979
Chloride	Area	Quad, WithOffset, 1/A	24.000	-0.013	5.729	-0.162	99.981
		AVERAGE:		-0.0639	4.6804	-0.0940	99.9799

Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount µg/mL ECD_1
	Chloride	Chloride	Chloride	Chloride
HPLCStds1652 #6	4.813	6.351	55.521	29.820
HPLCStds1652 #6	4.817	6.361	55.466	29.857
HPLCStds1652 #5	4.807	2.905	24.602	15.259
HPLCStds1652 #5	4.807	2.891	24.603	15.191
HPLCStds1652 #4	4.803	1.835	15.223	9.952
HPLCStds1652 #4	4.800	1.819	15.174	9.869
HPLCStds1652 #3	4.797	0.872	6.985	4.856
HPLCStds1652 #3	4.797	0.870	6.995	4.849
HPLCStds1652 #2	4.793	0.182	1.369	1.026
HPLCStds1652 #2	4.793	0.180	1.365	1.012
HPLCStds1652 #1	4.793	0.088	0.685	0.491
HPLCStds1652 #1	4.790	0.089	0.687	0.496
HPLCStds1652 #6	4.820	6.418	55.664	30.065
HPLCStds1652 #6	4.820	6.393	55.290	29.974
HPLCStds1652 #5	4.803	2.888	24.538	15.179
HPLCStds1652 #5	4.807	2.926	24.810	15.360
HPLCStds1652 #4	4.803	1.838	15.313	9.968
HPLCStds1652 #4	4.803	1.828	15.169	9.918
HPLCStds1652 #3	4.797	0.878	7.061	4.890
HPLCStds1652 #3	4.797	0.874	6.940	4.869
HPLCStds1652 #2	4.793	0.182	1.374	1.024
HPLCStds1652 #2	4.793	0.183	1.381	1.027
HPLCStds1652 #1	4.790	0.090	0.690	0.501
HPLCStds1652 #1	4.797	0.091	0.696	0.507

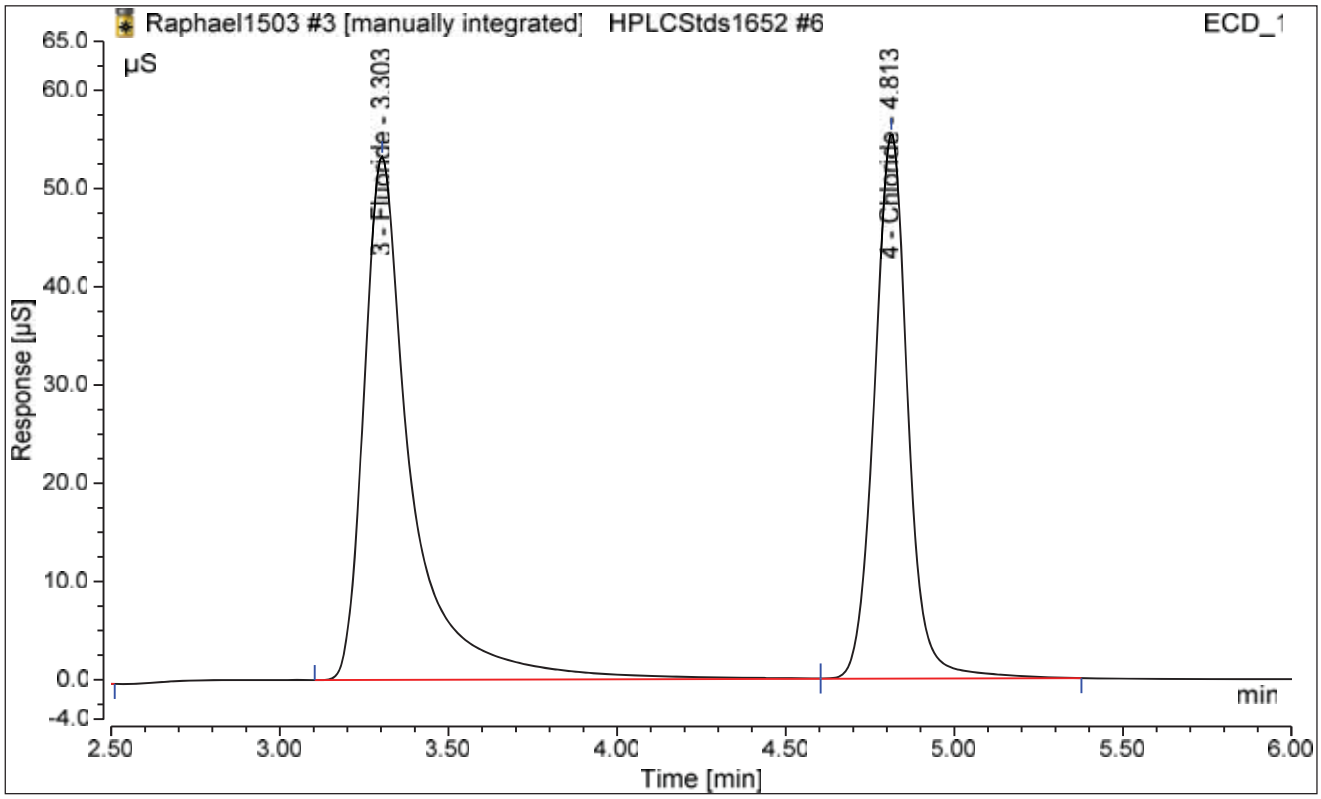


Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount µg/mL ECD_1
	Fluoride	Fluoride	Fluoride	Fluoride
HPLCStds1652 #6	3.303	8.748	53.302	29.692
HPLCStds1652 #6	3.307	8.777	55.122	29.786
HPLCStds1652 #5	3.293	4.304	26.170	15.041
HPLCStds1652 #5	3.293	4.305	26.767	15.045
HPLCStds1652 #4	3.287	2.797	16.808	9.842
HPLCStds1652 #4	3.287	2.792	17.083	9.825
HPLCStds1652 #3	3.283	1.384	7.656	4.861
HPLCStds1652 #3	3.283	1.381	7.755	4.851
HPLCStds1652 #2	3.290	0.307	1.313	0.998
HPLCStds1652 #2	3.287	0.310	1.324	1.009
HPLCStds1652 #1	3.293	0.167	0.649	0.489
HPLCStds1652 #1	3.290	0.170	0.654	0.504
HPLCStds1652 #6	3.307	8.882	65.057	30.118
HPLCStds1652 #6	3.307	8.878	64.962	30.105
HPLCStds1652 #5	3.290	4.386	32.090	15.322
HPLCStds1652 #5	3.290	4.419	32.182	15.434
HPLCStds1652 #4	3.287	2.866	20.296	10.084
HPLCStds1652 #4	3.287	2.844	20.128	10.006
HPLCStds1652 #3	3.283	1.416	9.152	4.977
HPLCStds1652 #3	3.280	1.400	9.060	4.920
HPLCStds1652 #2	3.283	0.313	1.555	1.020
HPLCStds1652 #2	3.287	0.313	1.556	1.019
HPLCStds1652 #1	3.287	0.171	0.757	0.504
HPLCStds1652 #1	3.290	0.172	0.757	0.509



Peak Analysis Report

Sample Name:	**HPLCStds1652 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 16:48**	Run Time:	**14.50**

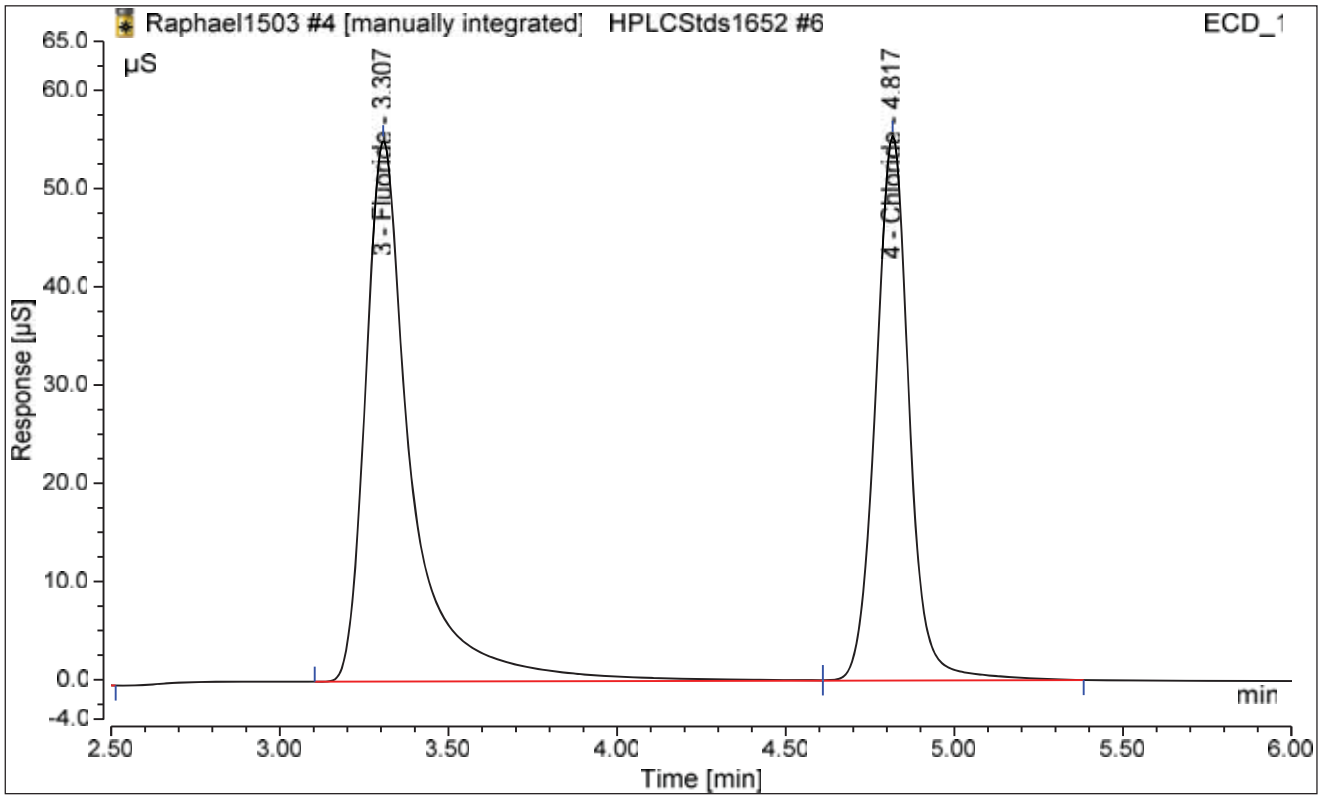


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
3	3.30	Fluoride	8.748	53.302	29.69209	FALSE	TRUE
4	4.81	Chloride	6.351	55.521	29.82050	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 17:04**	Run Time:	**14.50**

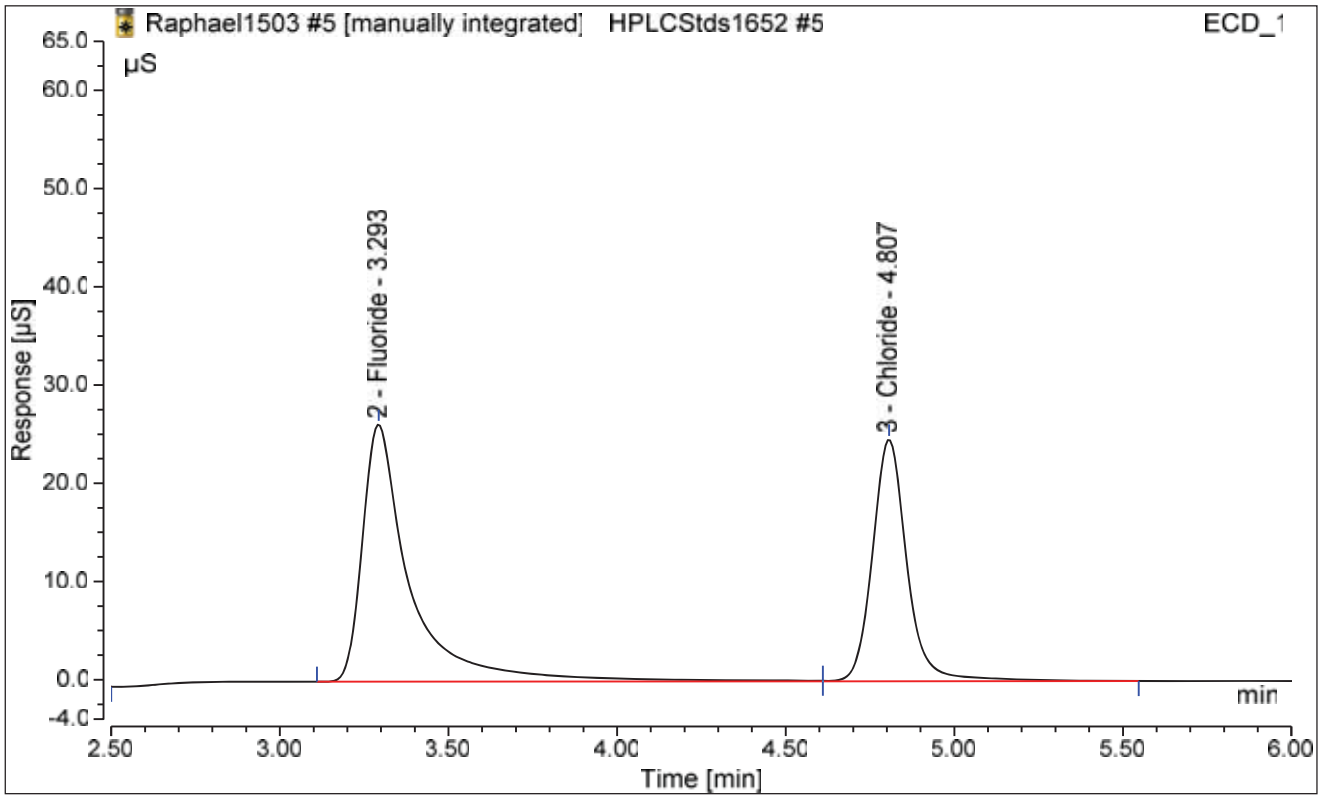


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
3	3.31	Fluoride	8.777	55.122	29.78597	FALSE	TRUE
4	4.82	Chloride	6.361	55.466	29.85667	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 17:21**	Run Time:	**14.50**

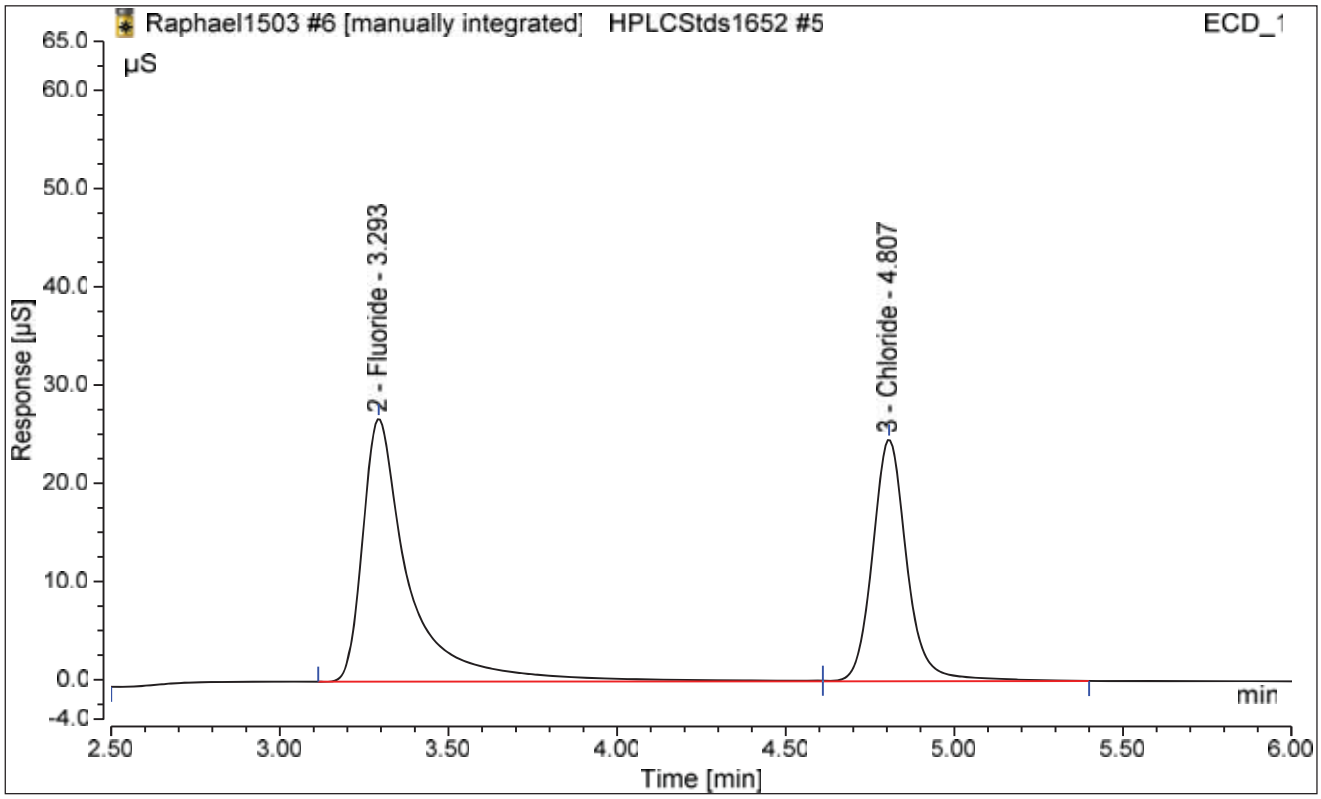


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	4.304	26.170	15.04086	FALSE	TRUE
3	4.81	Chloride	2.905	24.602	15.25860	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 17:37**	Run Time:	**14.50**

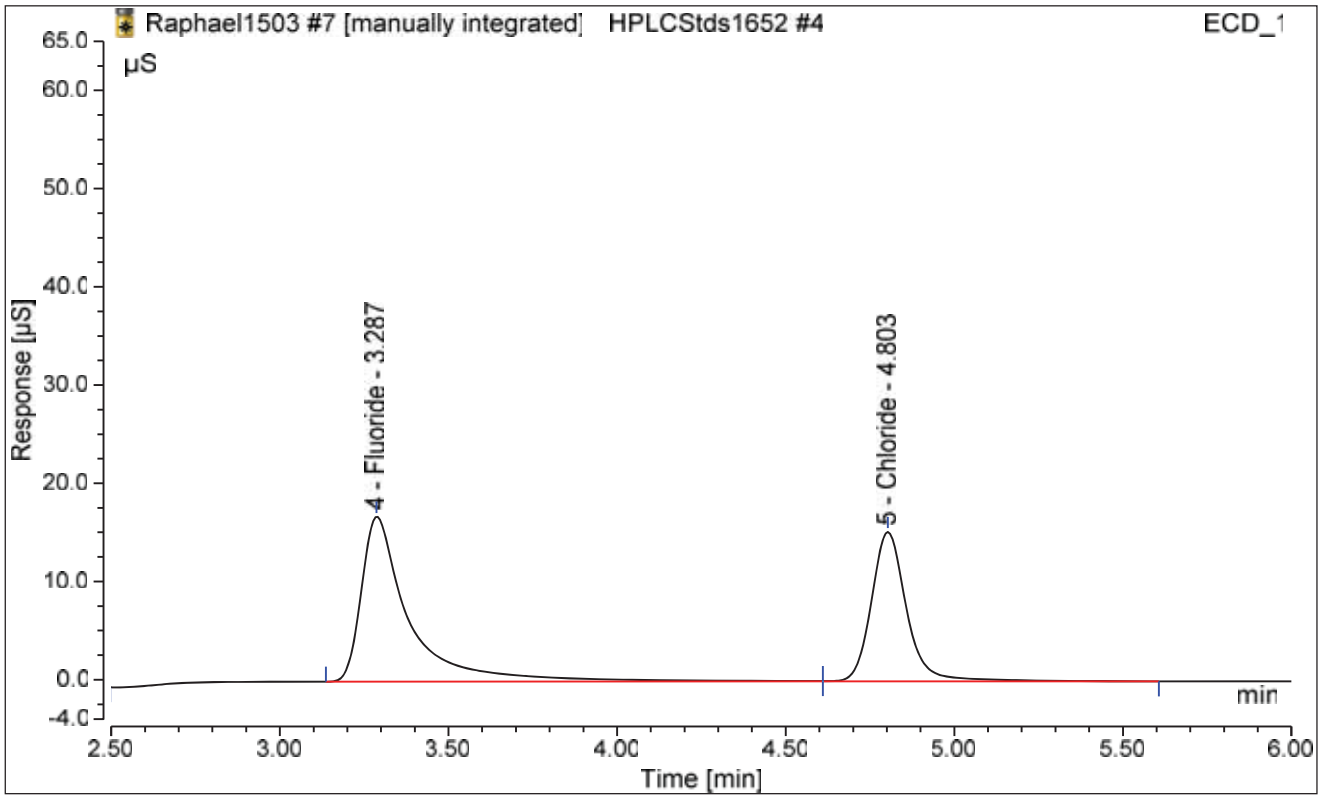


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	4.305	26.767	15.04488	FALSE	TRUE
3	4.81	Chloride	2.891	24.603	15.19133	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 17:53**	Run Time:	**14.50**

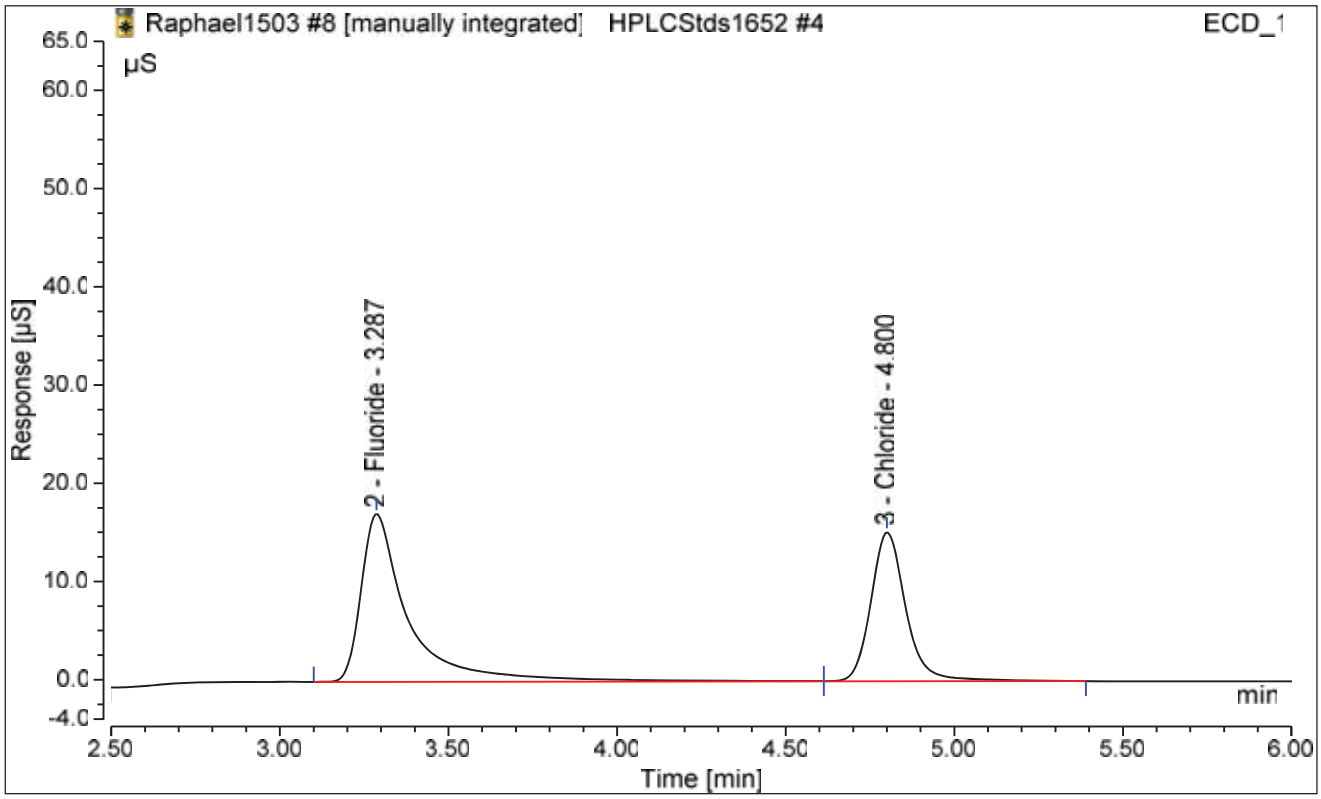


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
4	3.29	Fluoride	2.797	16.808	9.84208	FALSE	TRUE
5	4.80	Chloride	1.835	15.223	9.95225	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 18:09**	Run Time:	**14.50**

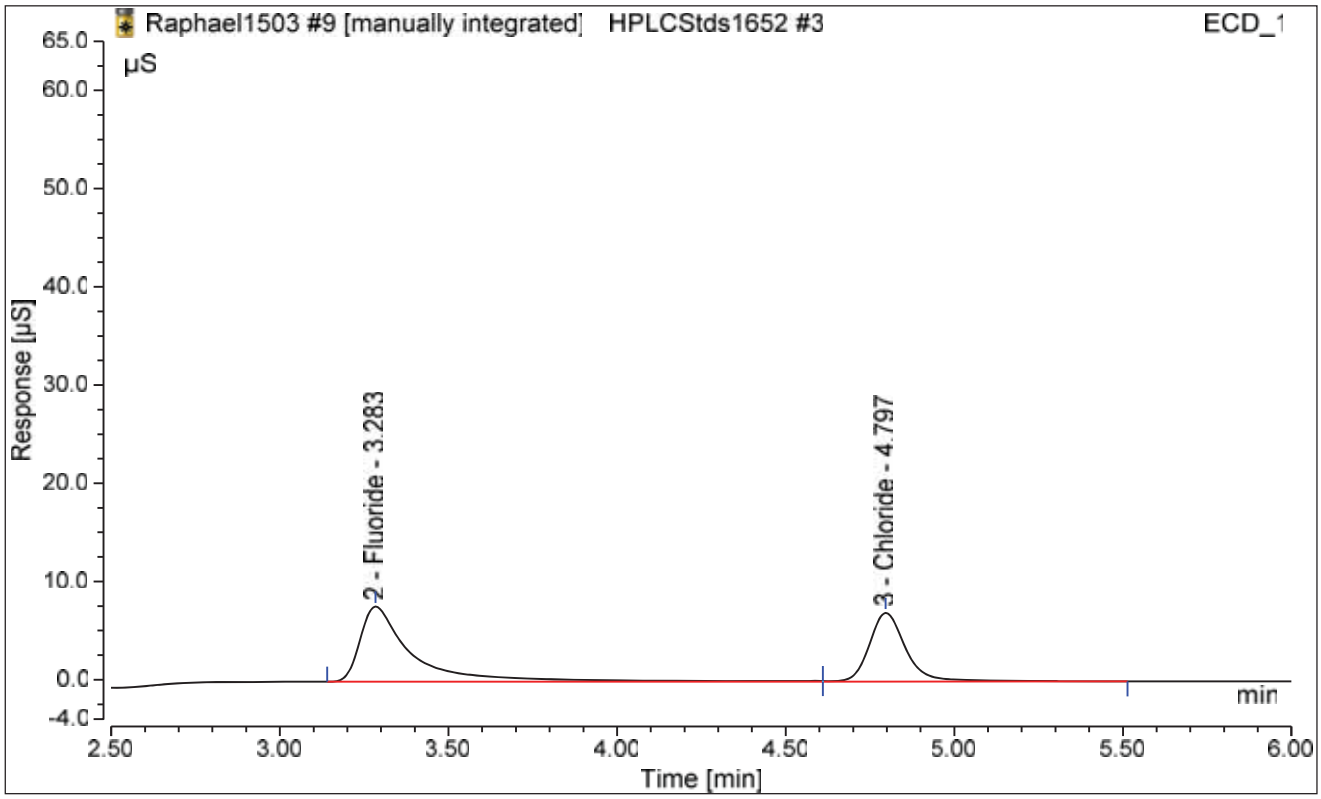


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	2.792	17.083	9.82497	FALSE	TRUE
3	4.80	Chloride	1.819	15.174	9.86868	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 18:25**	Run Time:	**14.50**

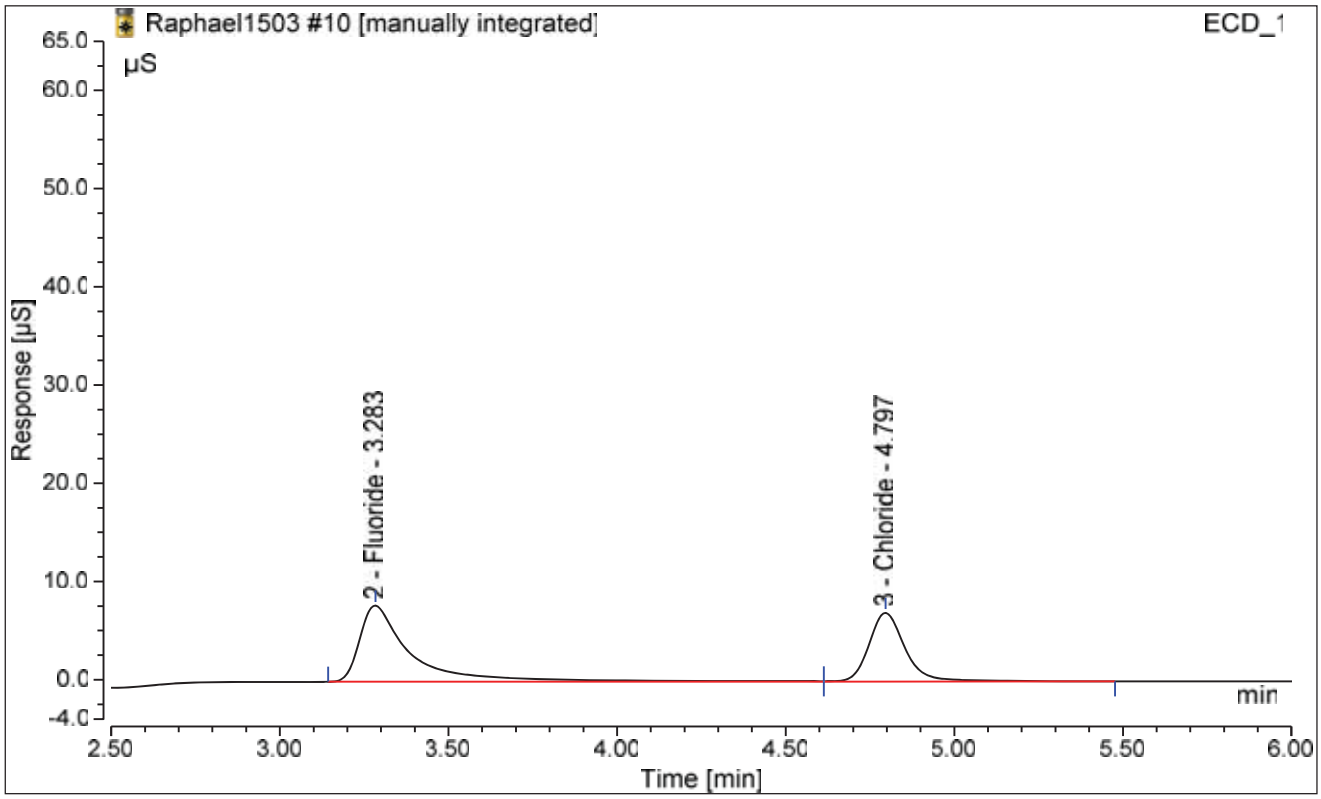


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.28	Fluoride	1.384	7.656	4.86095	FALSE	TRUE
3	4.80	Chloride	0.872	6.985	4.85640	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 18:41**	Run Time:	**14.50**

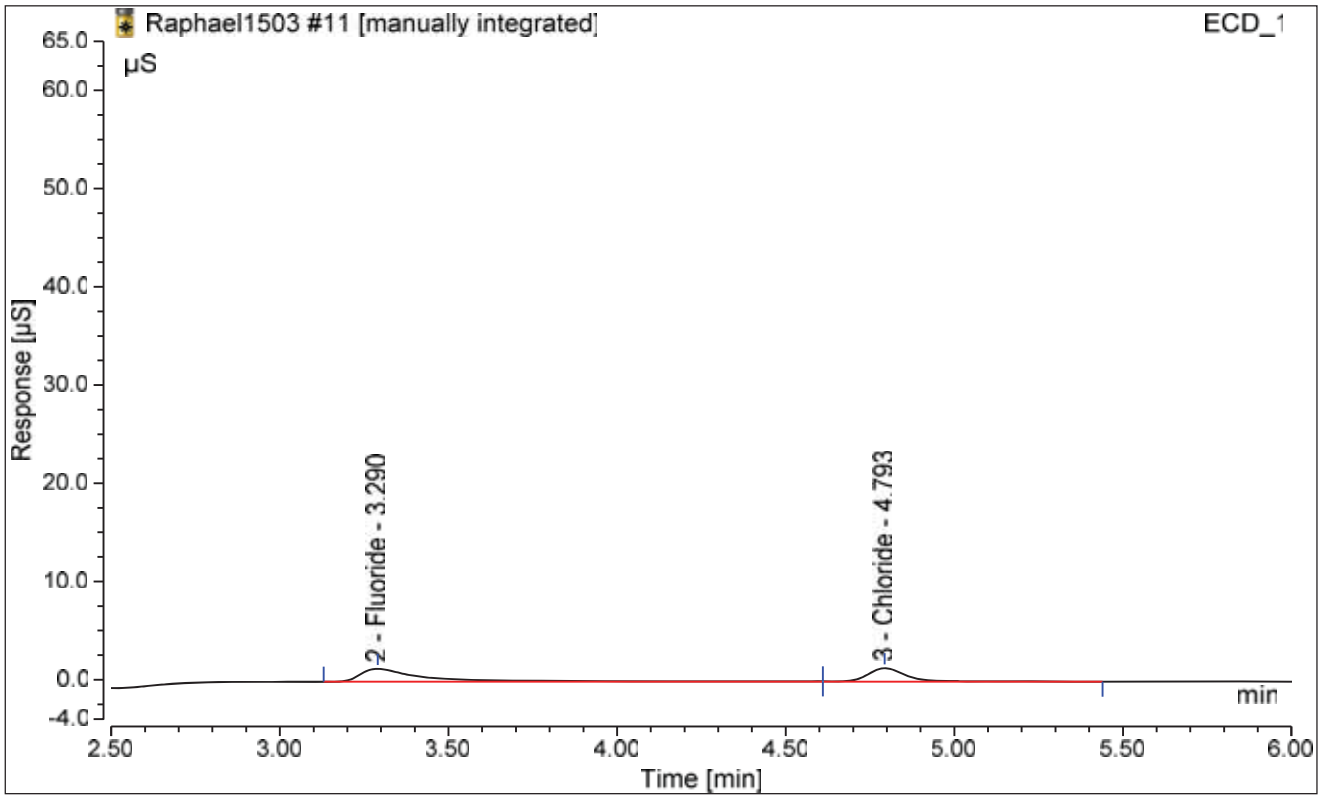


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.28	Fluoride	1.381	7.755	4.85085	FALSE	TRUE
3	4.80	Chloride	0.870	6.995	4.84867	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 18:57**	Run Time:	**14.50**

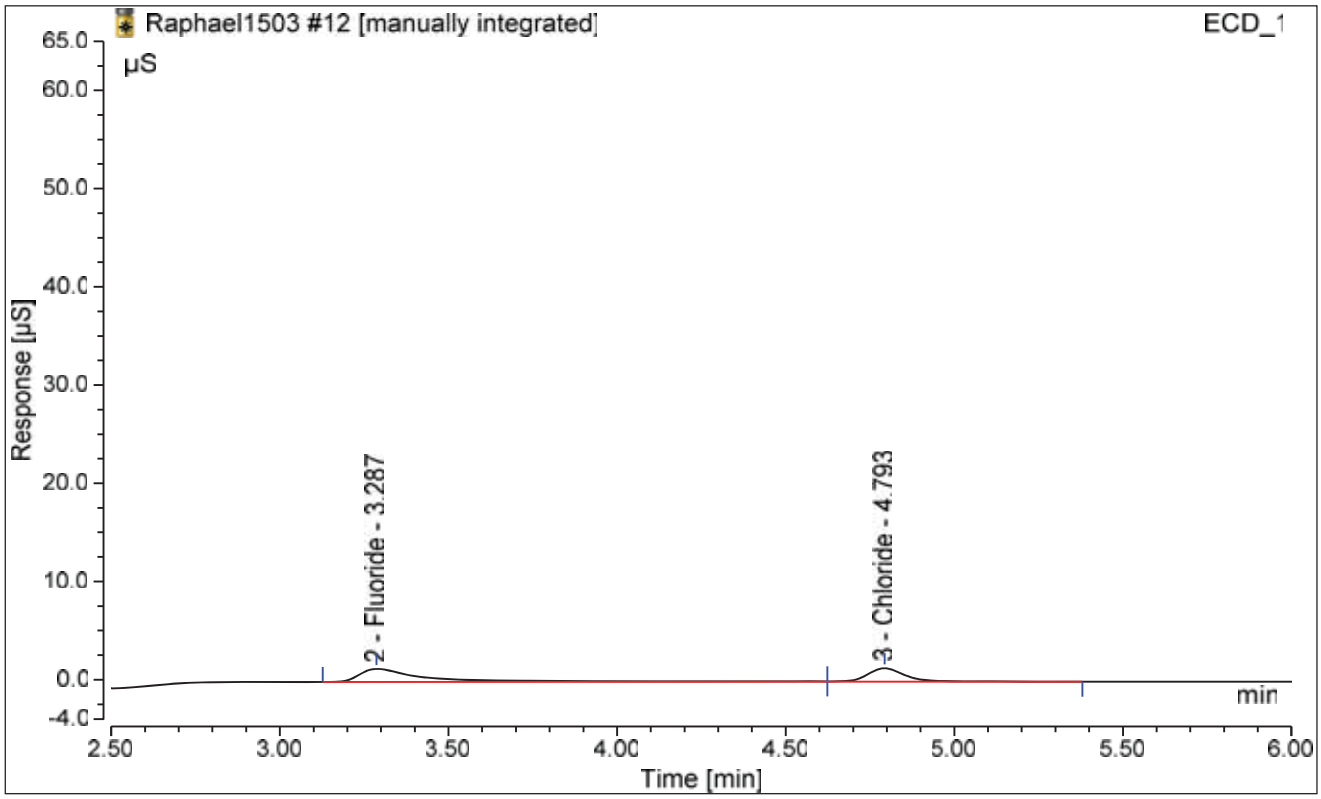


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	0.307	1.313	0.99773	FALSE	TRUE
3	4.79	Chloride	0.182	1.369	1.02595	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 19:13**	Run Time:	**14.50**

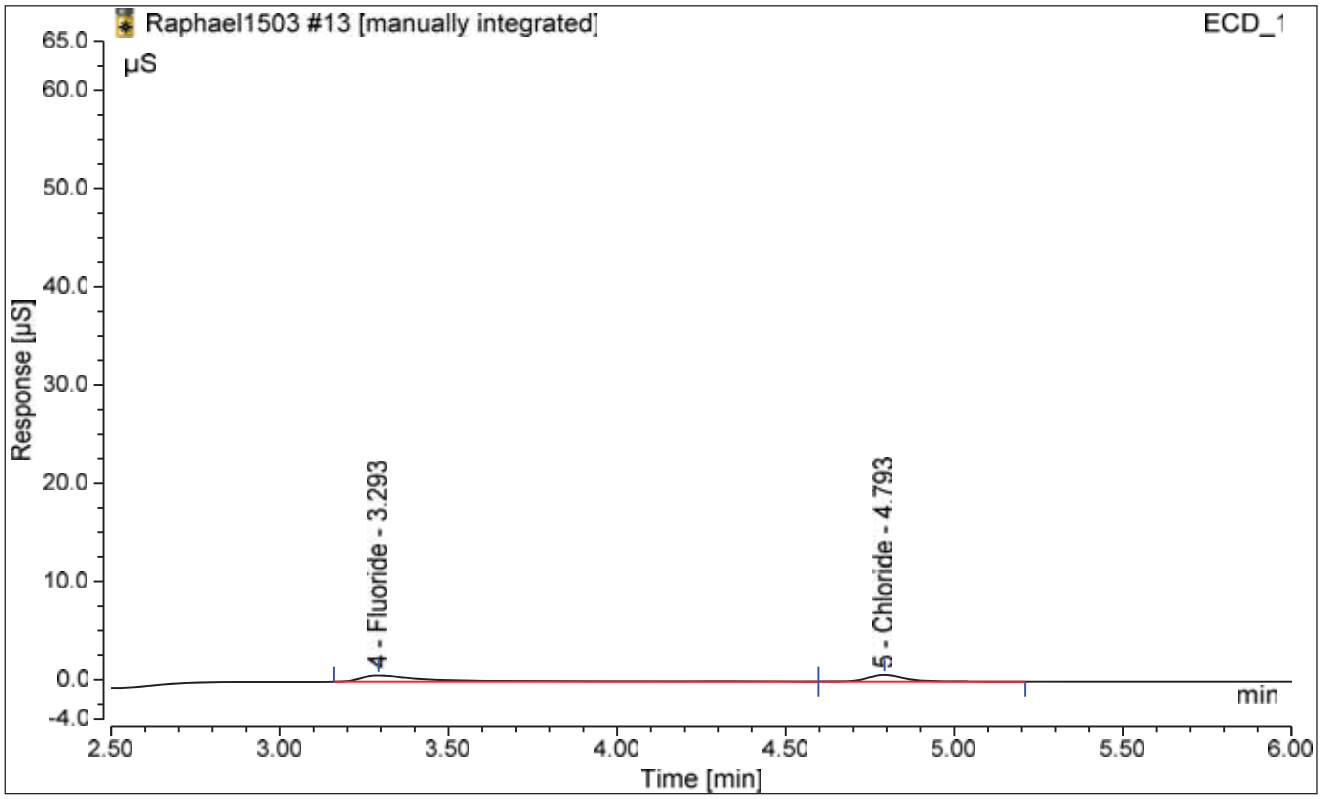


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	0.310	1.324	1.00870	FALSE	TRUE
3	4.79	Chloride	0.180	1.365	1.01155	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 19:29**	Run Time:	**14.50**

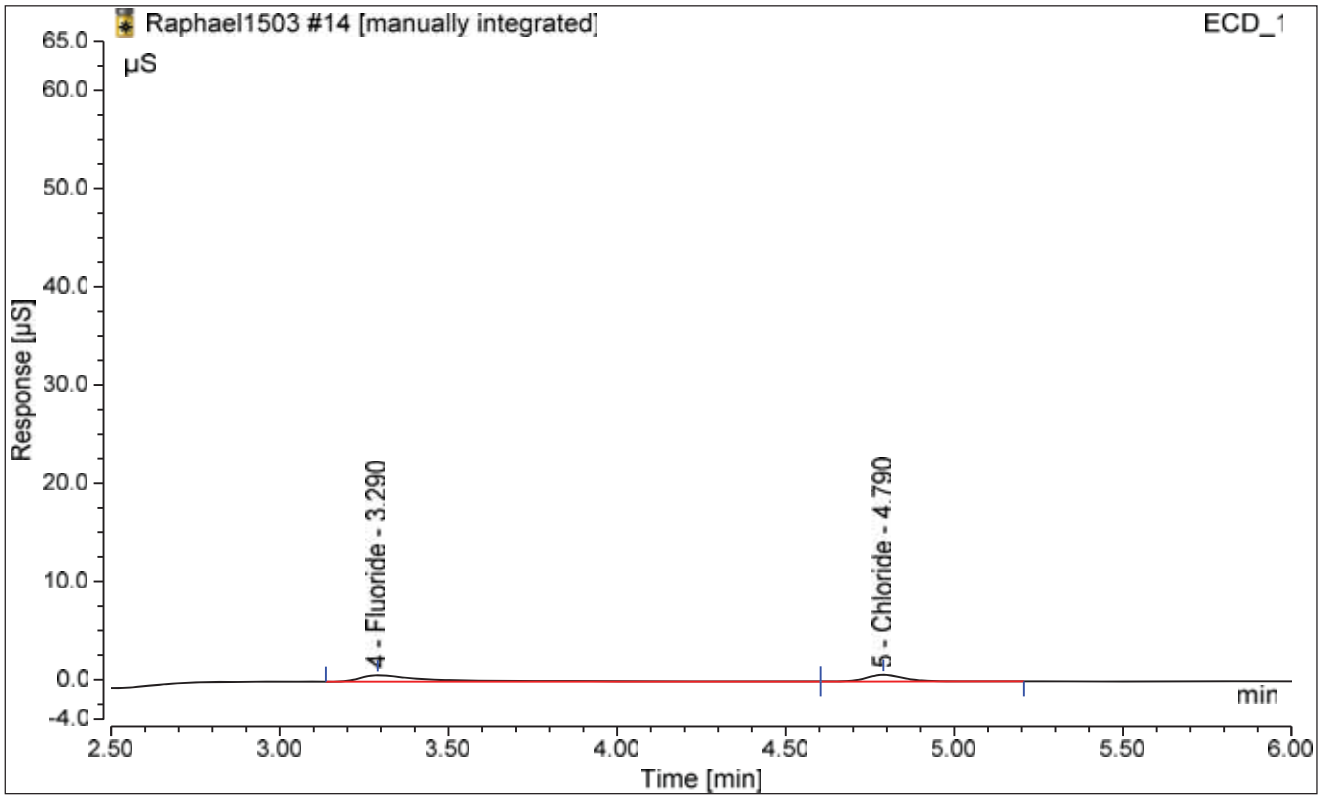


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
4	3.29	Fluoride	0.167	0.649	0.48944	FALSE	TRUE
5	4.79	Chloride	0.088	0.685	0.49146	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 19:46**	Run Time:	**14.50**

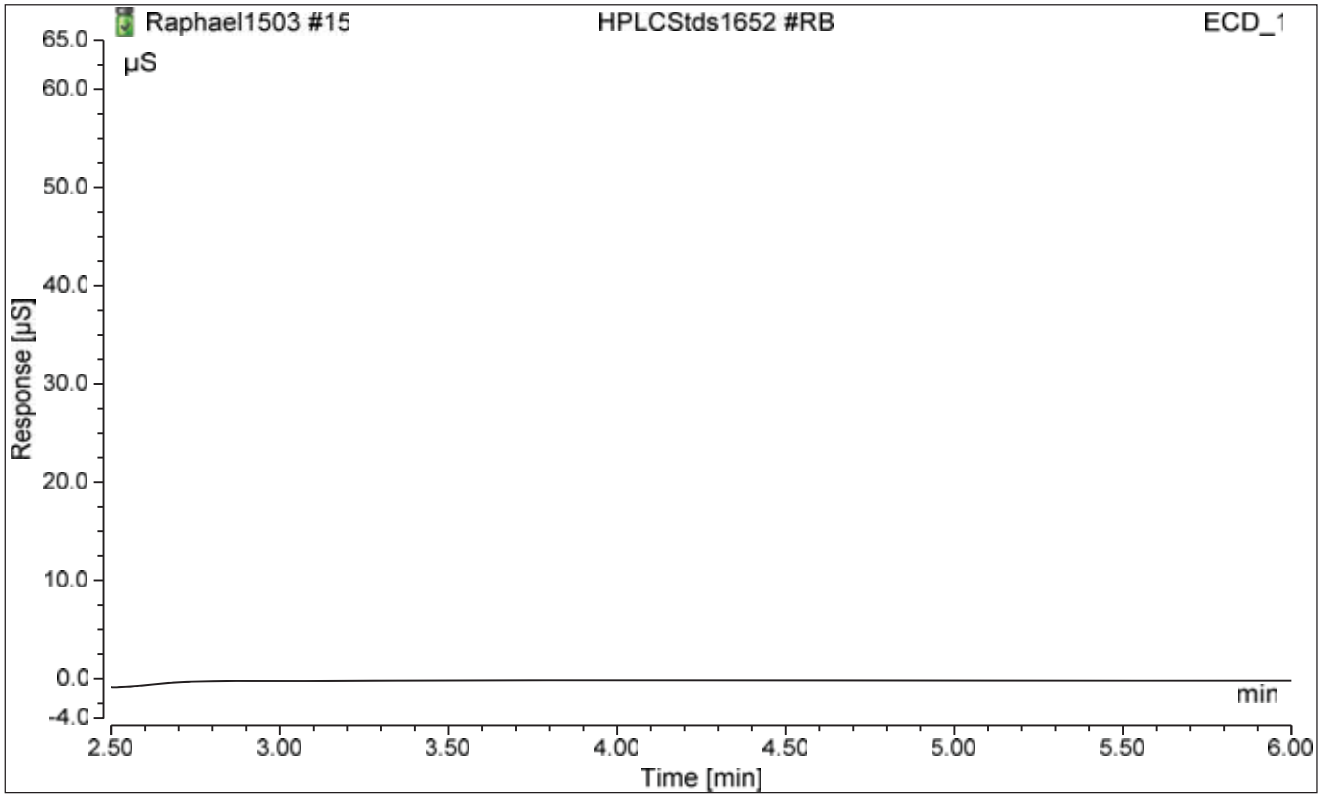


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
4	3.29	Fluoride	0.170	0.654	0.50355	FALSE	TRUE
5	4.79	Chloride	0.089	0.687	0.49581	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 20:02**	Run Time:	**14.50**

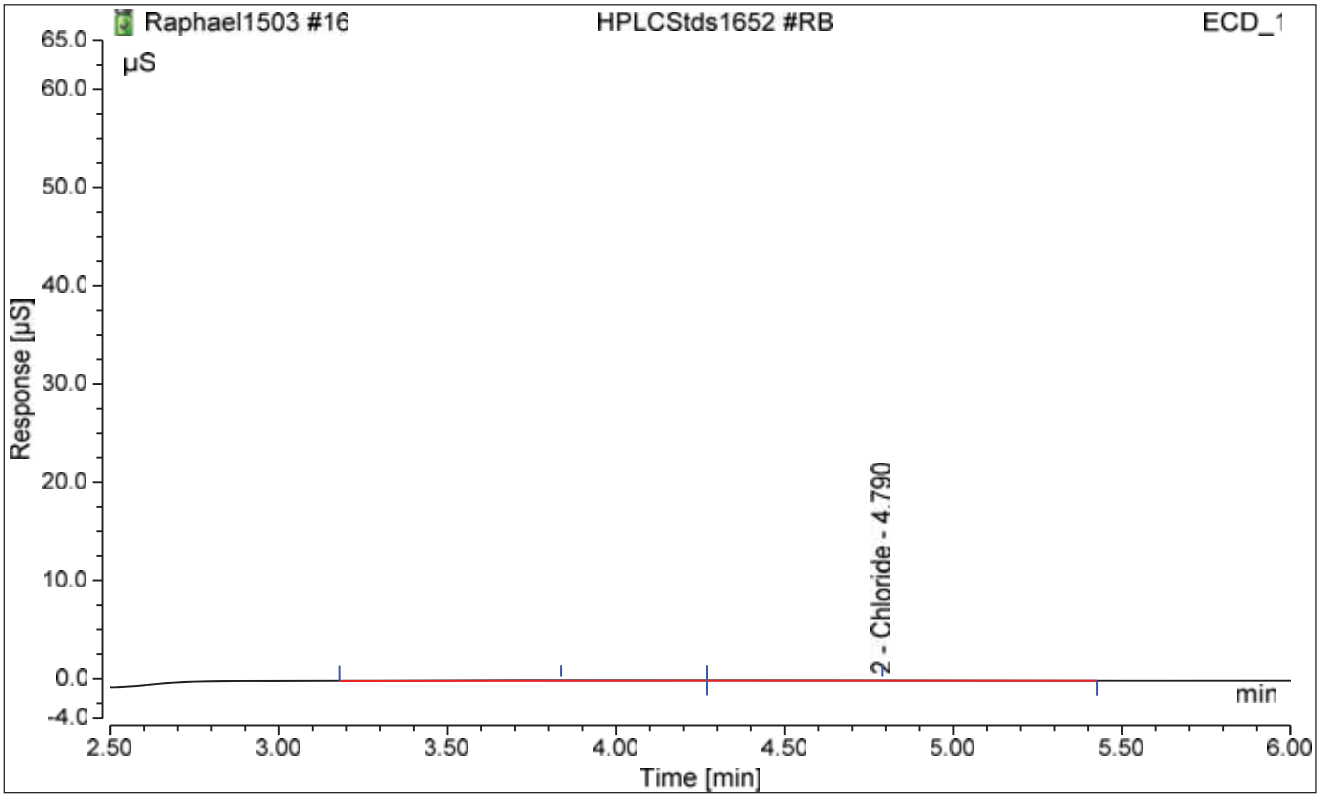


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?

Peak Analysis Report

Sample Name:	**HPLCStds1652 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 20:18**	Run Time:	**14.50**

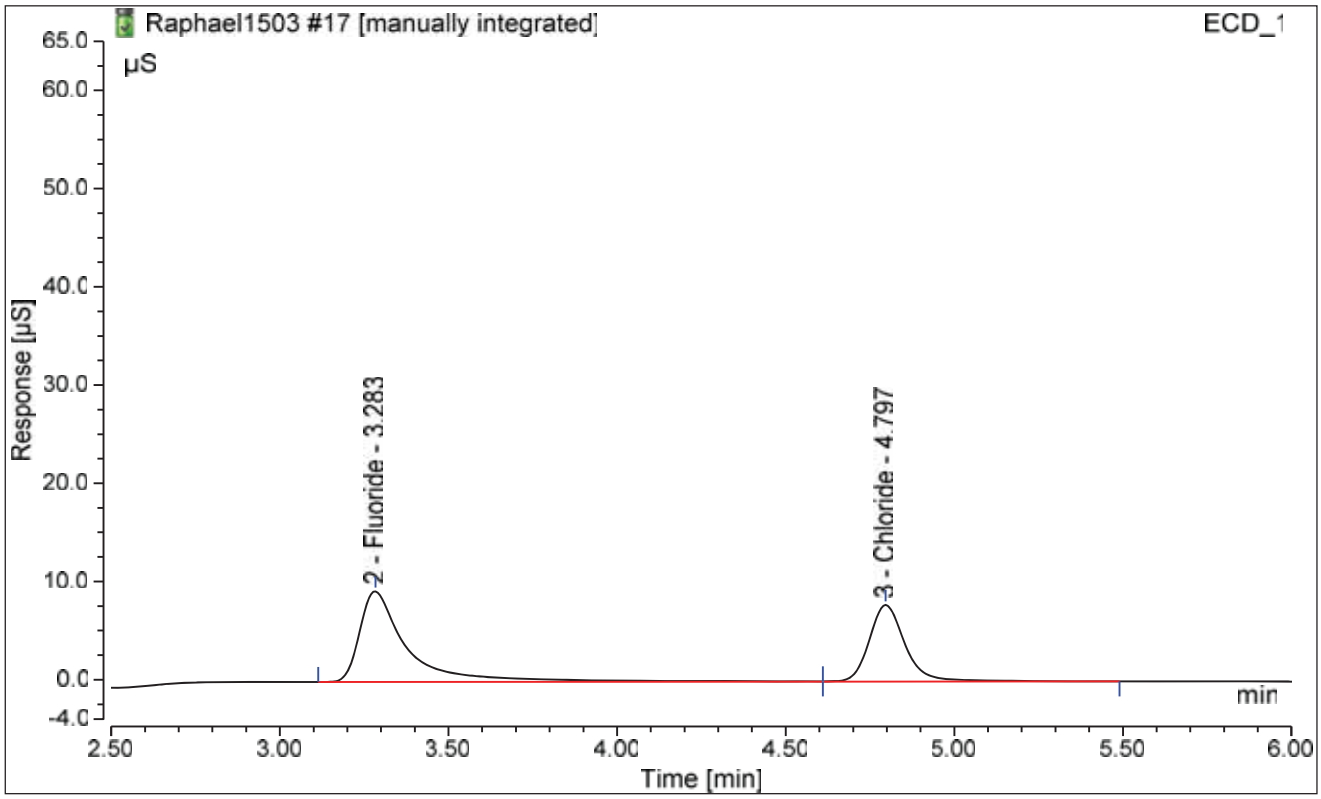


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	4.79	Chloride	0.021	0.032	0.10718	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 20:34**	Run Time:	**14.50**

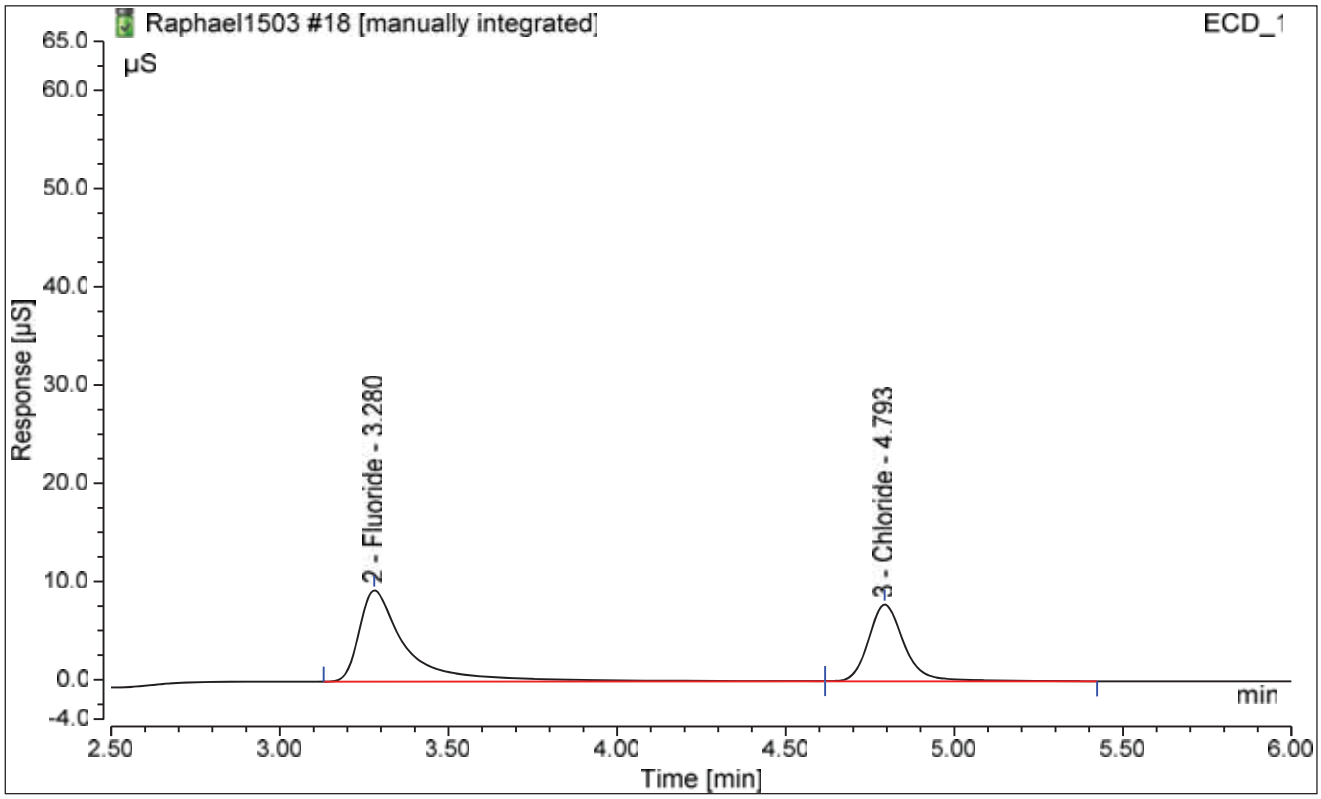


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.28	Fluoride	1.524	9.216	5.36160	FALSE	TRUE
3	4.80	Chloride	0.963	7.795	5.35516	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 20:50**	Run Time:	**14.50**

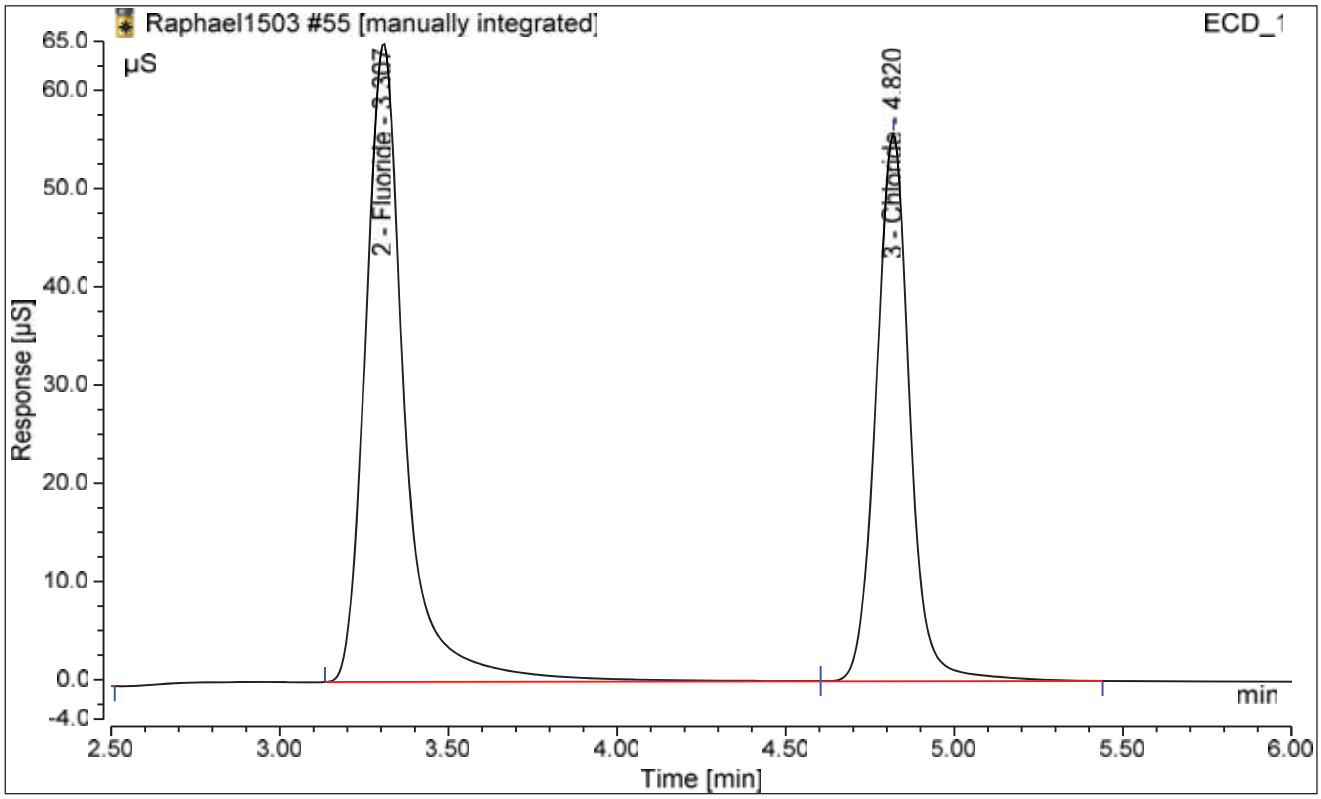


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.28	Fluoride	1.527	9.288	5.36989	FALSE	TRUE
3	4.79	Chloride	0.962	7.817	5.34767	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 06:46**	Run Time:	**14.50**

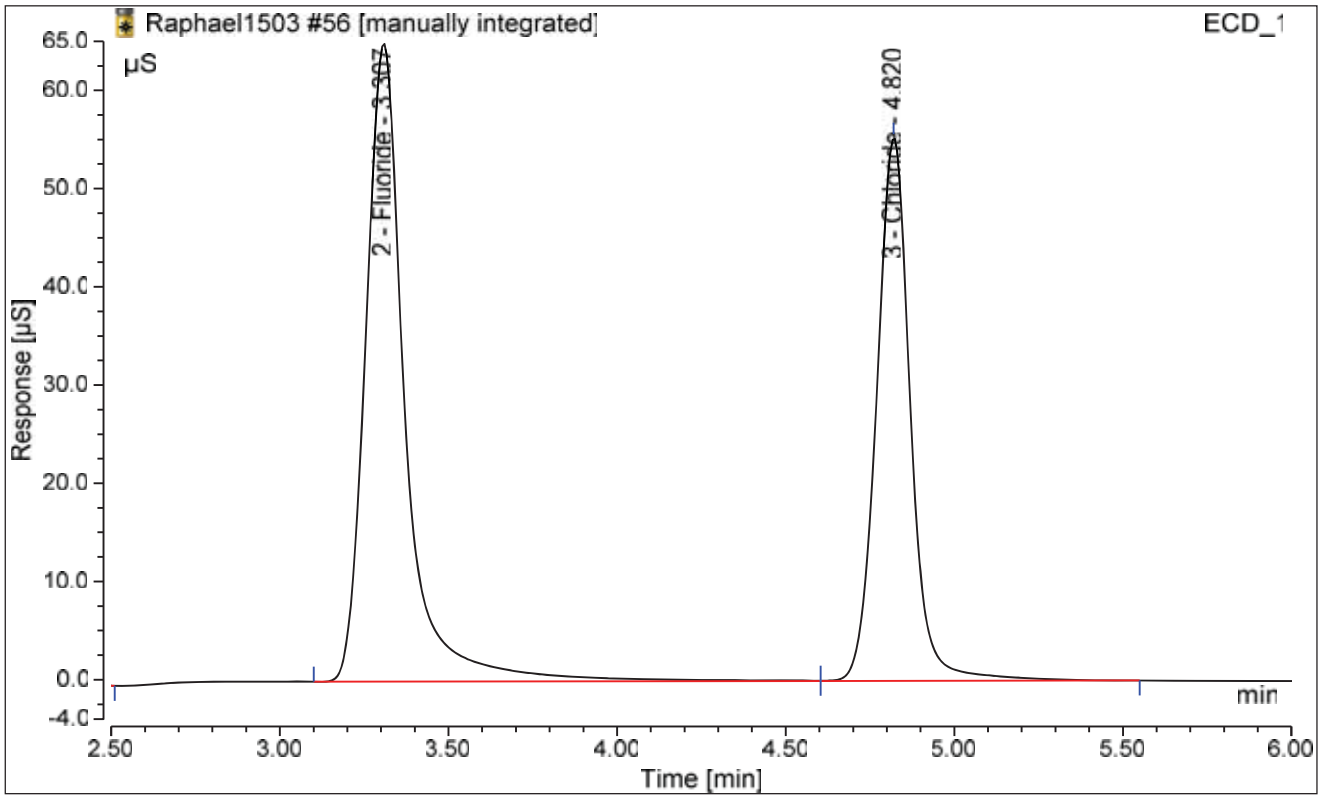


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.31	Fluoride	8.882	65.057	30.11750	FALSE	TRUE
3	4.82	Chloride	6.418	55.664	30.06496	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 07:02**	Run Time:	**14.50**

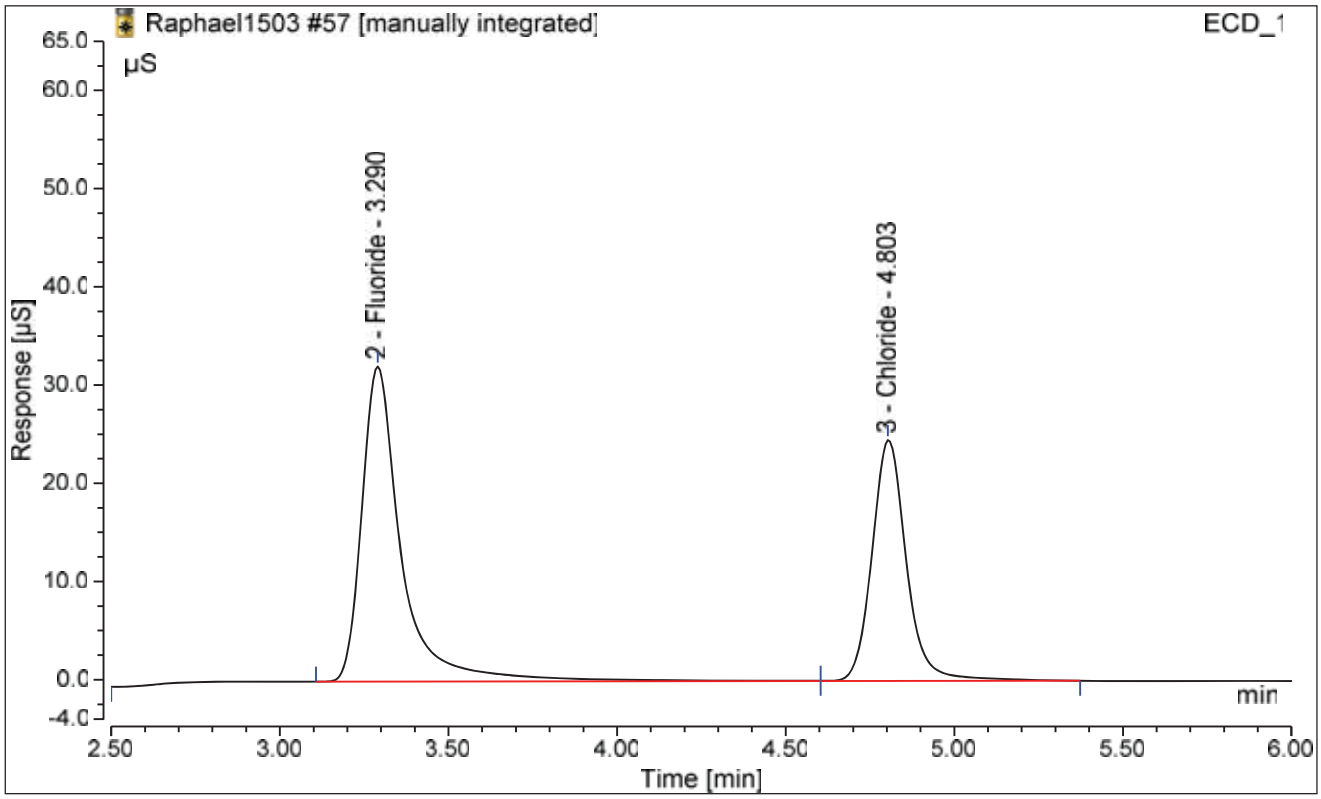


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.31	Fluoride	8.878	64.962	30.10501	FALSE	TRUE
3	4.82	Chloride	6.393	55.290	29.97423	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 07:18**	Run Time:	**14.50**

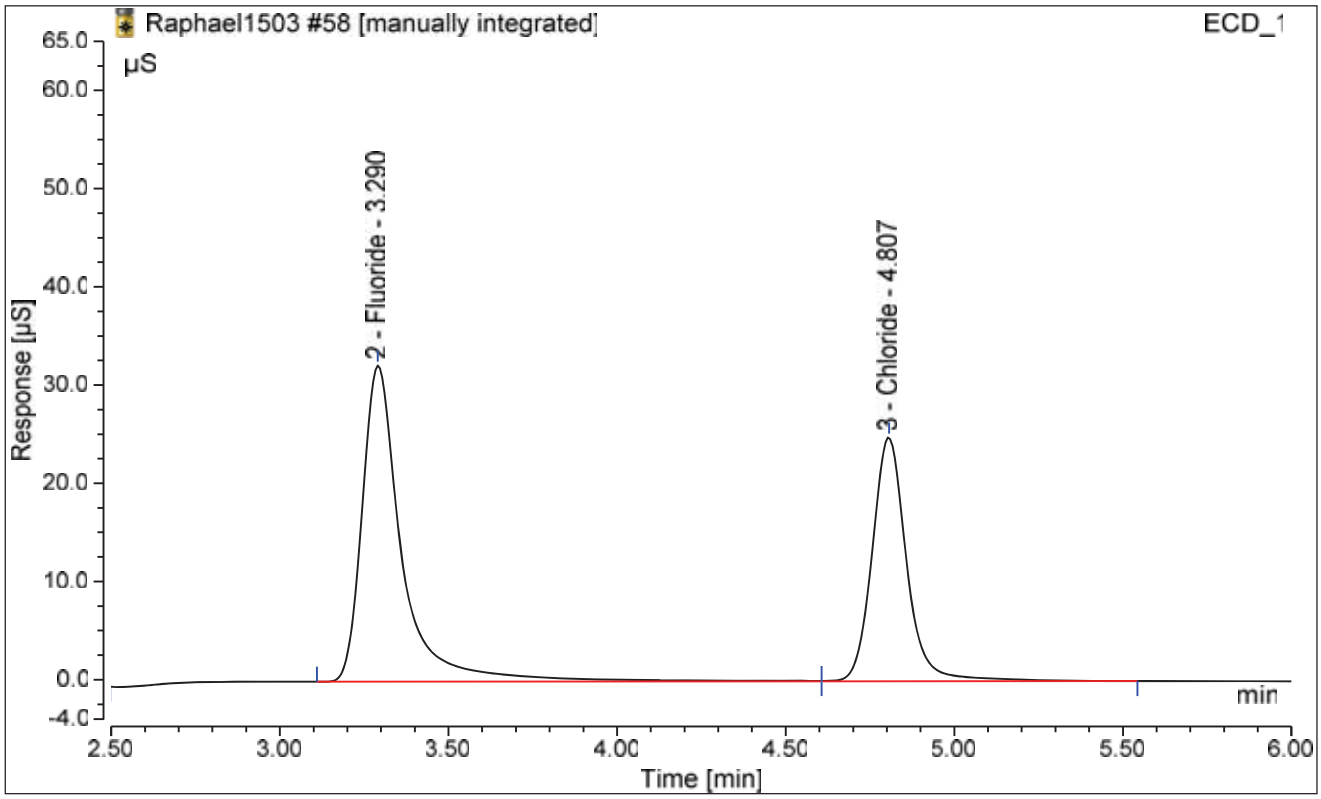


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	4.386	32.090	15.32153	FALSE	TRUE
3	4.80	Chloride	2.888	24.538	15.17886	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 07:34**	Run Time:	**14.50**

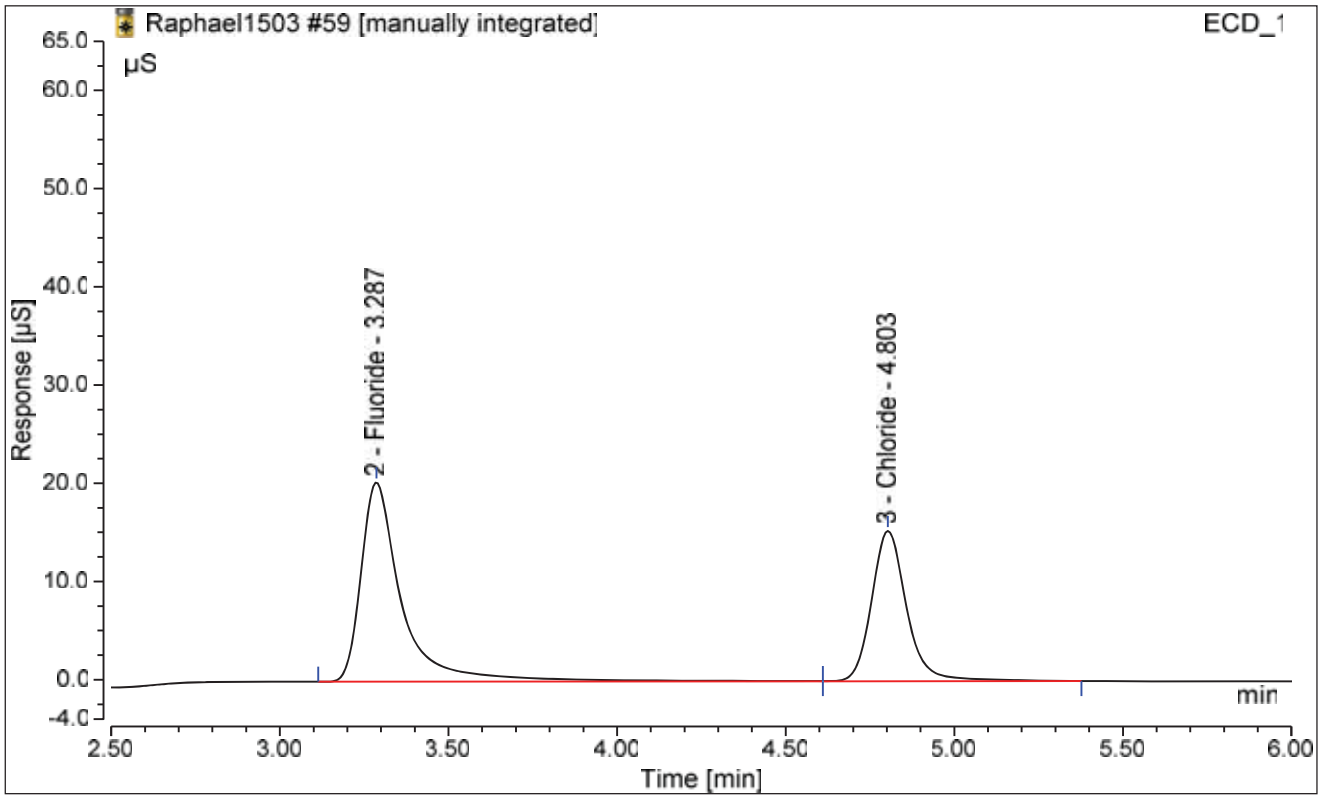


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	4.419	32.182	15.43364	FALSE	TRUE
3	4.81	Chloride	2.926	24.810	15.36006	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 07:50**	Run Time:	**14.50**

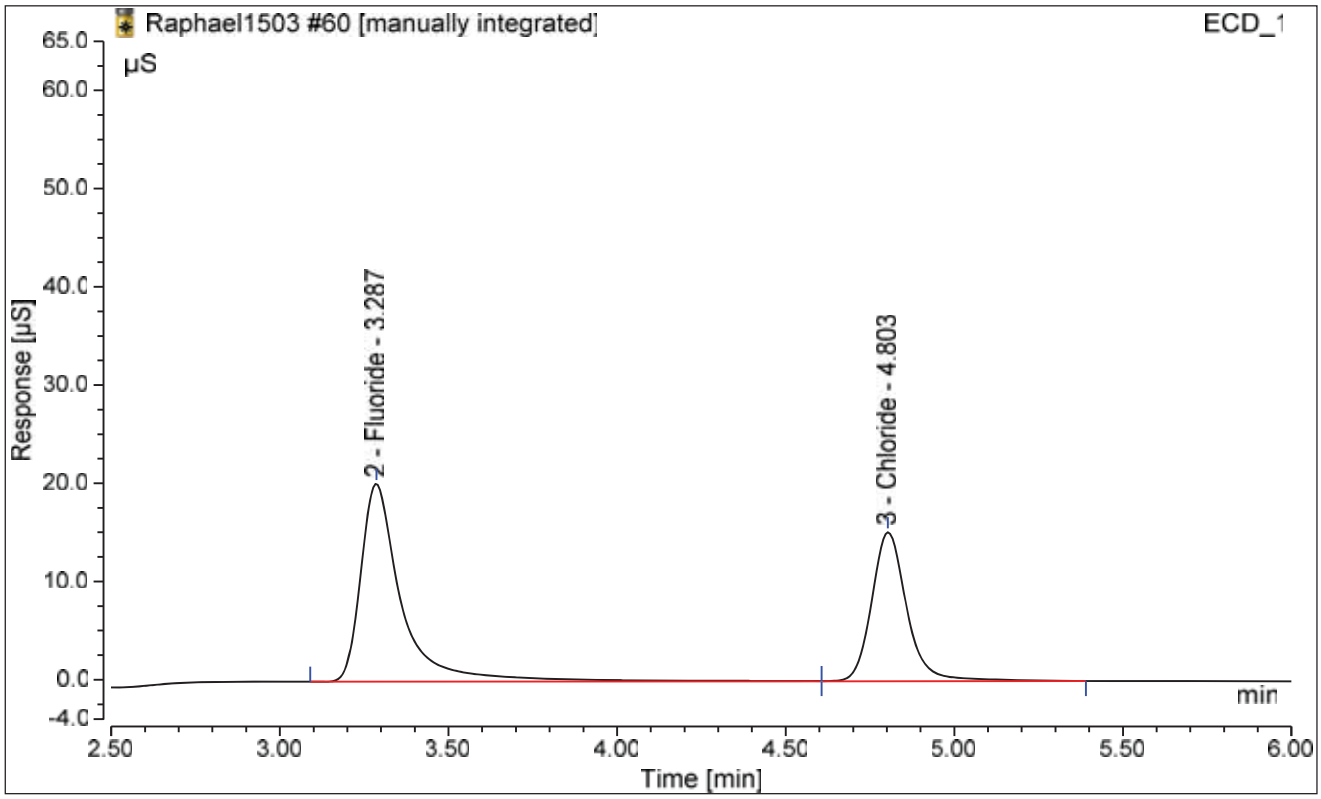


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	2.866	20.296	10.08351	FALSE	TRUE
3	4.80	Chloride	1.838	15.313	9.96796	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 08:06**	Run Time:	**14.50**

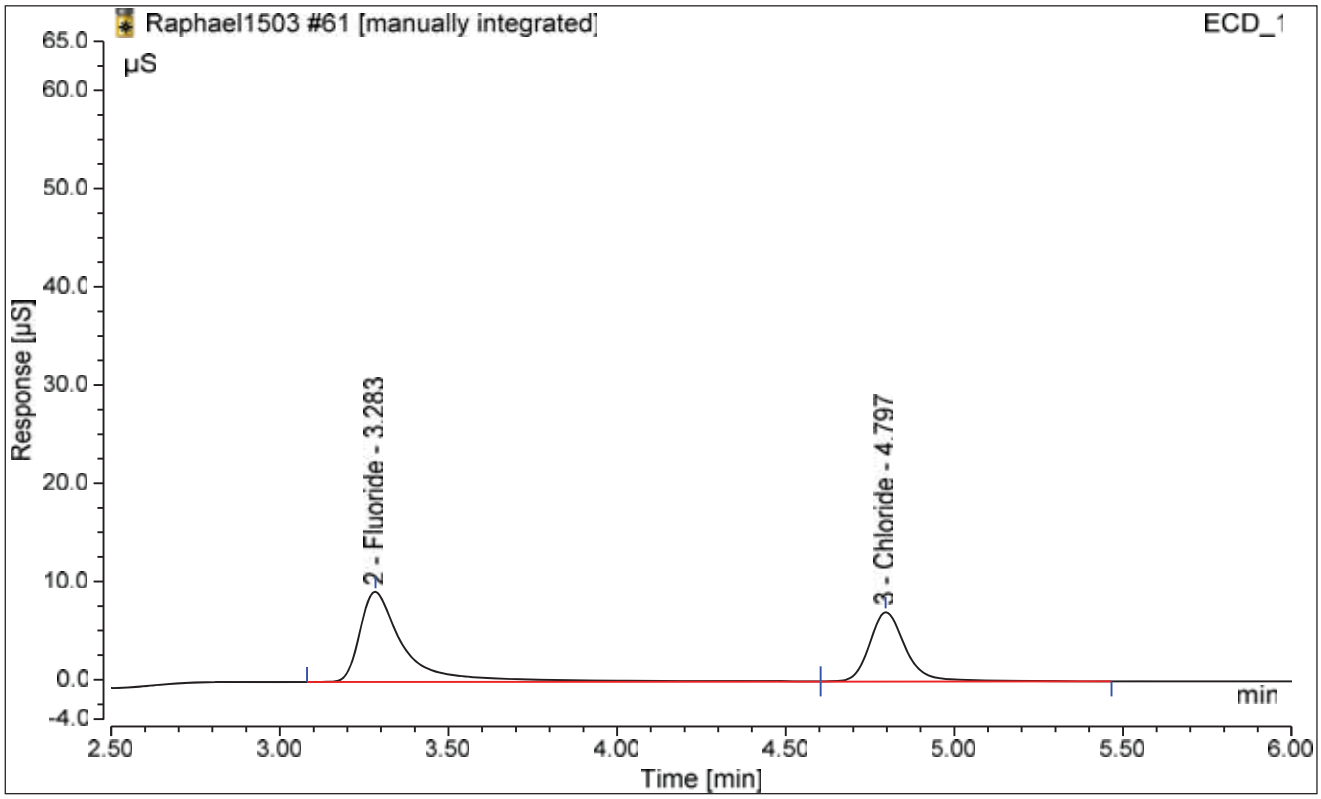


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	2.844	20.128	10.00555	FALSE	TRUE
3	4.80	Chloride	1.828	15.169	9.91816	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 08:22**	Run Time:	**14.50**

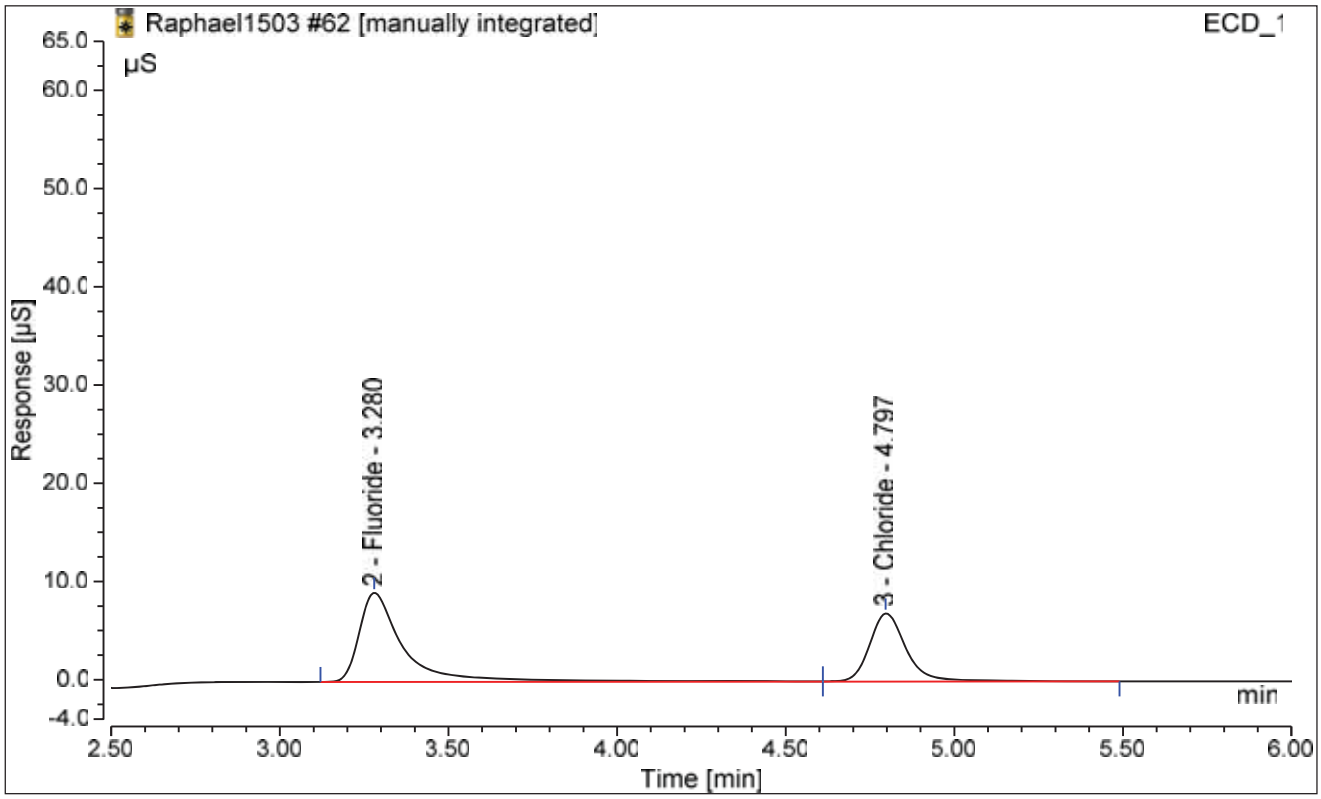


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.28	Fluoride	1.416	9.152	4.97694	FALSE	TRUE
3	4.80	Chloride	0.878	7.061	4.88986	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 08:39**	Run Time:	**14.50**

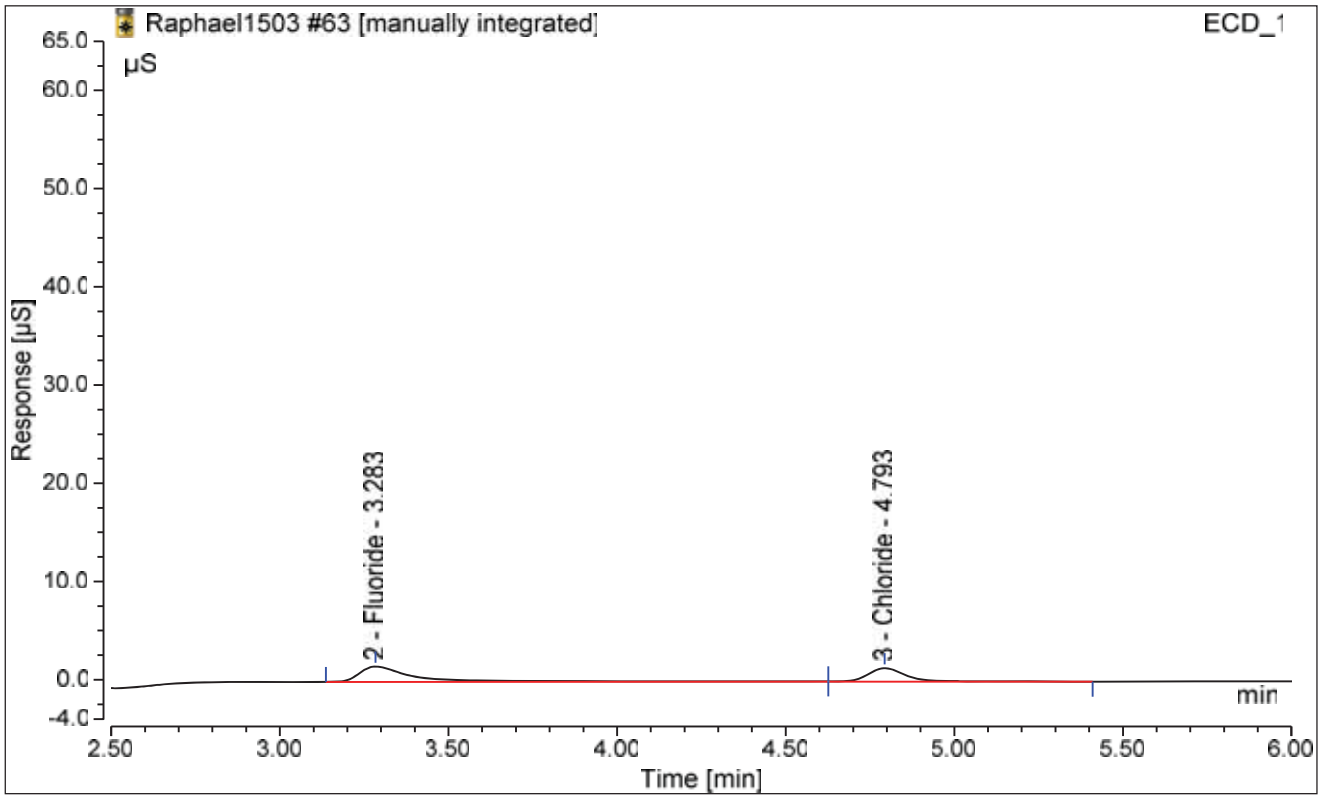


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.28	Fluoride	1.400	9.060	4.92044	FALSE	TRUE
3	4.80	Chloride	0.874	6.940	4.86900	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 08:55**	Run Time:	**14.50**

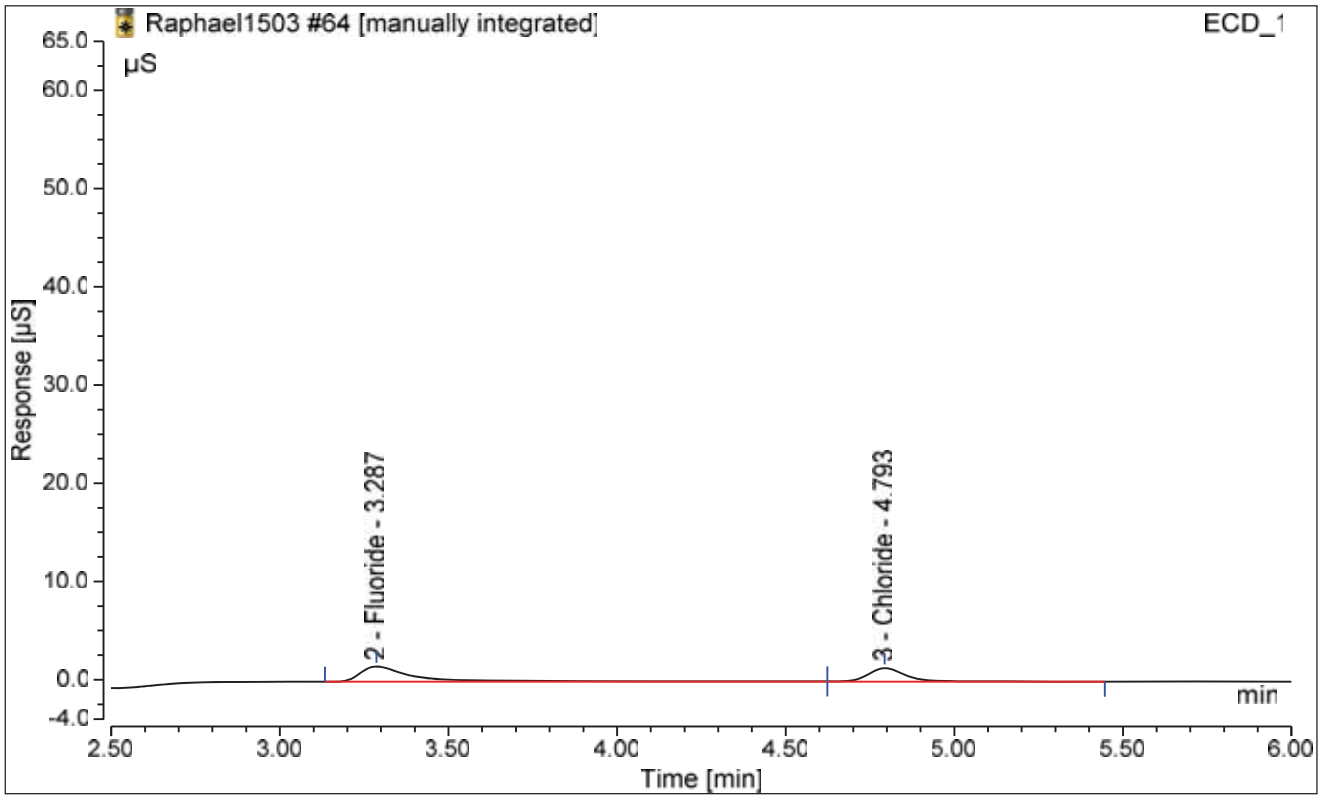


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.28	Fluoride	0.313	1.555	1.01955	FALSE	TRUE
3	4.79	Chloride	0.182	1.374	1.02400	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 09:11**	Run Time:	**14.50**

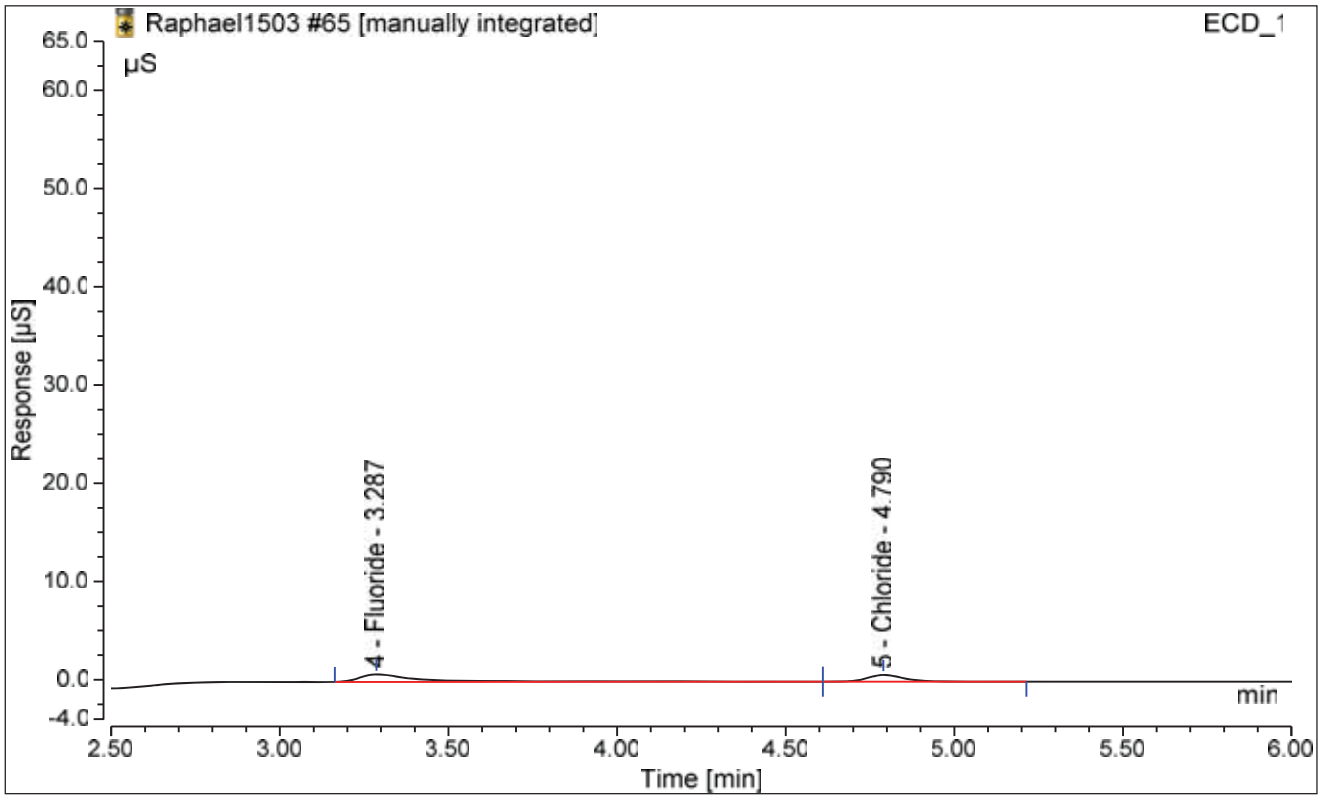


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	0.313	1.556	1.01922	FALSE	TRUE
3	4.79	Chloride	0.183	1.381	1.02747	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 09:27**	Run Time:	**14.50**

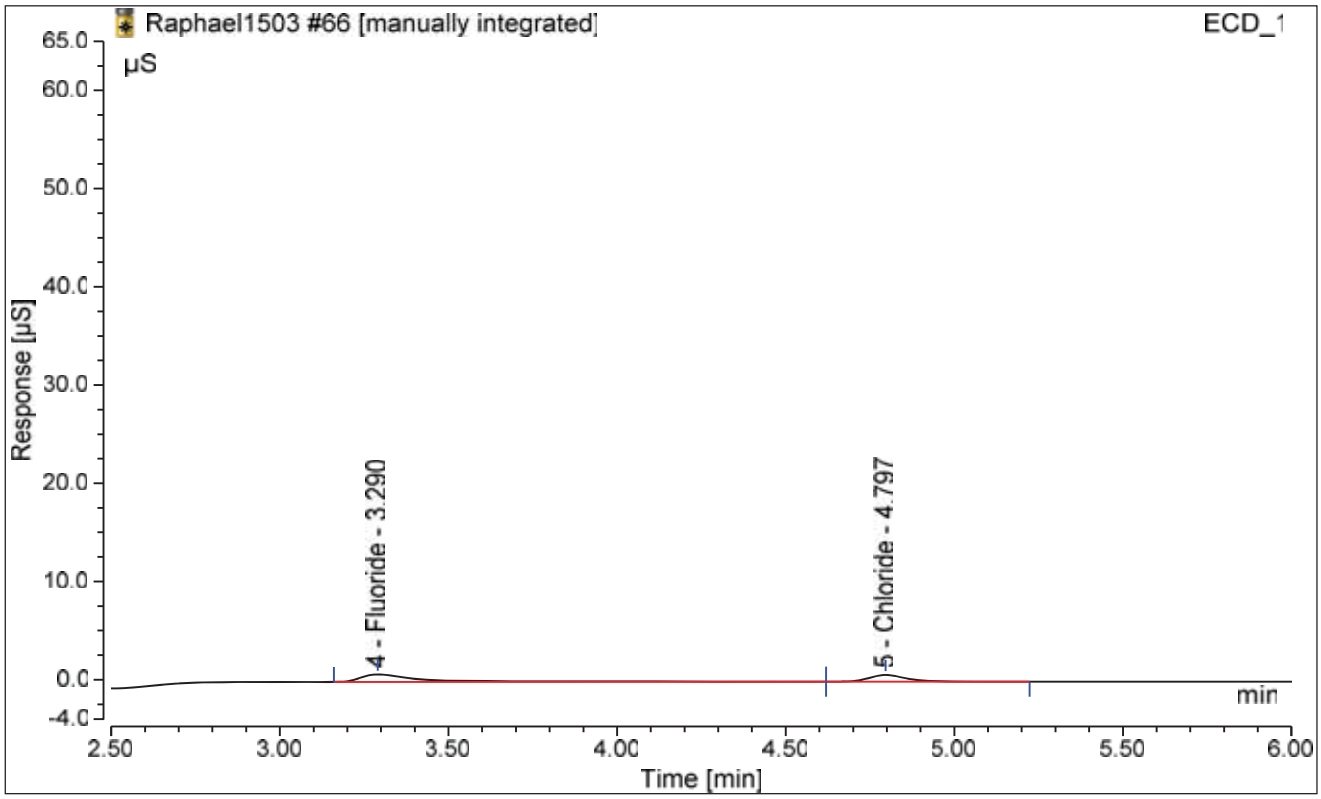


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
4	3.29	Fluoride	0.171	0.757	0.50373	FALSE	TRUE
5	4.79	Chloride	0.090	0.690	0.50082	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 09:43**	Run Time:	**14.50**

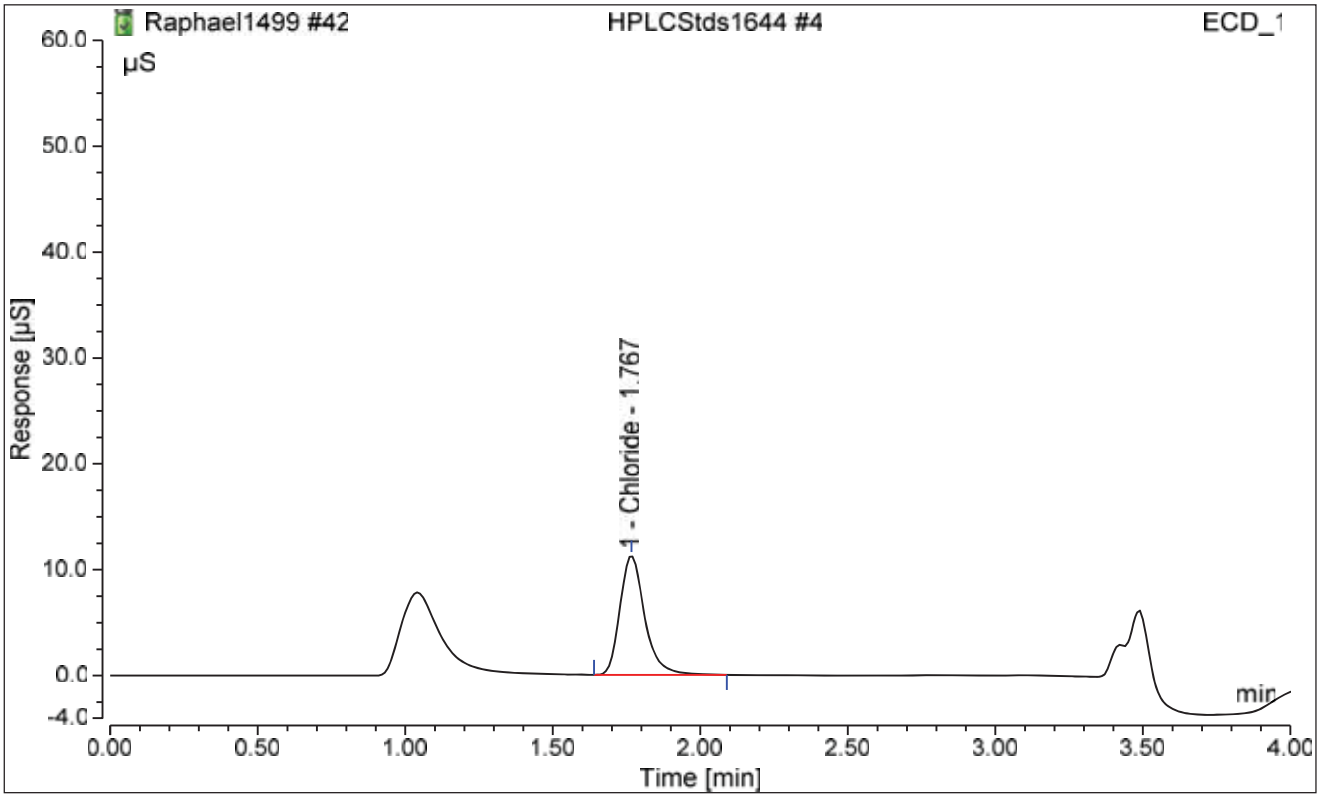


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
4	3.29	Fluoride	0.172	0.757	0.50892	FALSE	TRUE
5	4.80	Chloride	0.091	0.696	0.50743	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 21:21**	Run Time:	**12.50**

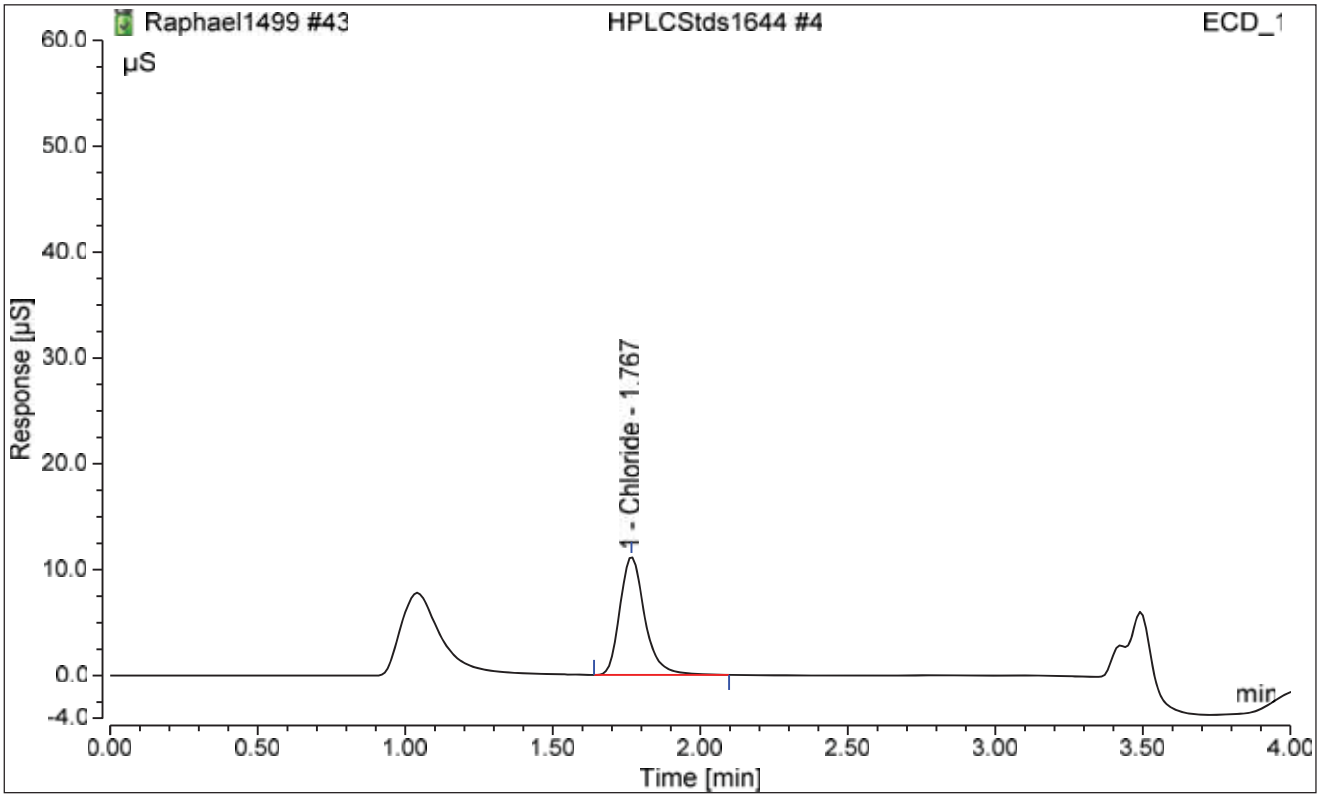


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.092	11.251	10.05162	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 21:36**	Run Time:	**12.50**

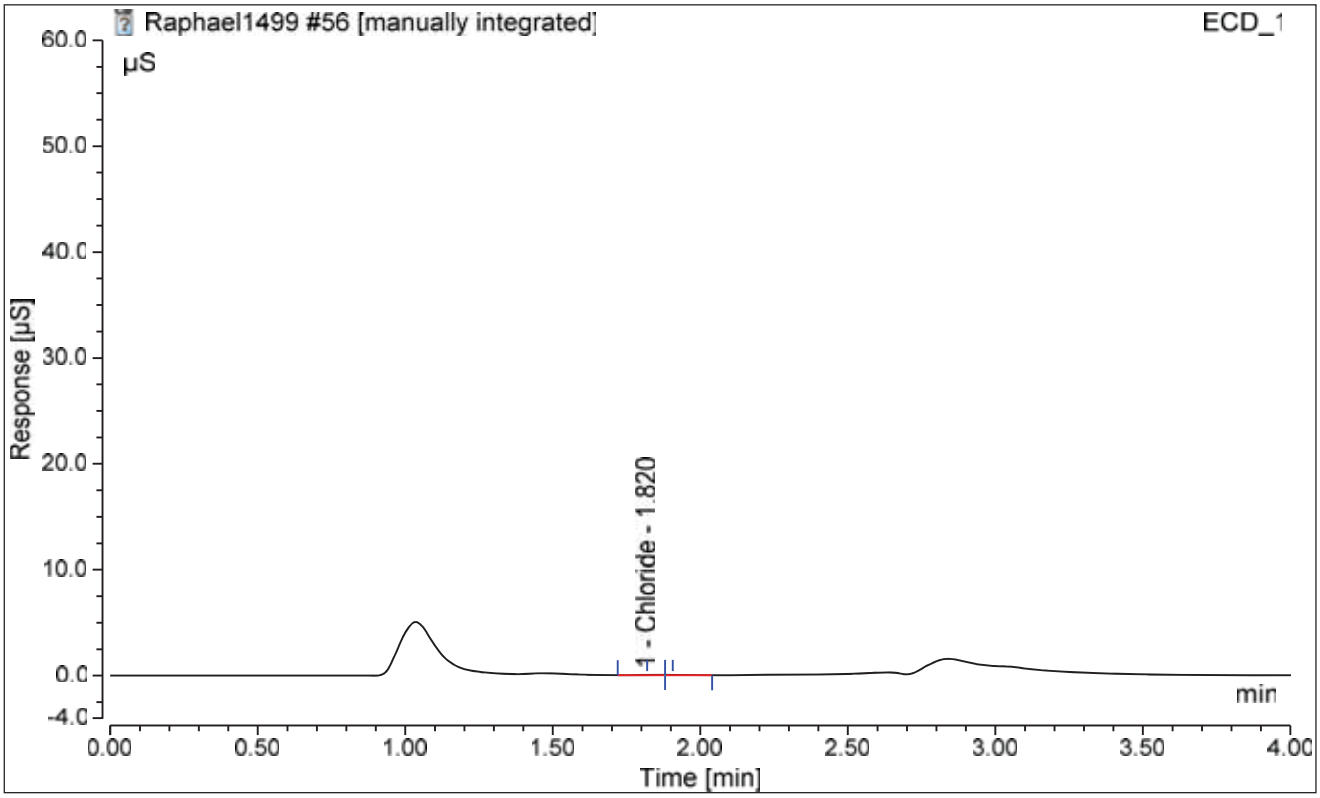


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.087	11.156	10.00616	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R1A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 00:39**	Run Time:	**12.50**

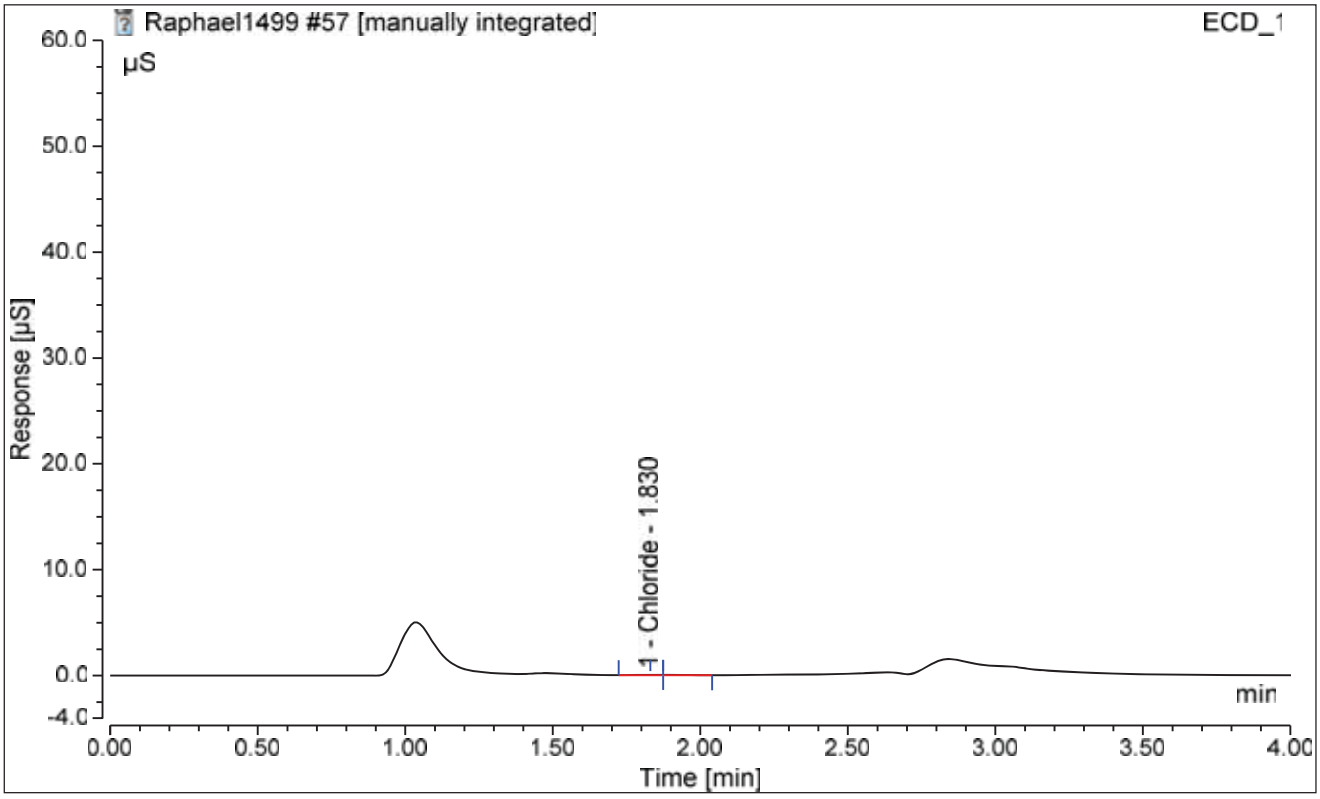


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.82	Chloride	0.003	0.026	0.07158	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R1A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 00:53**	Run Time:	**12.50**

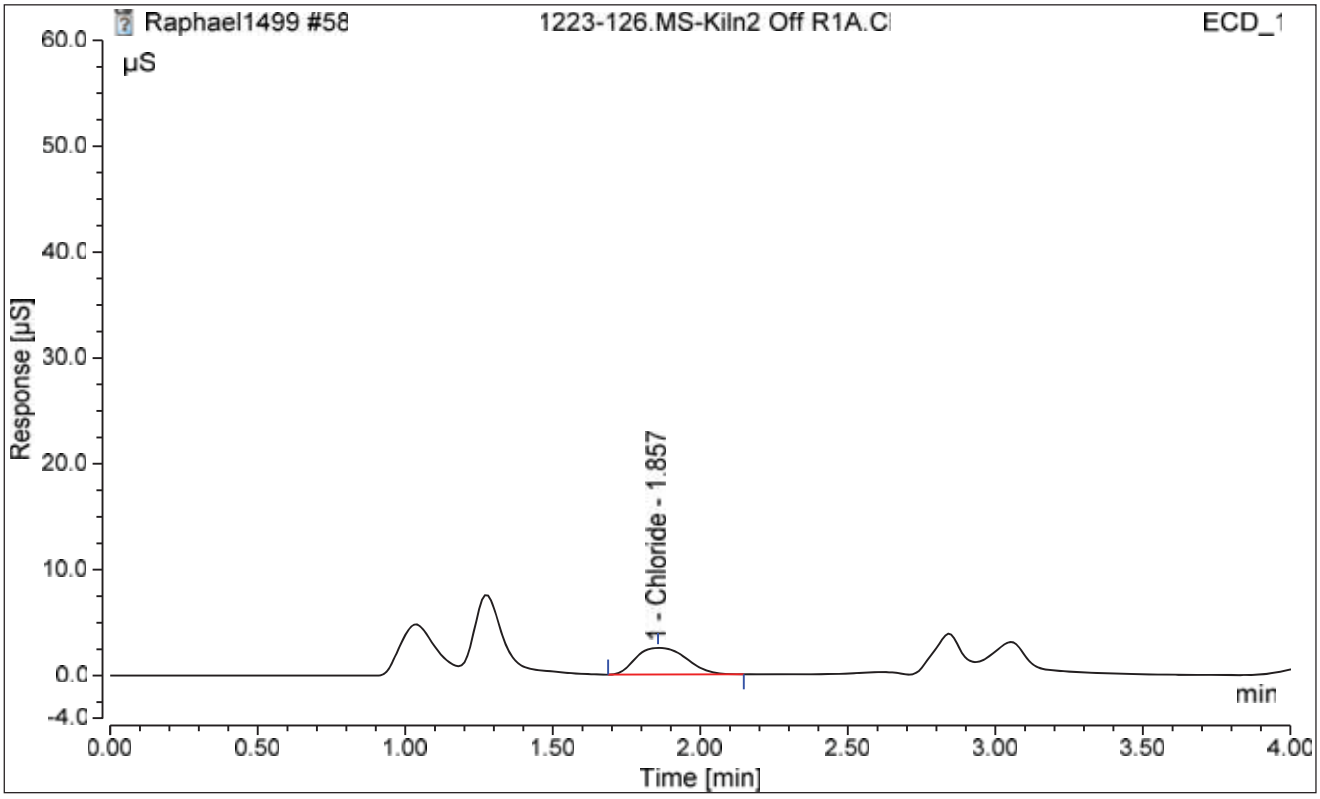


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.83	Chloride	0.003	0.028	0.07117	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.MS-Kiln2 Off R1A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 01:07**	Run Time:	**12.50**

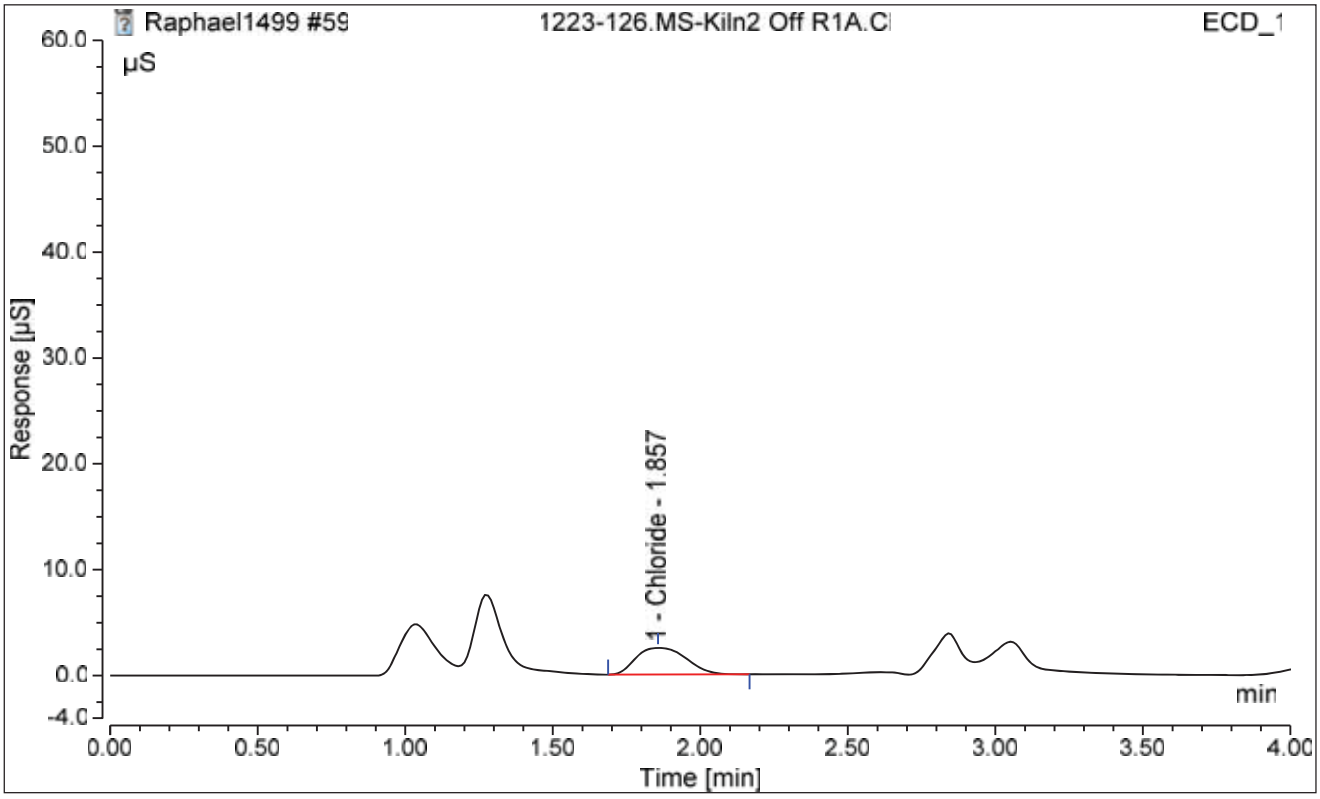


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.86	Chloride	0.495	2.503	4.71074	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.MS-Kiln2 Off R1A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 01:21**	Run Time:	**12.50**

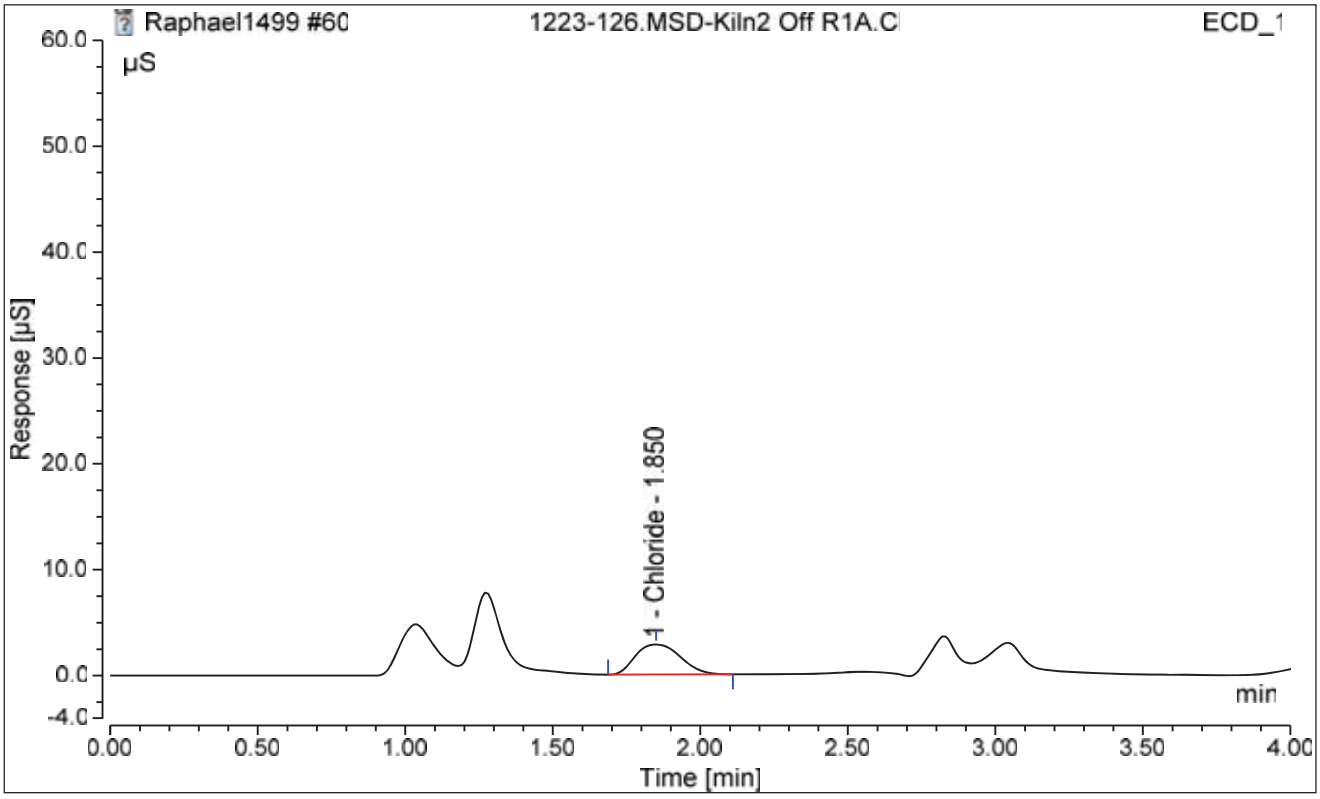


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.86	Chloride	0.496	2.510	4.71803	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.MSD-Kiln2 Off R1A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 01:35**	Run Time:	**12.50**

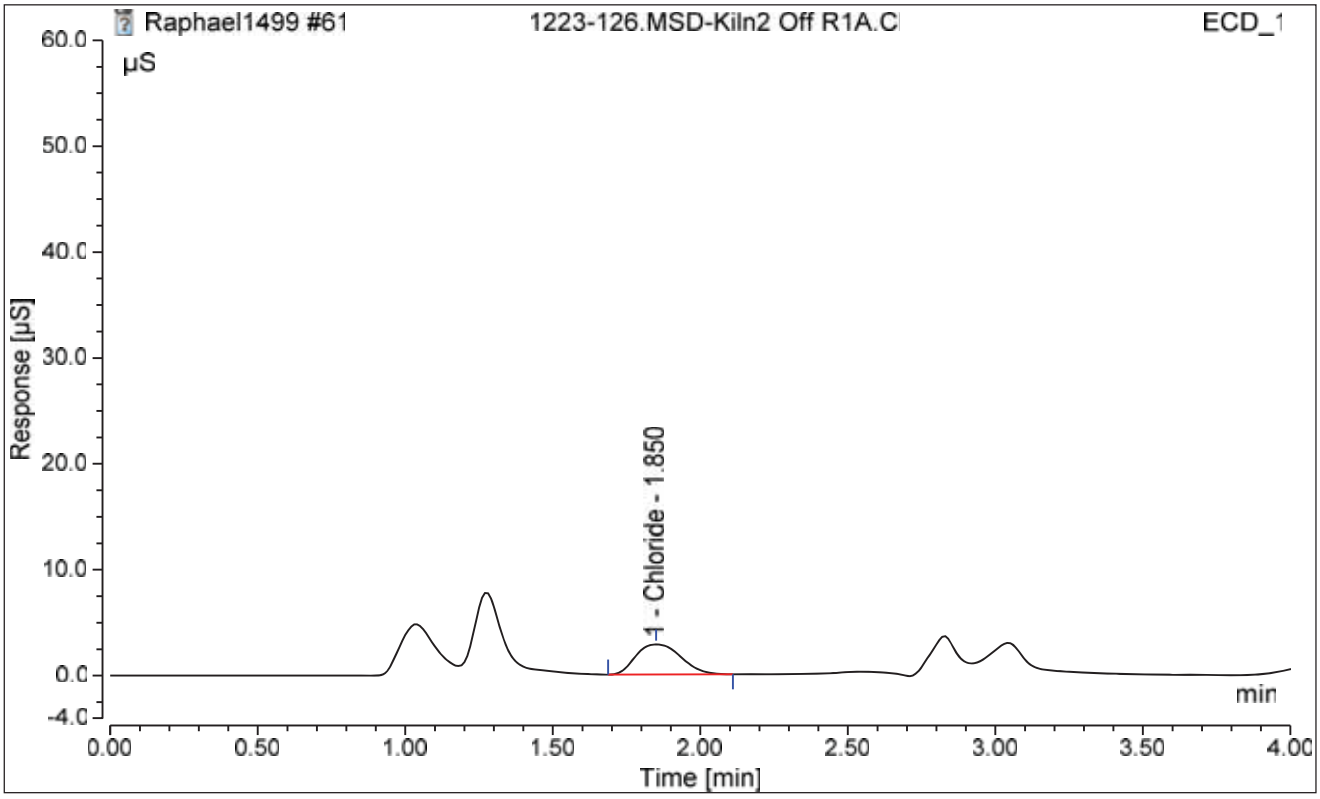


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.85	Chloride	0.504	2.840	4.78997	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.MSD-Kiln2 Off R1A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 01:49**	Run Time:	**12.50**

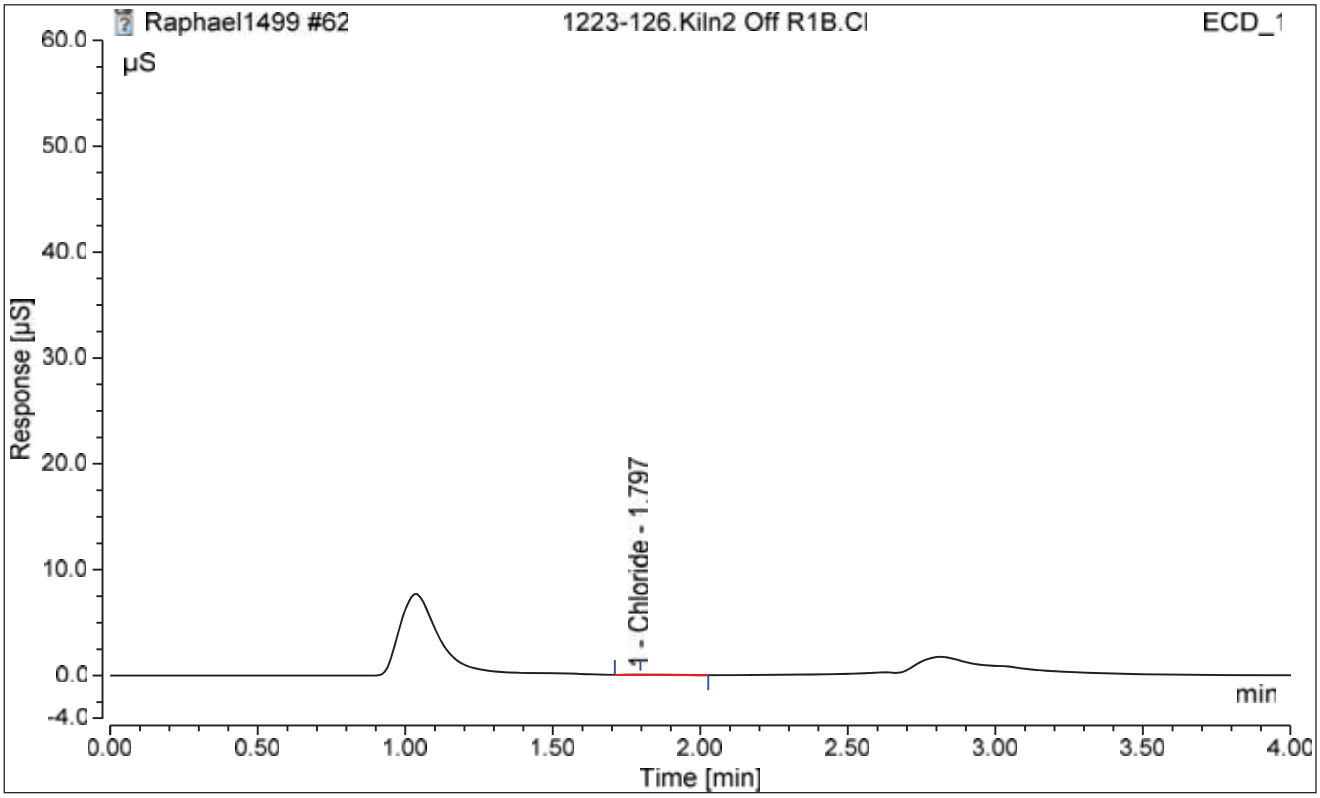


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.85	Chloride	0.504	2.842	4.79163	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R1B.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 02:03**	Run Time:	**12.50**

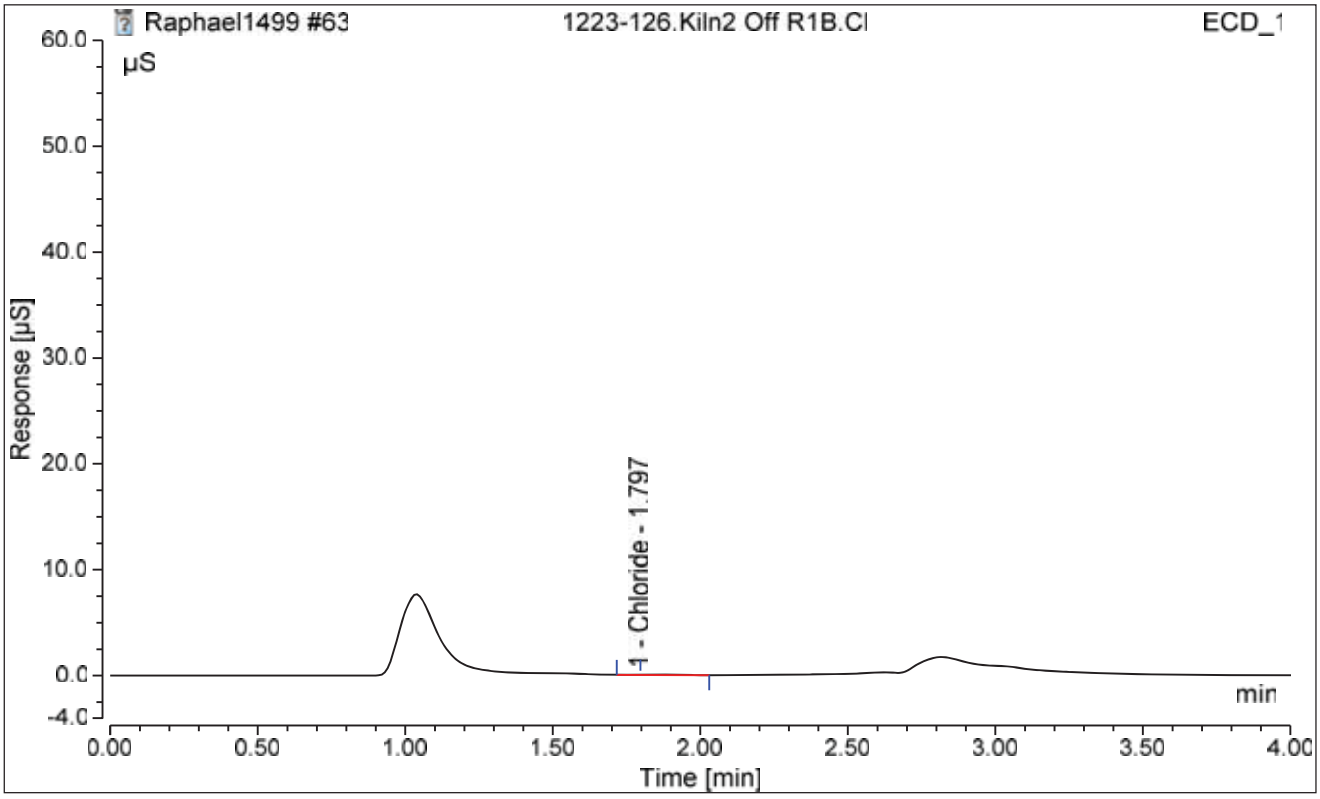


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.80	Chloride	0.007	0.032	0.11075	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R1B.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 02:18**	Run Time:	**12.50**

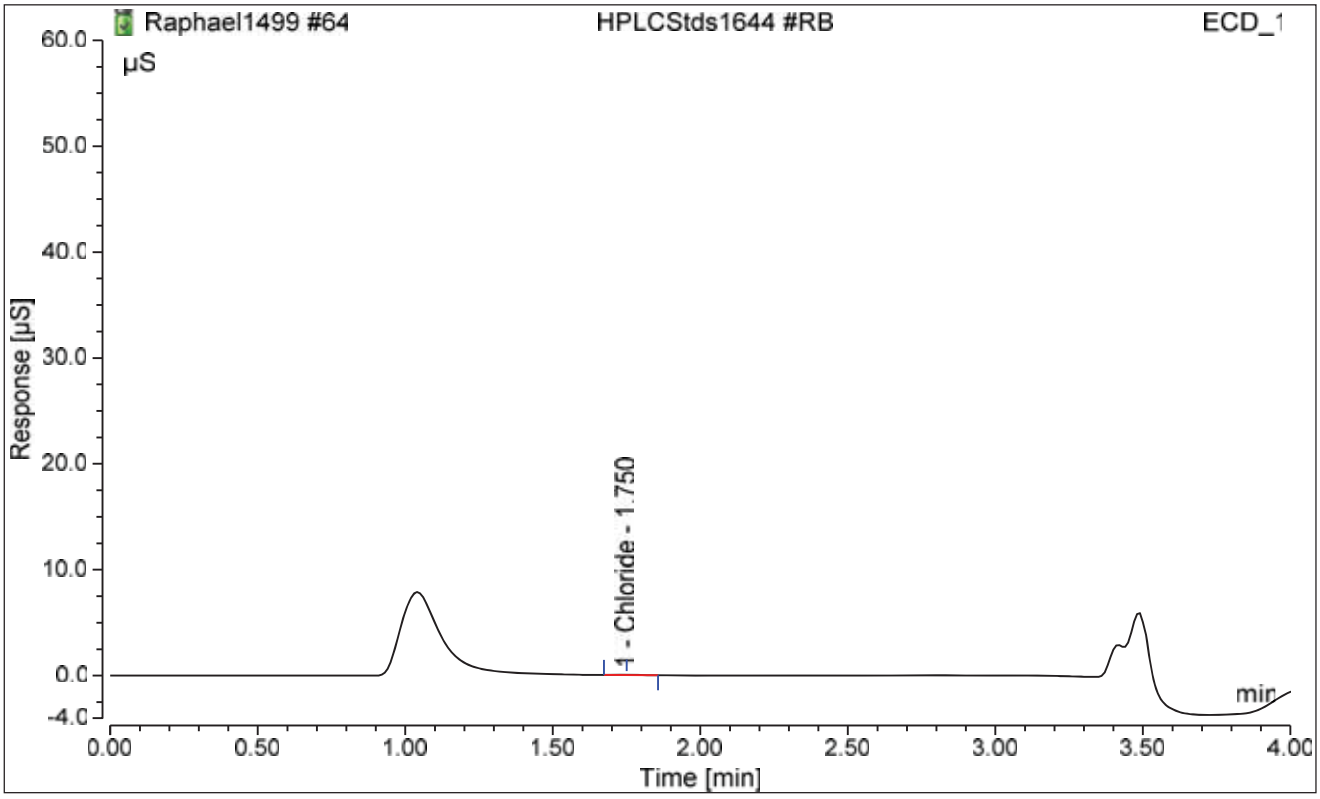


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.80	Chloride	0.007	0.033	0.10929	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 02:32**	Run Time:	**12.50**

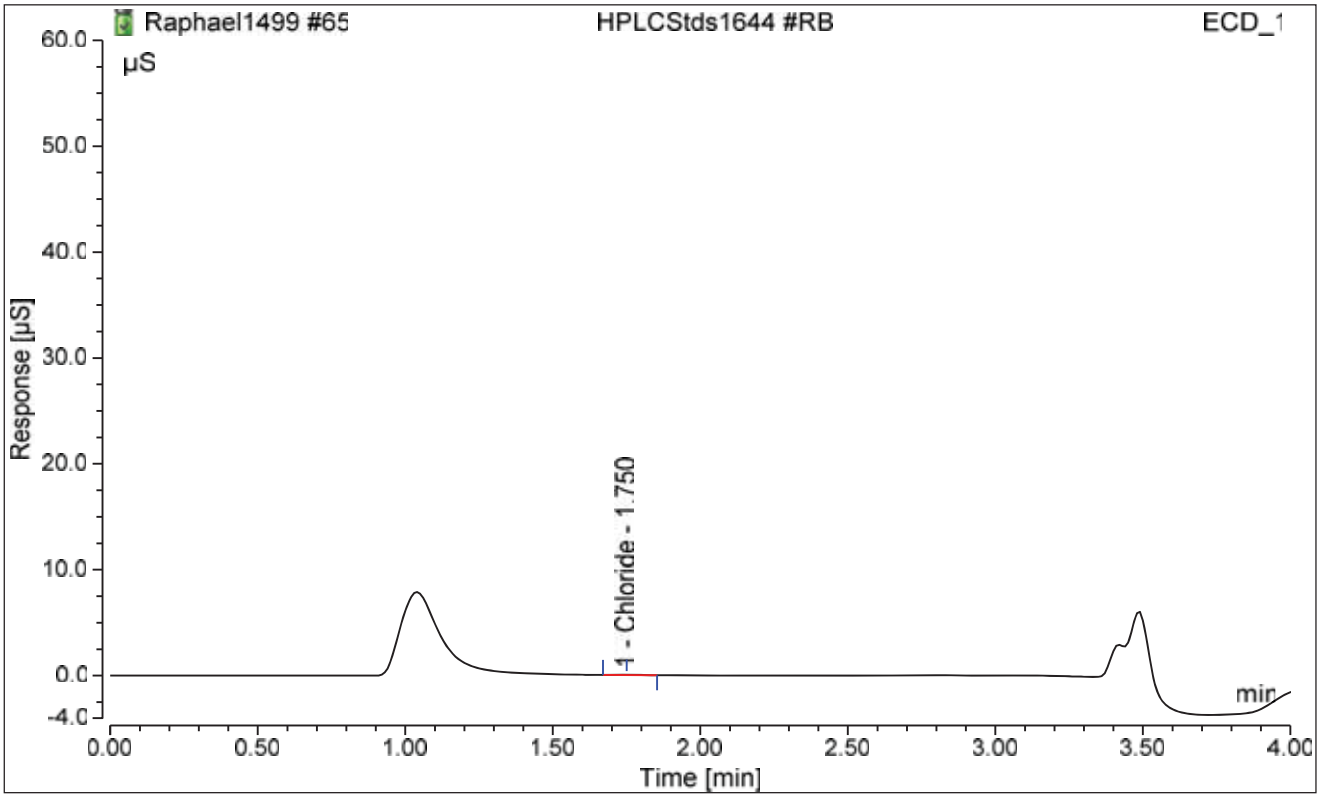


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.75	Chloride	0.003	0.039	0.07306	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 02:46**	Run Time:	**12.50**

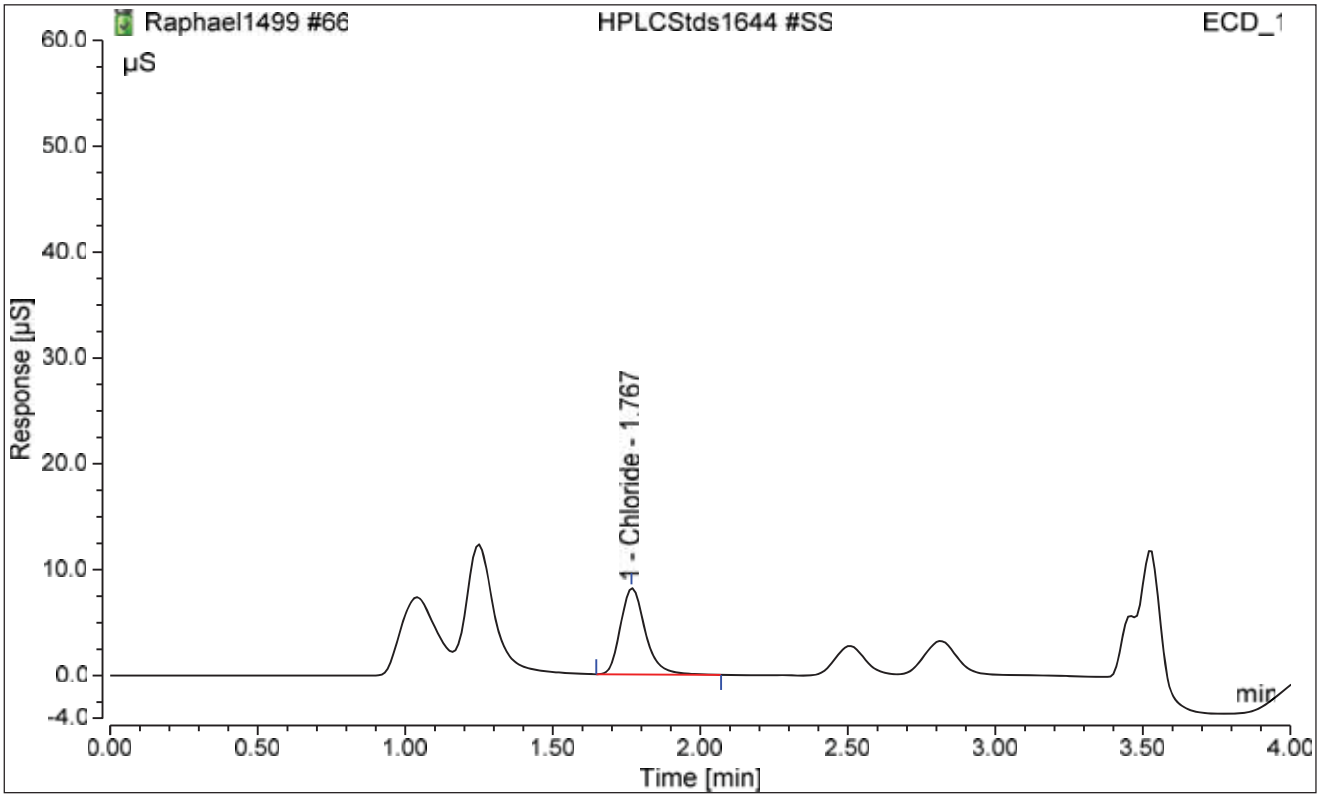


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.75	Chloride	0.003	0.038	0.07212	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 03:00**	Run Time:	**12.50**

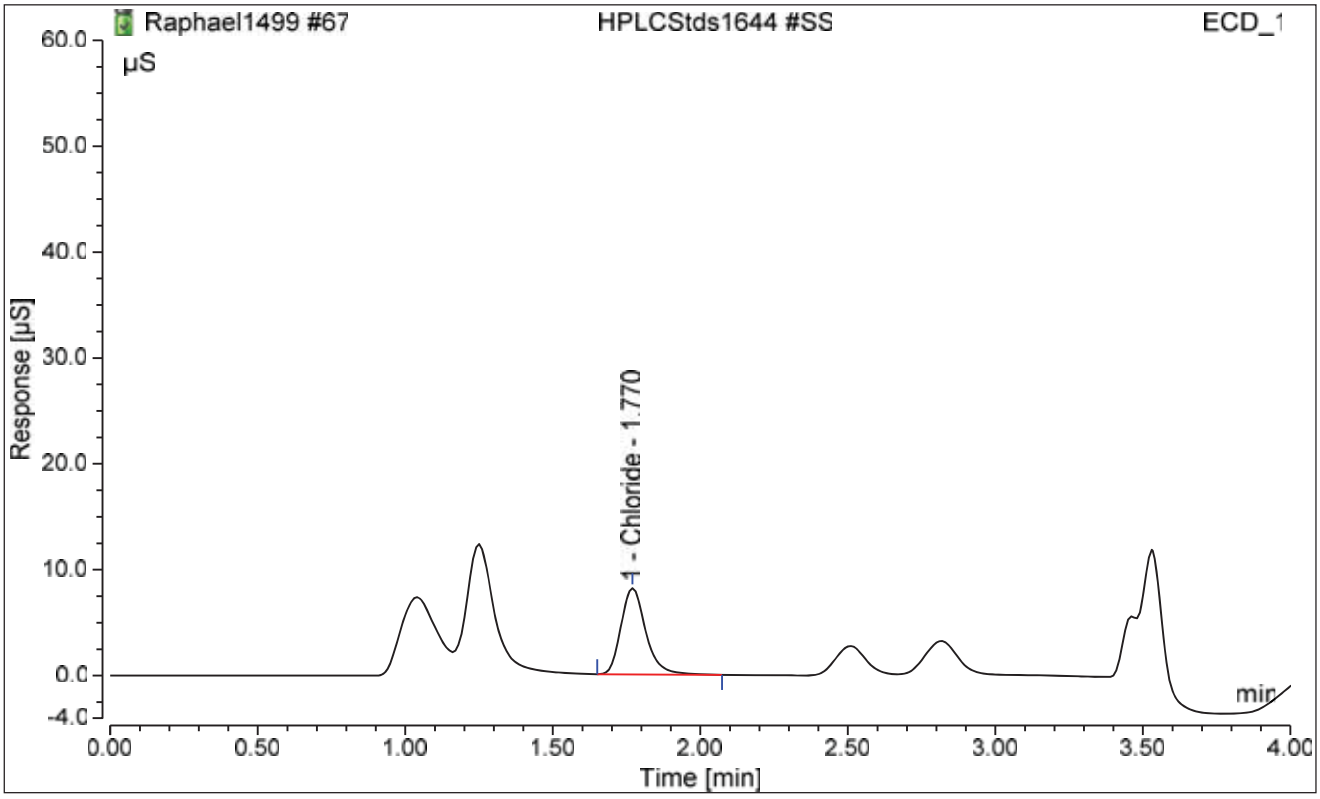


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	0.791	8.131	7.39266	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 03:14**	Run Time:	**12.50**

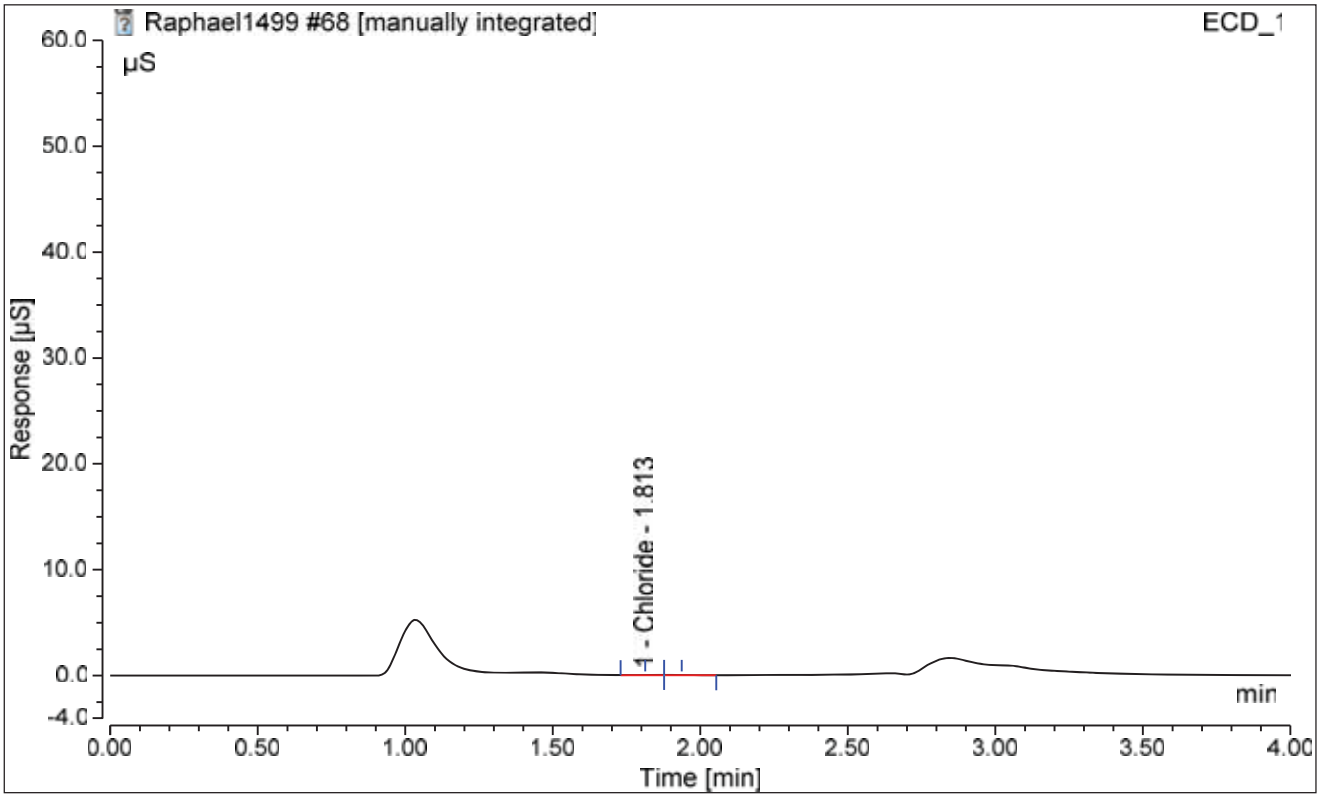


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	0.790	8.141	7.38902	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R2A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 03:28**	Run Time:	**12.50**

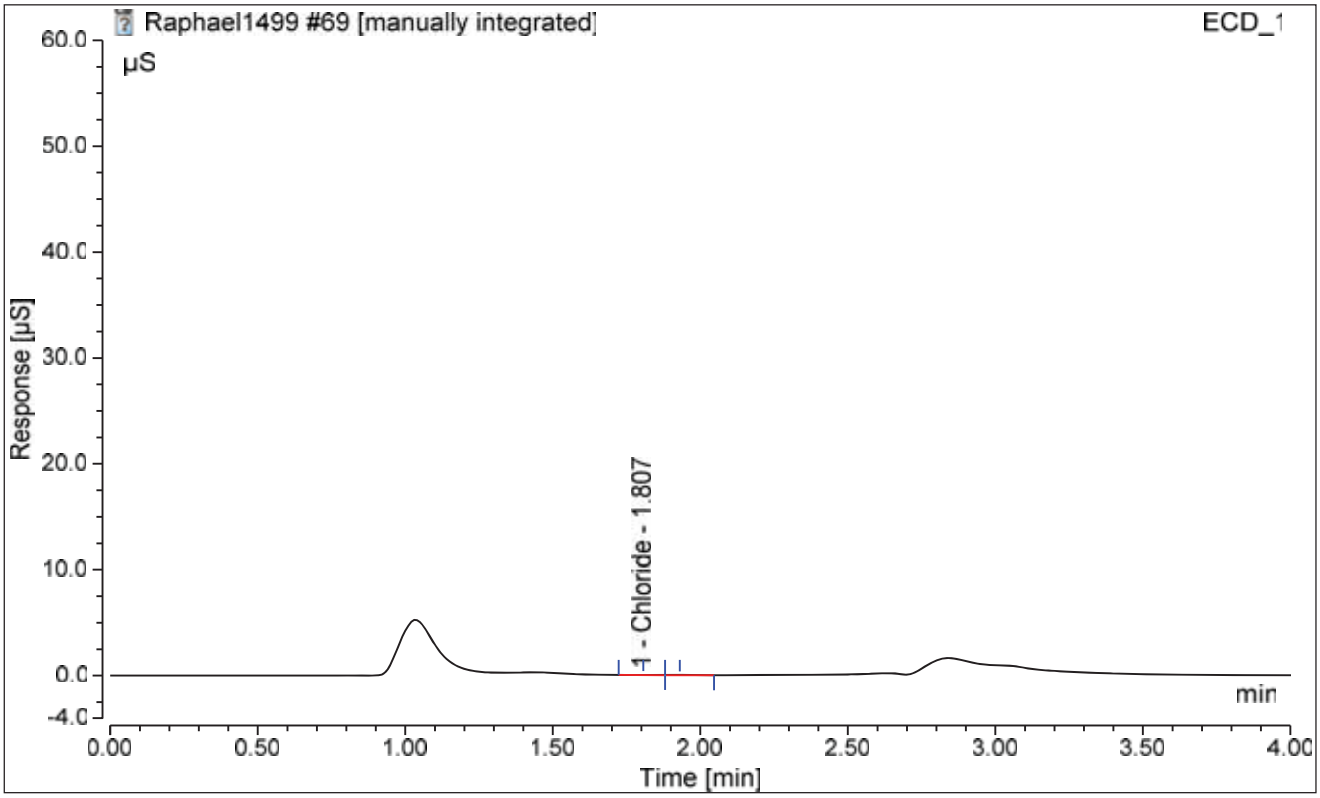


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.81	Chloride	0.002	0.016	0.05890	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R2A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 03:42**	Run Time:	**12.50**

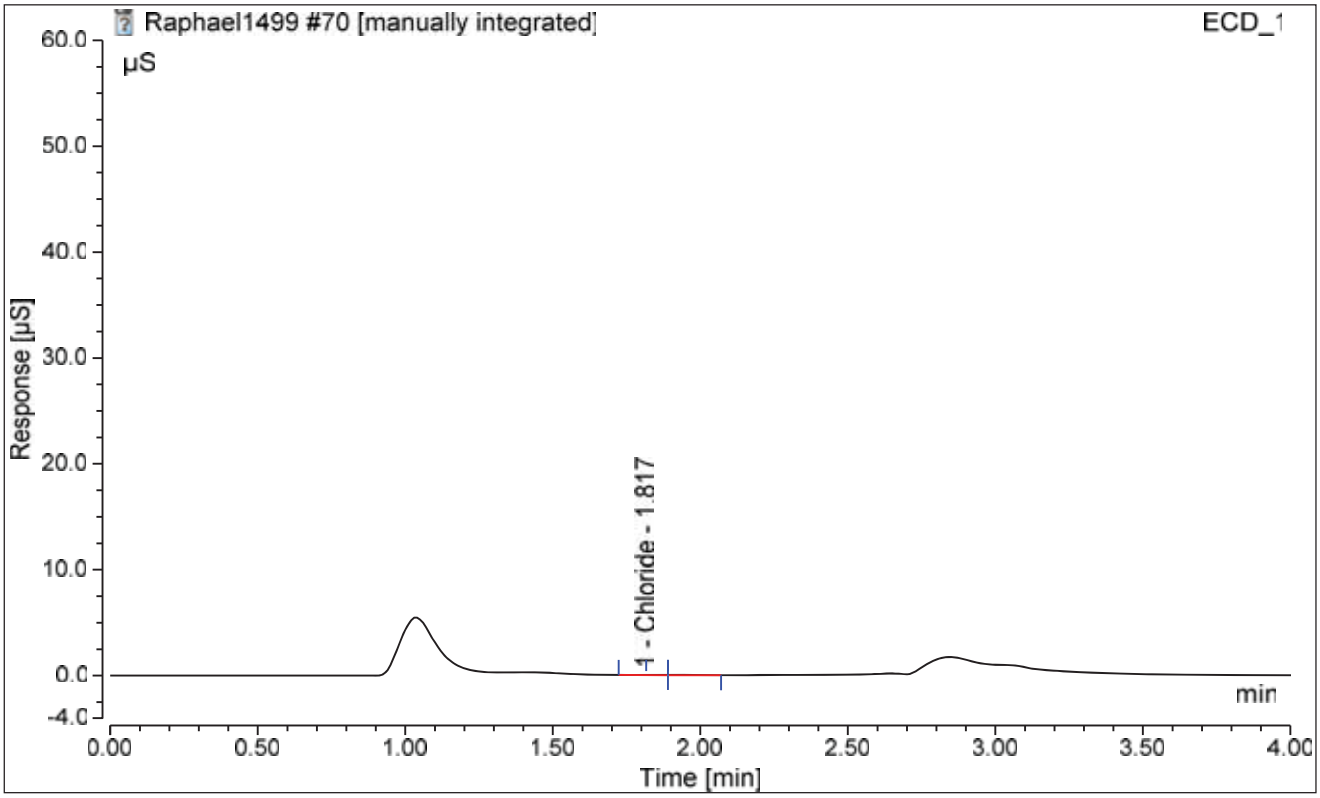


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.81	Chloride	0.002	0.015	0.05911	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R2B.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 03:56**	Run Time:	**12.50**

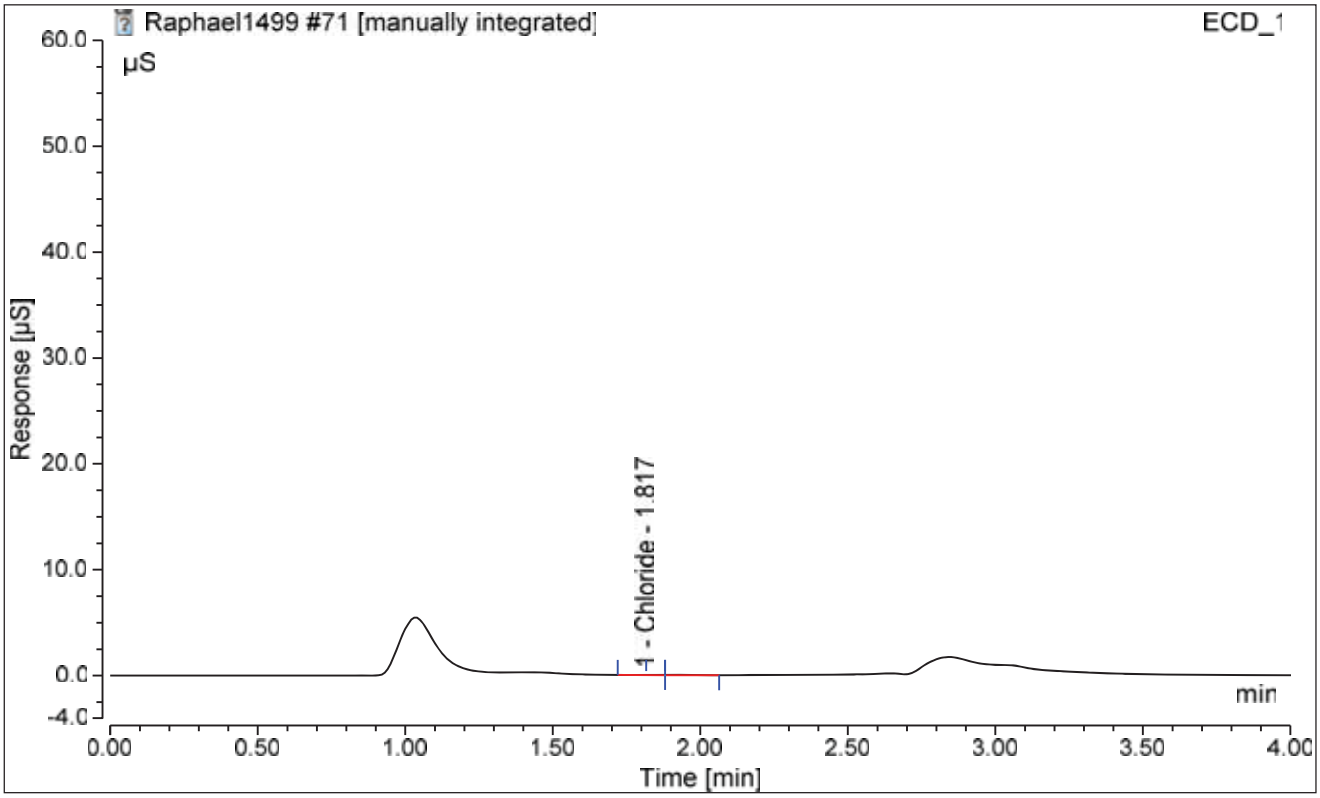


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.82	Chloride	0.003	0.024	0.07127	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R2B.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 04:10**	Run Time:	**12.50**

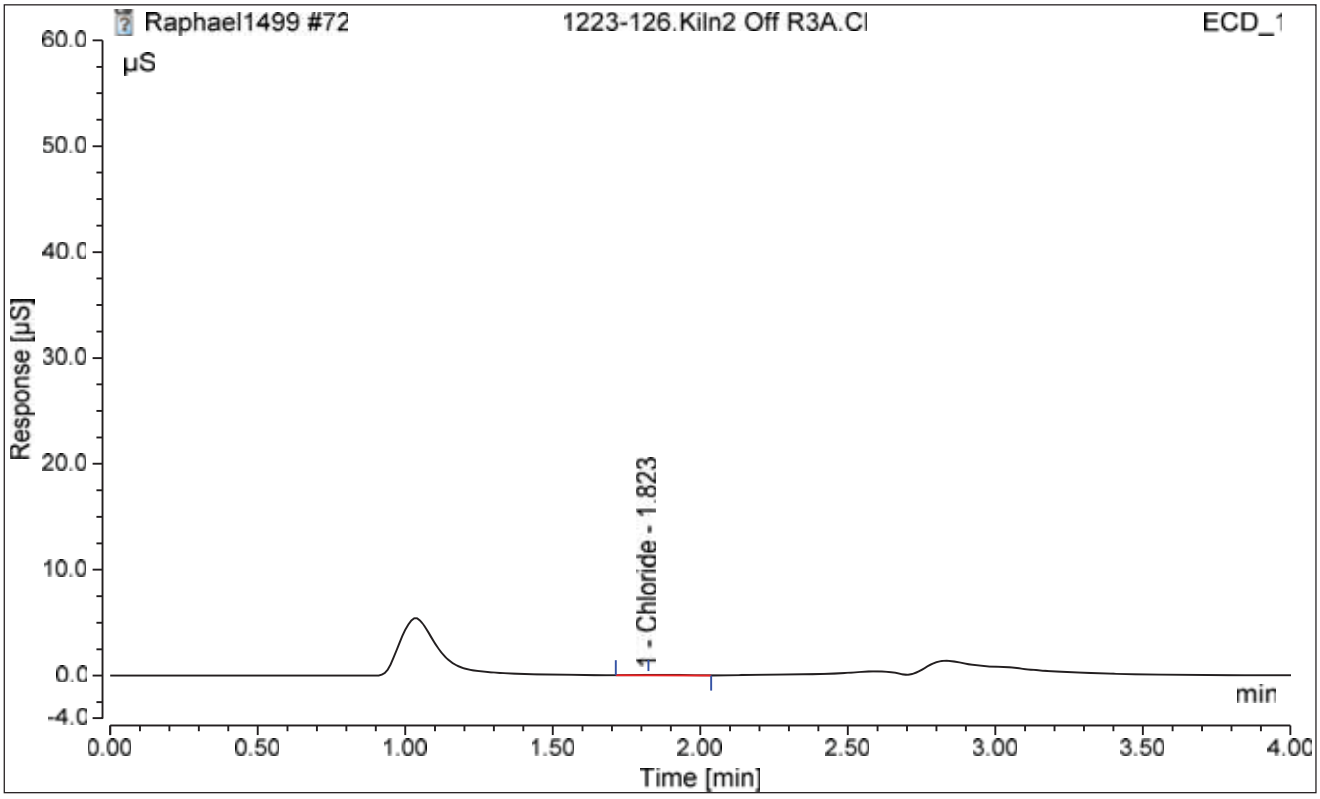


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.82	Chloride	0.003	0.025	0.07107	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R3A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 04:24**	Run Time:	**12.50**

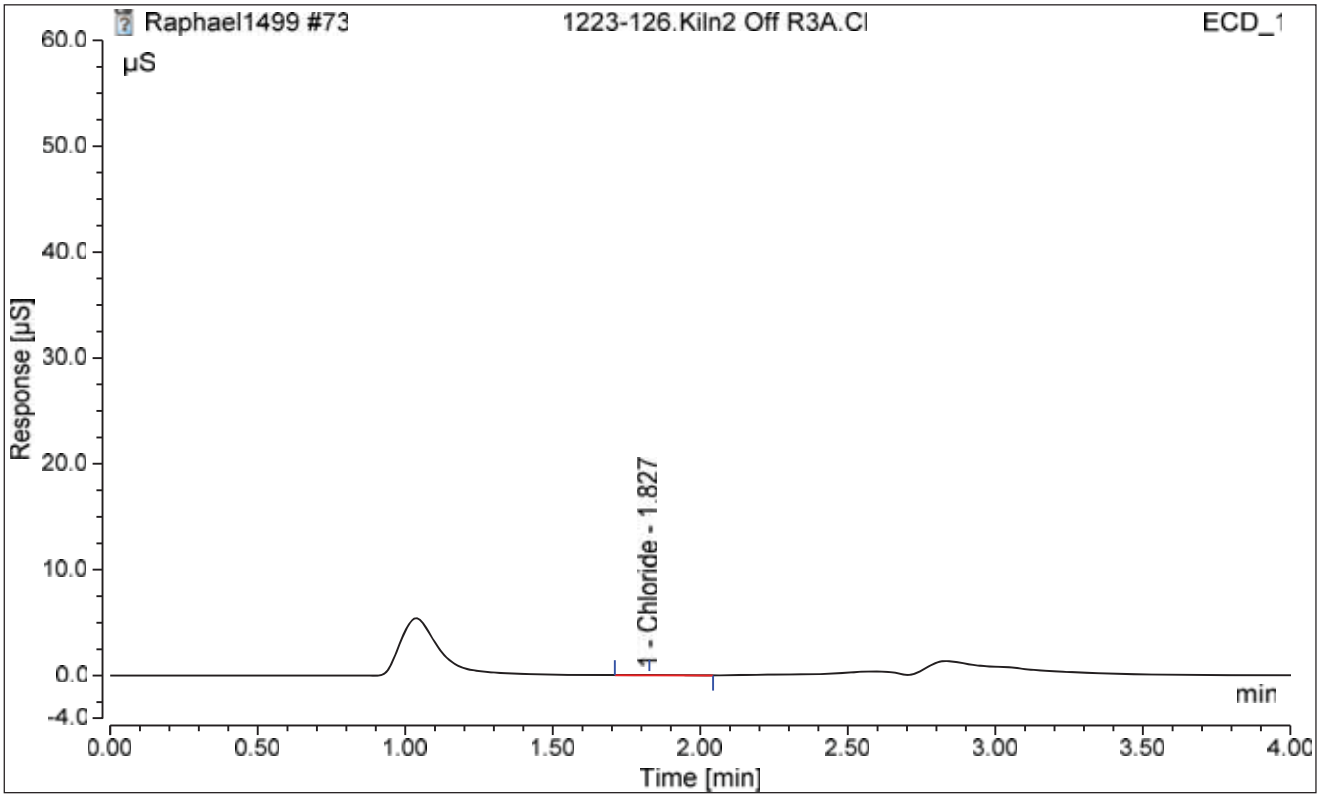


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.82	Chloride	0.006	0.031	0.10430	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R3A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 04:39**	Run Time:	**12.50**

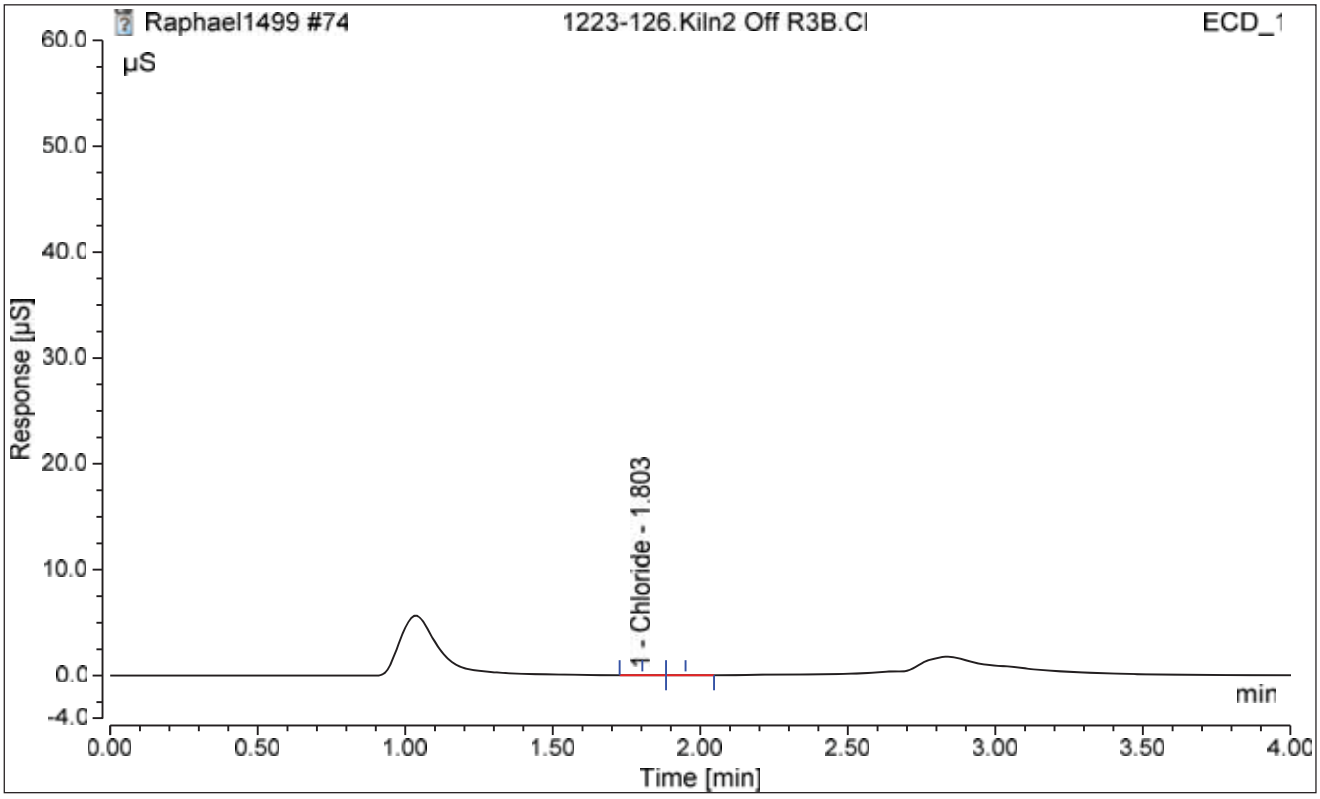


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.83	Chloride	0.007	0.033	0.10944	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R3B.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 04:53**	Run Time:	**12.50**

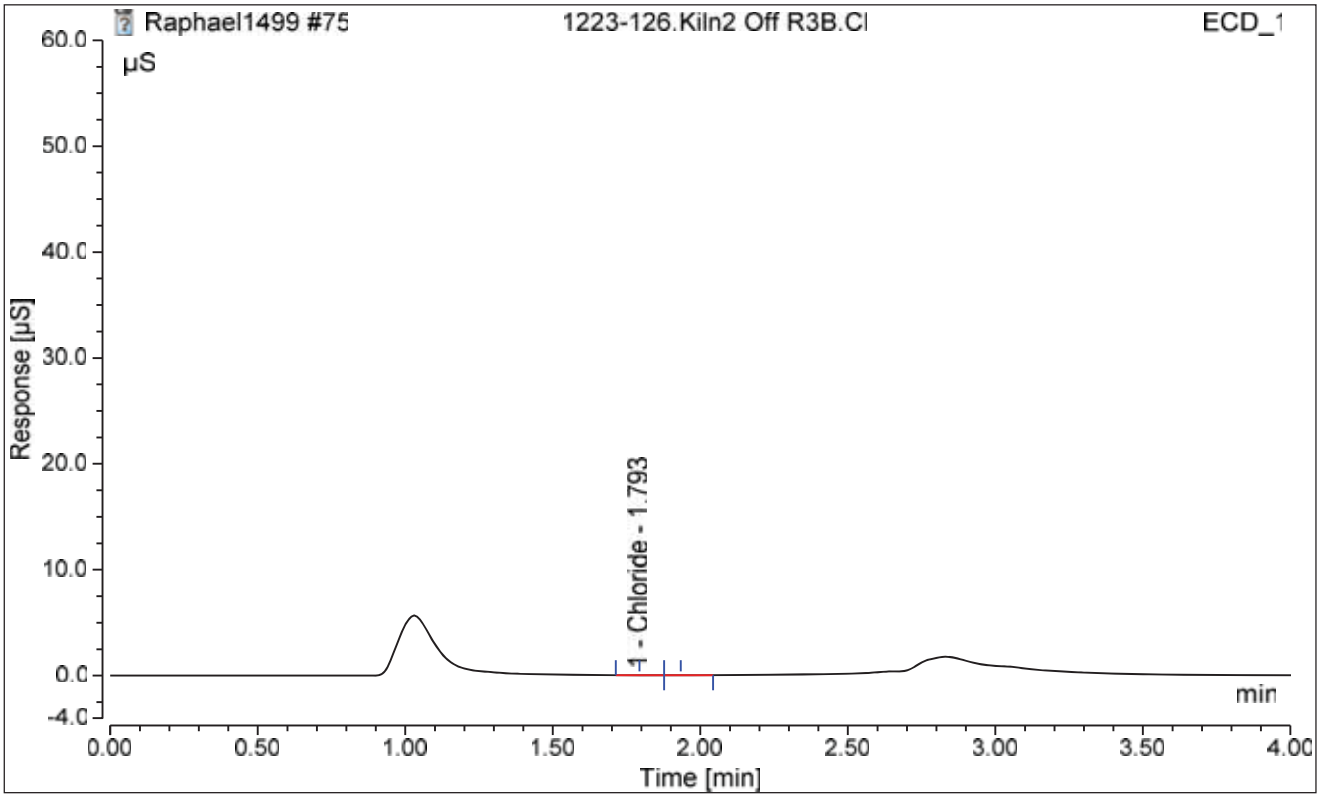


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.80	Chloride	0.001	0.011	0.05466	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off R3B.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 05:07**	Run Time:	**12.50**

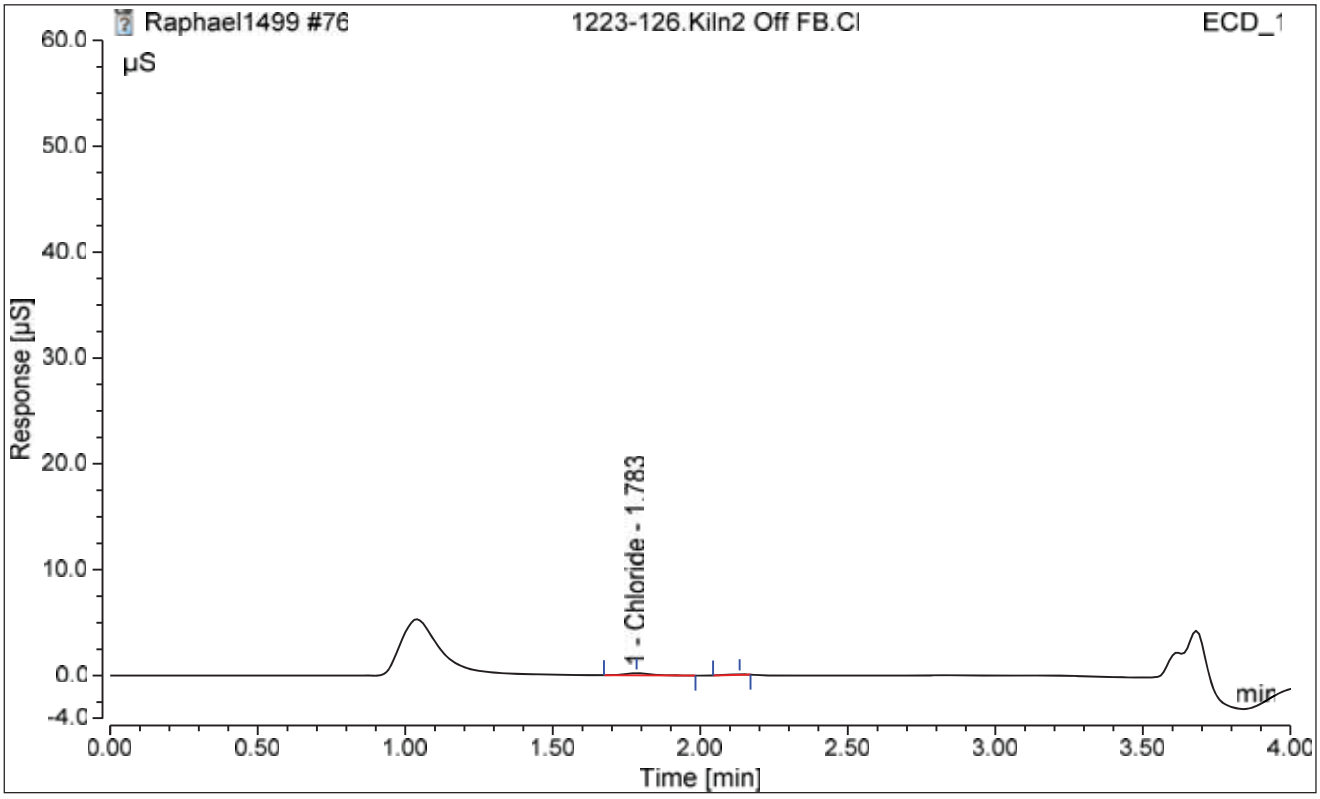


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.79	Chloride	0.001	0.011	0.05534	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off FB.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 05:21**	Run Time:	**12.50**

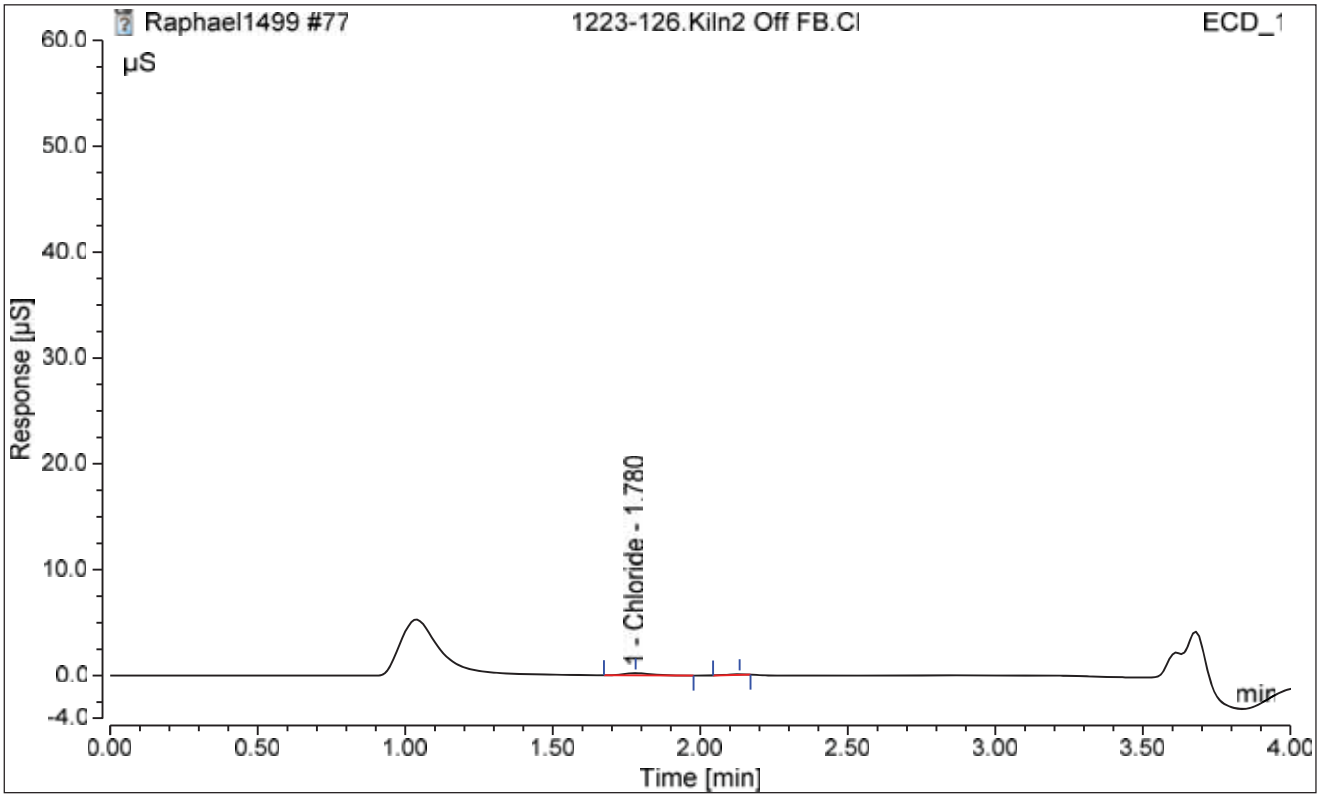


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.78	Chloride	0.019	0.200	0.22319	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 Off FB.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 05:35**	Run Time:	**12.50**

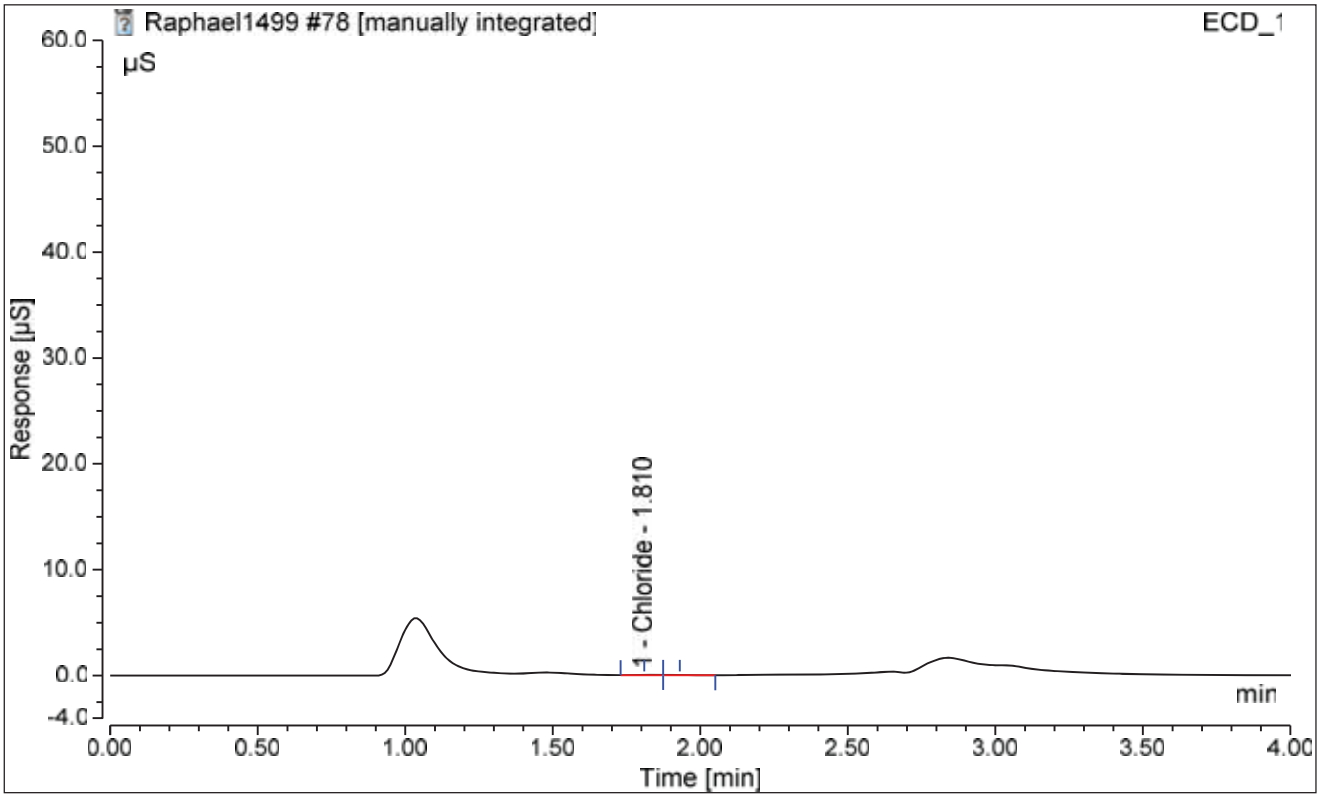


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.78	Chloride	0.019	0.201	0.22410	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R1A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 05:49**	Run Time:	**12.50**

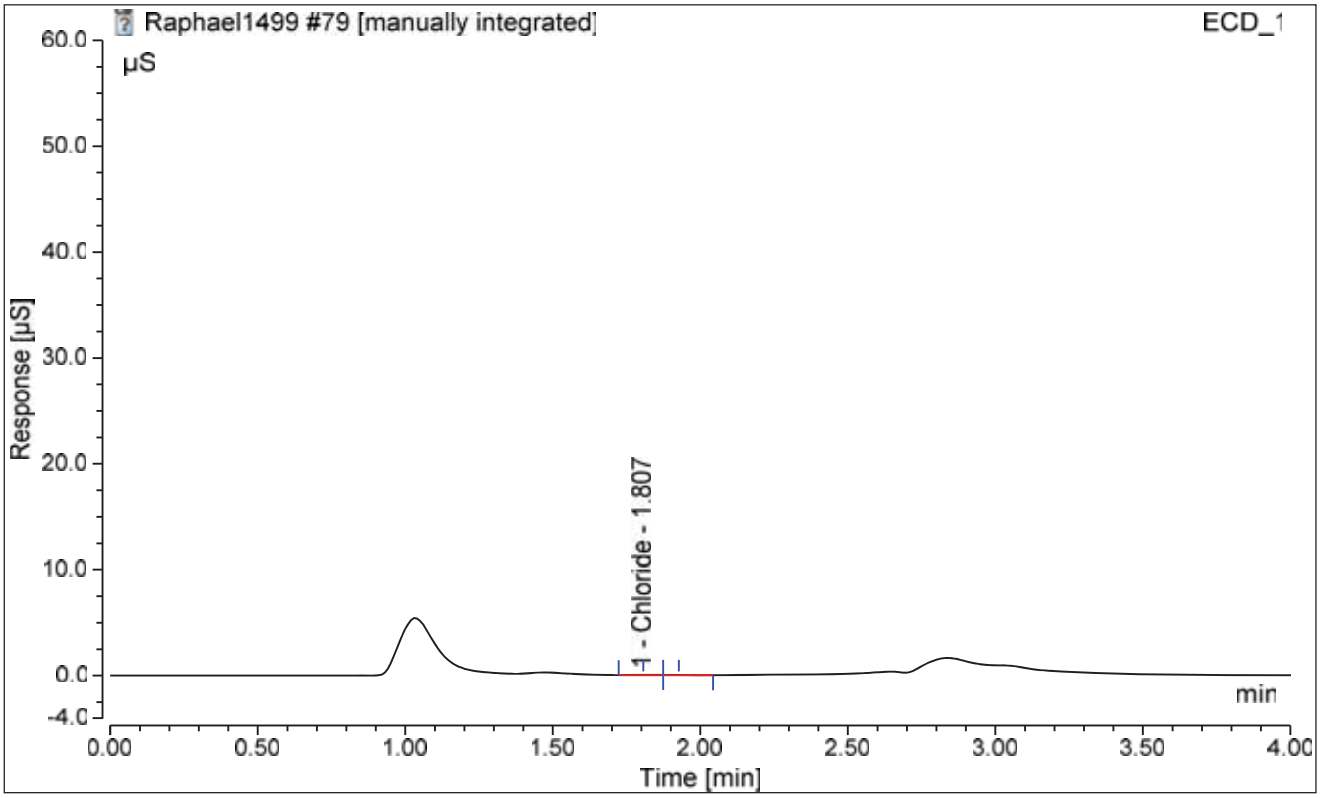


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.81	Chloride	0.002	0.016	0.05891	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R1A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 06:03**	Run Time:	**12.50**

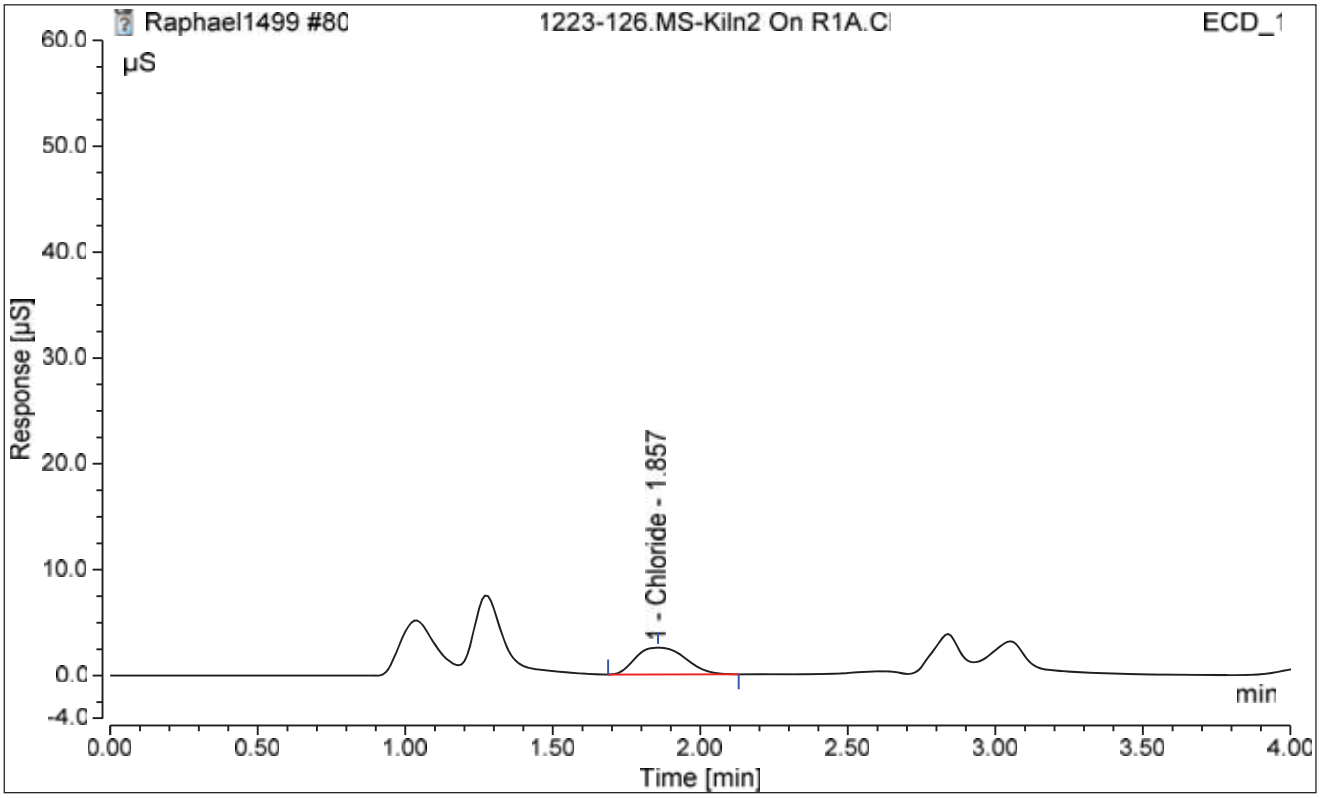


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.81	Chloride	0.002	0.015	0.05904	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.MS-Kiln2 On R1A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 06:17**	Run Time:	**12.50**

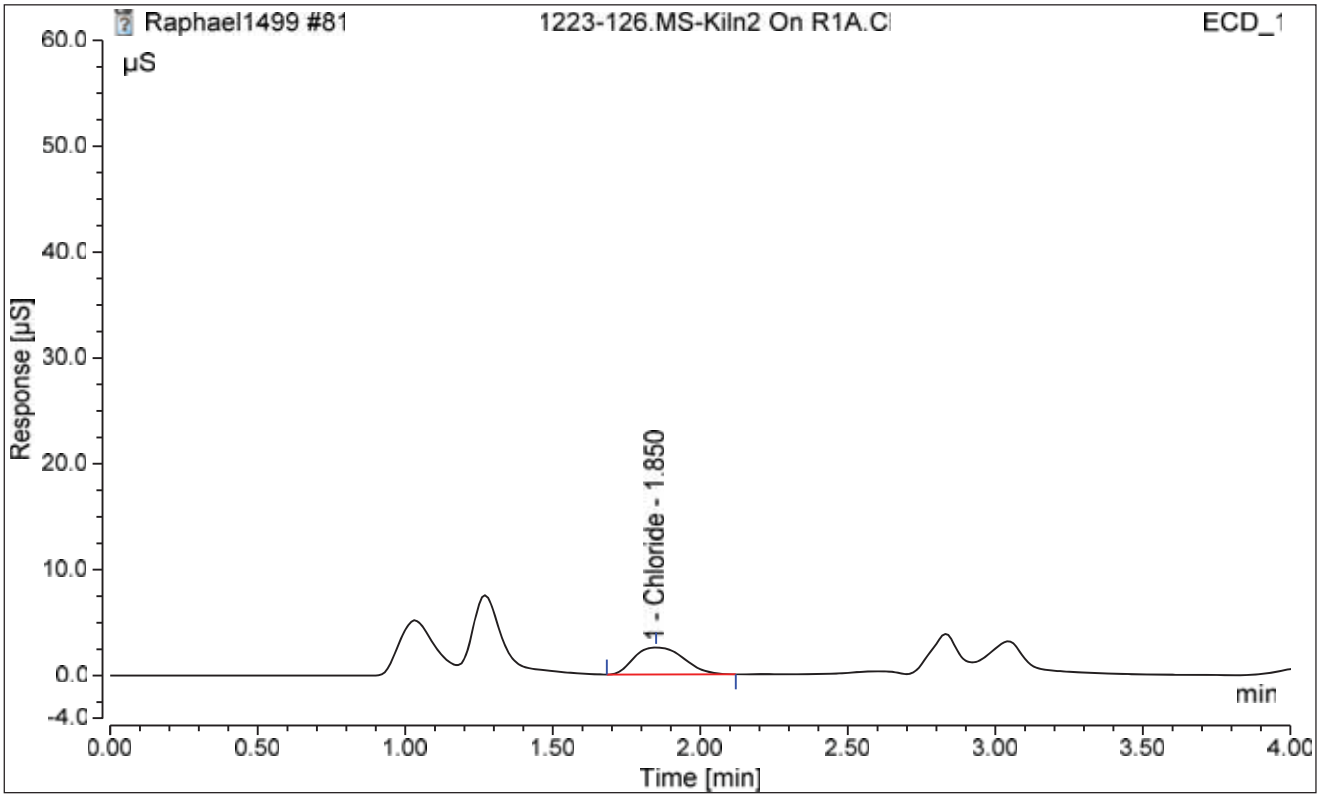


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.86	Chloride	0.493	2.532	4.69456	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.MS-Kiln2 On R1A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 06:32**	Run Time:	**12.50**

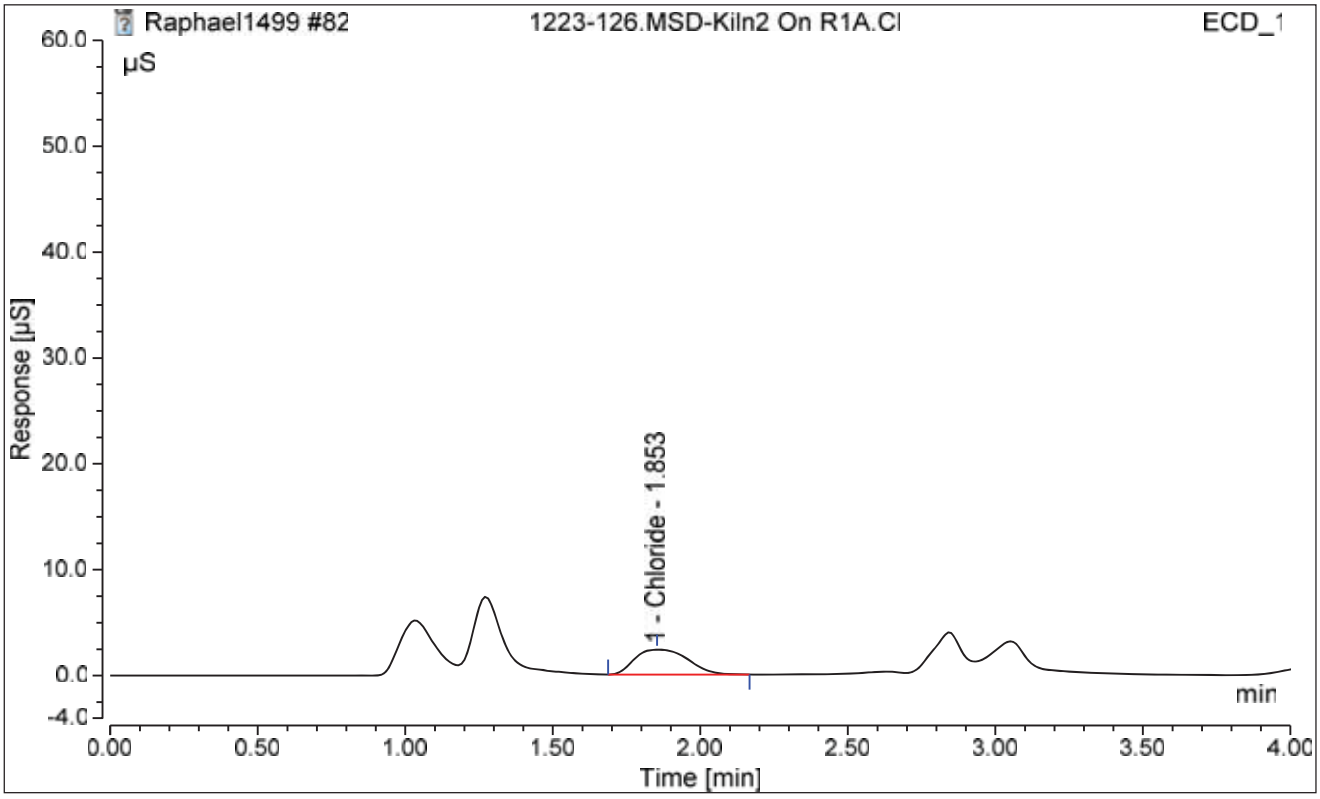


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.85	Chloride	0.494	2.545	4.69658	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.MSD-Kiln2 On R1A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 06:46**	Run Time:	**12.50**

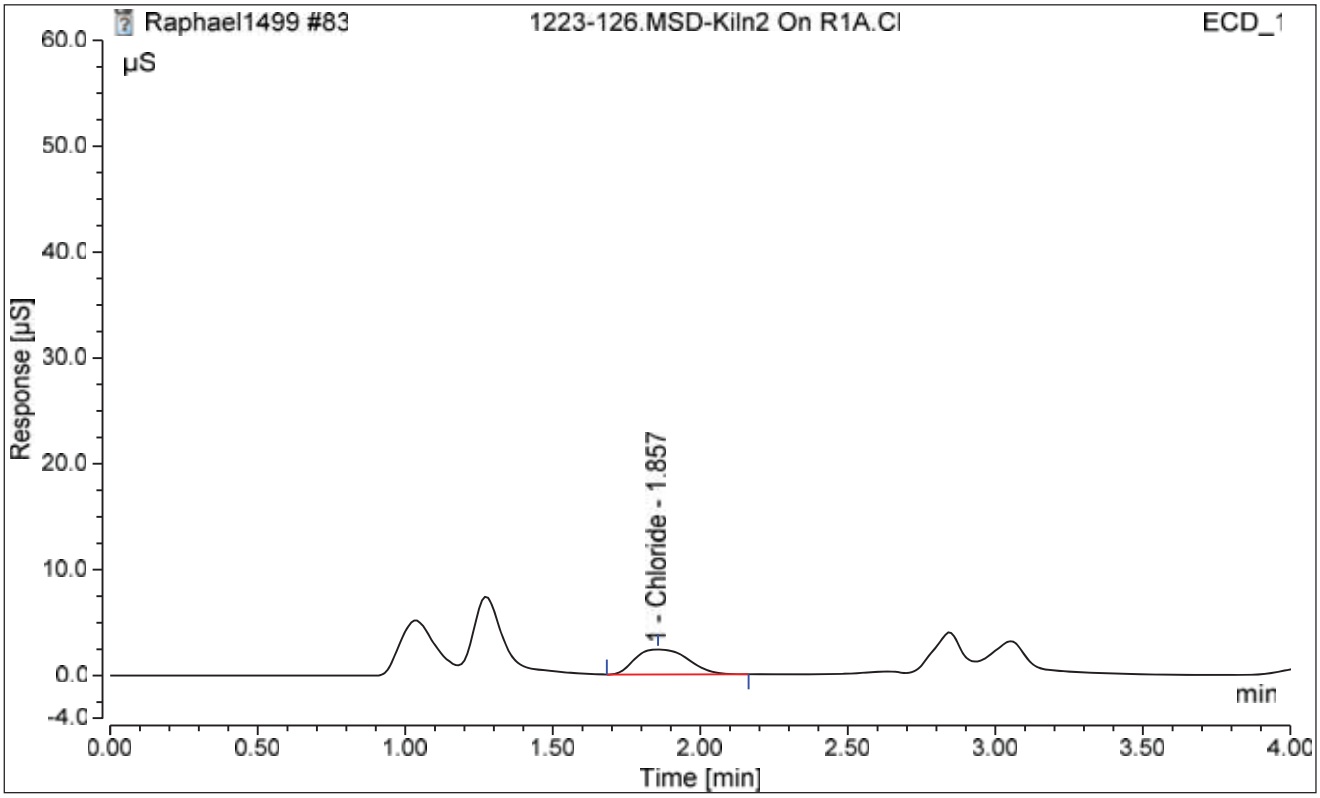


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.85	Chloride	0.487	2.347	4.63928	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.MSD-Kiln2 On R1A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 07:00**	Run Time:	**12.50**

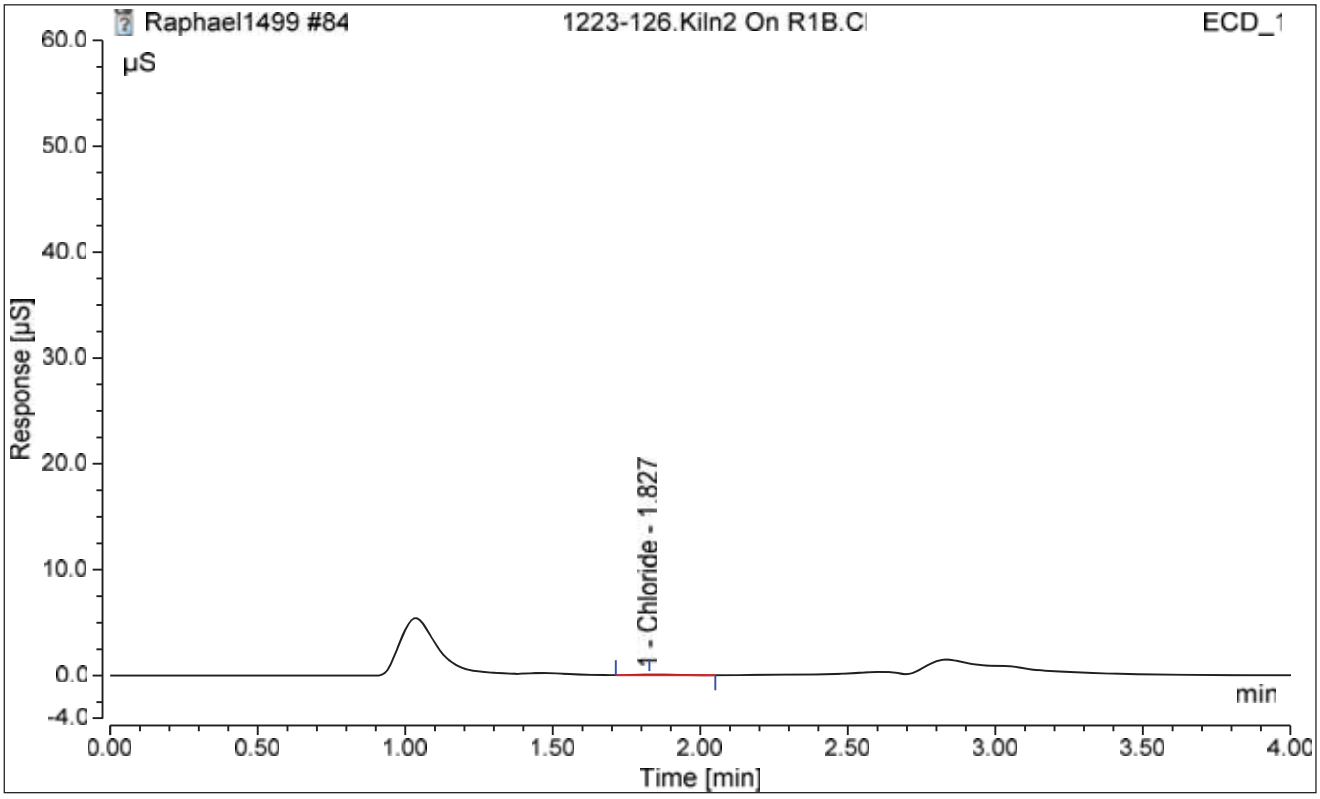


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.86	Chloride	0.488	2.358	4.64132	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R1B.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 07:14**	Run Time:	**12.50**

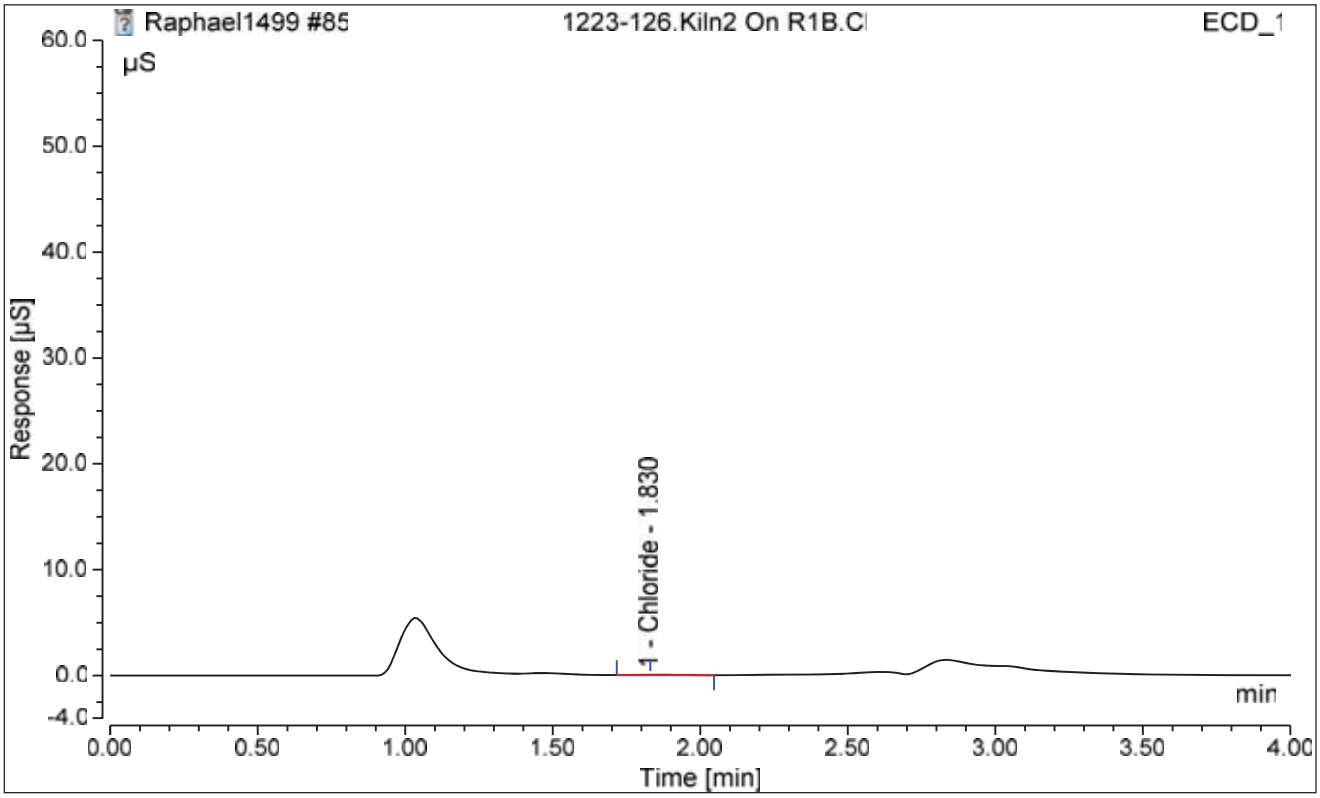


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.83	Chloride	0.010	0.045	0.13534	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R1B.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 07:28**	Run Time:	**12.50**

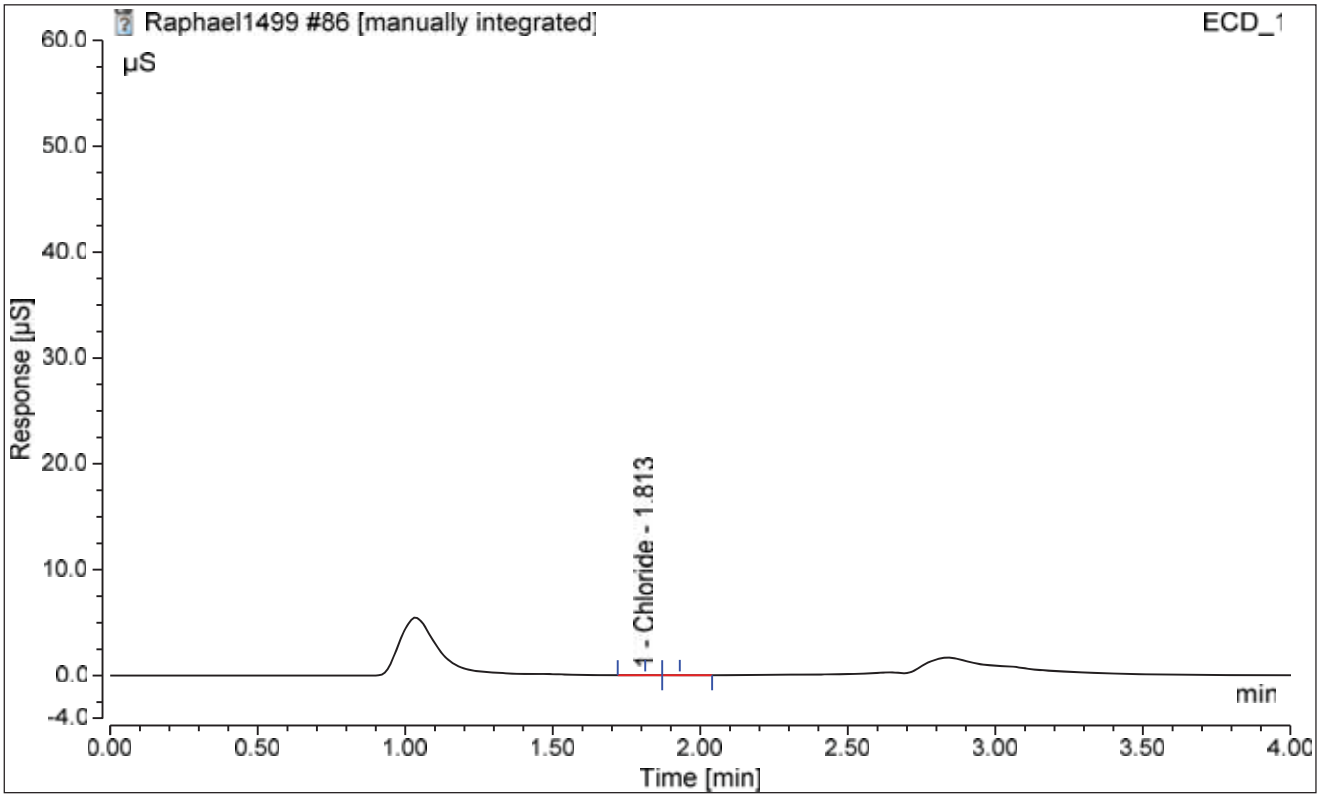


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.83	Chloride	0.009	0.045	0.13224	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R2A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 07:42**	Run Time:	**12.50**

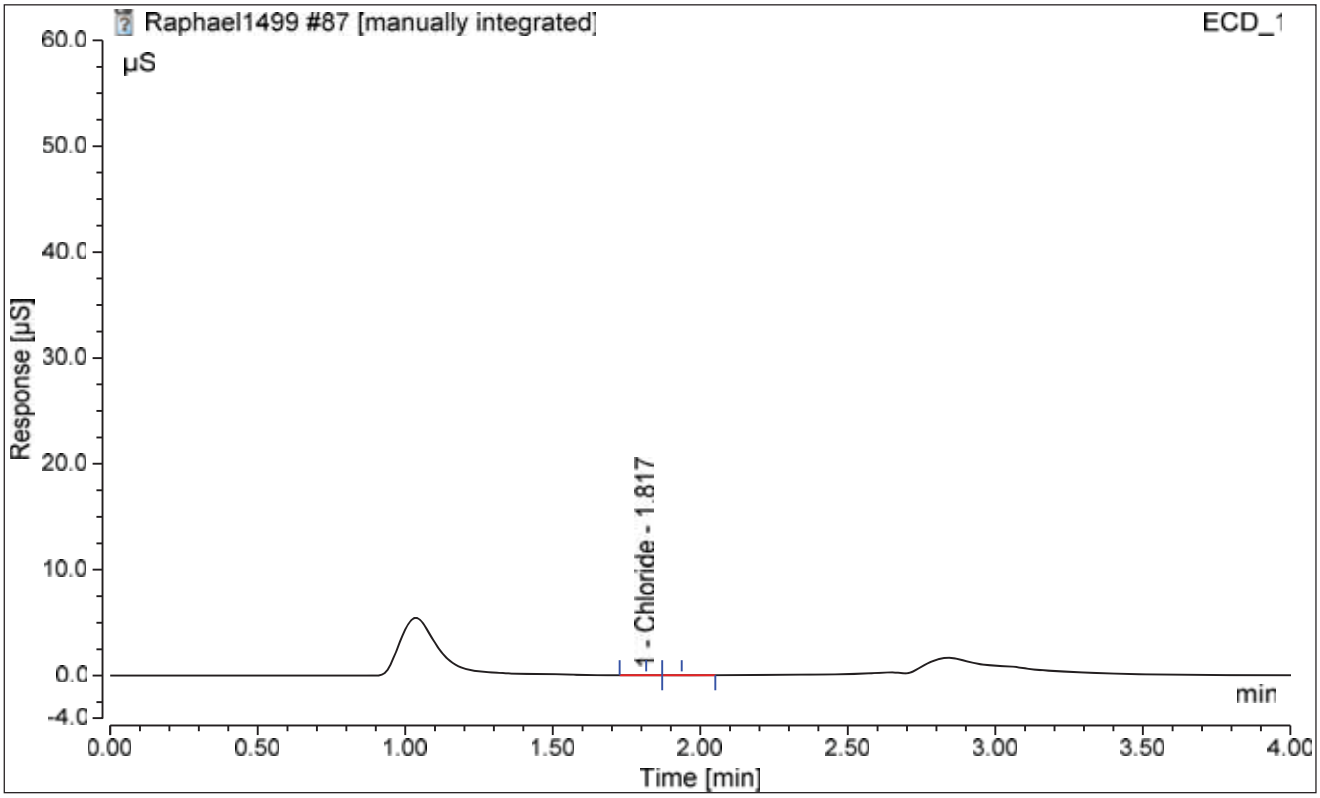


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.81	Chloride	0.002	0.015	0.05823	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R2A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 07:56**	Run Time:	**12.50**

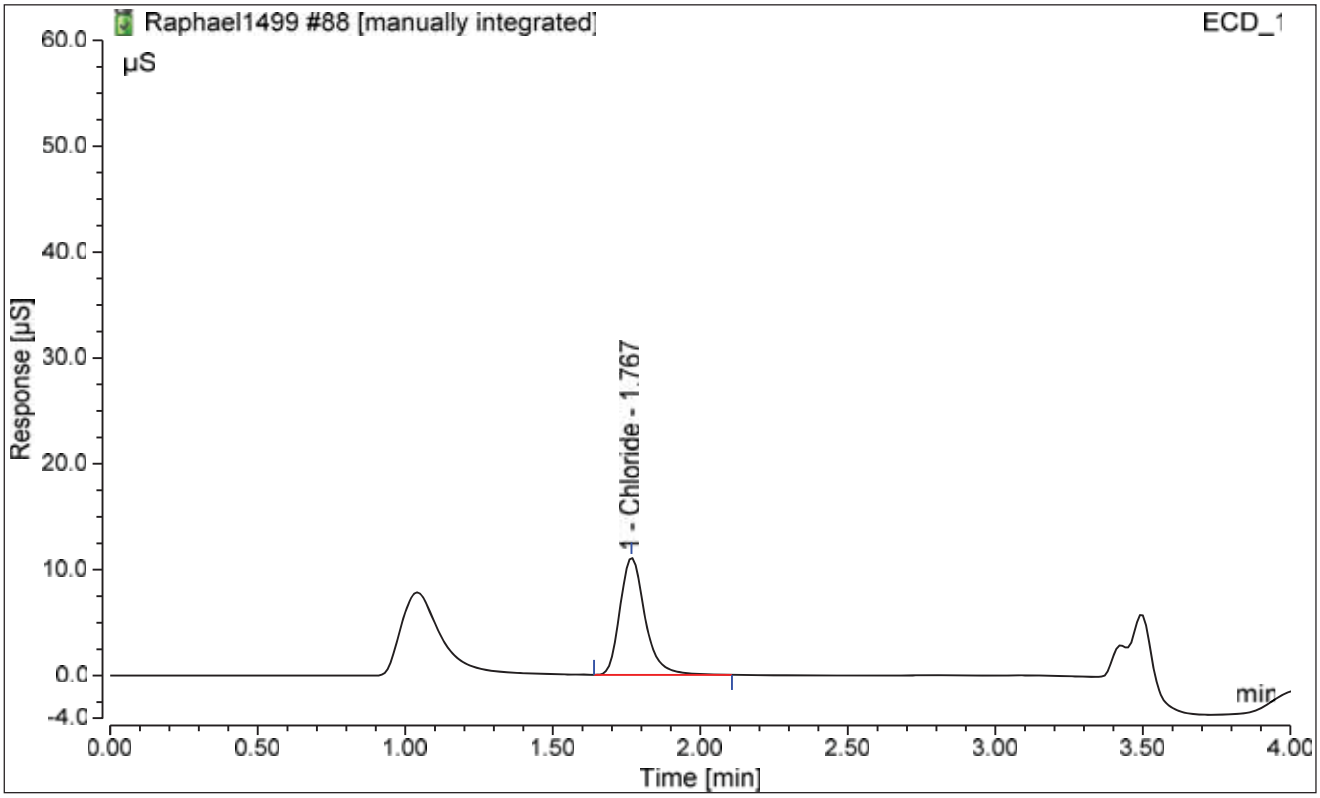


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.82	Chloride	0.002	0.015	0.05801	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 08:10**	Run Time:	**12.50**

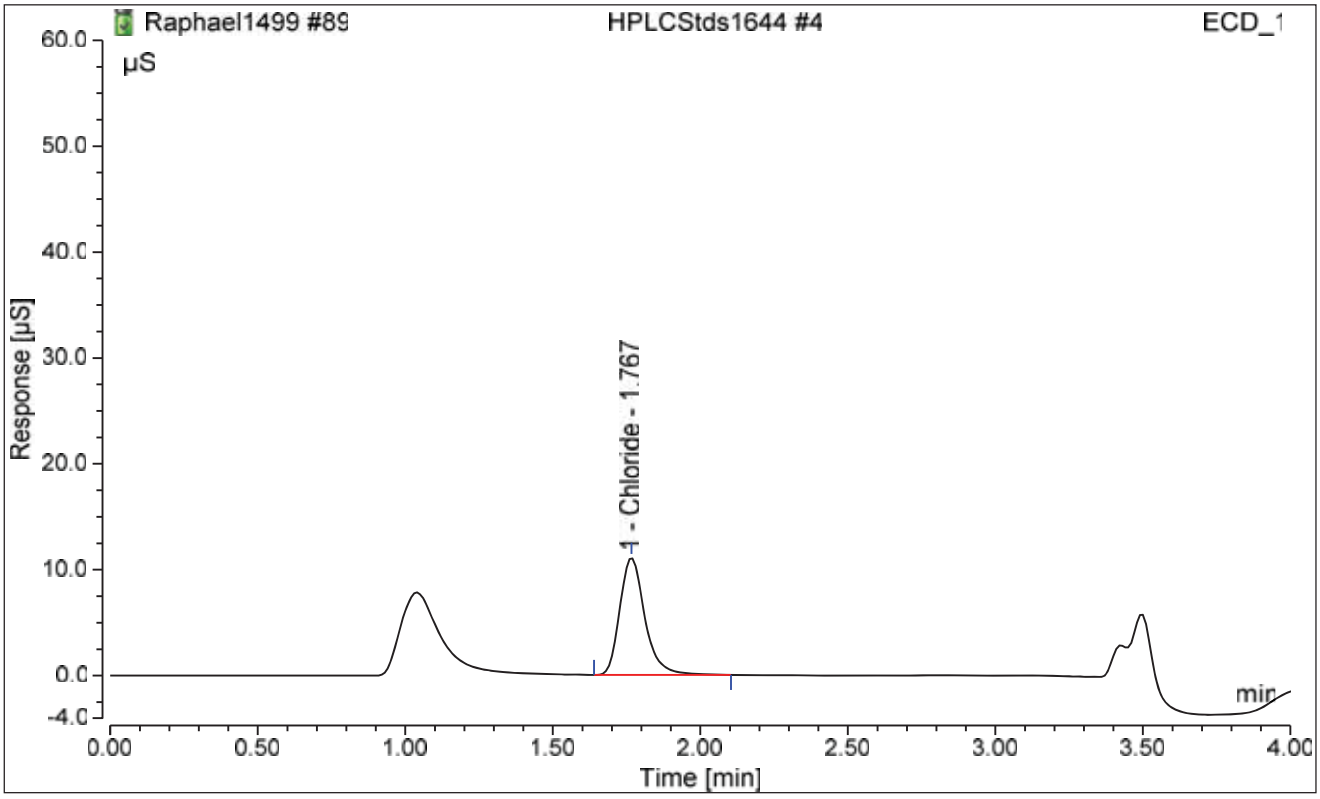


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.088	11.072	10.01627	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 08:24**	Run Time:	**12.50**

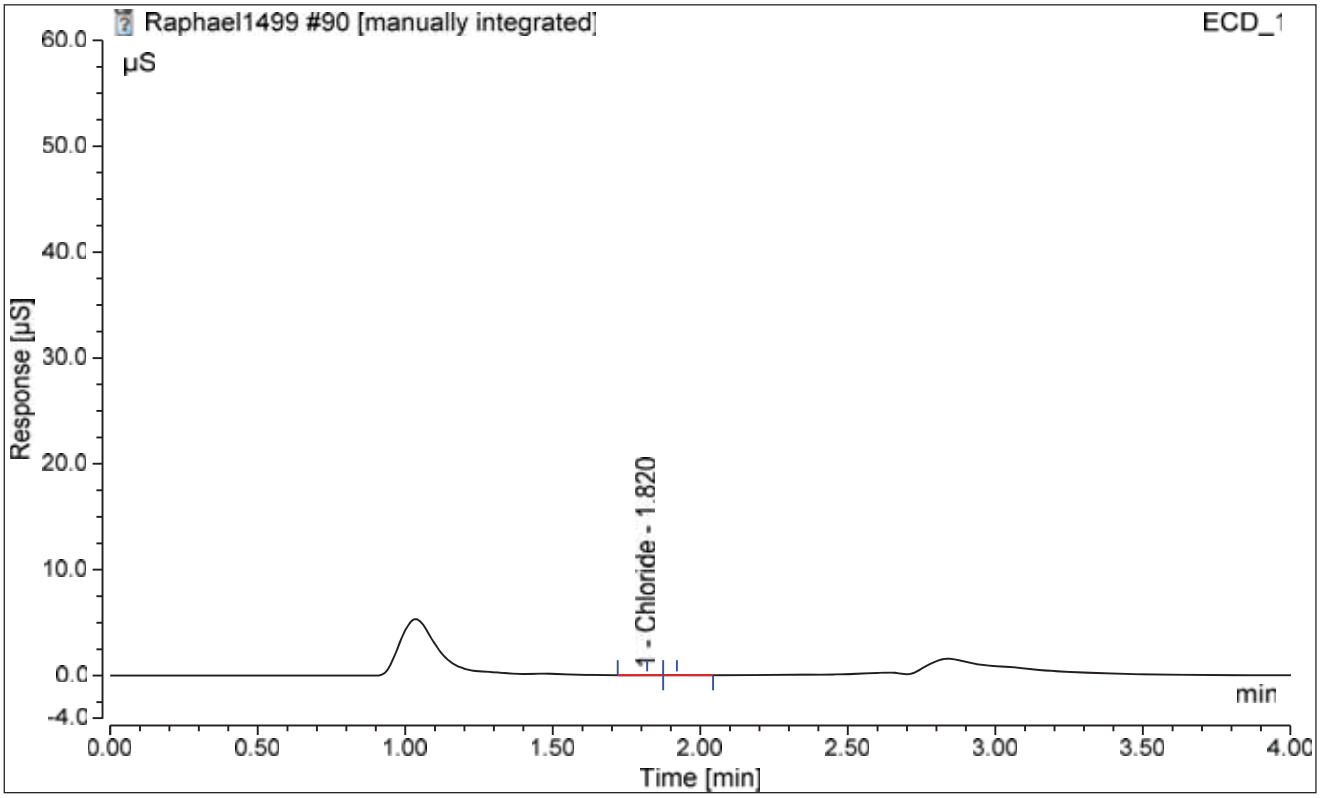


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.089	11.067	10.02324	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R2B.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 08:39**	Run Time:	**12.50**

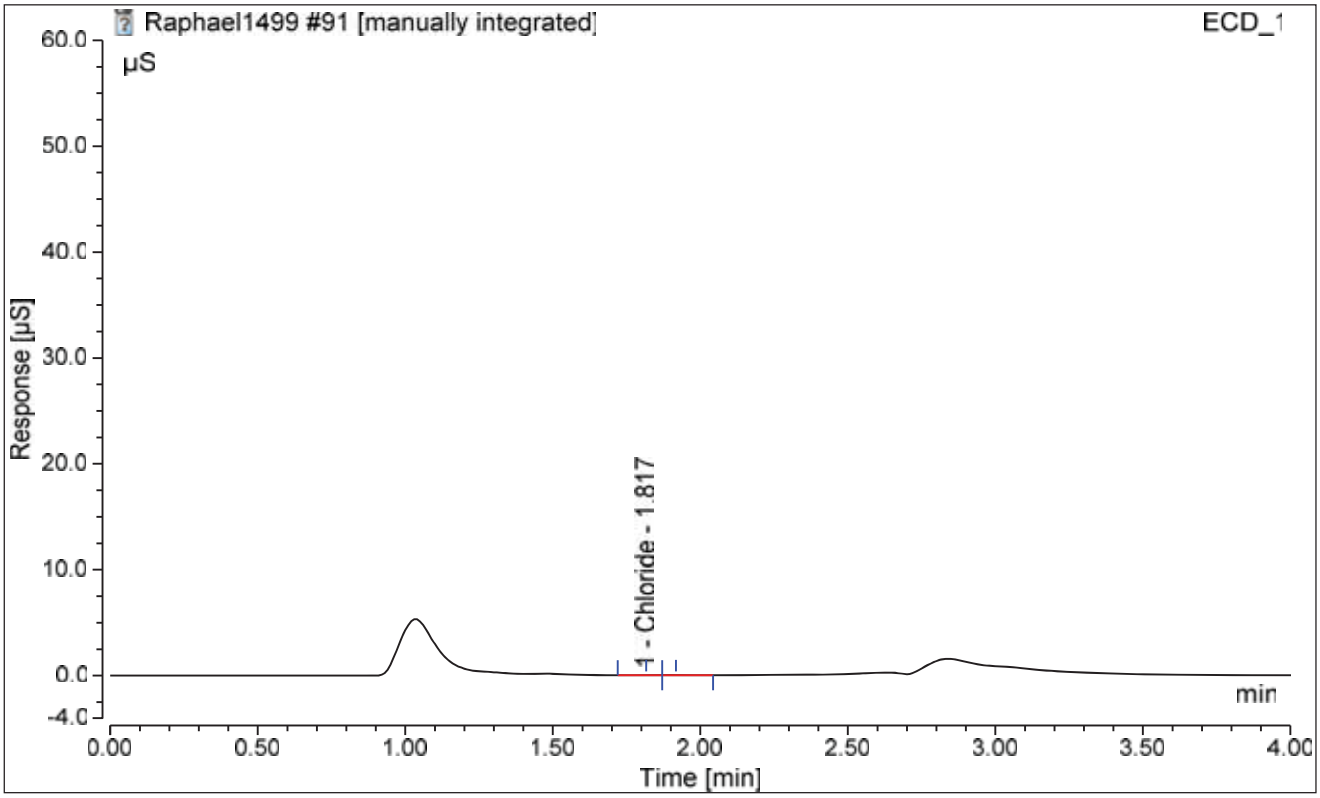


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.82	Chloride	0.002	0.020	0.06363	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R2B.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 08:53**	Run Time:	**12.50**

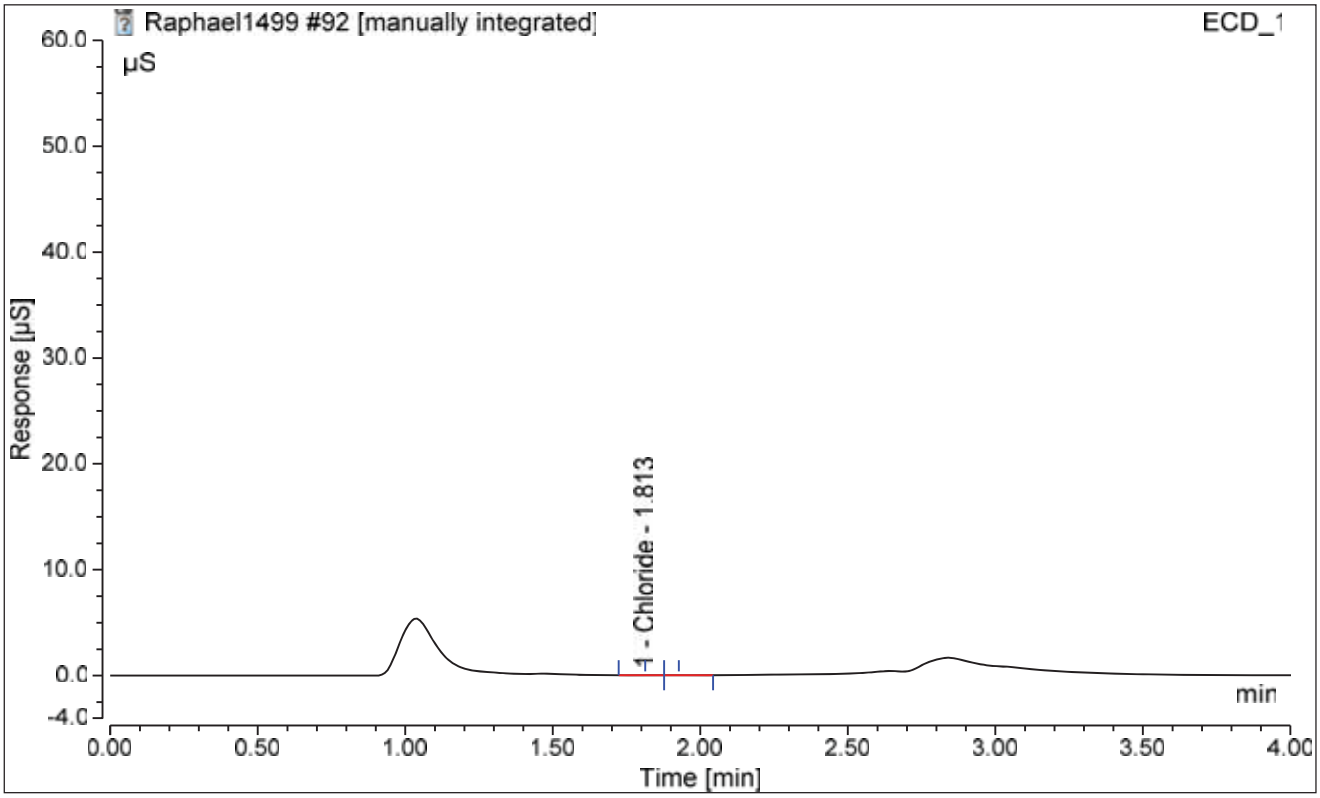


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.82	Chloride	0.002	0.018	0.06131	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R3A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 09:07**	Run Time:	**12.50**

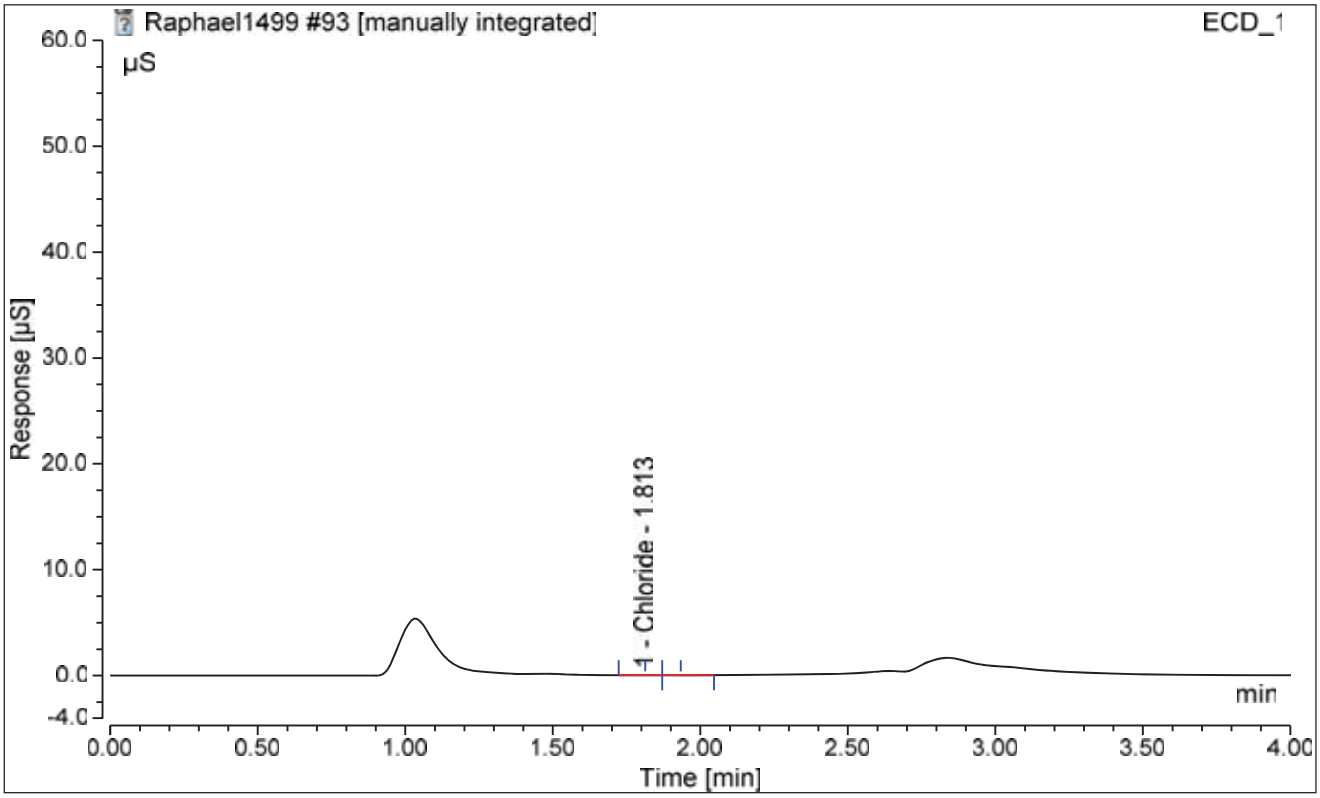


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.81	Chloride	0.002	0.015	0.05905	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R3A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 09:21**	Run Time:	**12.50**

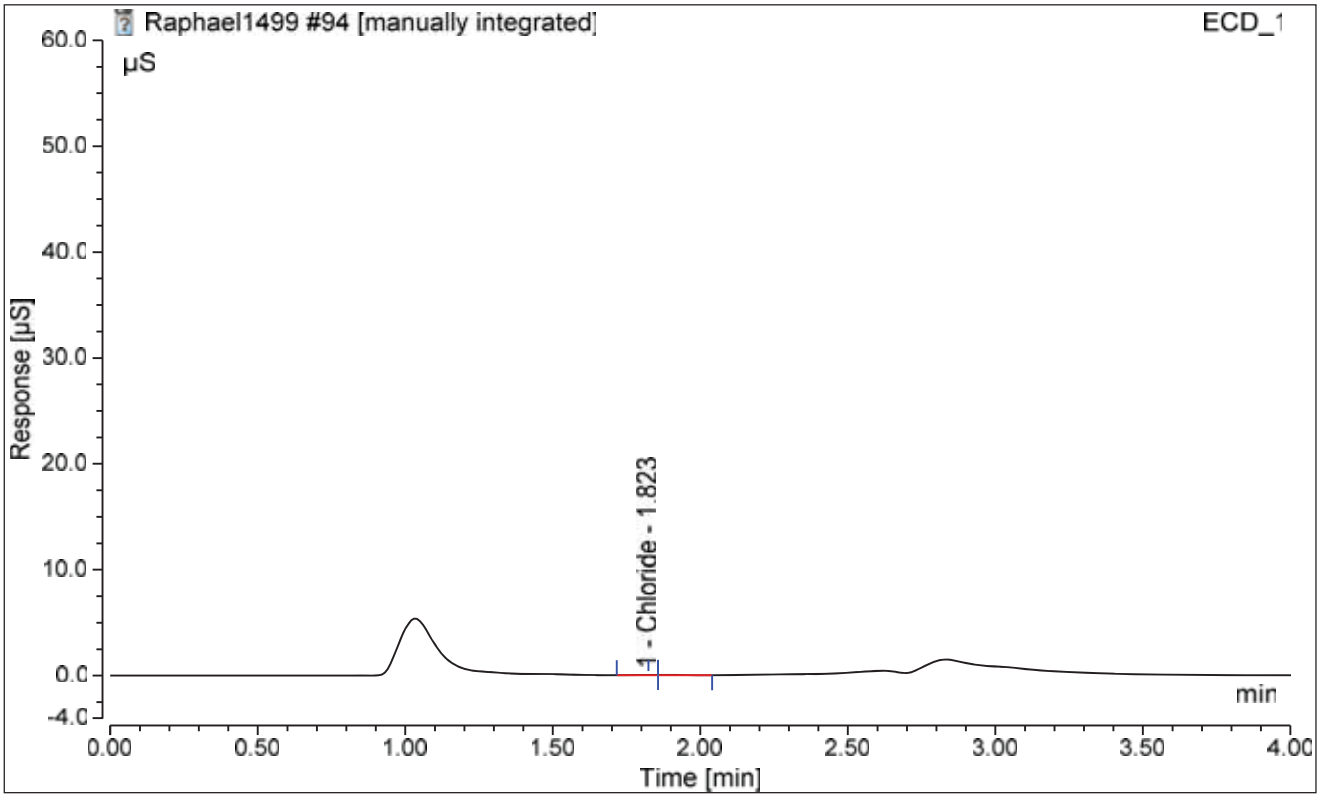


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.81	Chloride	0.001	0.014	0.05739	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R3B.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 09:35**	Run Time:	**12.50**

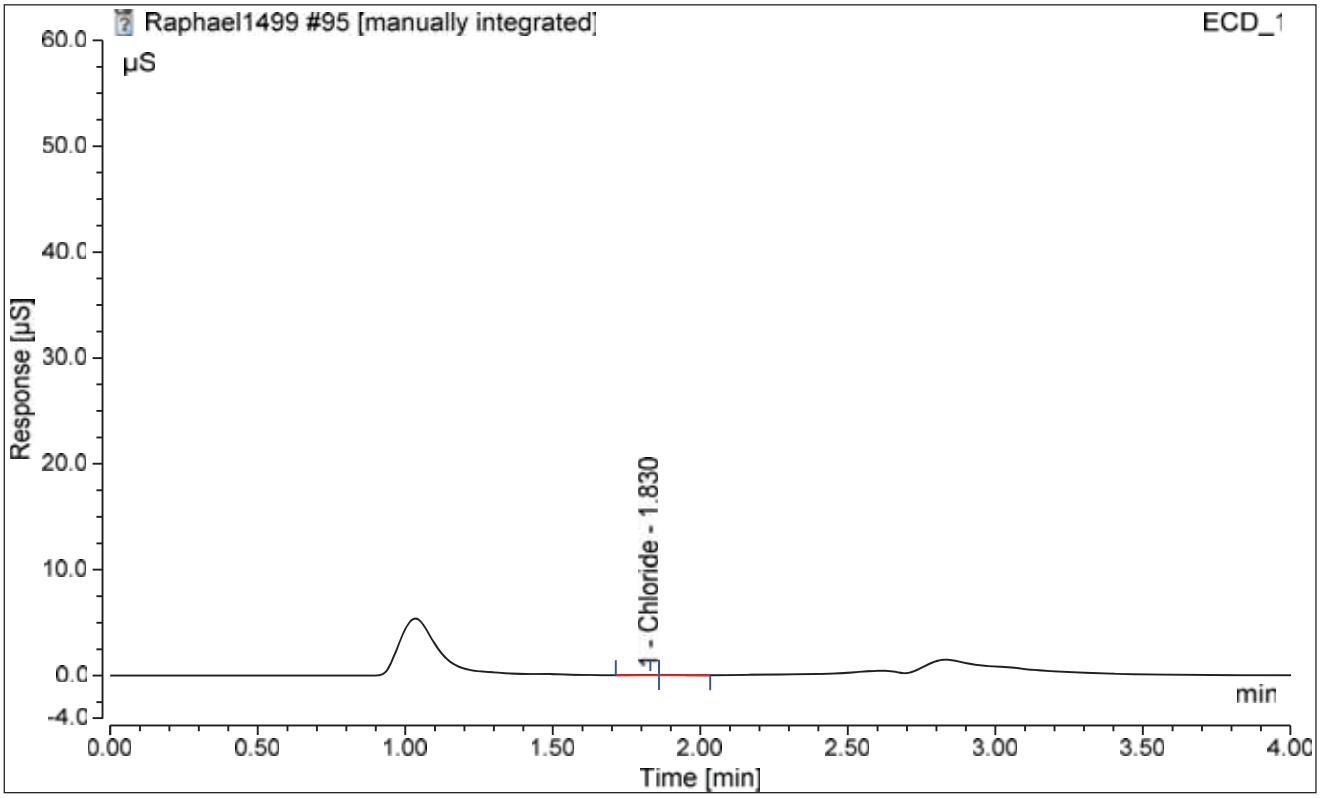


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.82	Chloride	0.003	0.029	0.06912	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On R3B.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 09:49**	Run Time:	**12.50**

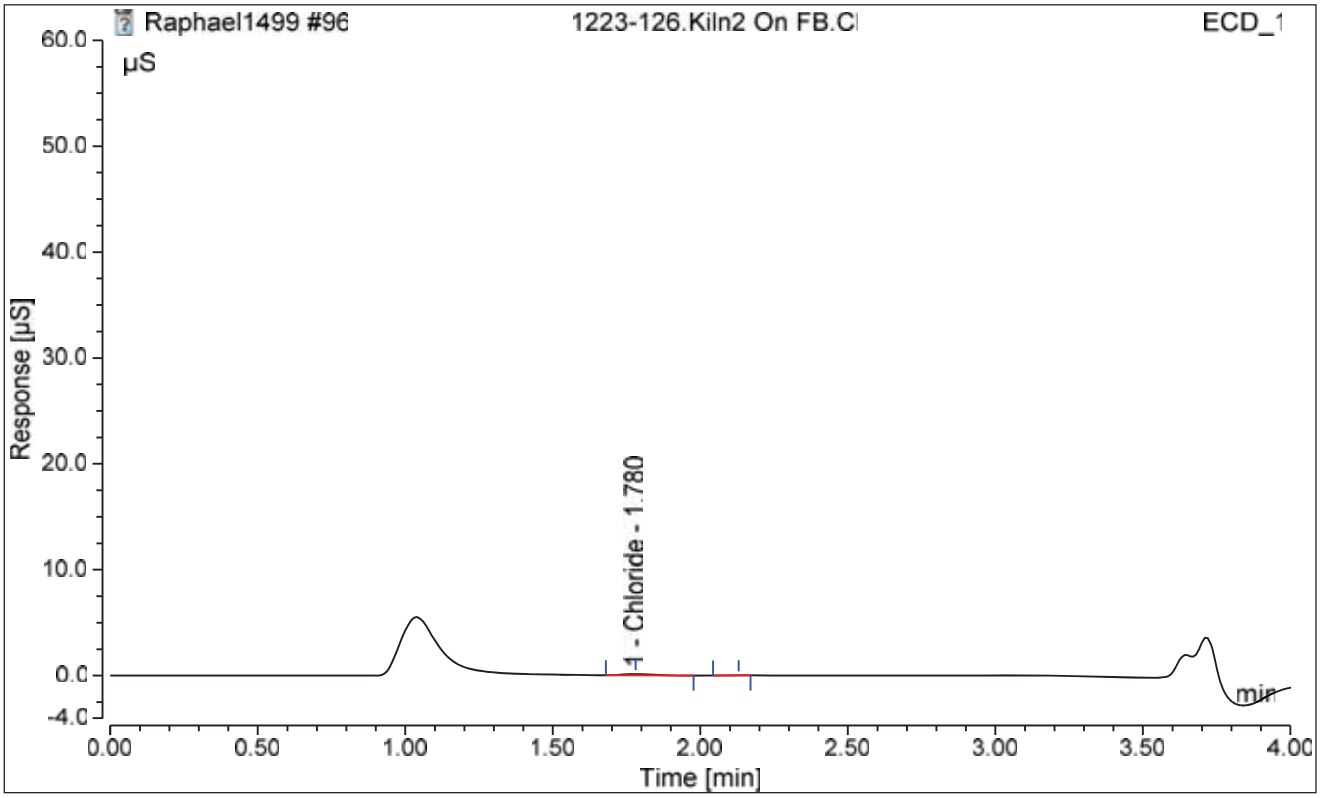


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.83	Chloride	0.003	0.030	0.07012	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On FB.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 10:03**	Run Time:	**12.50**

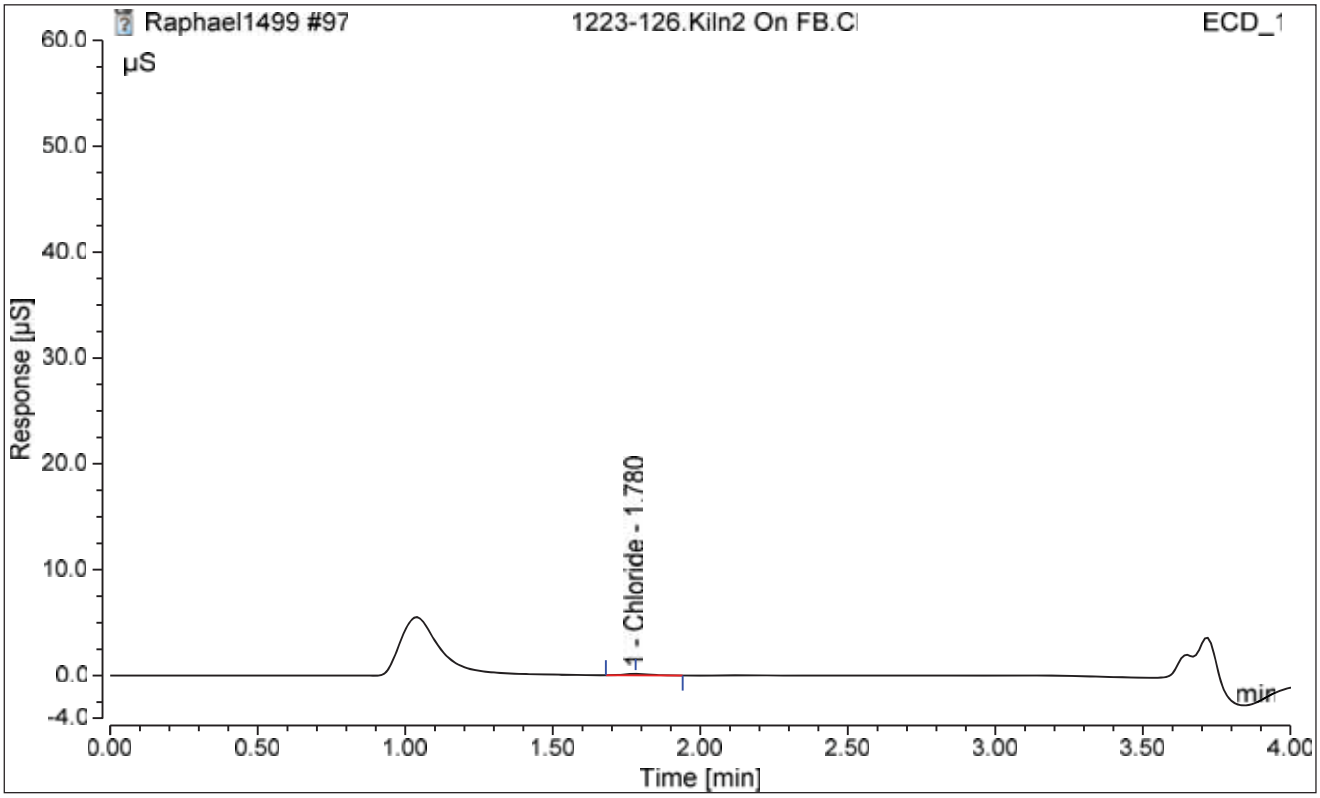


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.78	Chloride	0.013	0.135	0.16493	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln2 On FB.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 10:17**	Run Time:	**12.50**

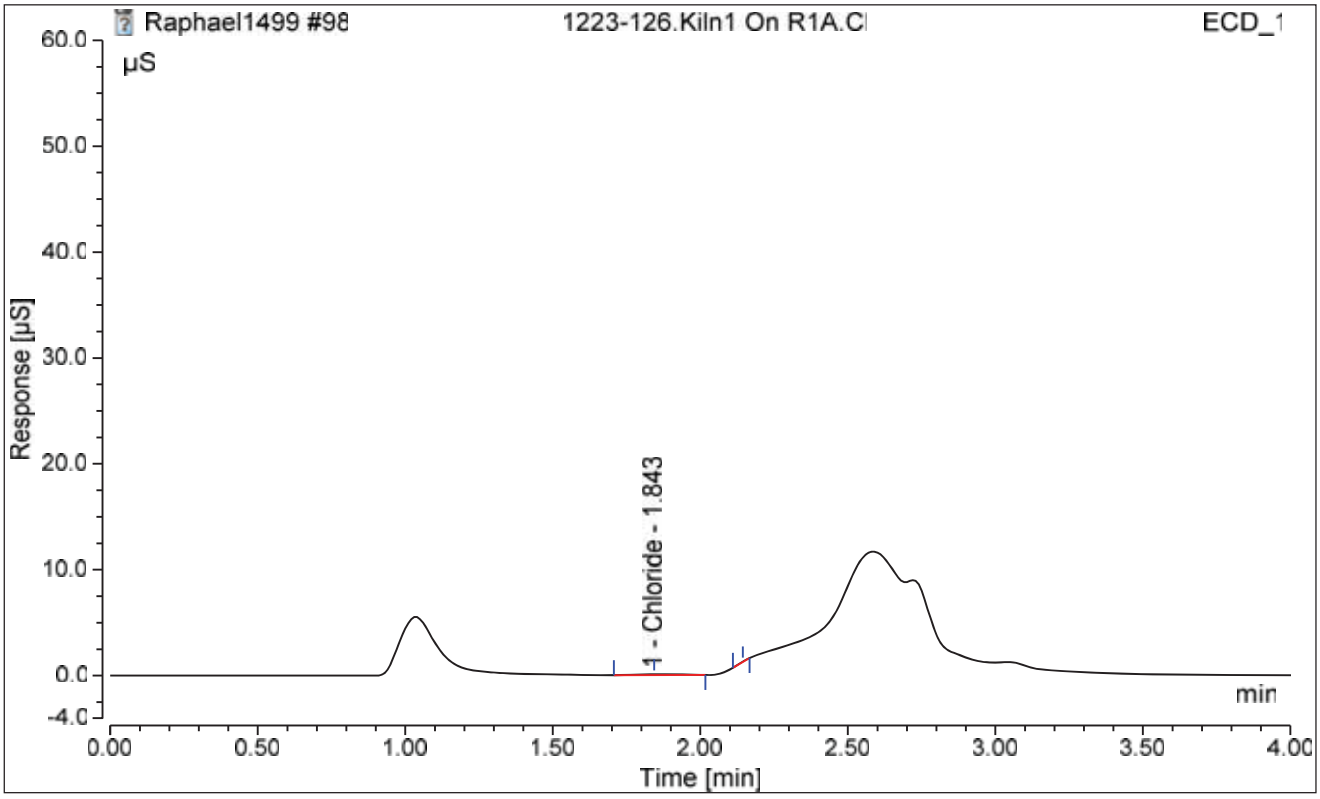


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.78	Chloride	0.012	0.134	0.16302	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R1A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 10:31**	Run Time:	**12.50**

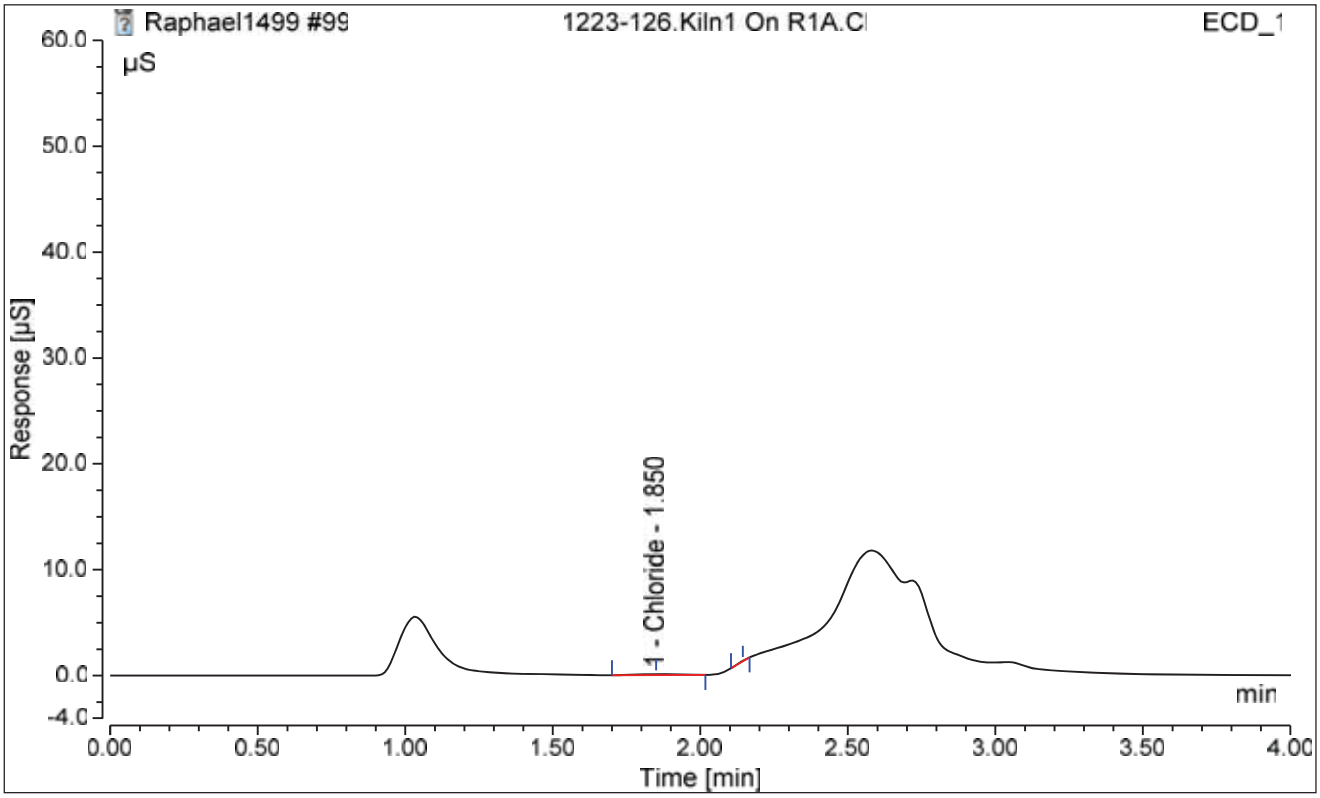


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.84	Chloride	0.016	0.080	0.19323	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R1A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 10:46**	Run Time:	**12.50**

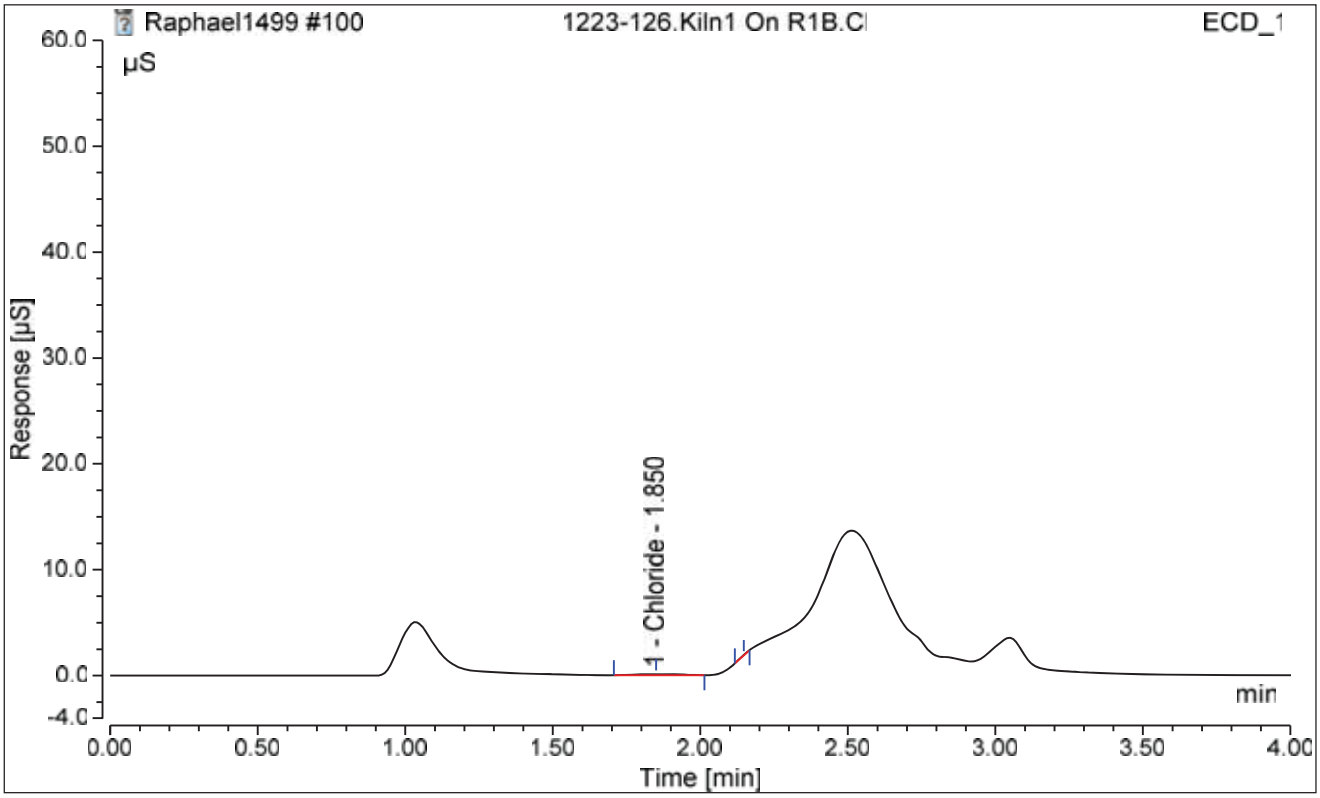


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.85	Chloride	0.016	0.082	0.19723	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R1B.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 11:00**	Run Time:	**12.50**

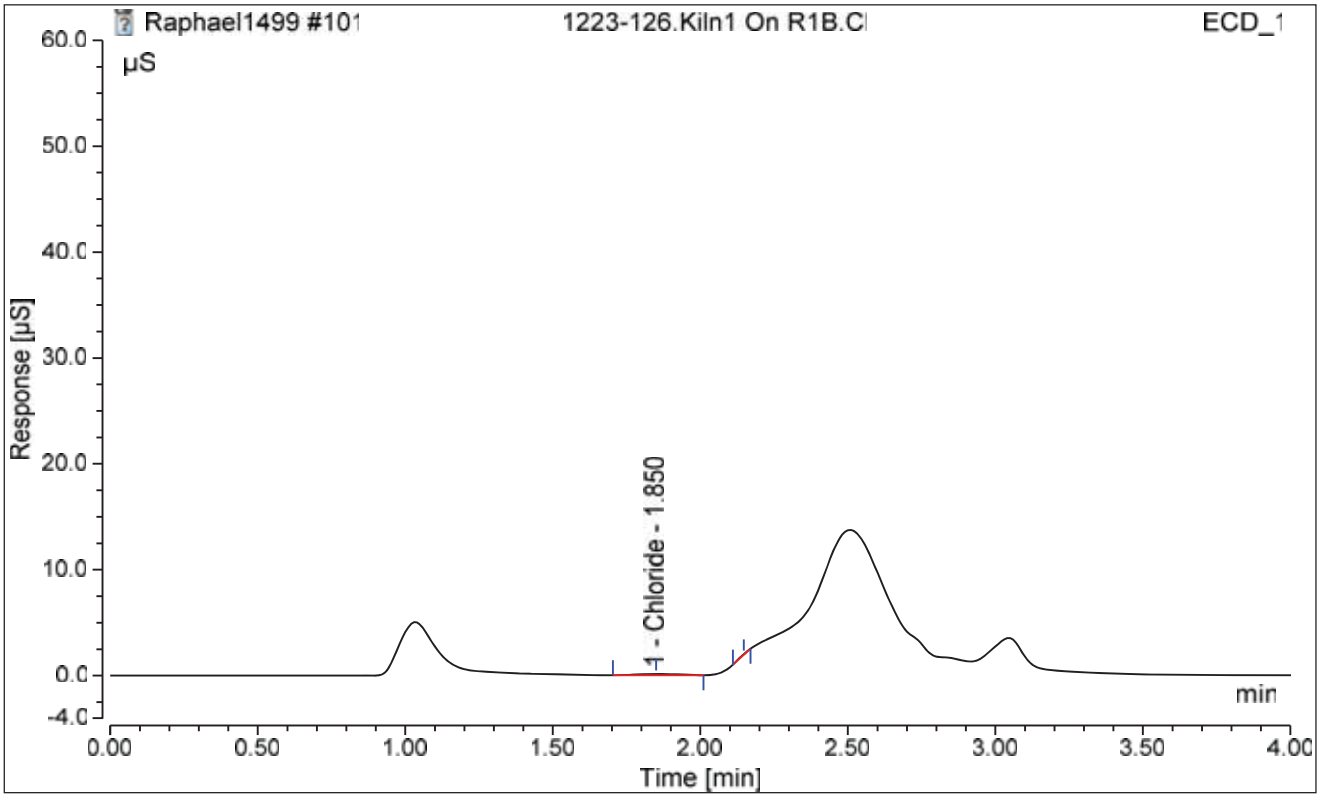


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.85	Chloride	0.019	0.104	0.22251	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R1B.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 11:14**	Run Time:	**12.50**

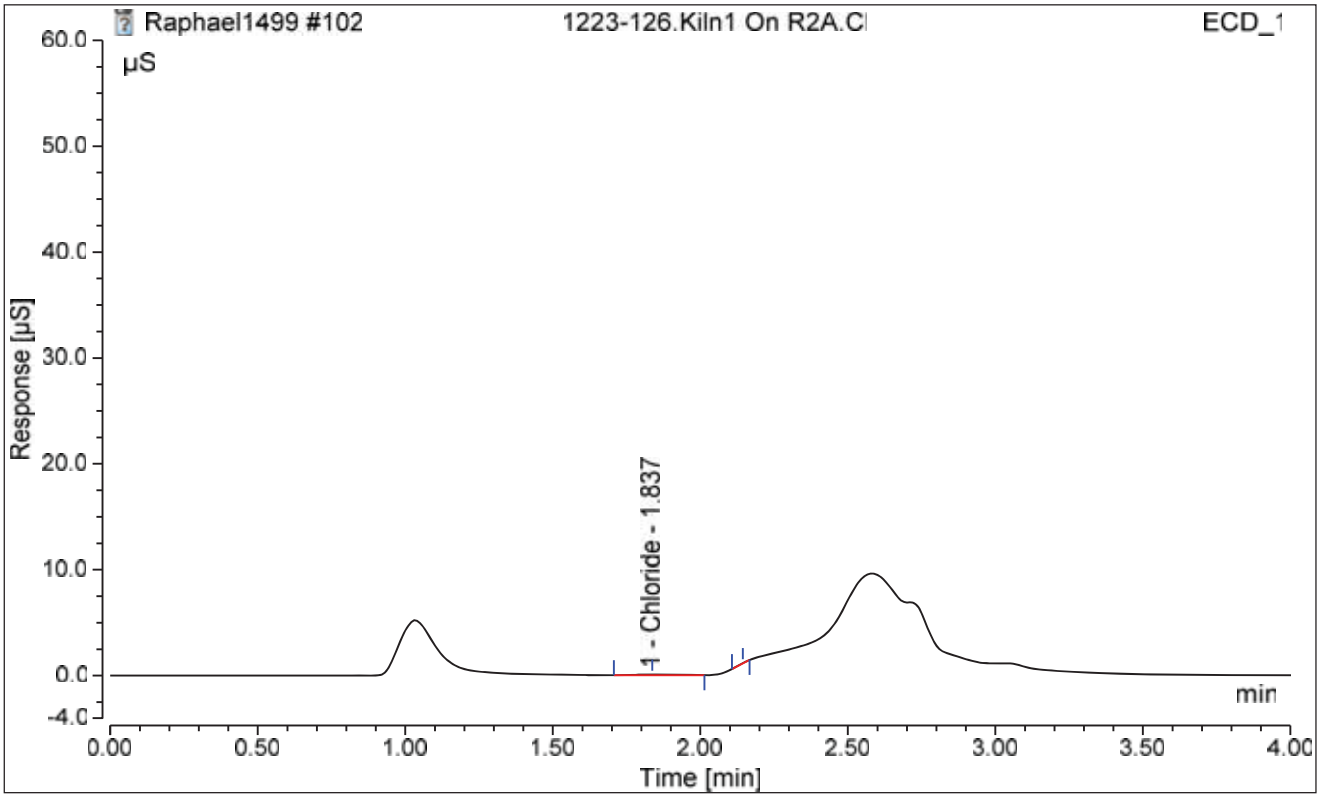


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.85	Chloride	0.019	0.106	0.22574	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R2A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 11:28**	Run Time:	**12.50**

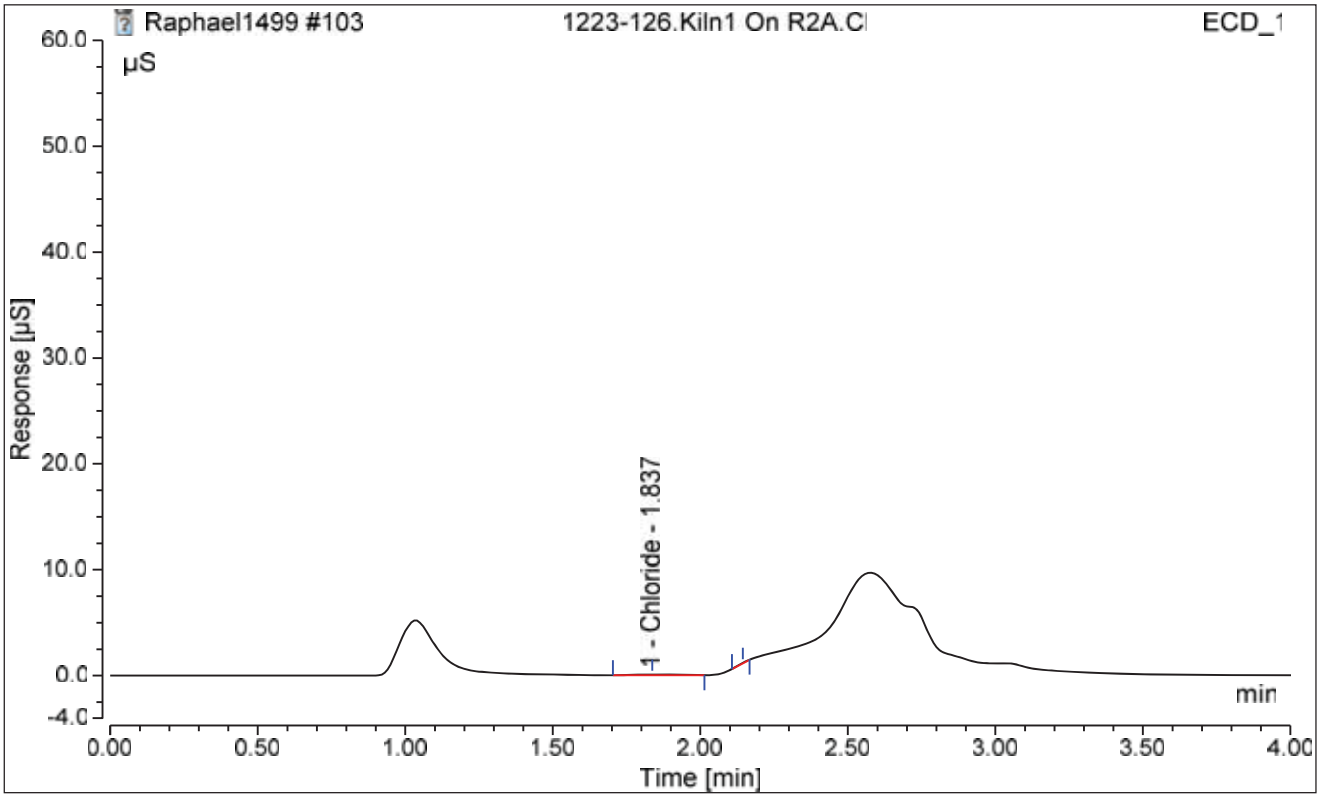


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.84	Chloride	0.012	0.061	0.15440	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R2A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 11:42**	Run Time:	**12.50**

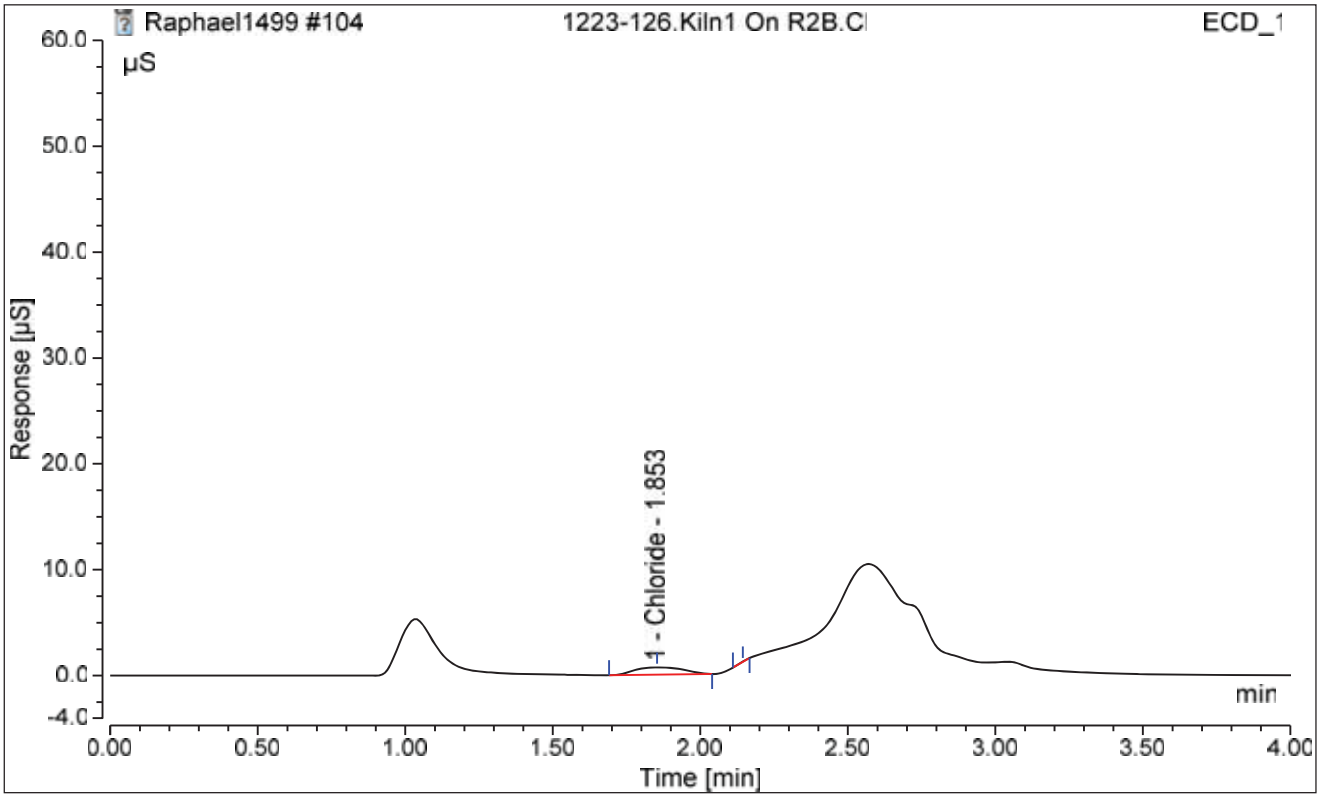


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.84	Chloride	0.012	0.063	0.16062	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R2B.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 11:56**	Run Time:	**12.50**

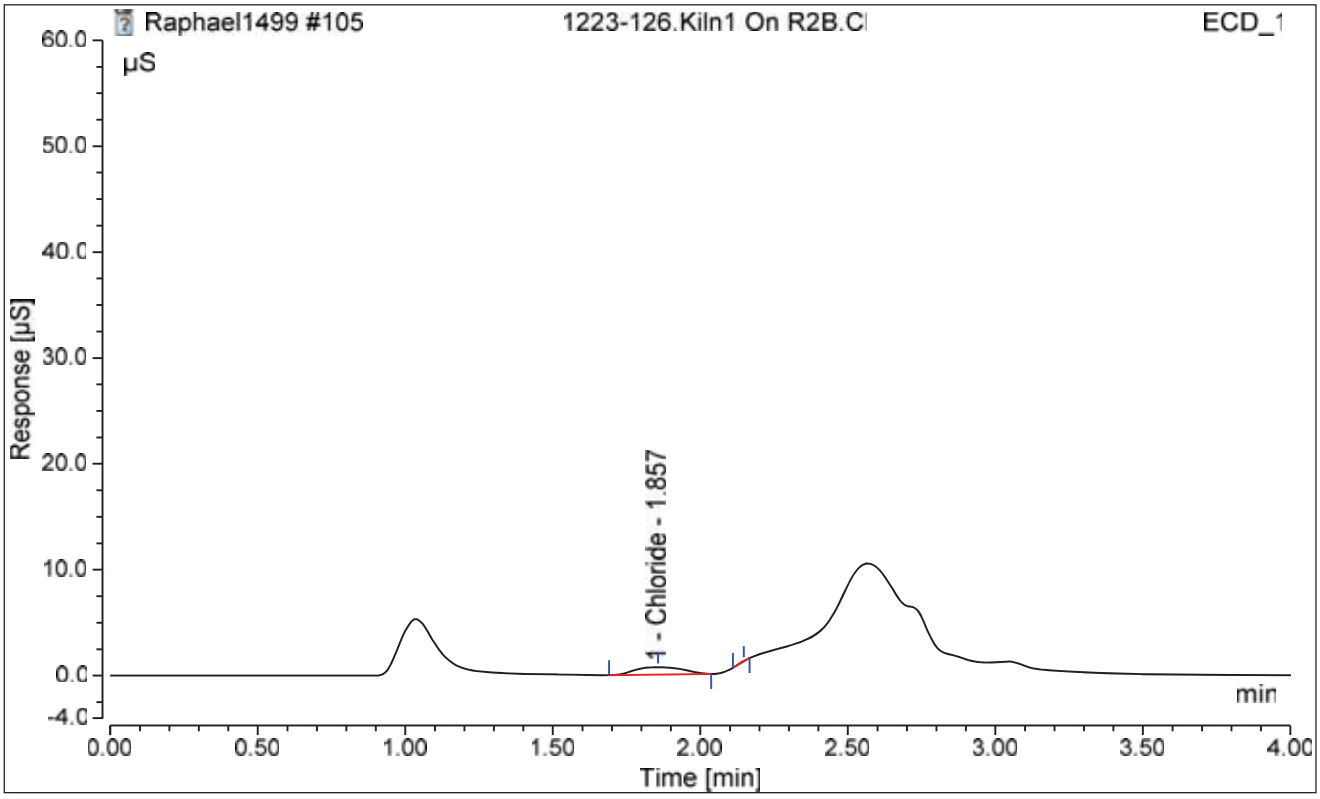


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.85	Chloride	0.131	0.684	1.30268	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R2B.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 12:10**	Run Time:	**12.50**

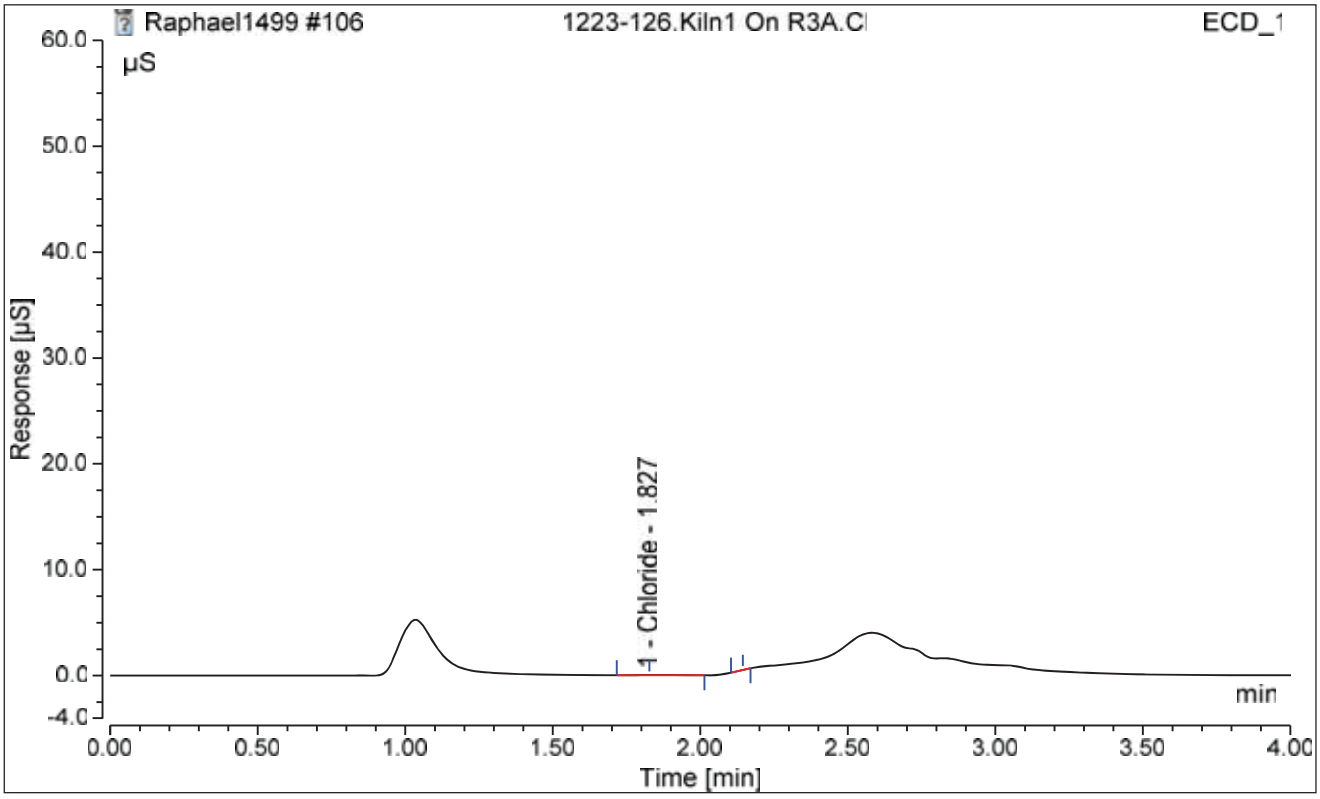


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.86	Chloride	0.132	0.690	1.31028	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R3A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 12:24**	Run Time:	**12.50**

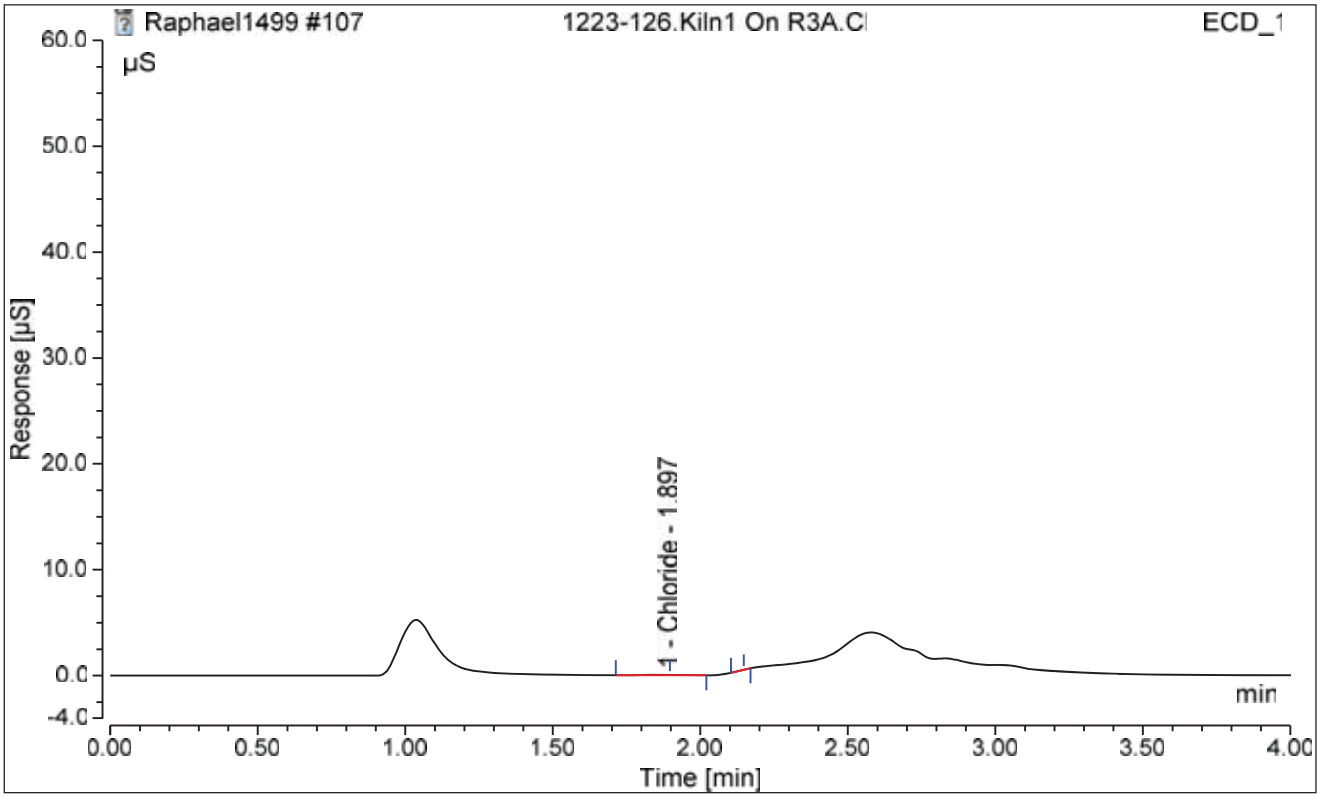


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.83	Chloride	0.005	0.027	0.09520	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R3A.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 12:38**	Run Time:	**12.50**

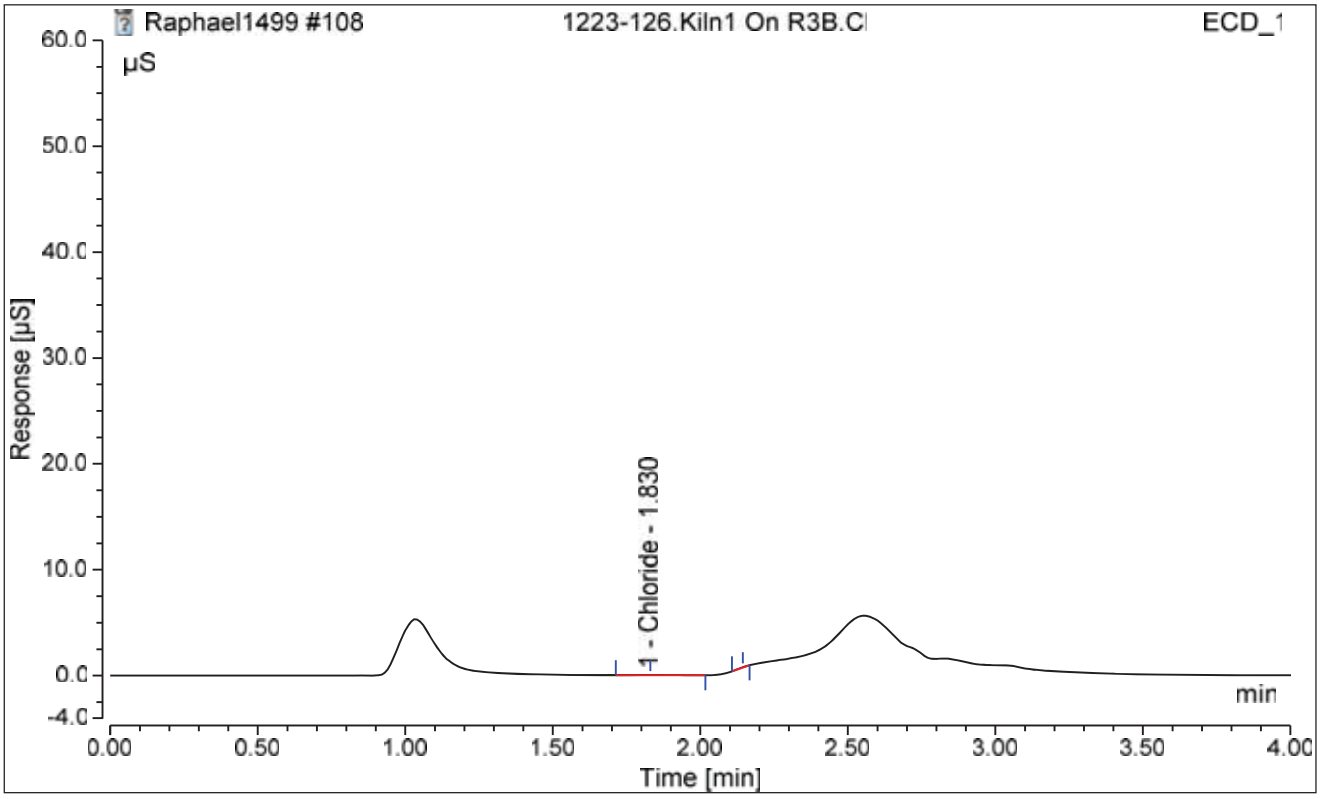


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.90	Chloride	0.005	0.028	0.09616	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R3B.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 12:52**	Run Time:	**12.50**

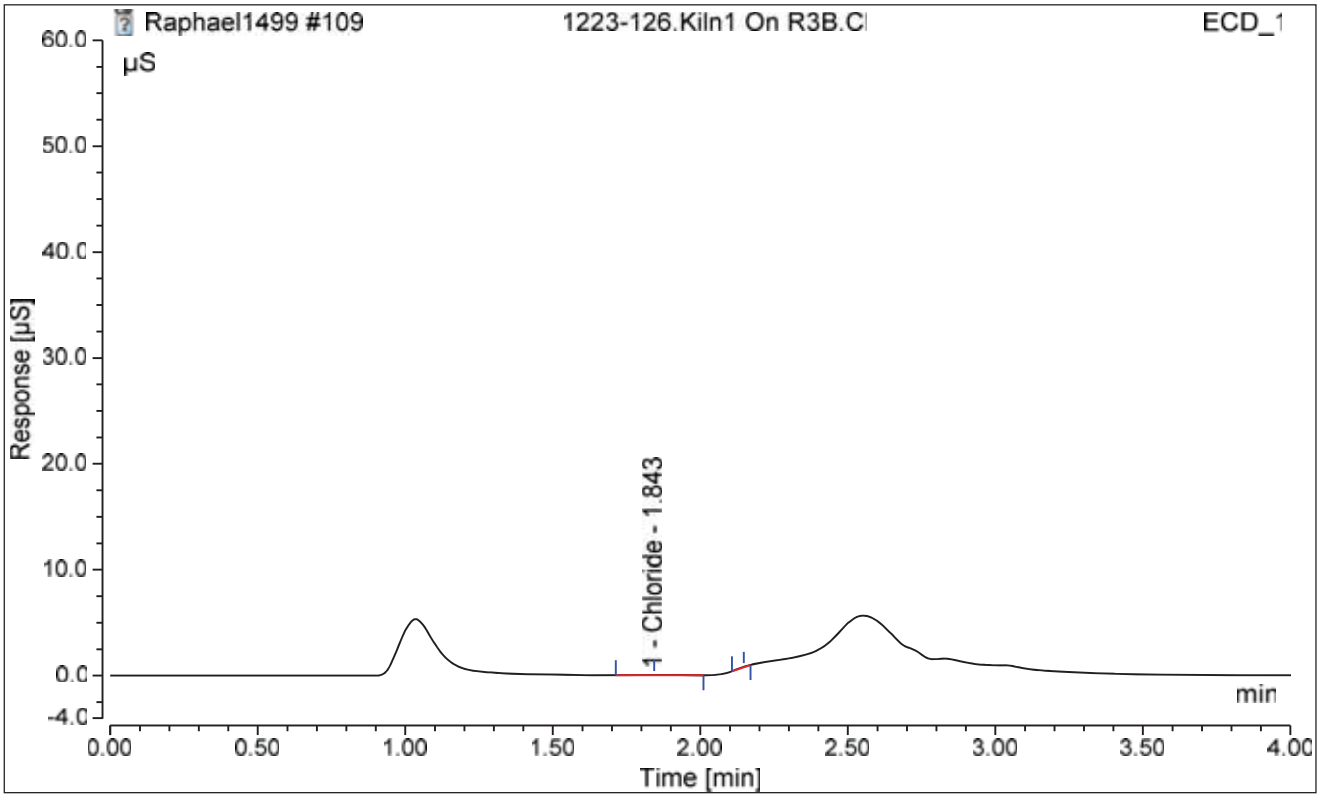


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.83	Chloride	0.006	0.033	0.10497	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On R3B.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 13:07**	Run Time:	**12.50**

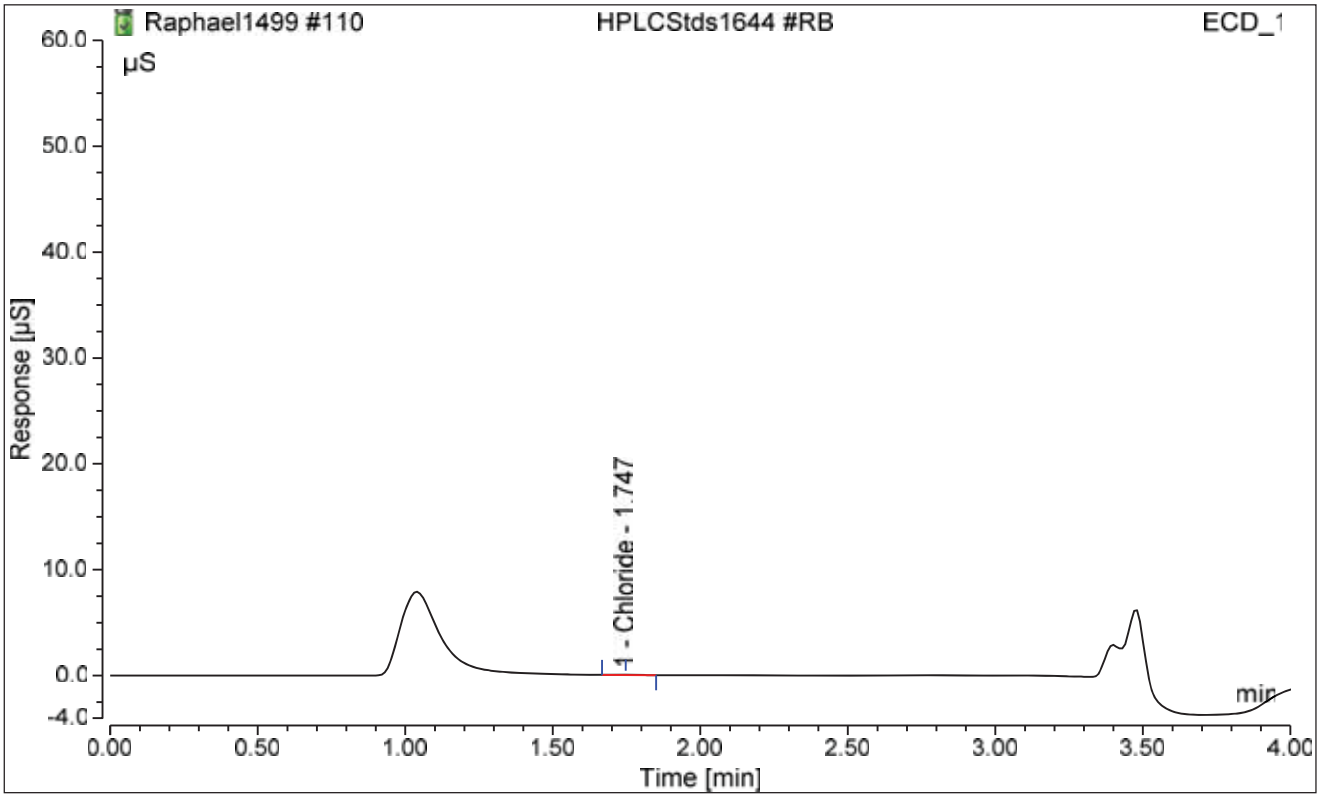


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.84	Chloride	0.007	0.036	0.10879	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 13:21**	Run Time:	**12.50**

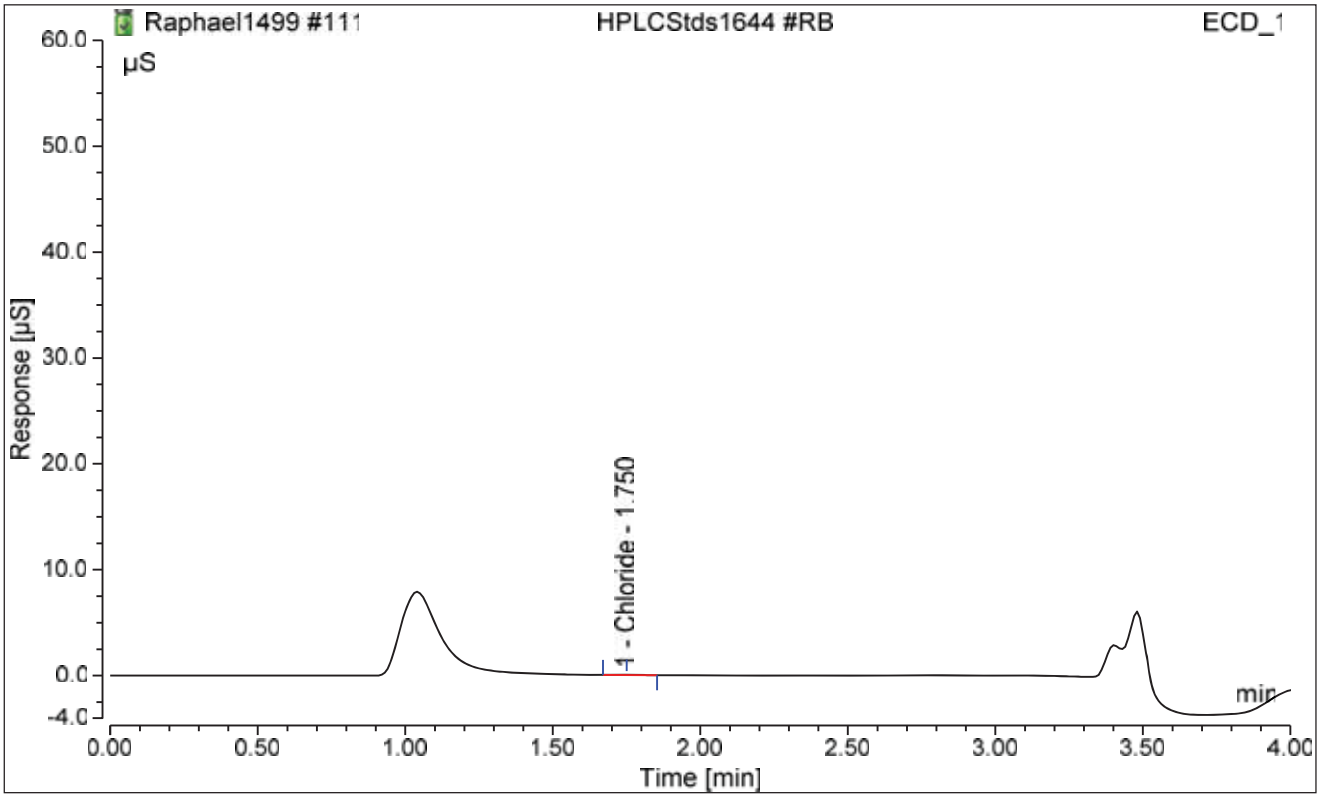


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.75	Chloride	0.003	0.034	0.06939	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 13:35**	Run Time:	**12.50**

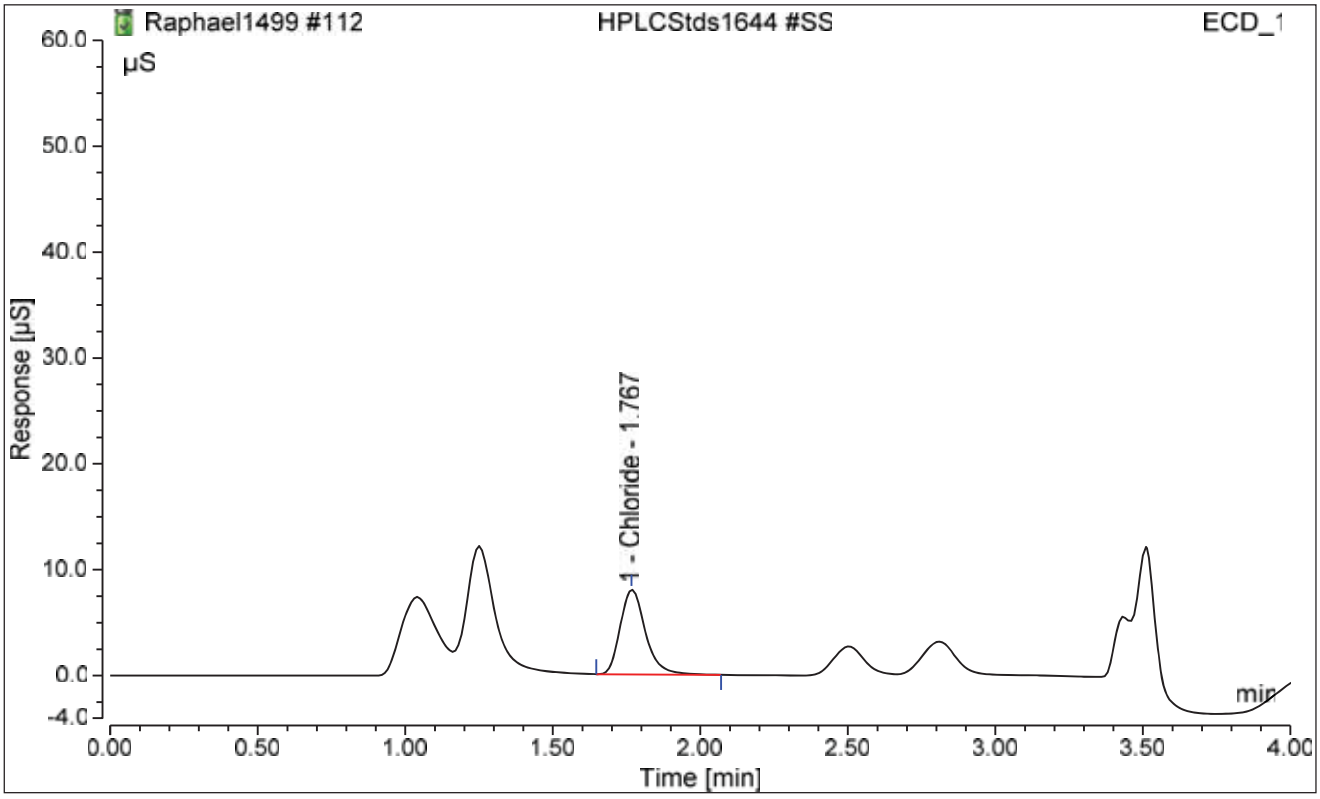


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.75	Chloride	0.003	0.034	0.06981	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 13:49**	Run Time:	**12.50**

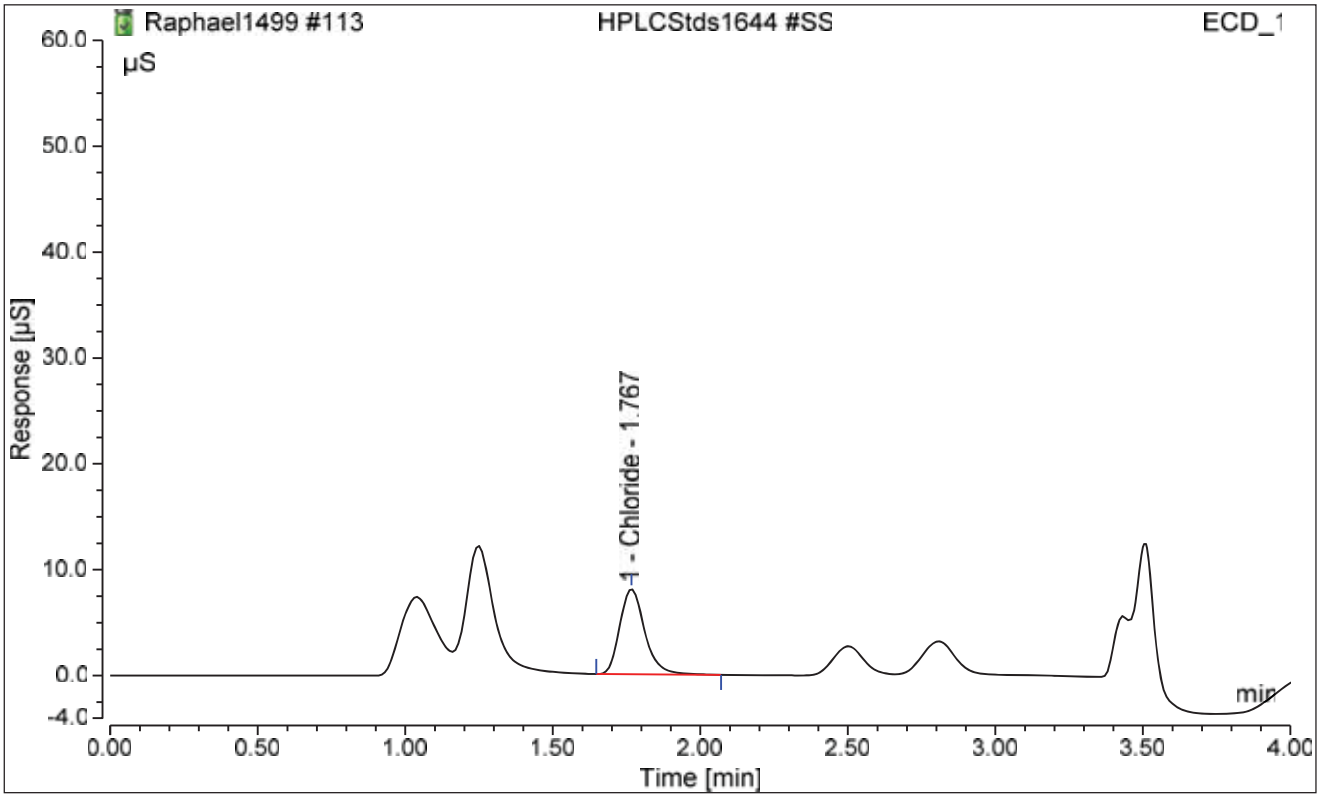


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	0.792	7.998	7.40036	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 14:03**	Run Time:	**12.50**

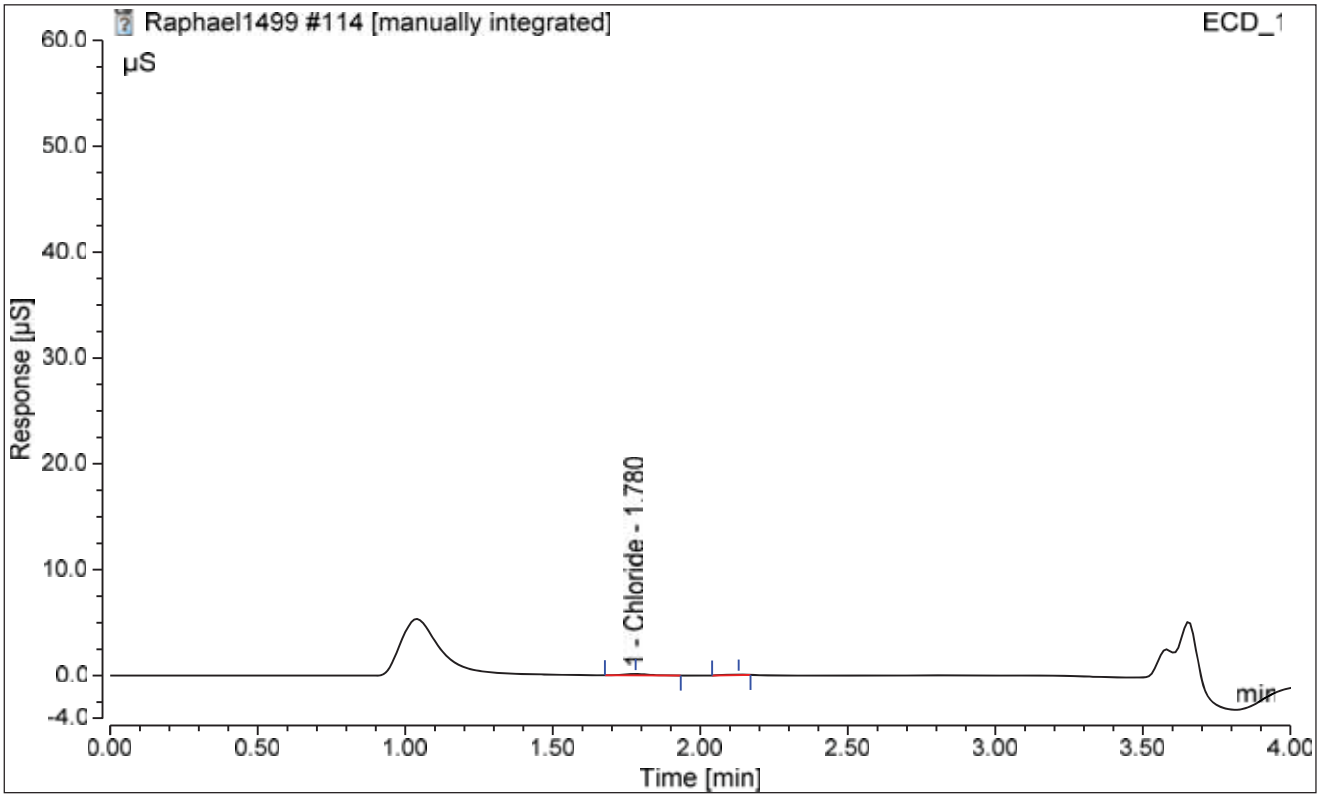


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	0.791	8.049	7.39453	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On FB.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 14:17**	Run Time:	**12.50**

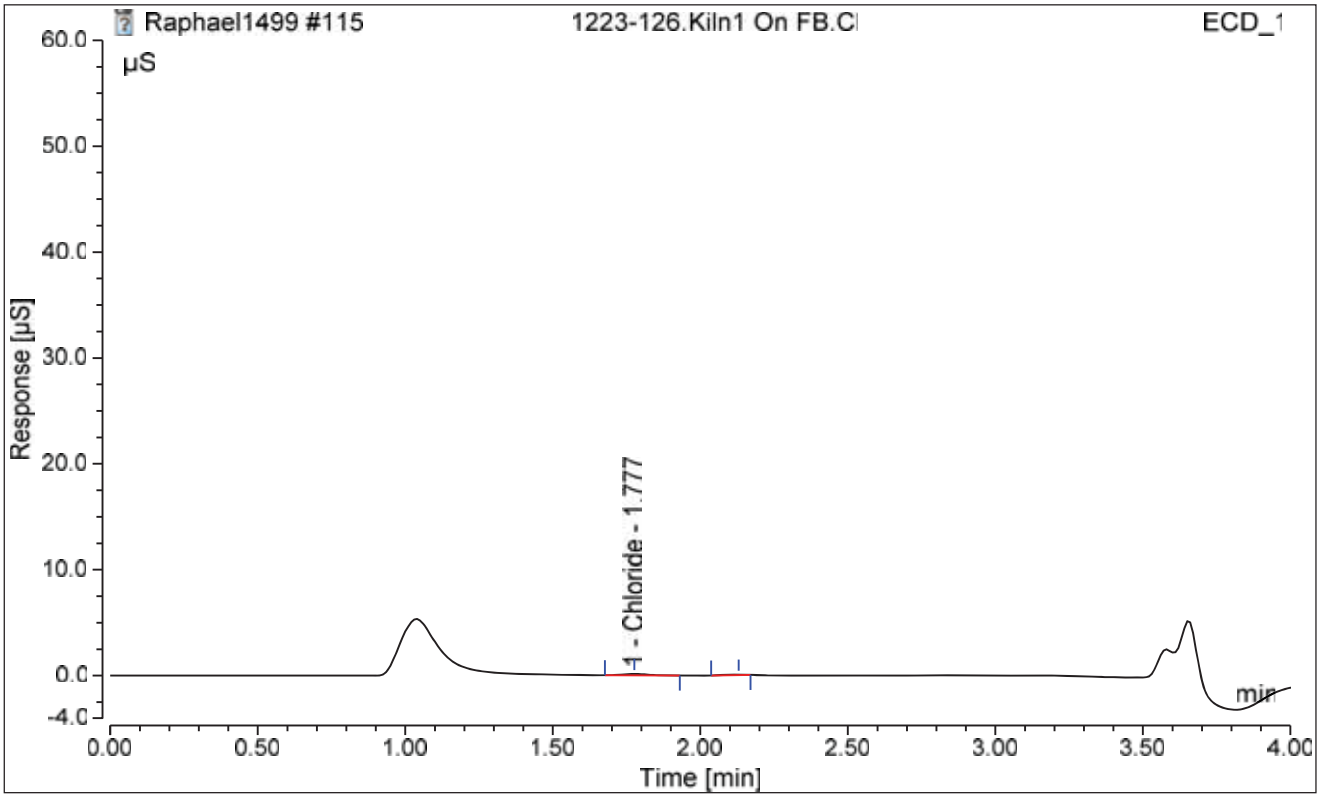


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.78	Chloride	0.012	0.125	0.15541	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.Kiln1 On FB.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 14:31**	Run Time:	**12.50**

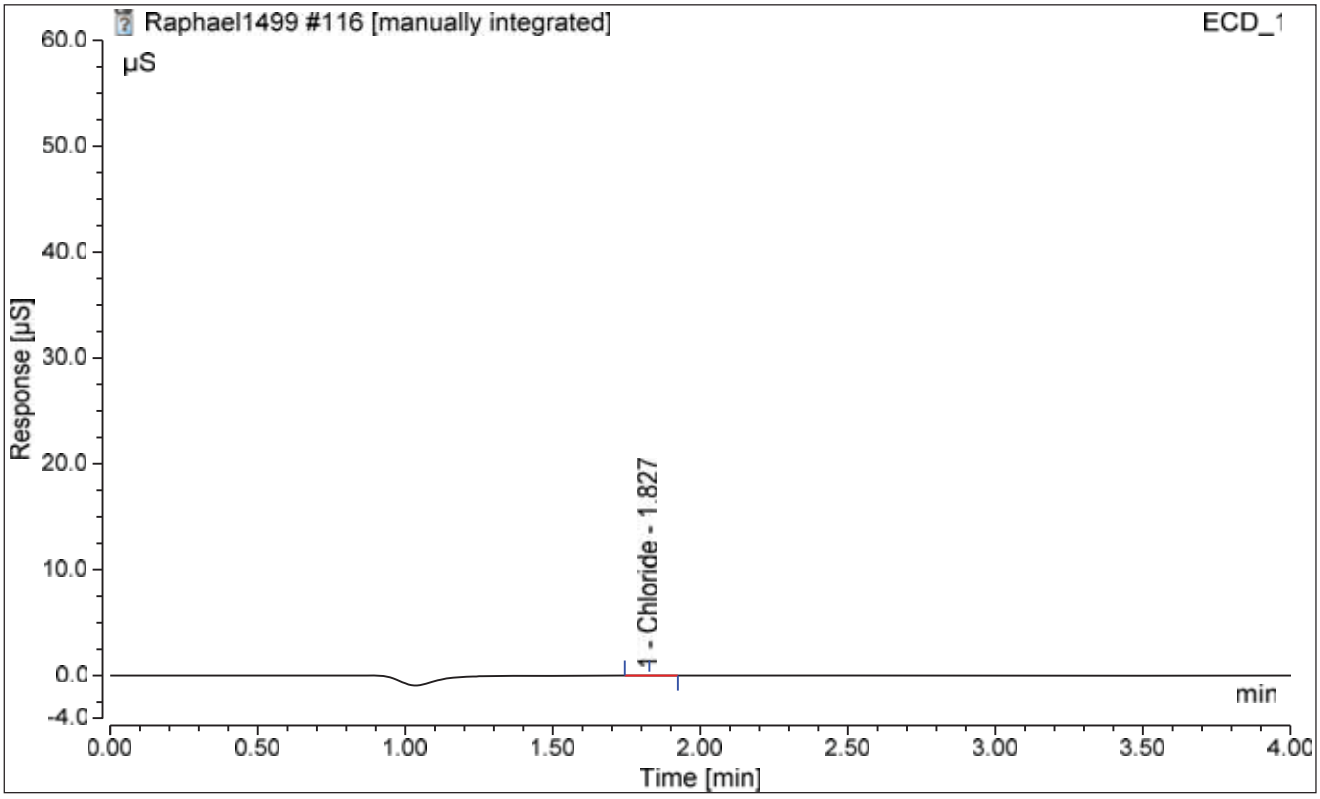


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.78	Chloride	0.011	0.124	0.15291	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.RB DI.CI**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 14:45**	Run Time:	**12.50**

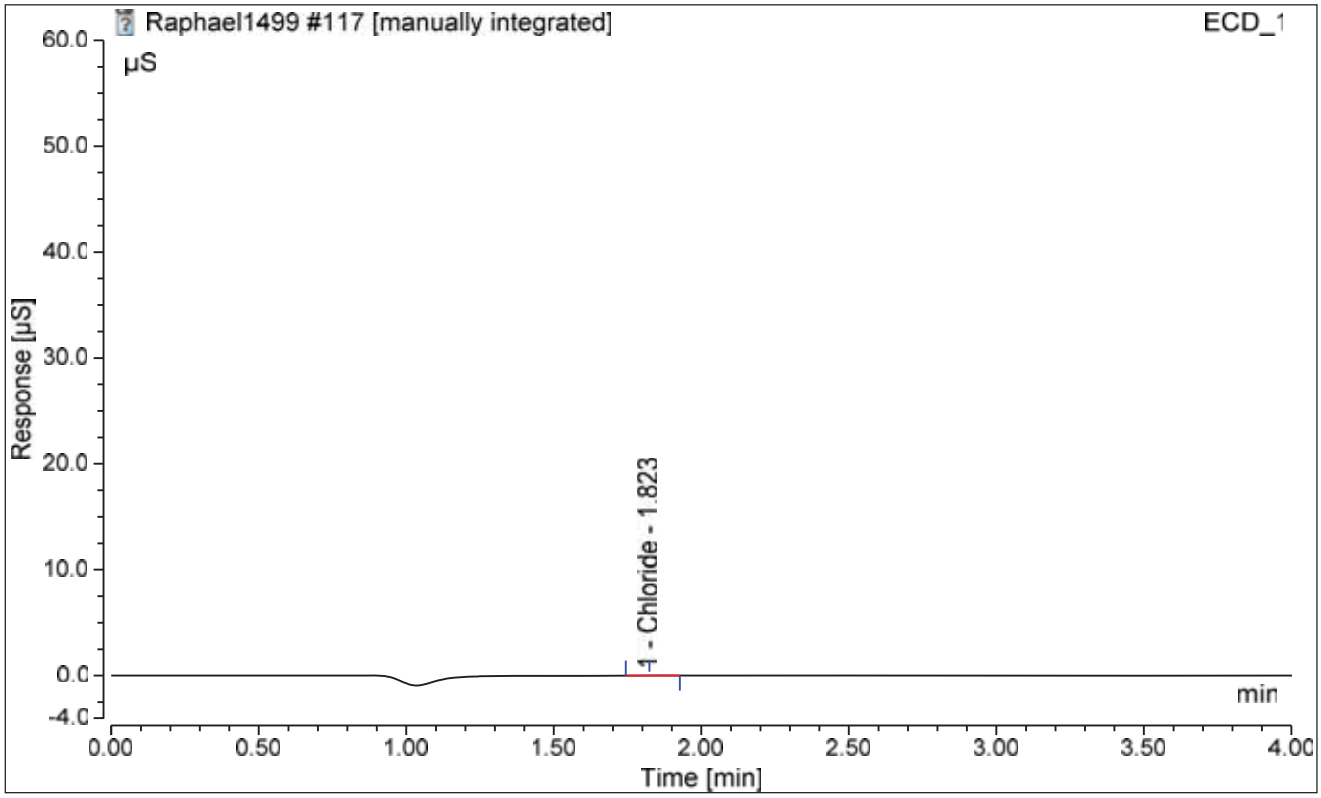


Analyst Comment: NI SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.83	Chloride	0.002	0.022	0.06119	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.RB DI.CI**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 14:59**	Run Time:	**12.50**

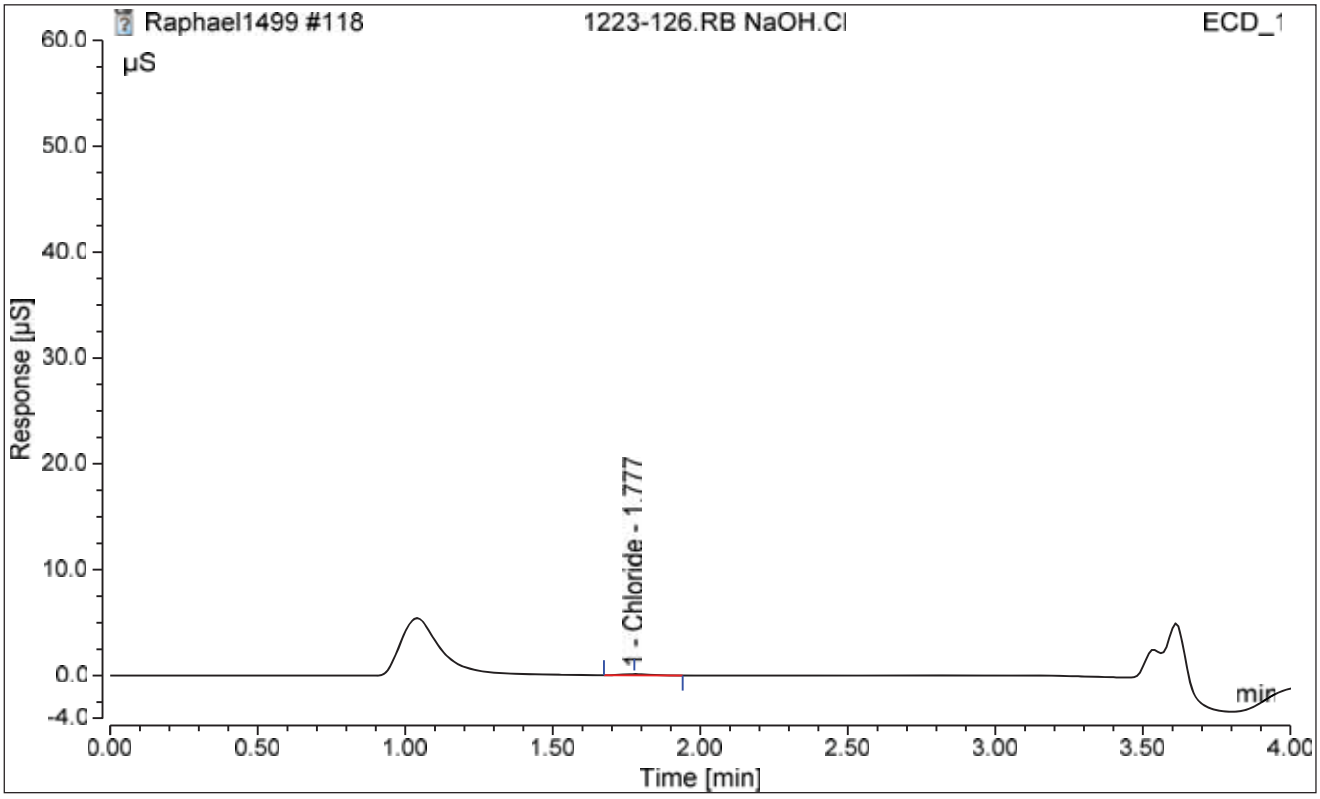


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.82	Chloride	0.002	0.023	0.06194	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-126.RB NaOH.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 15:14**	Run Time:	**12.50**

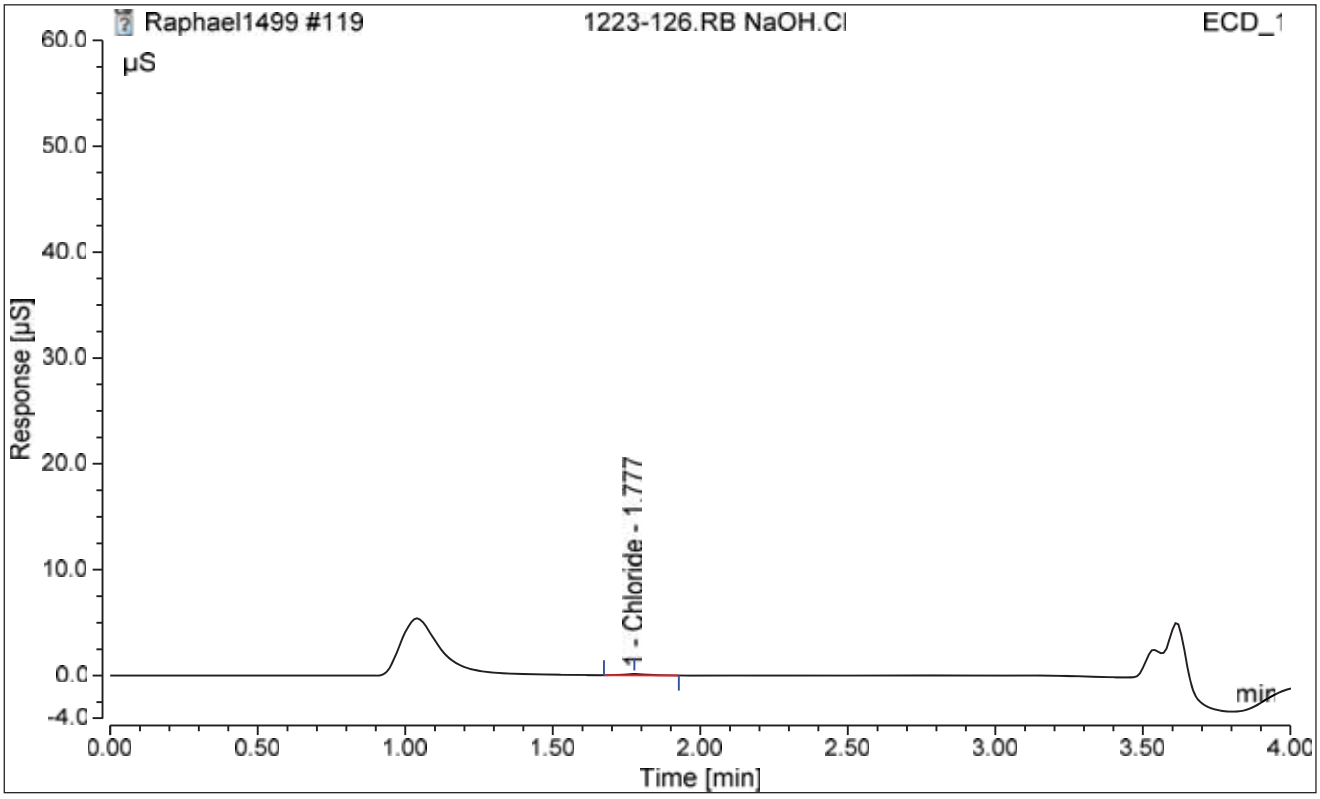


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.78	Chloride	0.010	0.111	0.14220	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-126.RB NaOH.Cl**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 15:28**	Run Time:	**12.50**



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.78	Chloride	0.010	0.113	0.14343	FALSE	FALSE

Calibration Table

No.	Injection Name	Inject Time	Pos.	Level	Ref.Amount	Calibration Point Status	Dil.Factor
					µg/mL ECD_1 Chloride	ECD_1 Chloride	
6	HPLCStds1644 #6	22/Dec/2023 12:54	BA6	06	30.0000	Ok	1.0000
7	HPLCStds1644 #6	22/Dec/2023 13:08	BA6	06	30.0000	Ok	1.0000
8	HPLCStds1644 #5	22/Dec/2023 13:22	BA5	05	15.0000	Ok	1.0000
9	HPLCStds1644 #5	22/Dec/2023 13:36	BA5	05	15.0000	Ok	1.0000
10	HPLCStds1644 #4	22/Dec/2023 13:50	BA4	04	10.0000	Ok	1.0000
11	HPLCStds1644 #4	22/Dec/2023 14:04	BA4	04	10.0000	Ok	1.0000
12	HPLCStds1644 #3	22/Dec/2023 14:18	BA3	03	5.0000	Ok	1.0000
13	HPLCStds1644 #3	22/Dec/2023 14:32	BA3	03	5.0000	Ok	1.0000
14	HPLCStds1644 #2	22/Dec/2023 14:46	BA2	02	1.0000	Ok	1.0000
15	HPLCStds1644 #2	22/Dec/2023 15:01	BA2	02	1.0000	Ok	1.0000
16	HPLCStds1644 #1	22/Dec/2023 15:15	BA1	01	0.5000	Ok	1.0000
17	HPLCStds1644 #1	22/Dec/2023 15:29	BA1	01	0.5000	Ok	1.0000
120	HPLCStds1644 #6	23/Dec/2023 15:42	BA6	06	30.0000	Ok	1.0000
121	HPLCStds1644 #6	23/Dec/2023 15:56	BA6	06	30.0000	Ok	1.0000
122	HPLCStds1644 #5	23/Dec/2023 16:10	BA5	05	15.0000	Ok	1.0000
123	HPLCStds1644 #5	23/Dec/2023 16:24	BA5	05	15.0000	Ok	1.0000
124	HPLCStds1644 #4	23/Dec/2023 16:38	BA4	04	10.0000	Ok	1.0000
125	HPLCStds1644 #4	23/Dec/2023 16:52	BA4	04	10.0000	Ok	1.0000
126	HPLCStds1644 #3	23/Dec/2023 17:06	BA3	03	5.0000	Ok	1.0000
127	HPLCStds1644 #3	23/Dec/2023 17:21	BA3	03	5.0000	Ok	1.0000
128	HPLCStds1644 #2	23/Dec/2023 17:35	BA2	02	1.0000	Ok	1.0000
129	HPLCStds1644 #2	23/Dec/2023 17:49	BA2	02	1.0000	Ok	1.0000
130	HPLCStds1644 #1	23/Dec/2023 18:03	BA1	01	0.5000	Ok	1.0000
131	HPLCStds1644 #1	23/Dec/2023 18:17	BA1	01	0.5000	Ok	1.0000

Detection Parameters

Ret. Time min	Param. Name	Param. Value	Inj. Type	Channel
Always	Baseline Noise Auto Range	Off	Any	All Channels
Always	Baseline Noise Start Time	0.000 [min]	Any	All Channels
Always	Baseline Noise End Time	0.776 [min]	Any	All Channels
Always	Cobra Smoothing Width	Auto	Any	All Channels
Always	Consider Void Peak	Off	Any	All Channels
0.000	Maximum Rider Ratio	10 [%]	Any	All Channels
0.000	Tailing Sensitivity Factor	0.250 [%]	Any	All Channels
0.000	Inhibit Integration	On	Any	All Channels
0.000	Minimum Area	Auto	Any	All Channels
1.550	Inhibit Integration	Off	Any	All Channels
2.171	Inhibit Integration	On	Any	All Channels

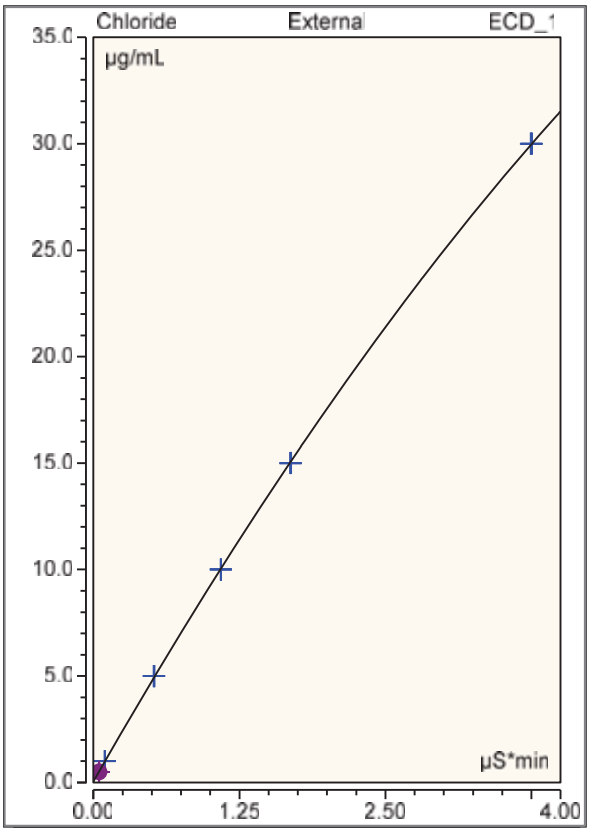
Calibration Batch Report

Sequence:	Raphael1499	*Injection Volume:*	25.00
Instrument Method:	AS22 FAST ASAP Base2	*Operator:*	searundhati
Inj. Date / Time:	23-Dec-2023 / 18:17	*Run Time:*	12.5

Calibration Summary

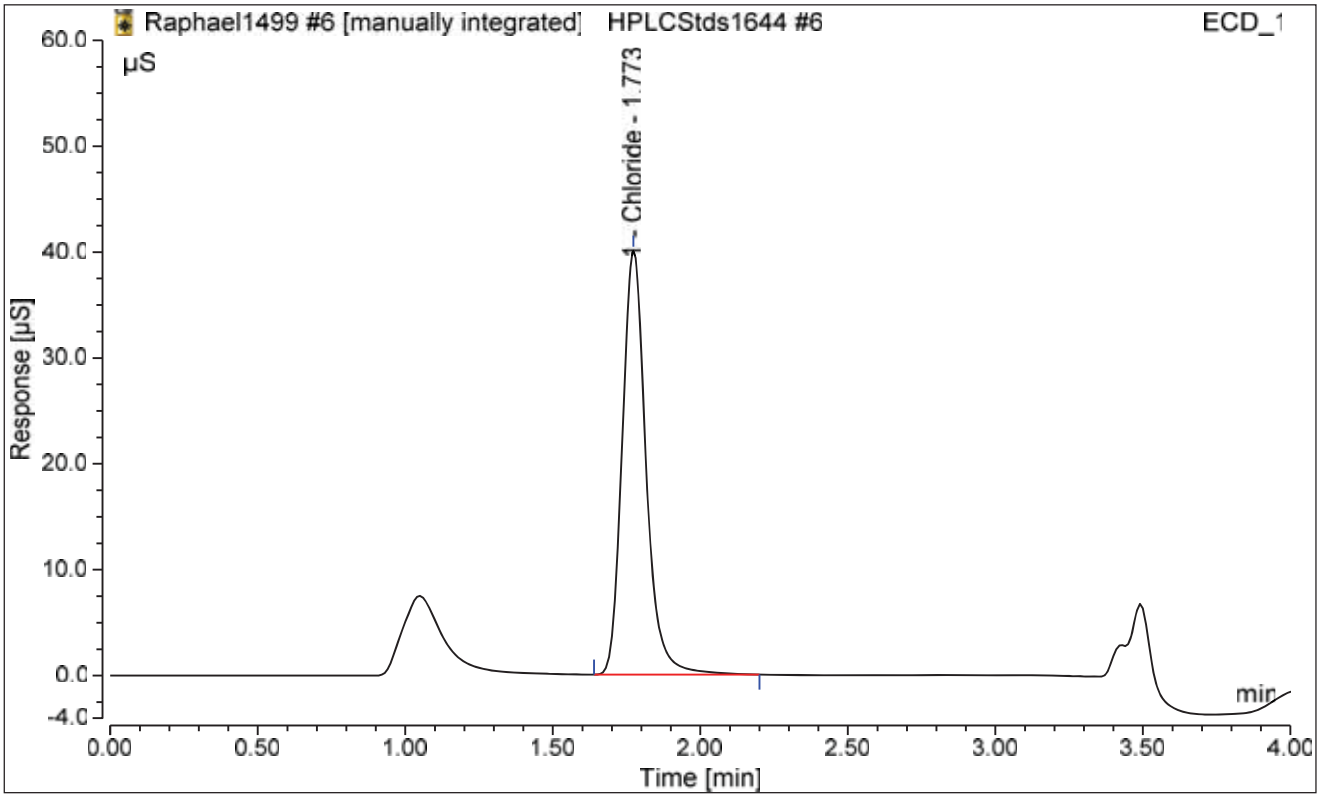
Peak Name	Eval.Type	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
Chloride	Area	Quad, WithOffset, 1/A	24.000	0.043	9.646	-0.443	99.995
		AVERAGE:		0.0431	9.6460	-0.4434	99.9948

Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount µg/mL ECD_1
	Chloride	Chloride	Chloride	Chloride
HPLCStds1644 #6	1.773	3.747	40.051	29.962
HPLCStds1644 #6	1.770	3.744	40.200	29.939
HPLCStds1644 #5	1.770	1.685	17.621	15.034
HPLCStds1644 #5	1.770	1.689	17.733	15.071
HPLCStds1644 #4	1.767	1.090	11.385	10.034
HPLCStds1644 #4	1.767	1.091	11.271	10.041
HPLCStds1644 #3	1.763	0.517	5.283	4.913
HPLCStds1644 #3	1.767	0.516	5.278	4.902
HPLCStds1644 #2	1.763	0.097	1.007	0.976
HPLCStds1644 #2	1.767	0.097	0.997	0.973
HPLCStds1644 #1	1.763	0.049	0.510	0.513
HPLCStds1644 #1	1.767	0.049	0.513	0.516
HPLCStds1644 #6	1.770	3.749	38.396	29.974
HPLCStds1644 #6	1.770	3.755	38.583	30.012
HPLCStds1644 #5	1.767	1.688	17.093	15.064
HPLCStds1644 #5	1.767	1.691	17.093	15.089
HPLCStds1644 #4	1.763	1.092	10.950	10.048
HPLCStds1644 #4	1.767	1.091	10.955	10.042
HPLCStds1644 #3	1.763	0.520	5.142	4.944
HPLCStds1644 #3	1.767	0.522	5.123	4.954
HPLCStds1644 #2	1.763	0.098	0.972	0.982
HPLCStds1644 #2	1.763	0.097	0.970	0.976
HPLCStds1644 #1	1.760	0.049	0.497	0.514
HPLCStds1644 #1	1.763	0.049	0.498	0.517



Peak Analysis Report

Sample Name:	**HPLCStds1644 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 12:54**	Run Time:	**12.50**

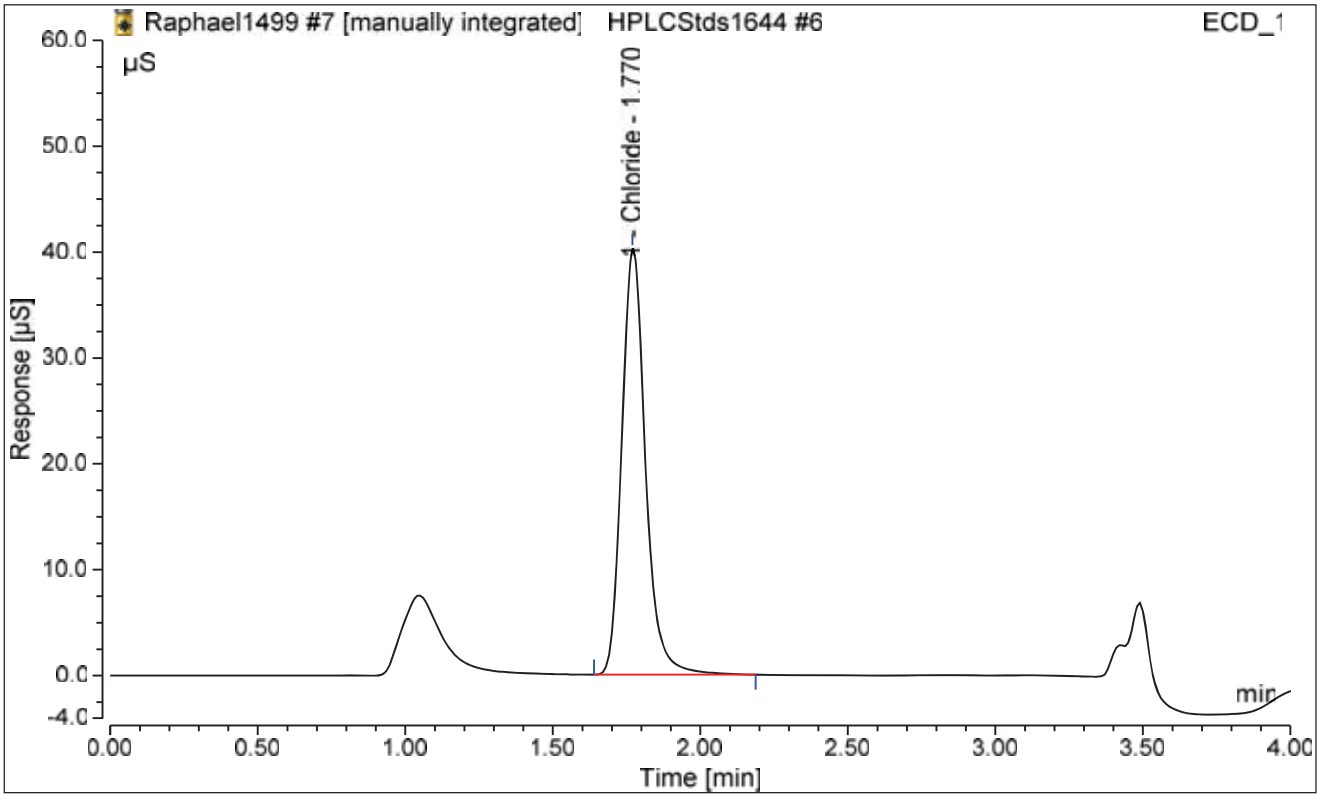


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	3.747	40.051	29.96238	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 13:08**	Run Time:	**12.50**

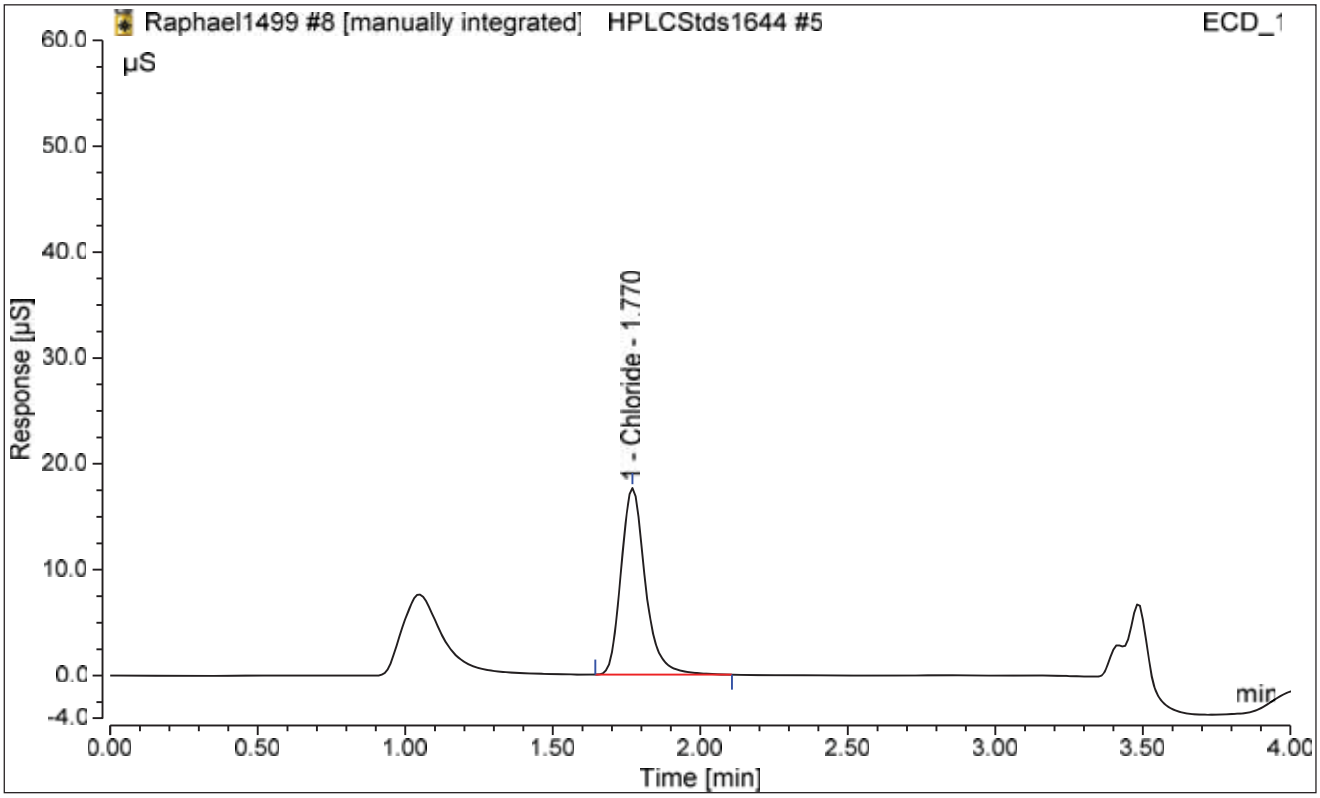


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	3.744	40.200	29.93950	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 13:22**	Run Time:	**12.50**

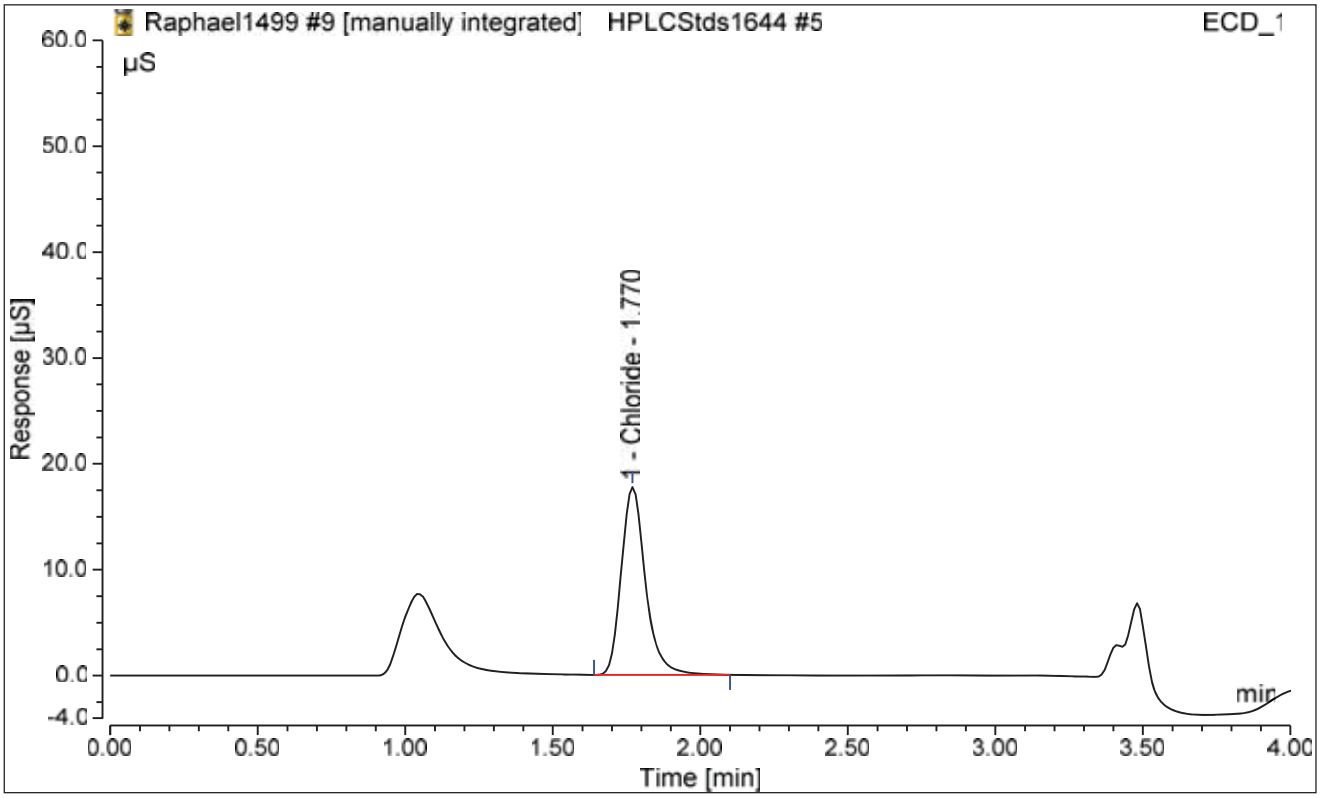


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.685	17.621	15.03379	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 13:36**	Run Time:	**12.50**

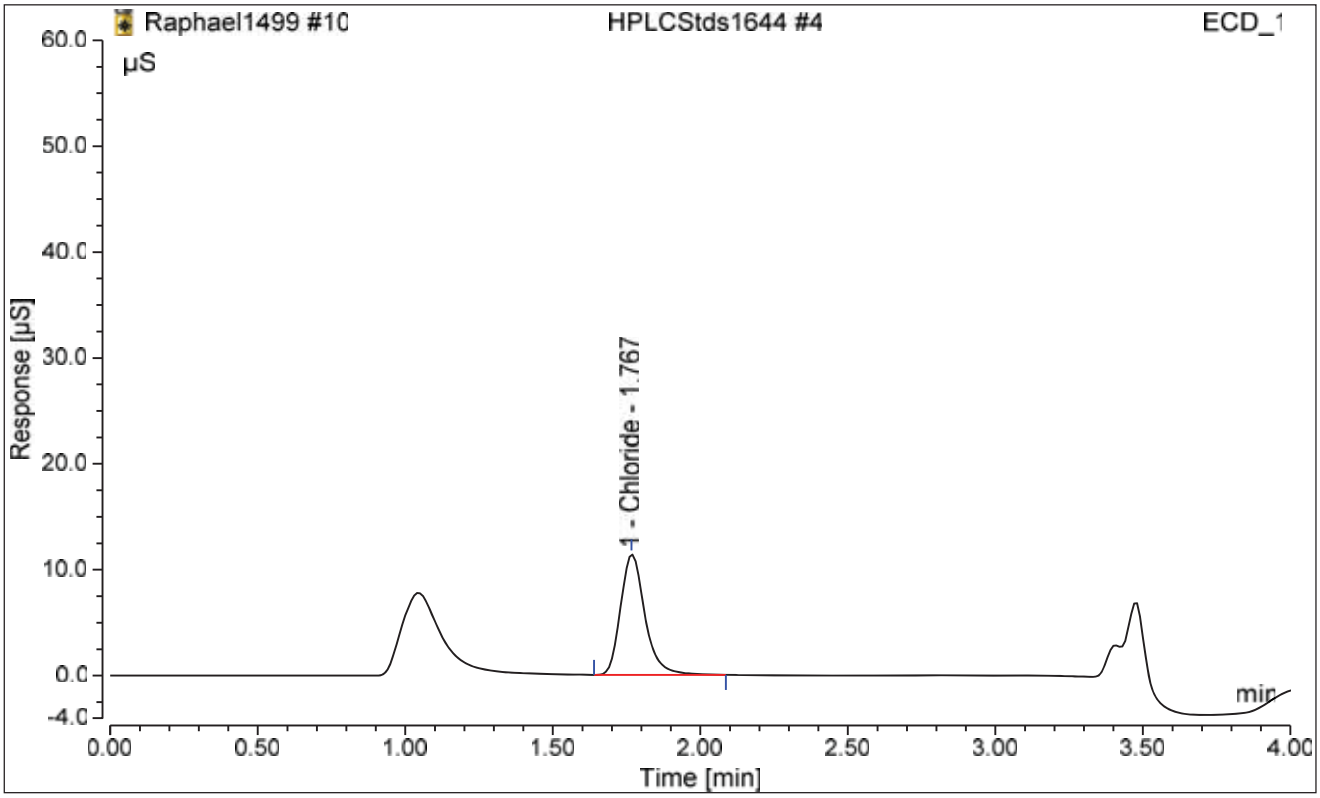


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.689	17.733	15.07096	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 13:50**	Run Time:	**12.50**

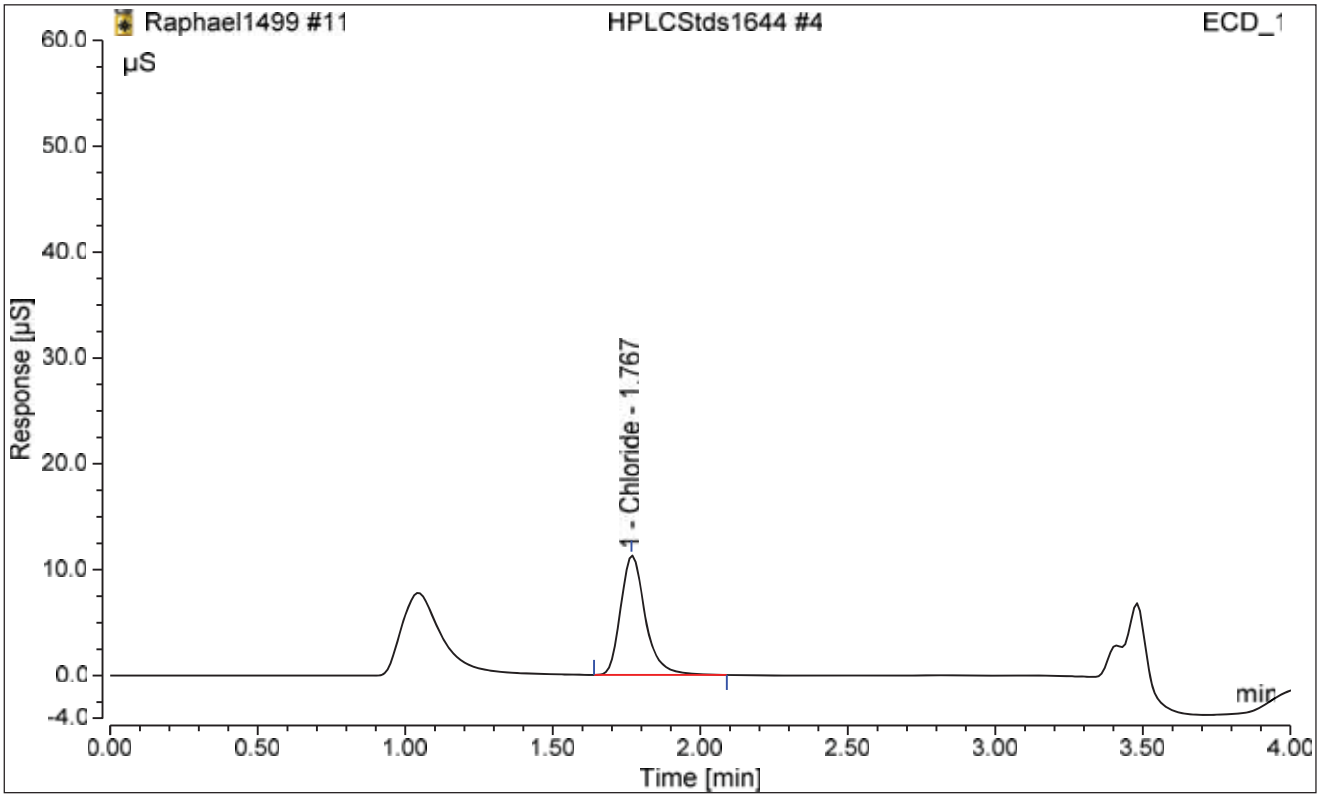


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.090	11.385	10.03383	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 14:04**	Run Time:	**12.50**

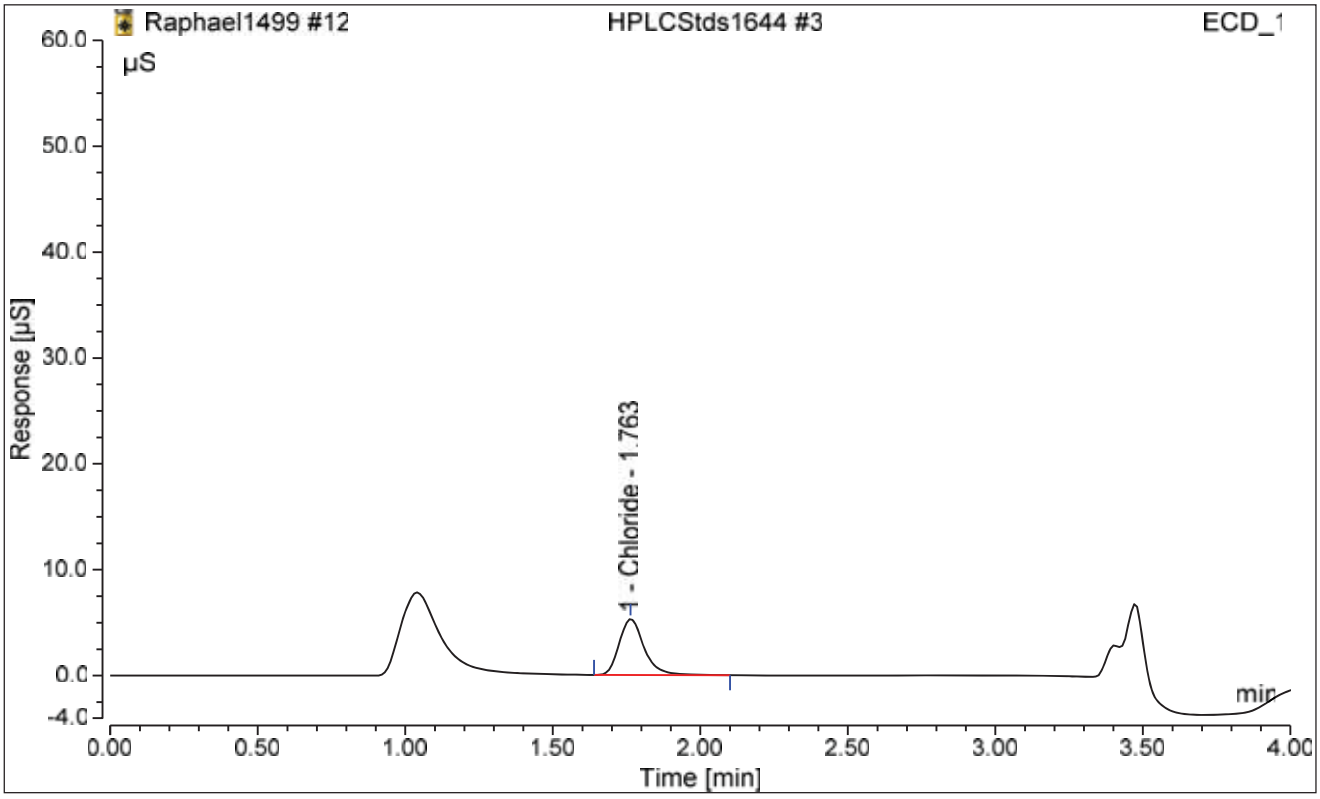


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.091	11.271	10.04147	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 14:18**	Run Time:	**12.50**

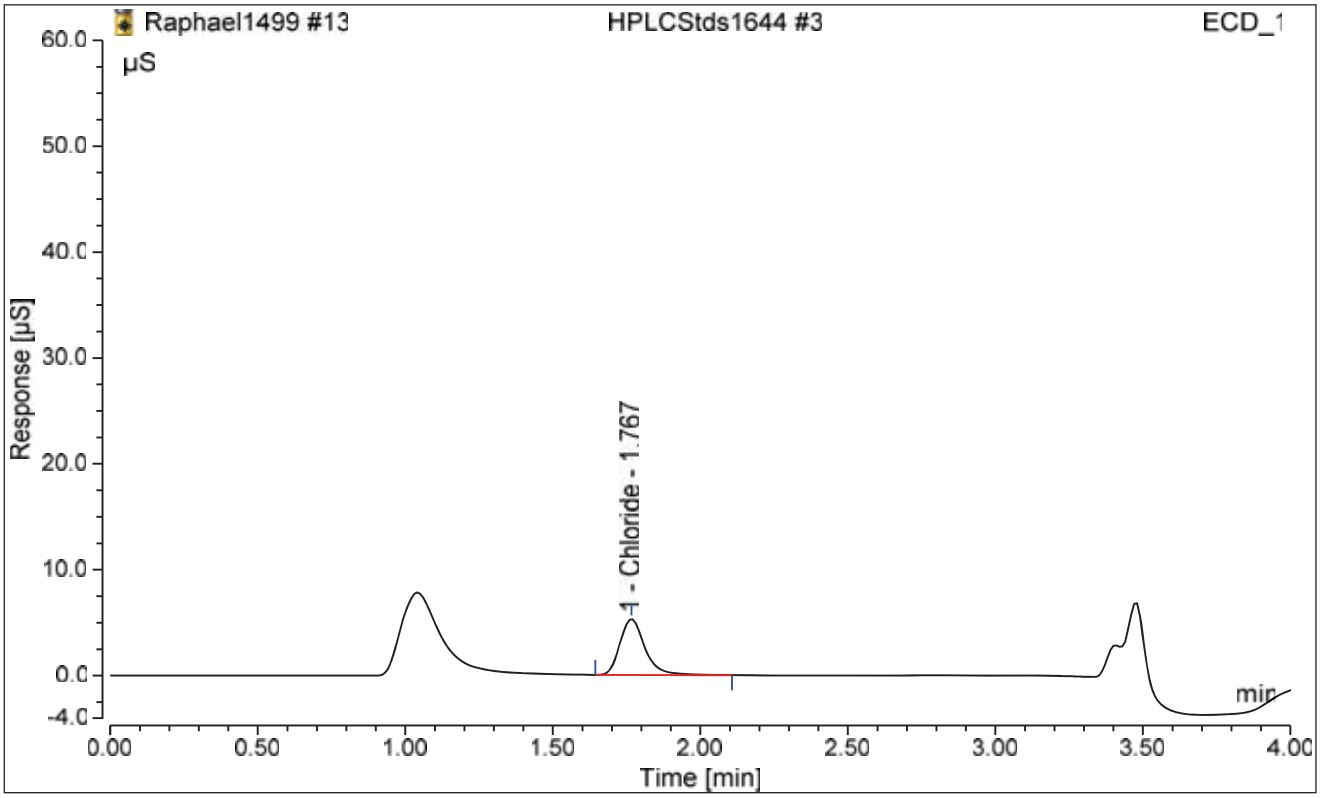


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.76	Chloride	0.517	5.283	4.91288	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 14:32**	Run Time:	**12.50**

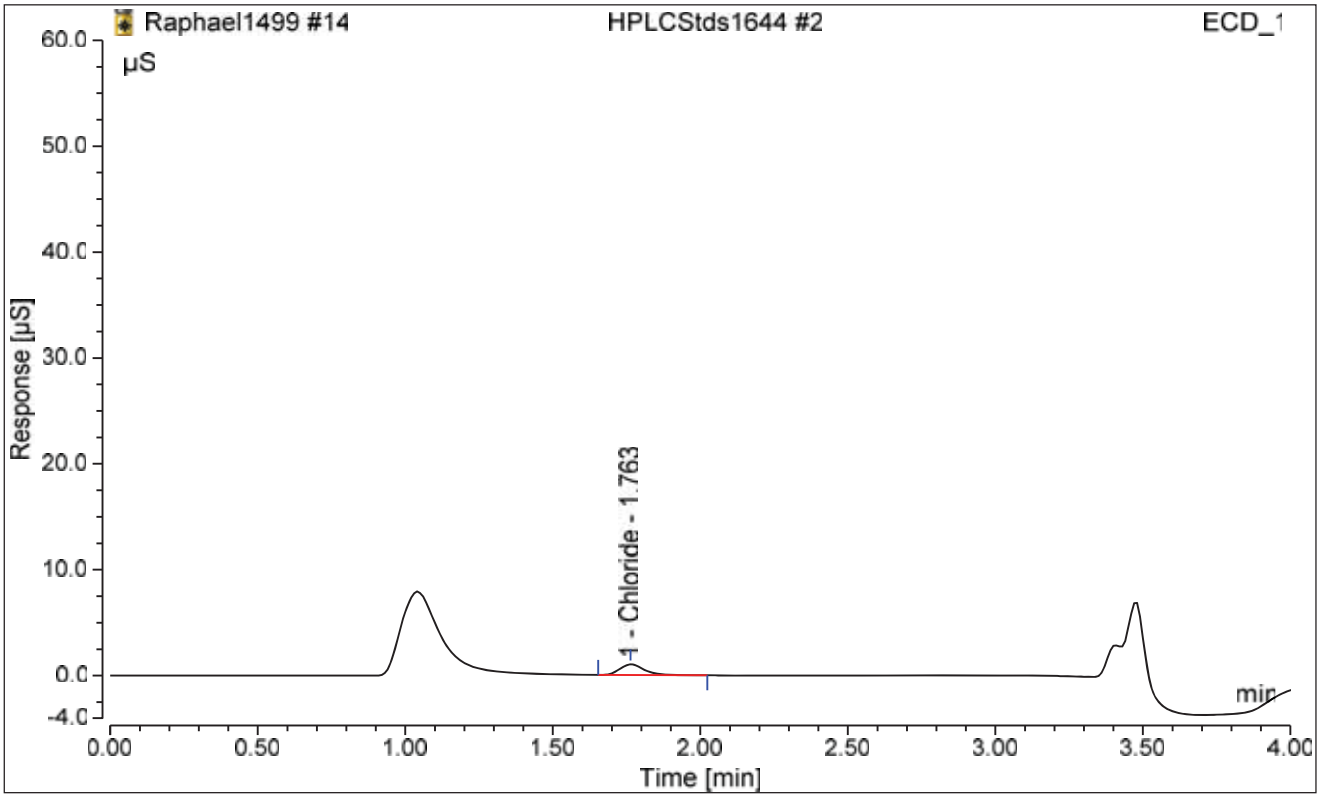


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	0.516	5.278	4.90172	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 14:46**	Run Time:	**12.50**

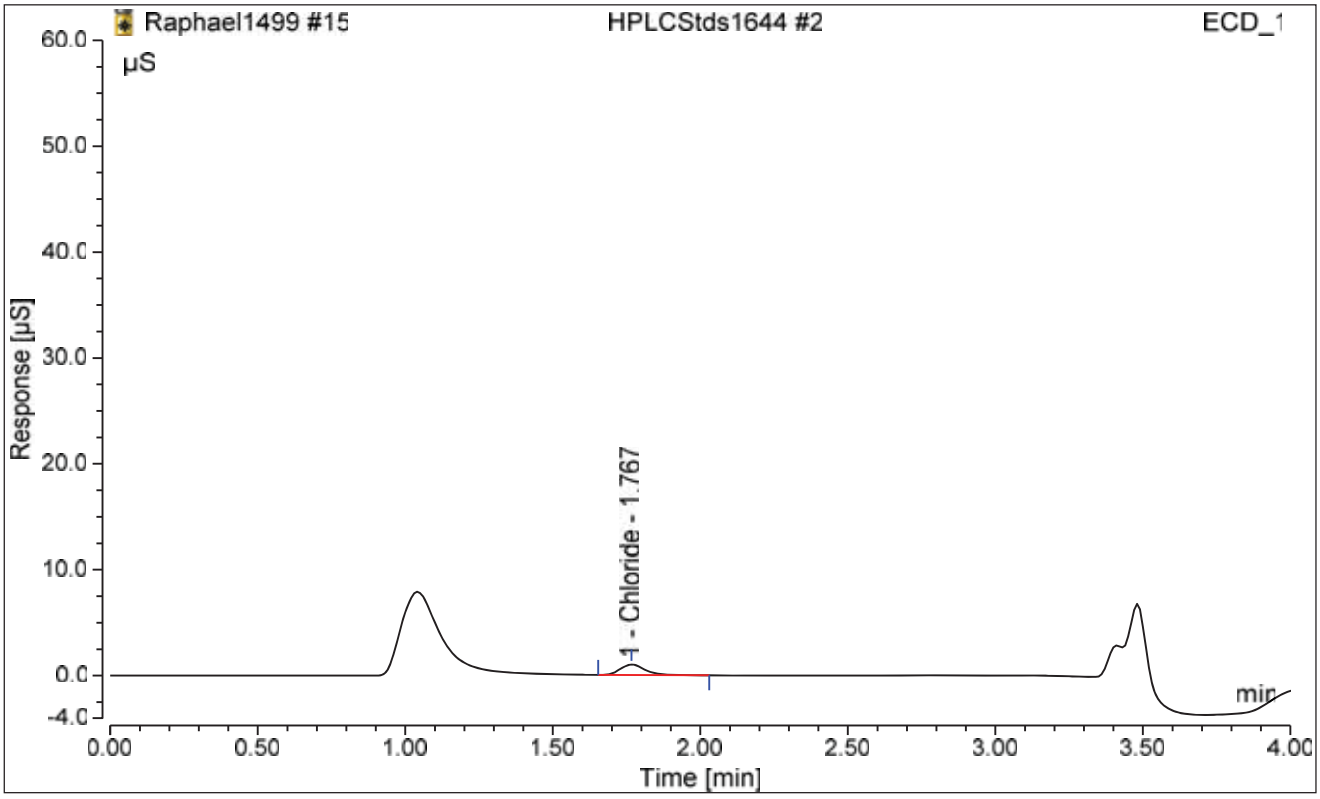


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.76	Chloride	0.097	1.007	0.97560	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 15:01**	Run Time:	**12.50**

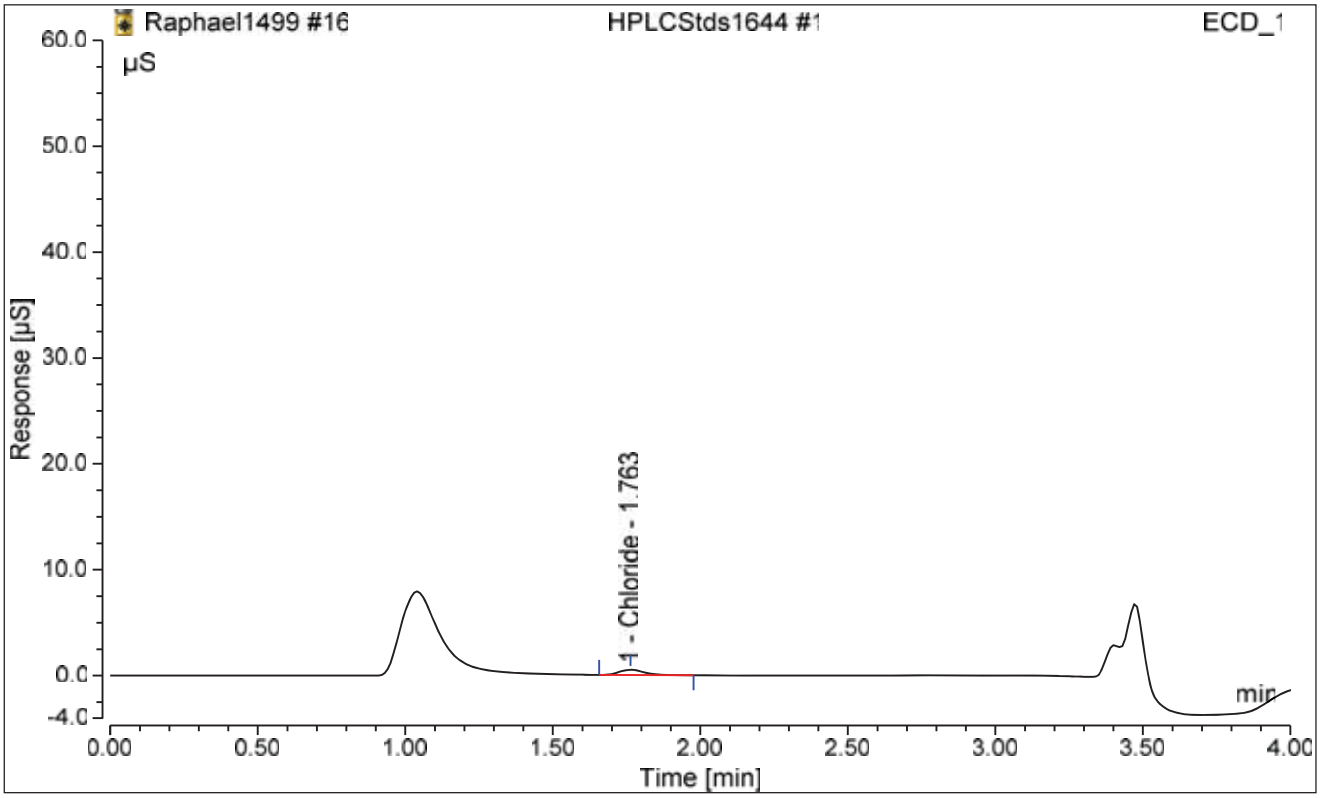


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	0.097	0.997	0.97291	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 15:15**	Run Time:	**12.50**

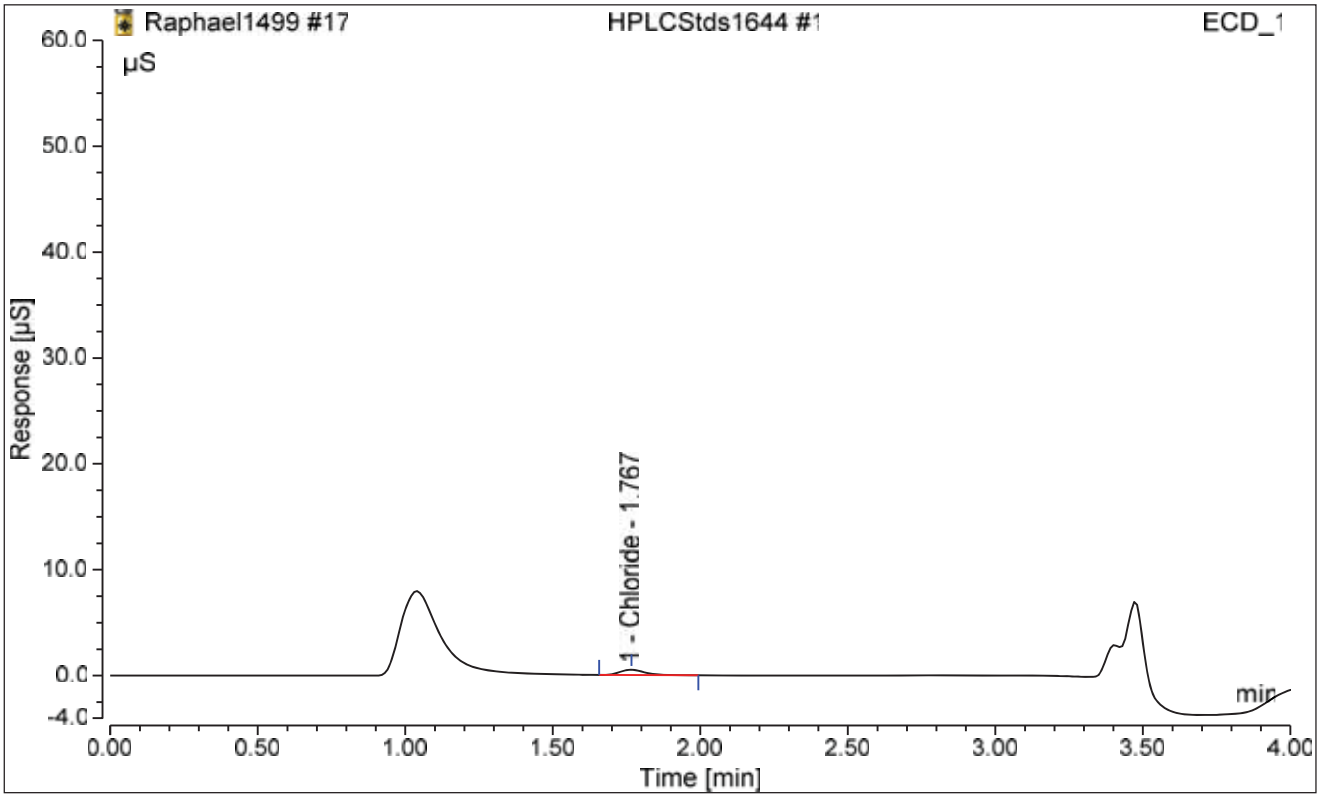


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.76	Chloride	0.049	0.510	0.51309	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 15:29**	Run Time:	**12.50**

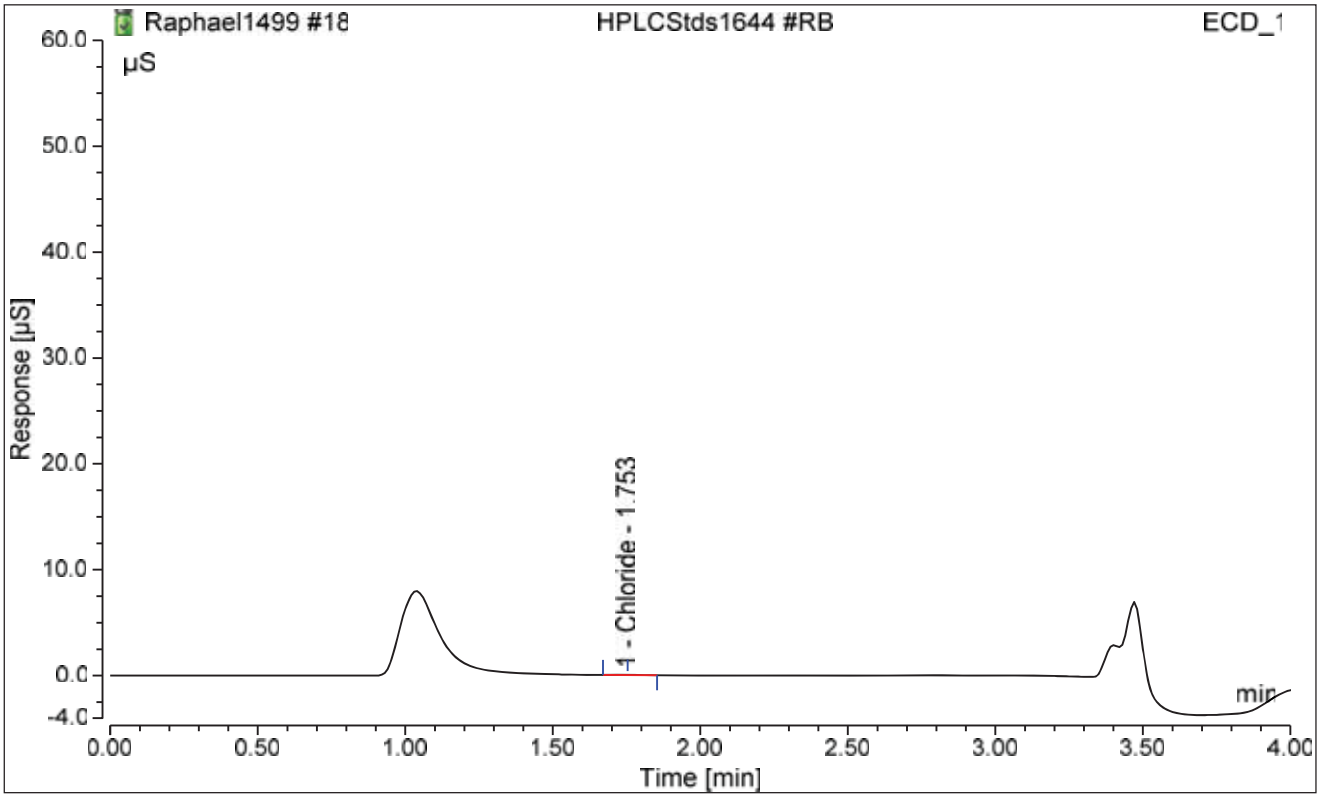


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	0.049	0.513	0.51591	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 15:43**	Run Time:	**12.50**

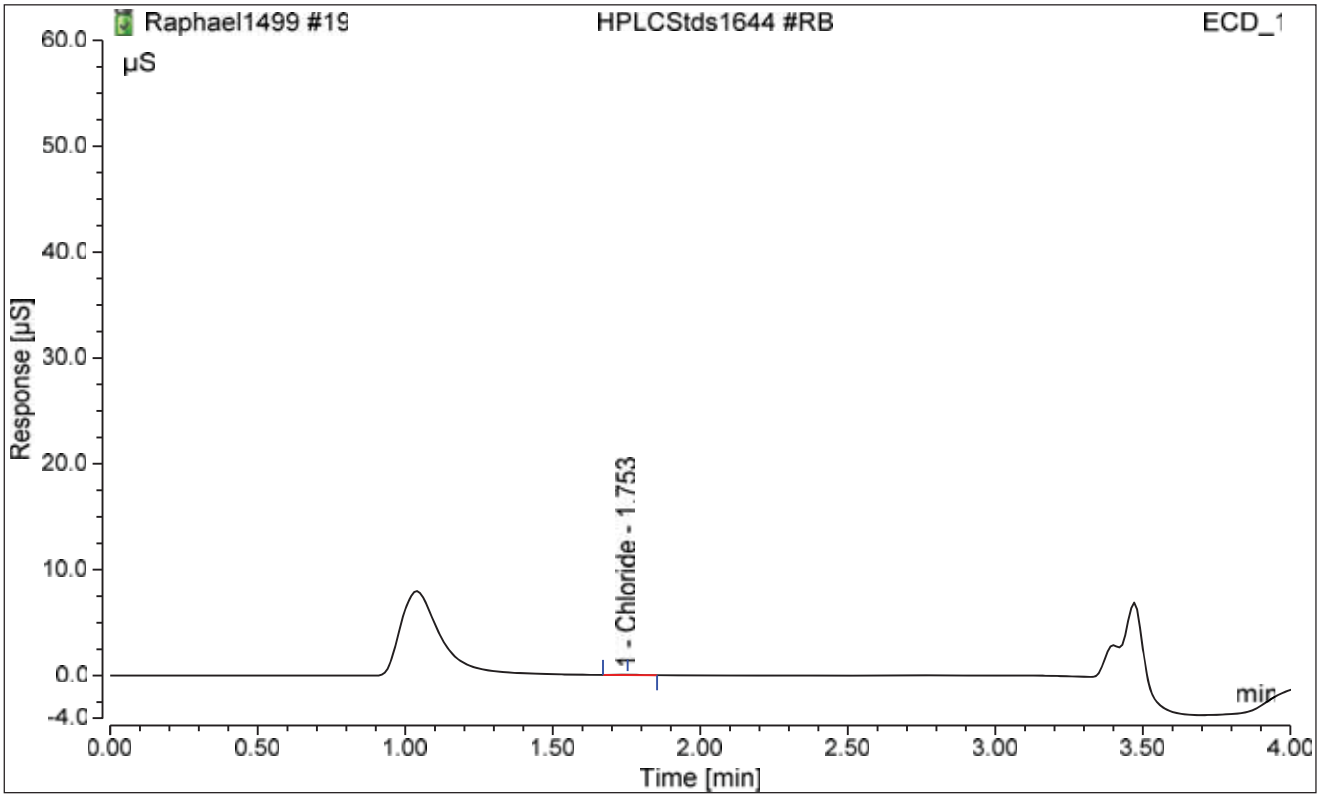


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.75	Chloride	0.003	0.039	0.07239	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 15:57**	Run Time:	**12.50**

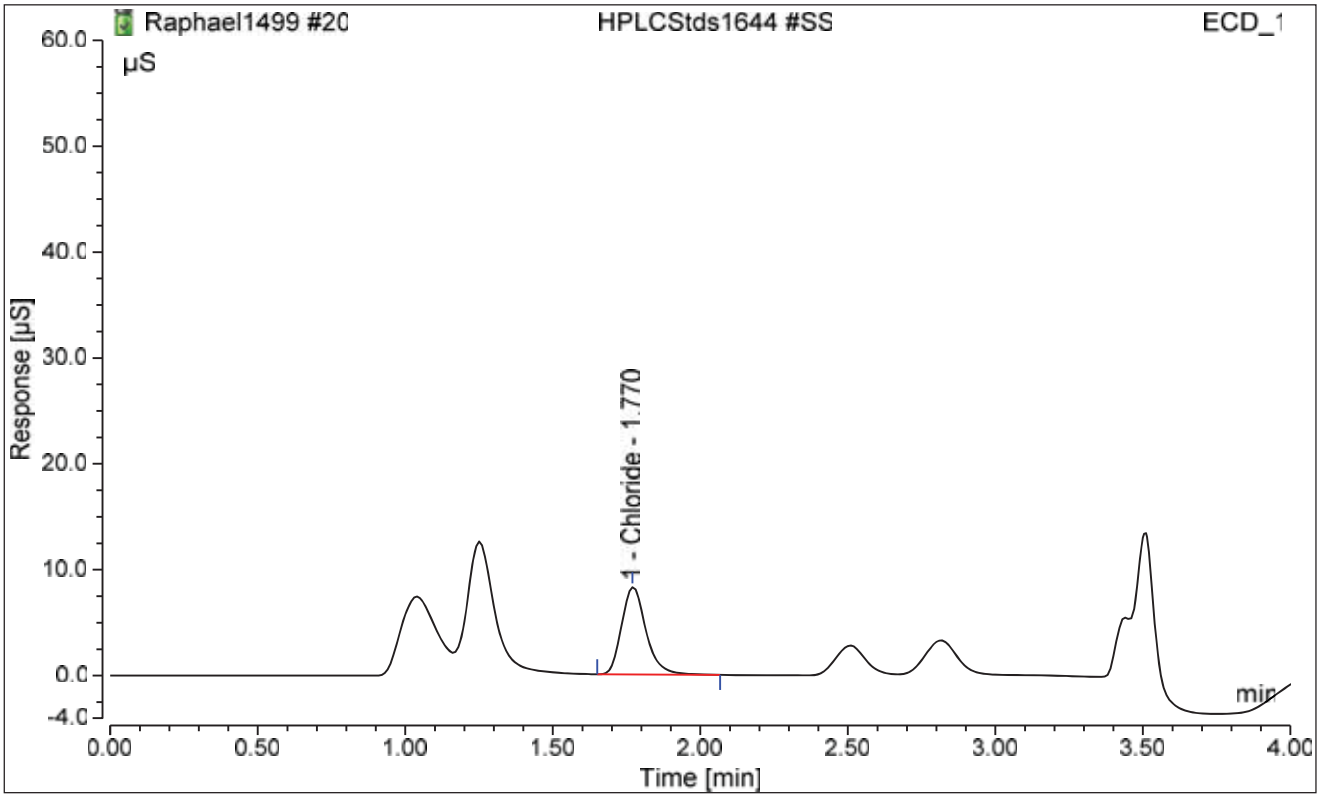


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.75	Chloride	0.003	0.038	0.07200	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 16:11**	Run Time:	**12.50**

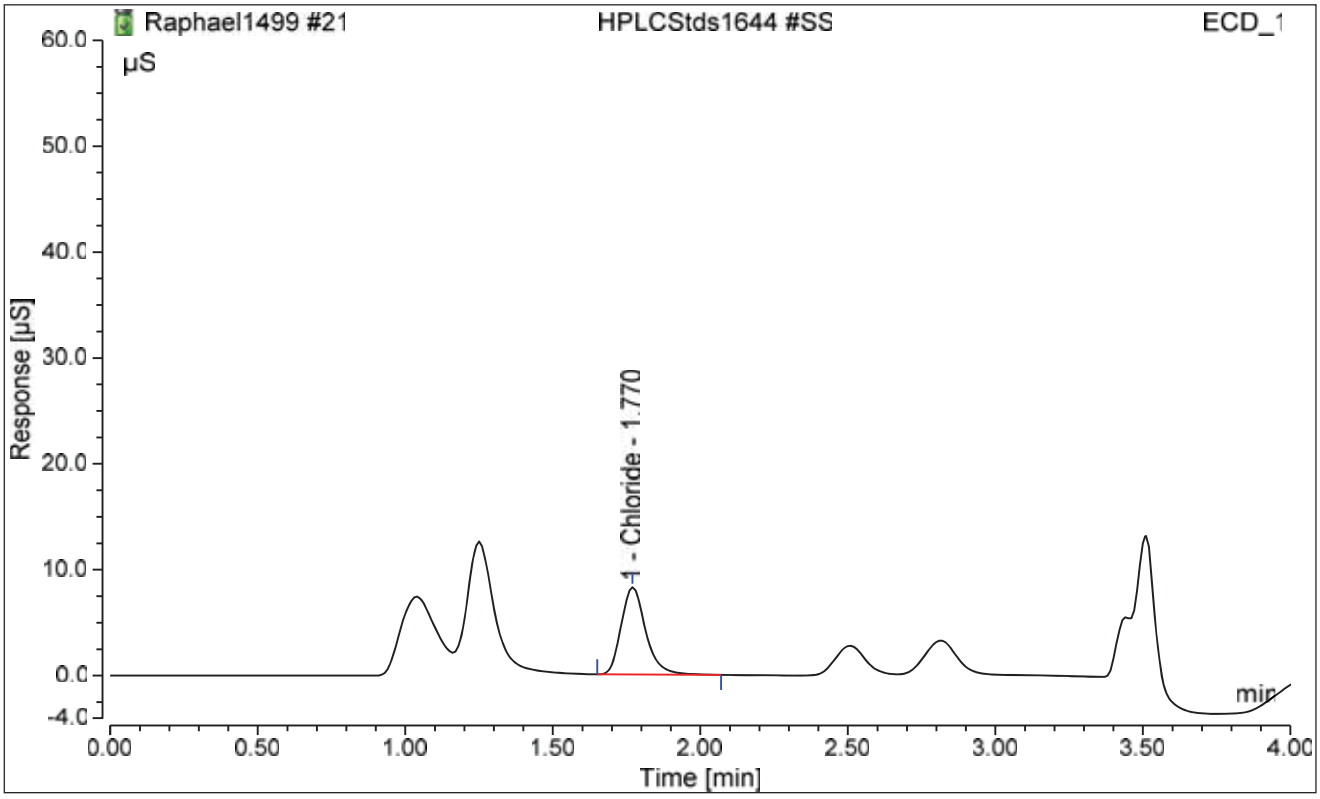


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	0.791	8.243	7.39893	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 16:25**	Run Time:	**12.50**

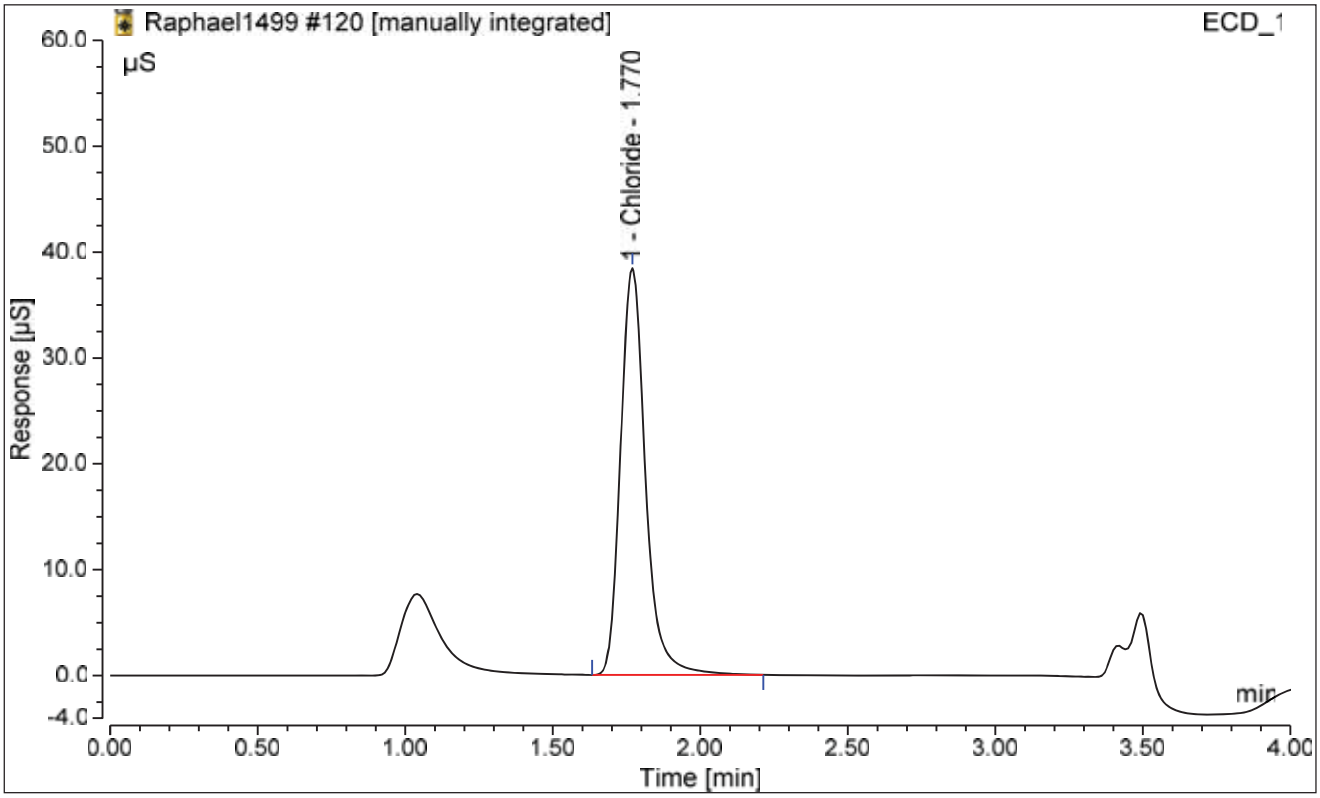


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	0.793	8.228	7.41675	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 15:42**	Run Time:	**12.50**

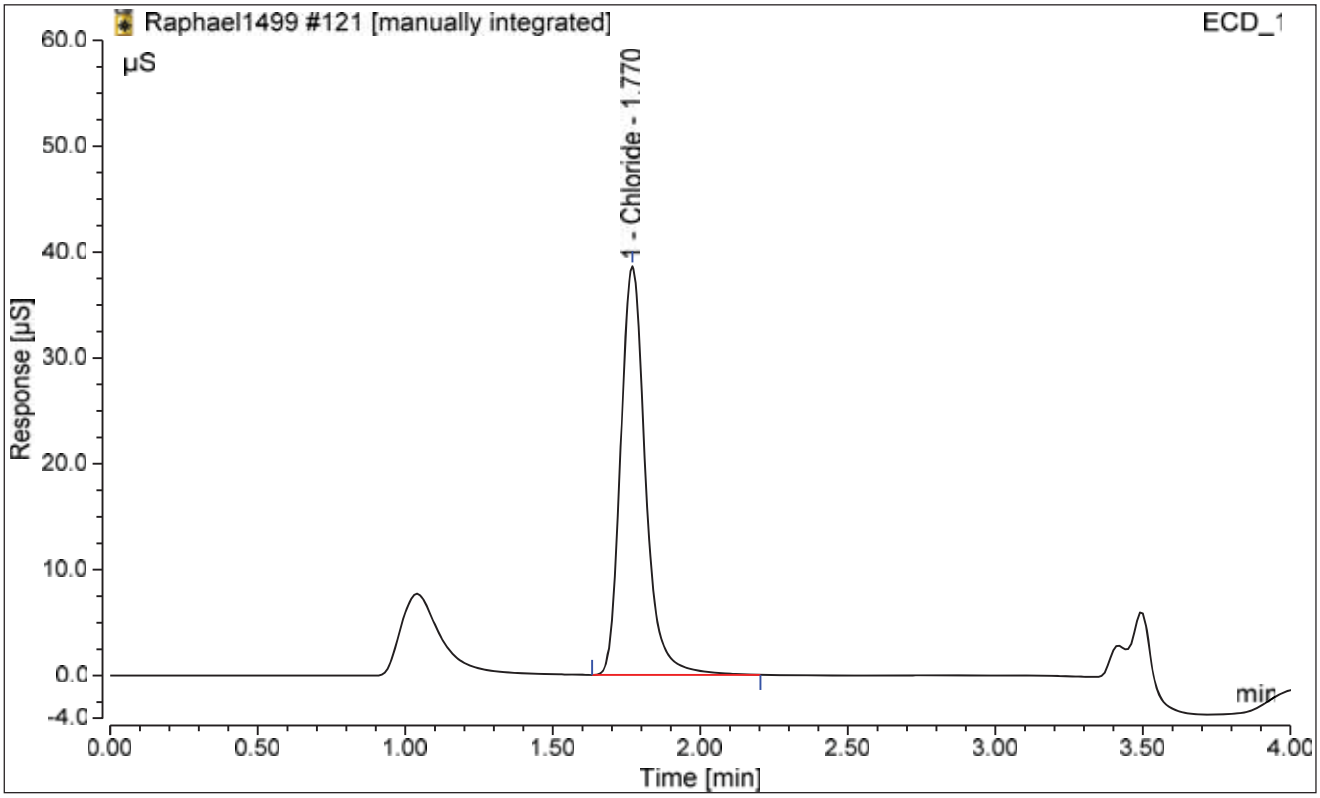


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	3.749	38.396	29.97377	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 15:56**	Run Time:	**12.50**

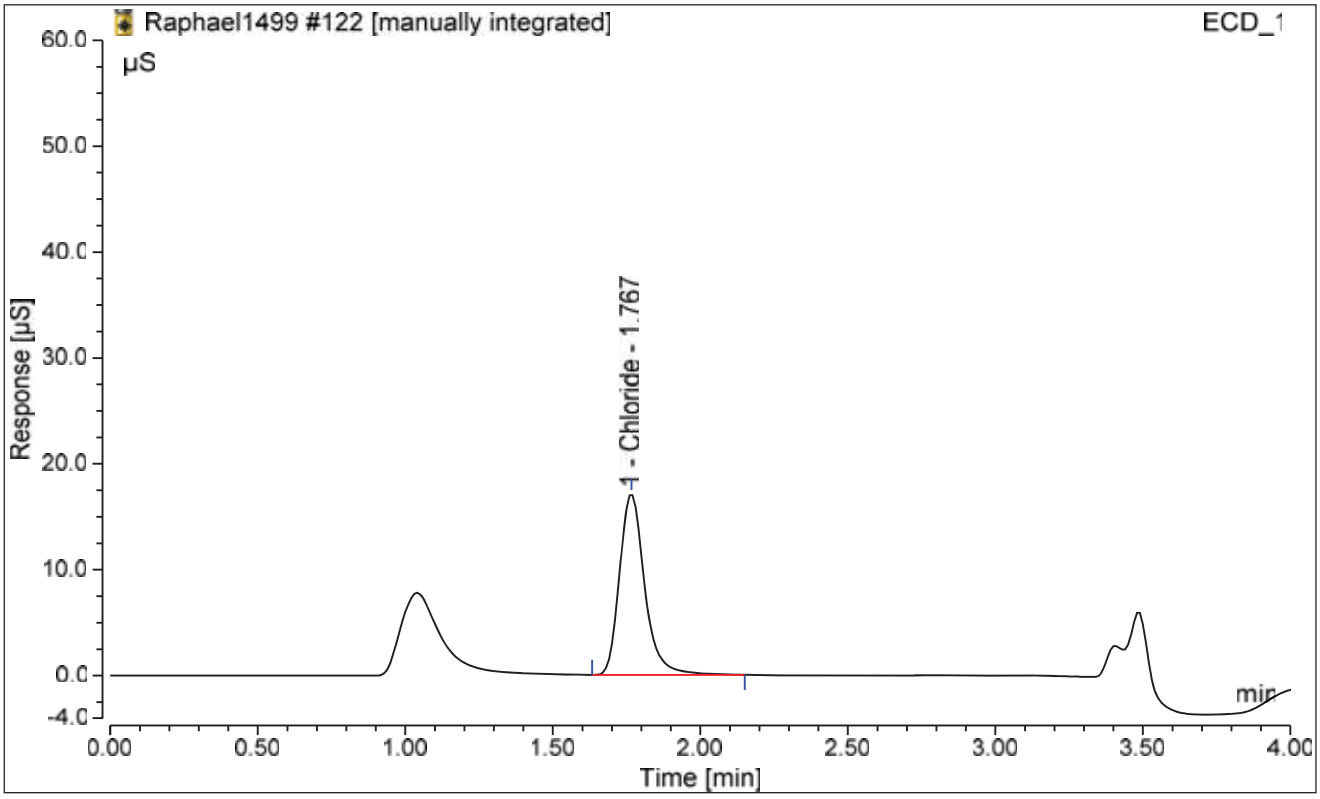


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	3.755	38.583	30.01181	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 16:10**	Run Time:	**12.50**

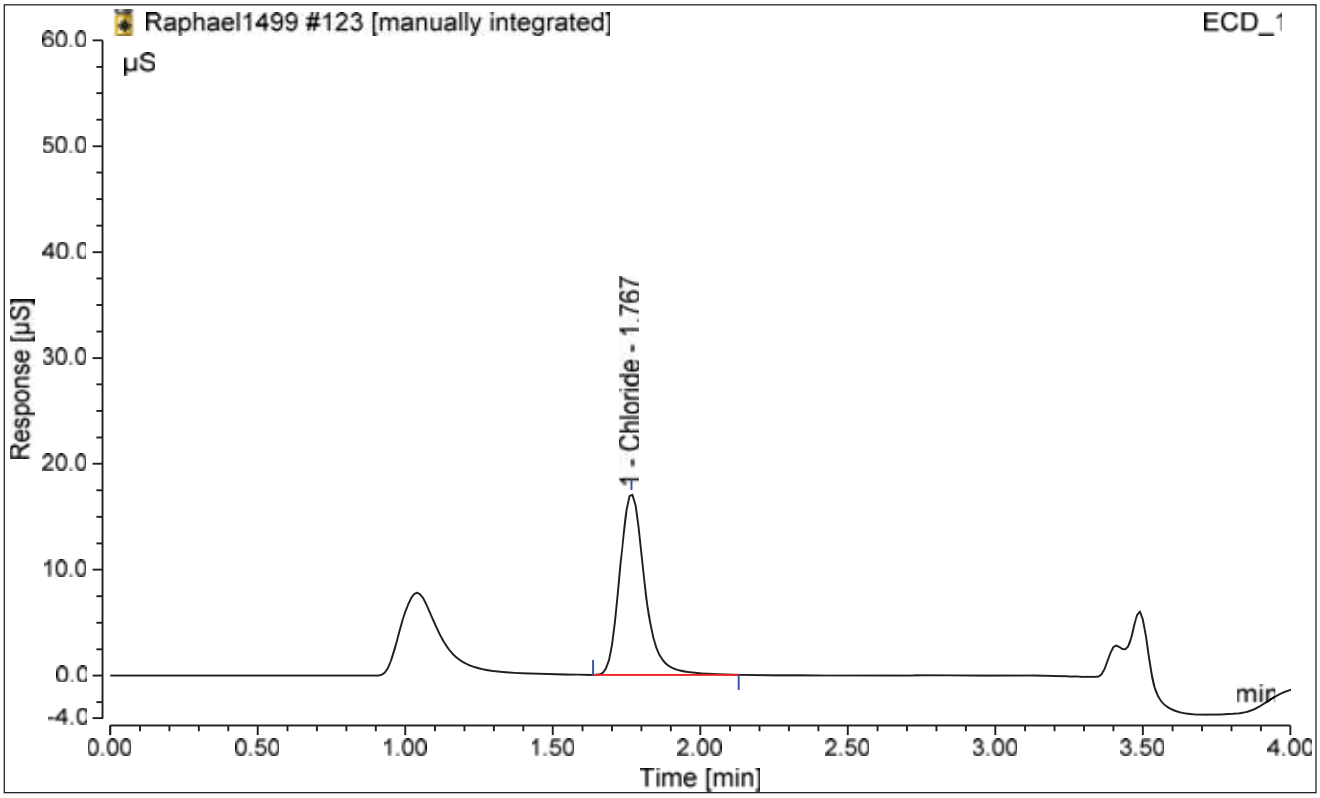


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.688	17.093	15.06383	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 16:24**	Run Time:	**12.50**

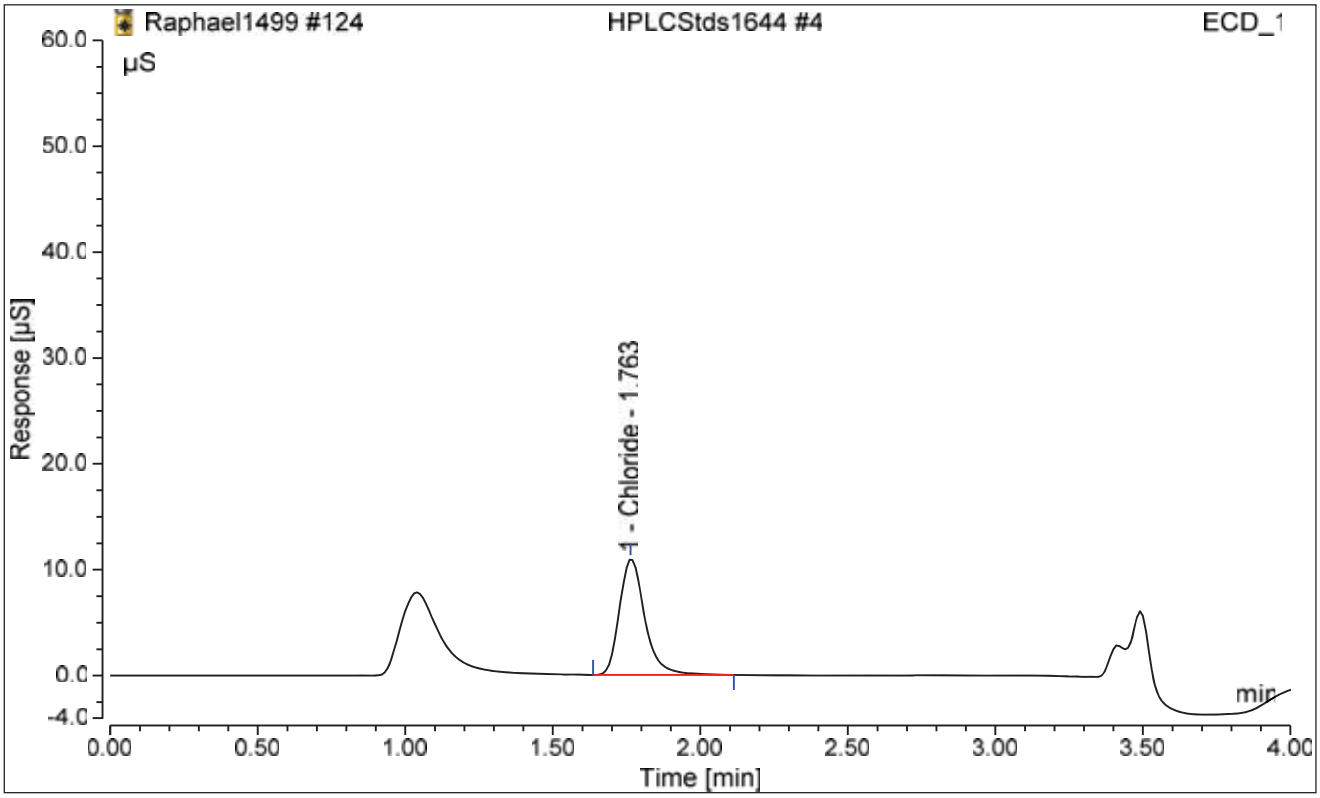


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.691	17.093	15.08915	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 16:38**	Run Time:	**12.50**

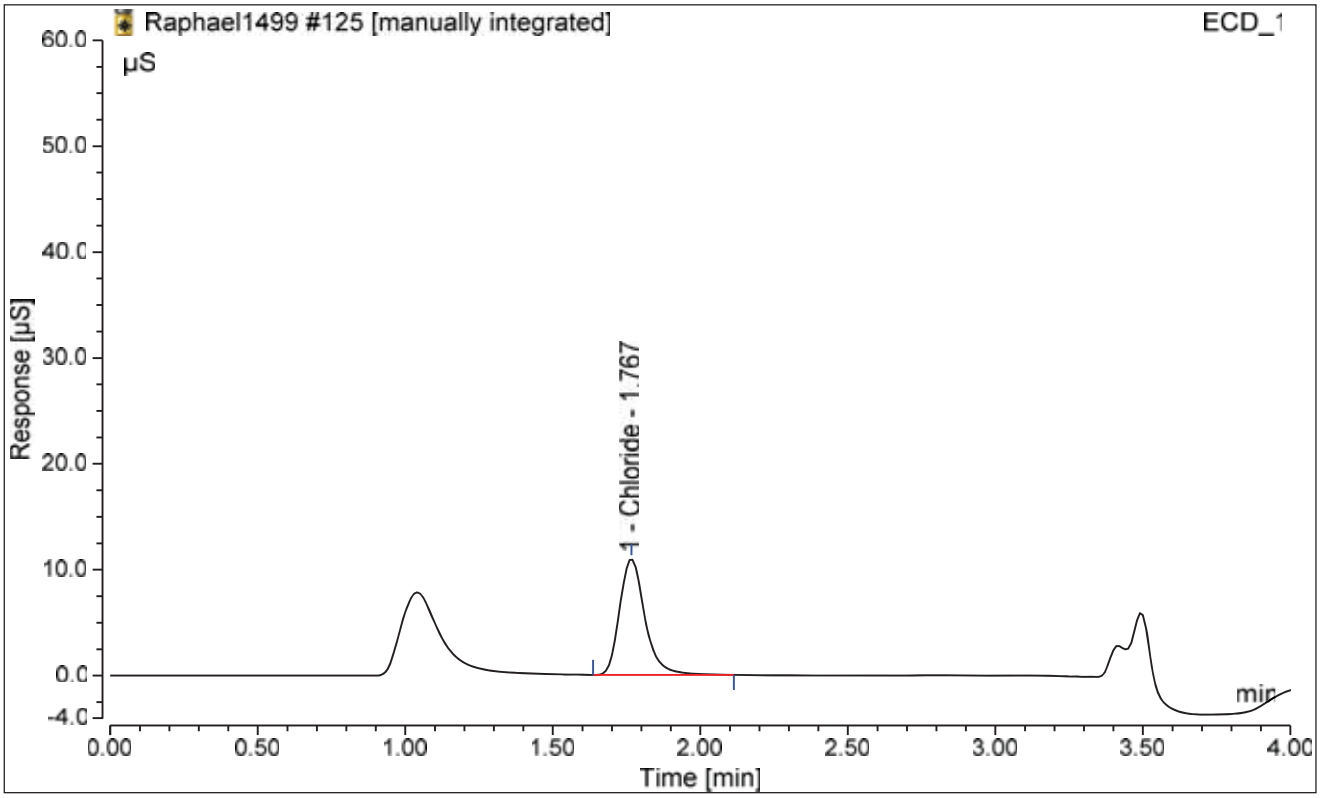


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.76	Chloride	1.092	10.950	10.04811	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 16:52**	Run Time:	**12.50**

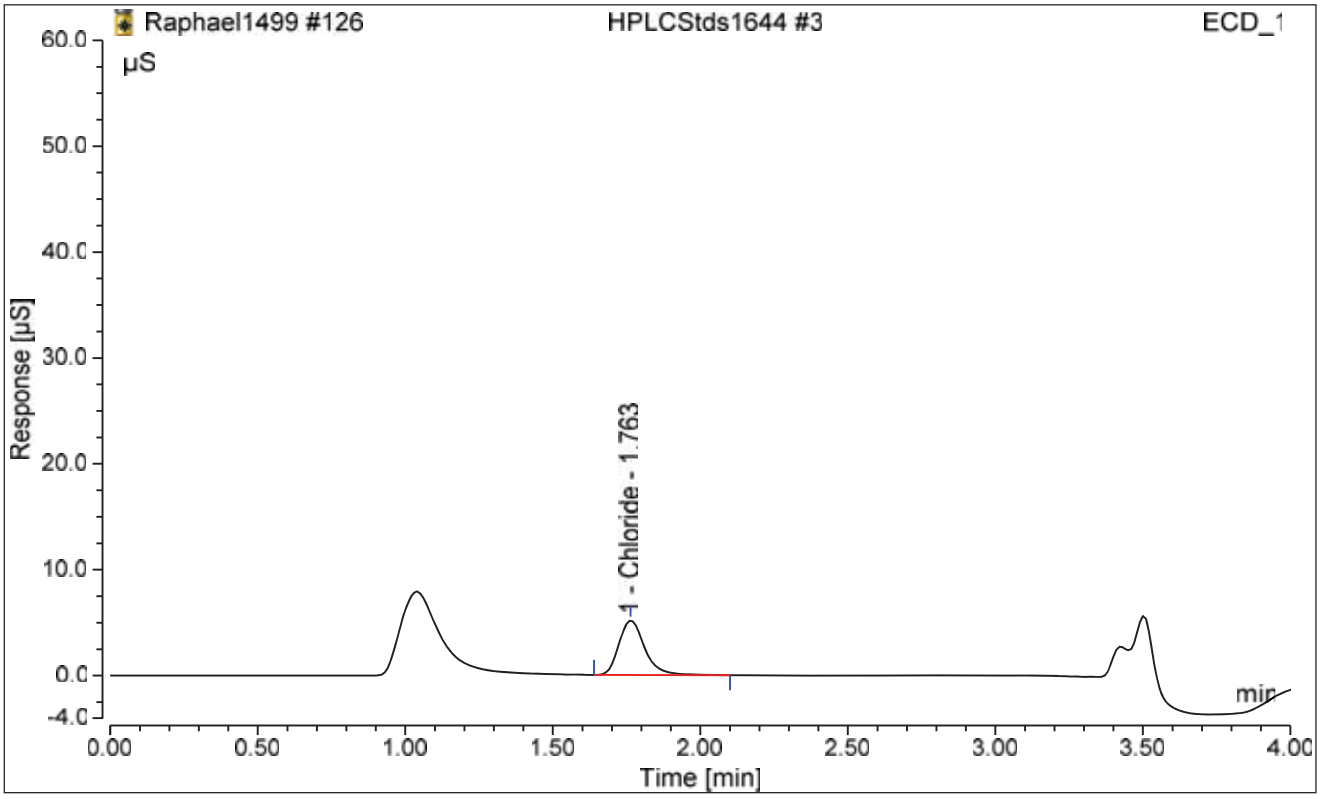


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.091	10.955	10.04157	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 17:06**	Run Time:	**12.50**

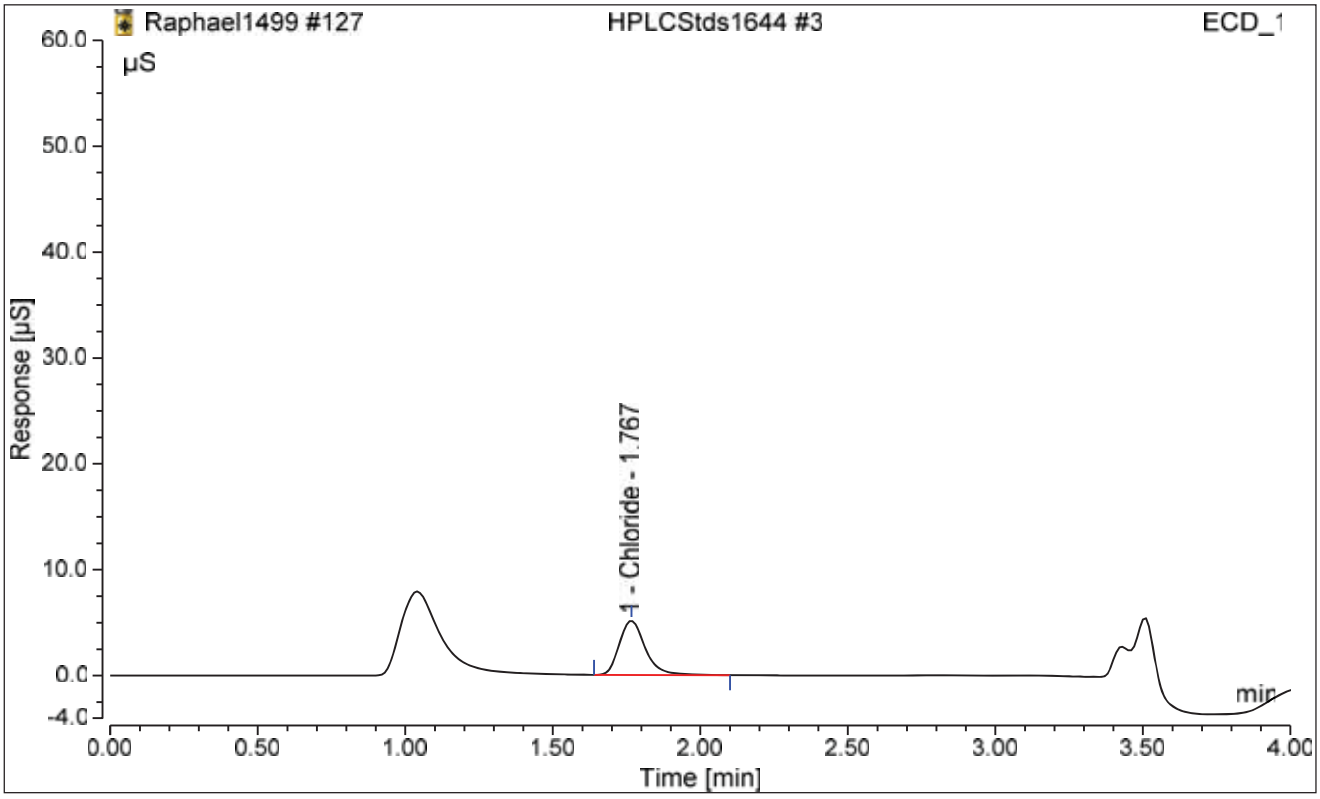


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.76	Chloride	0.520	5.142	4.94353	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 17:21**	Run Time:	**12.50**

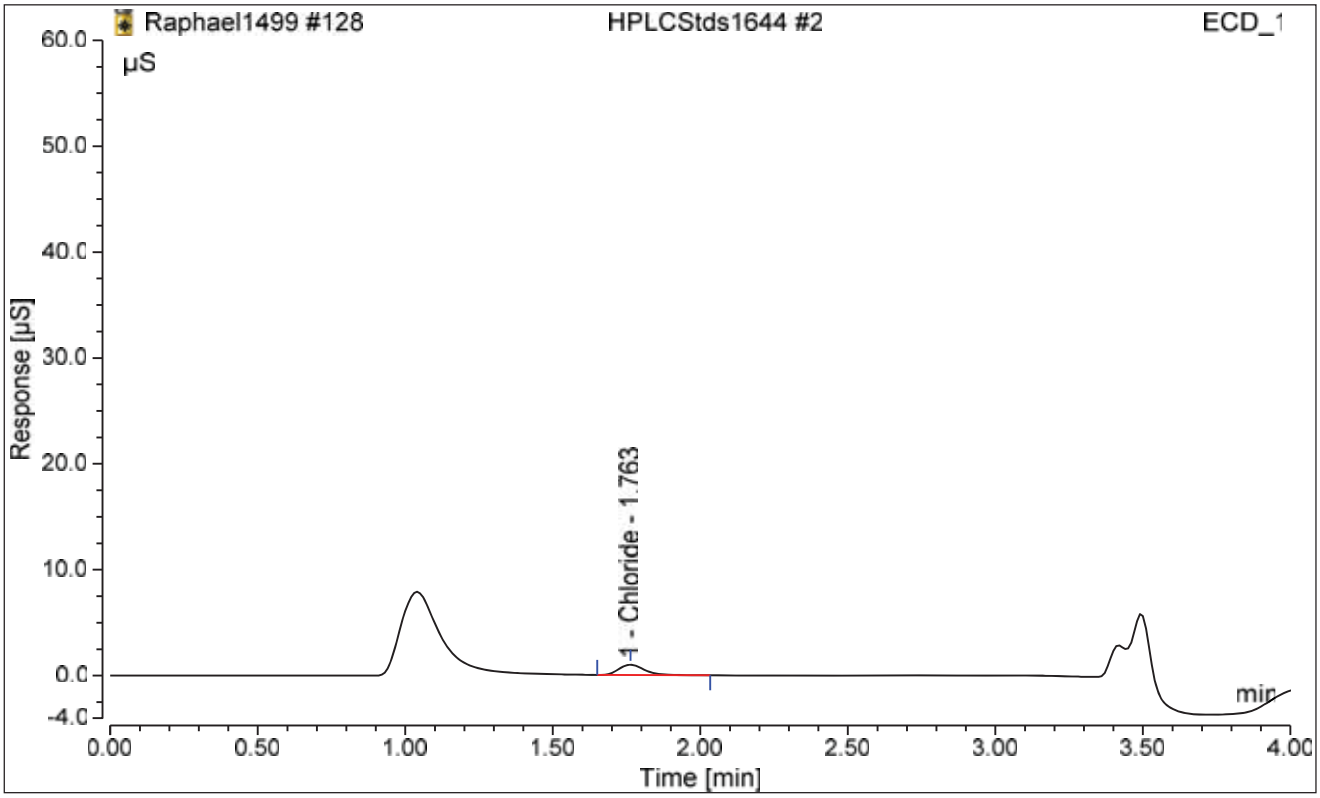


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	0.522	5.123	4.95375	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 17:35**	Run Time:	**12.50**

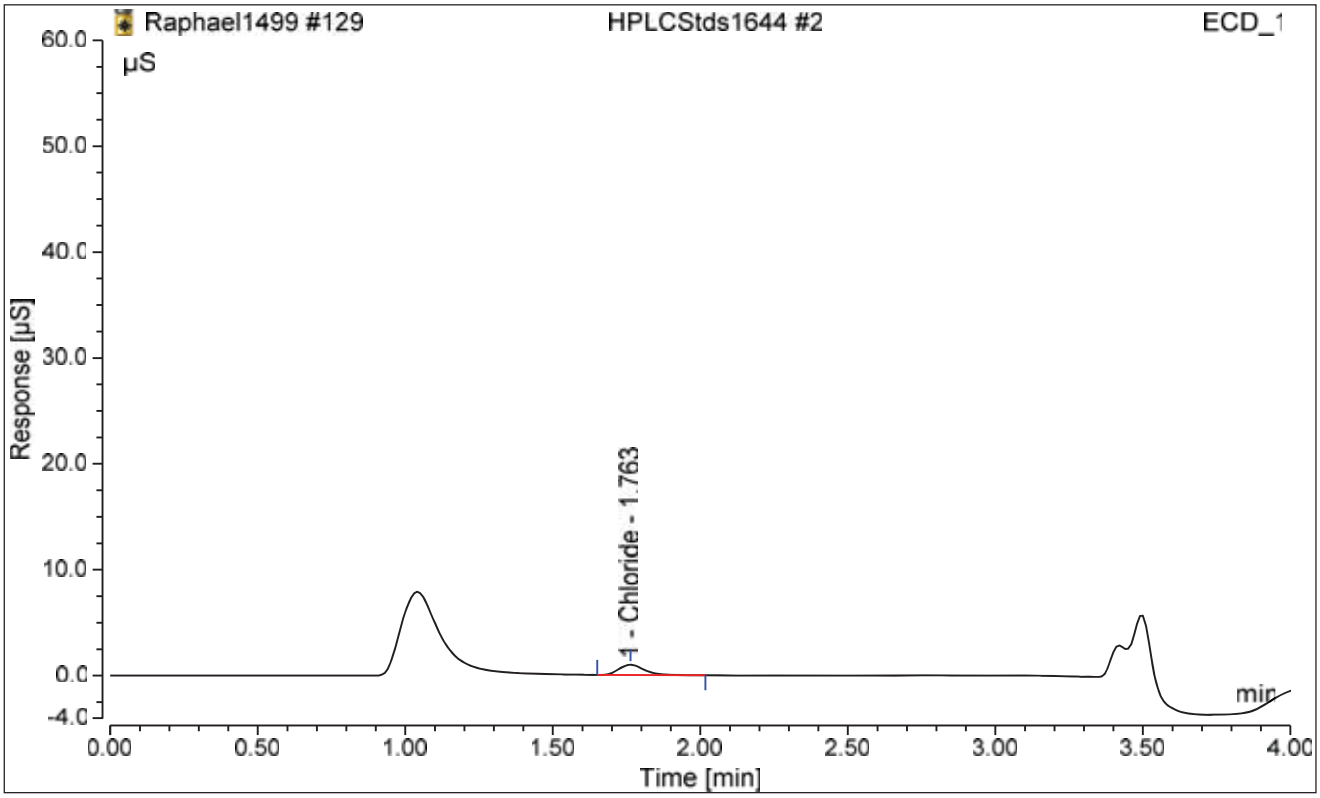


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.76	Chloride	0.098	0.972	0.98191	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 17:49**	Run Time:	**12.50**

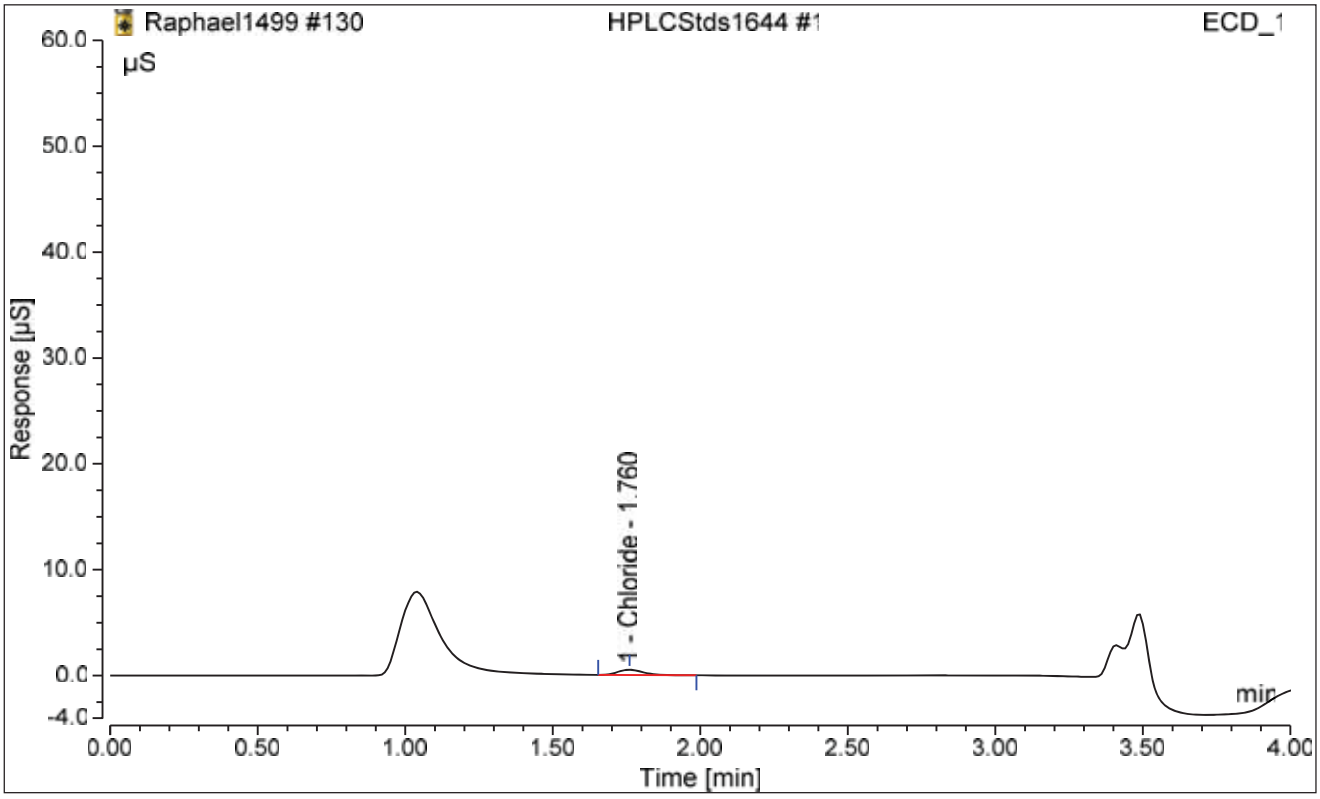


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.76	Chloride	0.097	0.970	0.97644	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 18:03**	Run Time:	**12.50**

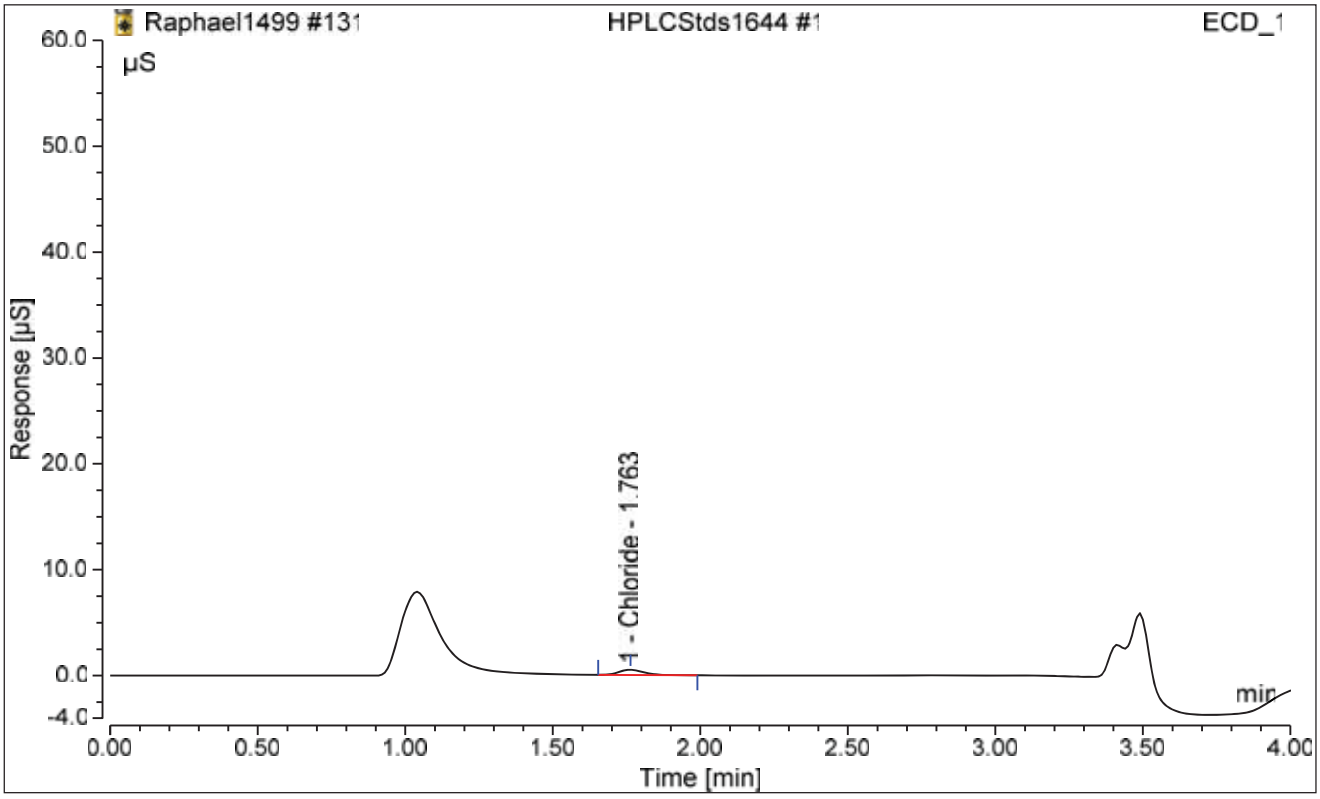


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.76	Chloride	0.049	0.497	0.51404	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 18:17**	Run Time:	**12.50**



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.76	Chloride	0.049	0.498	0.51737	FALSE	FALSE

This Is The Last Page Of This Report.

Montrose Air Quality Services, LLC – Pelham

30 Monroe Drive
Pelham, AL 35124

Cemex

Brooksville, FL
Client Project # 031486

Analytical Report
(0624-097)

EPA Method 26A

Hydrogen fluoride, Chlorine

Enthalpy Analytical, LLC

Phone: (919) 850 - 4392 / Fax: (919) 850 - 9012 / www.enthalpy.com
800-1 Capitola Drive Durham, NC 27713-4385

I certify that to the best of my knowledge all analytical data presented in this report:

- Have been checked for completeness
- Are accurate, error-free, and legible
- Have been conducted in accordance with approved protocol, and that all deviations and analytical problems are summarized in the appropriate narrative(s)

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Report Issued: 06/19/2024

ENTHALPY ANALYTICAL

Summary of Results

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Pelham

Job No.: 0624-097 EPA Method 26A Analysis

Client No.: 031486 Site: Cemex-Brooksville, FL

Summary Table

Sample ID	Hydrogen Fluoride Catch Weight (ug)
Kiln 1-Run 1A- Acid Impingers	42.2 J
Kiln 1-Run 2A- Acid Impingers	28.8 J
Kiln 1-Run 3A- Acid Impingers	19.9 J
Kiln 1-Run 1B- Acid Impingers	40.4 J
Kiln 1-Run 2B- Acid Impingers	56.7 J
Kiln 1-Run 3B- Acid Impingers	56.7 J
Field Train Blank - Acid Impingers	33.1 J
DI Water Reagent Blank	65.0
0.1 N H2SO4 Reagent Blank	30.7 J

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Pelham

Job No.: 0624-097 EPA Method 26A Analysis

Client No.: 031486 Site: Cemex-Brooksville, FL

Summary Table

Sample ID	Chlorine Catch Weight (ug)
Kiln 1-Run 1A- Alkaline Impingers	110 J
Kiln 1-Run 2A- Alkaline Impingers	59.6 J
Kiln 1-Run 3A- Alkaline Impingers	44.0 J
Kiln 1-Run 1B- Alkaline Impingers	53.5 J
Kiln 1-Run 2B- Alkaline Impingers	81.6 J
Kiln 1-Run 3B- Alkaline Impingers	60.9 J
Field Train Blank - Alkaline Impingers	49.9 J
0.1 N NaOH Reagent Blank	48.5 J
DI Water Reagent Blank	614

Results

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Pelham

Job No.: 0624-097 EPA Method 26A Analysis

Client No.: 031486 Site: Cemex-Brooksville, FL

Hydrogen Fluoride as Fluoride

Sample ID	Filename #1	Filename #2	MDL (ug/mL)	Curve Min. (ug/mL)	Curve Max. (ug/mL)	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc. # 1 (ug/mL)	Conc. # 2 (ug/mL)	%diff. conc.	Avg. Conc. (ug/mL)	DF	Liquid Vol. (mL)	Conv. Factor	Catch Weight (ug)	Flag	pH
Kiln 1-Run 1A- Acid Impingers	023	024	0.0500	0.500	30.0	3.32	3.33	0.2	0.117	0.116	0.6	0.116	1	343.7	1.053	42.2	J	1
Kiln 1-Run 2A- Acid Impingers	029	030	0.0500	0.500	30.0	3.31	3.32	0.1	0.0836	0.0771	4.1	0.0803	1	341.0	1.053	28.8	J	1
Kiln 1-Run 3A- Acid Impingers	031	032	0.0500	0.500	30.0	3.33	NA	NA	0.0689	0.0500	NA	0.0595	1	317.3	1.053	19.9	J	1
Kiln 1-Run 1B- Acid Impingers	033	034	0.0500	0.500	30.0	3.33	3.33	0.1	0.115	0.111	1.8	0.113	1	339.2	1.053	40.4	J	1
Kiln 1-Run 2B- Acid Impingers	035	036	0.0500	0.500	30.0	3.32	3.32	0.0	0.167	0.166	0.4	0.166	1	323.7	1.053	56.7	J	1
Kiln 1-Run 3B- Acid Impingers	037	038	0.0500	0.500	30.0	3.33	3.33	0.0	0.171	0.172	0.4	0.171	1	314.5	1.053	56.7	J	1
Field Train Blank - Acid Impingers	039	040	0.0500	0.500	30.0	3.33	3.33	0.0	0.110	0.109	0.7	0.110	1	286.2	1.053	33.1	J	1
DI Water Reagent Blank	041	042	0.0500	0.500	30.0	3.24	3.24	0.0	0.526	0.519	0.7	0.522	1	118.2	1.053	65.0		5
0.1 N H2SO4 Reagent Blank	045	046	0.0500	0.500	30.0	NA	NA	NA	0.0500	0.0999	NA	0.0749	1	389.1	1.053	30.7	J	1

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Pelham

Job No.: 0624-097 EPA Method 26A Analysis

Client No.: 031486 Site: Cemex-Brooksville, FL

Matrix Spike Recovery

Enthalpy Sample ID	Compound	Filename #1	Filename #2	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc. # 1 (ug/mL)	Conc. # 2 (ug/mL)	%diff. conc.	Avg. Conc. (ug/mL)	DF	Vol. (mL)	Catch Weight (ug)	Flag
0624-097.MSD-R1A.Acid	Fluoride	027	028	3.25	3.25	0.1	4.83	4.85	0.2	4.84	1	0.800	3.87	
												Native Amt (ug)	0.0885	J
												Spiked Amt (ug)	4.00	
												Recovery (%)	94.6	
0624-097.MS-R1A.Acid	Fluoride	041	042	3.22	3.23	0.1	4.99	4.99	0.0	4.99	1	0.800	3.99	
												Native Amt (ug)	0.0885	J
												Spiked Amt (ug)	4.00	
												Recovery (%)	97.6	

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Pelham

Job No.: 0624-097 EPA Method 26A Analysis

Client No.: 031486 Site: Cemex-Brooksville, FL

Chlorine as Chloride

Sample ID	Filename #1	Filename #2	MDL (ug/mL)	Curve Min. (ug/mL)	Curve Max. (ug/mL)	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc. # 1 (ug/mL)	Conc. # 2 (ug/mL)	%diff. conc.	Avg. Conc. (ug/mL)	DF	Liquid Vol. (mL)	Conv. Factor	Catch Weight (ug)	Flag	pH
Kiln 1-Run 1A- Alkaline Impingers	033	034	0.0500	0.500	30.0	1.72	1.72	0.0	0.189	0.190	0.4	0.189	2	290.2	1	110	J	8
Kiln 1-Run 2A- Alkaline Impingers	041	042	0.0500	0.500	30.0	1.72	1.72	0.0	0.102	0.0965	2.9	0.0994	2	300.0	1	59.6	J	8
Kiln 1-Run 3A- Alkaline Impingers	043	044	0.0500	0.500	30.0	1.72	1.72	0.0	0.0857	0.0846	0.7	0.0851	2	258.6	1	44.0	J	8
Kiln 1-Run 1B- Alkaline Impingers	045	046	0.0500	0.500	30.0	1.72	1.72	0.0	0.0895	0.0893	0.1	0.0894	2	299.3	1	53.5	J	9
Kiln 1-Run 2B- Alkaline Impingers	047	048	0.0500	0.500	30.0	1.72	1.72	0.0	0.142	0.142	0.0	0.142	2	286.6	1	81.6	J	9
Kiln 1-Run 3B- Alkaline Impingers	049	050	0.0500	0.500	30.0	1.72	1.72	0.0	0.108	0.108	0.0	0.108	2	282.9	1	60.9	J	8
Field Train Blank - Alkaline Impingers	051	052	0.0500	0.500	30.0	1.70	1.70	0.0	0.0852	0.0858	0.4	0.0855	2	291.9	1	49.9	J	13
0.1 N NaOH Reagent Blank	053	054	0.0500	0.500	30.0	1.69	1.70	0.1	0.0858	0.0857	0.1	0.0858	2	282.7	1	48.5	J	13
DI Water Reagent Blank	055	056	0.0500	0.500	30.0	1.72	1.72	0.0	2.59	2.60	0.2	2.60	2	118.2	1	614		5

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Pelham

Job No.: 0624-097 EPA Method 26A Analysis

Client No.: 031486 Site: Cemex-Brooksville, FL

Matrix Spike Recovery

Enthalpy Sample ID	Compound	Filename #1	Filename #2	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc. # 1 (ug/mL)	Conc. # 2 (ug/mL)	%diff. conc.	Avg. Conc. (ug/mL)	DF	Vol. (mL)	Catch Weight (ug)	Flag
0624-097.MS-R1A.Alkaline	Chloride	035	036	1.72	1.72	0.0	4.94	4.92	0.2	4.93	1	0.850	4.19	
										Native Amt (ug)			0.151	J
										Spiked Amt (ug)			4.00	
										Recovery (%)			101	
0624-097.MSD-R1A.Alkaline	Chloride	037	038	1.72	1.72	0.0	5.00	5.02	0.1	5.01	1	0.850	4.26	
										Native Amt (ug)			0.151	J
										Spiked Amt (ug)			4.00	
										Recovery (%)			103	

Narrative Summary

Enthalpy Analytical Narrative Summary

Company **Job No.** **Client ID.**	**Montrose Air Quality Services, LLC - Pelham** **0624-097 EPA Method 26 Analysis** **031486 Site: Cemex-Brooksville, FL**
Custody	**Alyssa Miller received the samples on June 11, 2024 at 22.5 °C after being relinquished by Montrose Air Quality Services, LLC - Pelham. The samples were received in good condition.** **Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.**
Analysis	**The samples were analyzed for fluoride and chloride using the analytical procedures in Section 11.0 of EPA Method 26, Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources Non-Isokinetic Method.** **All sample aliquots and standards are prepared, stored and analyzed using high-density polyethylene containers. Client samples are retained in the container as received.** **Sample catch weight results were determined using the sample volumes provided by the client on the COC.** **The Dionex Ion Chromatograph "Astro" equipped with a Conductivity Detector was used for these analyses.**
Calibration	**The calibration curves are included in the Raw Data section of this report. A quadratic curve type was used instead of the method-specified linear curve.**
Chrom. Conditions	**The acquisition methods** *AS22 ASAP new* **and** *AS22 ASAP FAST Base2* **were used for the fluoride and chloride analyses, respectively, and may be available upon request.**
QC Notes	**The samples were analyzed within the 28-day holding time specified by the method.** **The analyses of the field DI Water Reagent Blank contained fluoride and chloride at concentrations greater than the LOQ. This was confirmed by reanalysis of fresh sample aliquots. All other laboratory and field blanks did not contain fluoride or chloride at concentrations greater than the LOQ.** **Duplicate matrix spikes were prepared using aliquots of samples** *Kiln 1-Run 1A- Acid Impingers* **and** *Kiln 1-Run 1A- Alkaline Impingers* **and both met method spike recovery criteria of 80-120%.** **The analysis of second source standards also served as laboratory control samples and met the laboratory acceptance criteria of ±5% of the tag value.**

Enthalpy Analytical Narrative Summary

Company **Job No.** **Client ID.**	**Montrose Air Quality Services, LLC - Pelham** **0624-097 EPA Method 26 Analysis** **031486 Site: Cemex-Brooksville, FL**

Reporting Notes	**The H2SO4 samples were analyzed for fluoride but the results have been reported as hydrogen fluoride. The hydrogen fluoride results were converted using a factor of 1.053 to account for the additional hydrogen mass.** **These analyses met the requirements of the TNI Standard. Any deviations from the requirements of the reference method or TNI Standard have been stated above.** **The results presented in this report are representative of the samples as provided to the laboratory.**

General Reporting Notes

The following are general reporting notes that are applicable to all Enthalpy Analytical, LLC data reports, unless specifically noted otherwise.

- Any analysis which refers to the method as ***"Type"*** represents a planned deviation from the reference method. For instance a Hydrogen Sulfide assay from a Tedlar bag would be labeled as "EPA Method 16-Type" because Tedlar bags are not mentioned as one of the collection options in EPA Method 16.

- The acronym ***MDL*** represents the Minimum Detection Limit. Below this value the laboratory cannot determine the presence of the analyte of interest reliably.

- The acronym ***LOQ*** represents the Limit of Quantification. Below this value the laboratory cannot quantitate the analyte of interest within the criteria of the method.

- The acronym ***ND*** following a value indicates a non-detect or analytical result below the MDL.

- The letter ***J*** in the Qualifier or Flag column in the results indicates that the value is between the MDL and the LOQ. The laboratory can positively identify the analyte of interest as present, but the value should be considered an estimate.

- The letter ***E*** in the Qualifier or Flag column indicates an analytical result exceeding 100% of the highest calibration point. The associated value should be considered as an estimate.

- Sample results are presented 'as measured' for single injection methodologies, or an average value if multiple injections are made. If all injections are below the MDL, the sample is considered non-detect and the ND value is presented. If one, but not all, are below the MDL, the MDL value is used for any injections that are below the MDL. For example, if the MDL is 0.500 and LOQ is 1.00, and the instrument measures 0.355, 0.620, and 0.442 - the result reported is the average of 0.500, 0.620, and 0.500 - - - i.e. 0.540 with a J flag.

- When a spike recovery (Bag Spike, Collocated Spike Train, or liquid matrix spike) is being calculated, the native (unspiked) sample result is used in the calculations, as long as the value is above the MDL. If a sample is ND, then 0 is used as the native amount (not the MDL value).

- The acronym ***DF*** represents Dilution Factor. This number represents dilution of the sample during the preparation and/or analysis process. The analytical result taken from a laboratory instrument is multiplied by the DF to determine the final undiluted sample results.

- The addition of ***MS*** to the Sample ID represents a Matrix Spike. An aliquot of an actual sample is spiked with a known amount of analyte so that a percent recovery value can be determined. The MS analysis indicates what effect the sample matrix may have on the target analyte, i.e. whether or not anything in the sample matrix interferes with the analysis of the analyte(s).

General Reporting Notes
(continued)

- The addition of ***MSD*** to the Sample ID represents a Matrix Spike Duplicate. Prepared in the same manner as a MS, the use of duplicate matrix spikes allows further confirmation of laboratory quality by showing the consistency of results gained by performing the same steps multiple times.

- The addition of ***LD*** to the Sample ID represents a Laboratory Duplicate. The analyst prepares an additional aliquot of sample for testing and the results of the duplicate analysis are compared to the initial result. The result should have a difference value of within 10% of the initial result (if the results of the original analysis are greater than the LOQ).

- The addition of ***AD*** to the Sample ID represents an Alternate Dilution. The analyst prepares an additional aliquot at a different dilution factor (usually double the initial factor). This analysis helps confirm that no additional compound is present and coeluting or sharing absorbance with the analyte of interest, as they would have a different response/absorbance than the analyte of interest.

- The Sample ID ***LCS*** represents a Laboratory Control Sample. Clean matrix, similar to the client sample matrix, prepared and analyzed by the laboratory using the same reagents, spiking standards and procedures used for the client samples. The LCS is used to assess the control of the laboratory's analytical system. Whenever spikes are prepared for our client projects, two spikes are retained as LCSs. The LCSs are labeled with the associated project number and kept in-house at the appropriate temperature conditions. When the project samples are received for analysis, the LCSs are analyzed to confirm that the analyte could be recovered from the media, separate from the samples which were used on the project and which may have been affected by source matrix, sample collection, and/or sample transport.

- **Significant Figures**: Where the reported value is much greater than unity (1.00) in the units expressed, the number is rounded to a whole number of units, rather than to 3 significant figures. For example, a value of 10,456.45 ug catch is rounded to 10,456 ug. There are five significant digits displayed, but no confidence should be placed on more than two significant digits. In the case of small numbers, generally 3 significant figures are presented, but still only 2 should be used with confidence. Many neat materials are only certified to 3 digits, and as the mathematically correct final result is always 1 digit less than all its pre-cursors - 2 significant figures are what are most defensible.

- **Manual Integration**: The data systems used for processing will flag manually integrated peaks with an "M". There are several reasons a peak may be manually integrated. These reasons will be identified by the following two letter designations on sample chromatograms, if provided in the report. The peak was ***not integrated*** by the software **"NI"**, the peak was ***integrated incorrectly*** by the software **"II"** or the ***wrong peak*** was integrated by the software **"WP"**. These codes will accompany the analyst's manual integration stamp placed next to the compound name on the chromatogram.

Sample Custody

MONTROSE

Chain of Custody Record

0624-097
<---
06.11.24

Special Handling:
- Office Location: Birmingham; Mobile; Baton Rouge; Kannapolis
- Standard Turn Around Time - 10 Days _____
- Express Turn Around Time - 3 Days _____
- Rush Turn Around Time - Next Day _____

Client Name: Cemex	**Project Number:** 031486	**PO No.:**	**Samples Collected By:**
Project Manager: Todd Gregg	**Site ID:**	**Phone No.:**	
Report Results To:	**Plant Location:** Brooksville, FL	**Email:** togregg@montrose-env.com	

Special Instructions:

Page 1 of 2

Matrix Info: A = Air; 1 = H2SO4; 2 = NaOH; 3 = Filter; 4 = Acetone; 5 = Water; 6 = Hexanes; X = XAD; C = Charcoal; * = Other

G = Grab C = Composite Q = Quality Control / Blanks

Sample ID	Date	Time	Volume	Type	Matrix	Sample Container: Glass	Sample Container: Plastic	Sample Container: Other	Analysis: Method:	Analysis: Method:	Analysis: Method:	Notes:	Sample Receipt Acknowledgment (Initial / Date)
												* Volume	
Kiln 1-Run 1A- Acid Impingers	6/5/2024	9:45	~320 ml		5		x		26A			343.7mL	
Kiln 1-Run 1A- Alkaline Impingers	6/5/2024	9:45	~320 ml		5		x		26A			290.2mL	
Kiln 1-Run 2A- Acid Impingers	6/5/2024	11:00	~320 ml		5		x		26A			341.0mL	
Kiln 1-Run 2A- Alkaline Impingers	6/5/2024	11:00	~320 ml		5		x		26A			300.0mL	
Kiln 1-Run 3A- Acid Impingers	6/5/2024	12:30	~320 ml		5		x		26A			317.3mL	
Kiln 1-Run 3A- Alkaline Impingers	6/5/2024	12:30	~320 ml		5		x		26A			258.6mL	
Field Train Blank - Acid Impingers	6/5/2024	8:30	~300 ml		5		x		26A			286.2mL	
Field Train Blank - Alkaline Impingers	6/5/2024	8:30	~300 ml		5		x		26A			291.9mL	

Relinquished By:	Date:	Time	Received By:	Date:	Time:	Sample Condition Upon Receipt:
David Caynes - [illegible]	6/7/24	14:30	[illegible]	6/7/24	14:30	☐ Iced ☐ Ambient ☐ °C _____
[illegible]	6/10/24	16:00	Alyssa Mumbles	06/11/24	0915	☐ Iced ☐ Ambient ☒ °C 22.5
						☐ Iced ☐ Ambient ☐ °C _____

Montrose Air Quality Services- 30 Monroe Drive, Pelham Alabama 35124 • 205.358.1011 • Fax 205.358.1036 • www.montrose-env.com Rev. 10/29/2014 KMR

22.5°C Fluke 1, good condition Amm3 06.11.24

MONTROSE

Chain of Custody Record

0624-097
<----------
06.11.24

Special Handling:
- Office Location: Birmingham; Mobile; Baton Rouge; Kannapolis
- Standard Turn Around Time - 10 Days _____
- Express Turn Around Time - 3 Days _____
- Rush Turn Around Time - Next Day _____

Client Name: Cemex	**Project Number:** 031486	**PO No.:**	**Samples Collected By:**
Project Manager: Todd Gregg	**Site ID:**	**Phone No.:**	
Report Results To:	**Plant Location:** Brooksville, FL	**Email:** togregg@montrose_env.com	

Special Instructions:

Page 2 of 2

Matrix Info: A = Air; 1 = H2SO4; 2 = NaOH; 3 = Filter; 4 = Acetone; 5 = Water; 6 = Hexanes; X = XAD; C = Charcoal; * = Other

G = Grab C = Composite Q = Quality Control / Blanks

Sample ID	Date	Time	Volume*	Type	Matrix	Sample Container: Glass	Sample Container: Plastic	Sample Container: Other	Analysis: Method:	Analysis: Method:	Analysis: Method:	Notes:	Sample Receipt Acknowledgment (Initial / Date)
												* Volume	
Kiln 1-Run 1B- Acid Impingers	6/5/2024	9:45	~320 ml		5		x		26A			339.2 mL	
Kiln 1-Run 1B- Alkaline Impingers	6/5/2024	9:45	~320 ml		5		x		26A			299.3 mL	
Kiln 1-Run 2B- Acid Impingers	6/5/2024	11:00	~320 ml		5		x		26A			323.7mL	
Kiln 1-Run 2B- Alkaline Impingers	6/5/2024	11:00	~320 ml		5		x		26A			286.6 mL	
3													
Kiln 1-Run 3B- Acid Impingers	6/5/2024	12:30	~320 ml		5		x		26A			314.5mL	
Kiln 1-Run 3B- Alkaline Impingers	6/5/2024	12:30	~320 ml		5		x		26A			282.9mL	
3													
DI Water Reagent Blank							x		26A			118.2mL	
0.1 N H2SO4 Reagent Blank							x		26A			389.1mL	
0.1 N NaOH Reagent Blank							x		26A			282.7mL	

Relinquished By:	Date:	Time	Received By:	Date:	Time:	Sample Condition Upon Receipt:
David Garza - Hall Env	6/7/24	14:30		6/7/24	14:30	☐ Iced ☐ Ambient ☐ °C _____
	6/11/24	16:00	Alyssa Morales	06.11.24	0915	☐ Iced ☐ Ambient ☐ °C 22.5
						☐ Iced ☐ Ambient ☐ °C _____

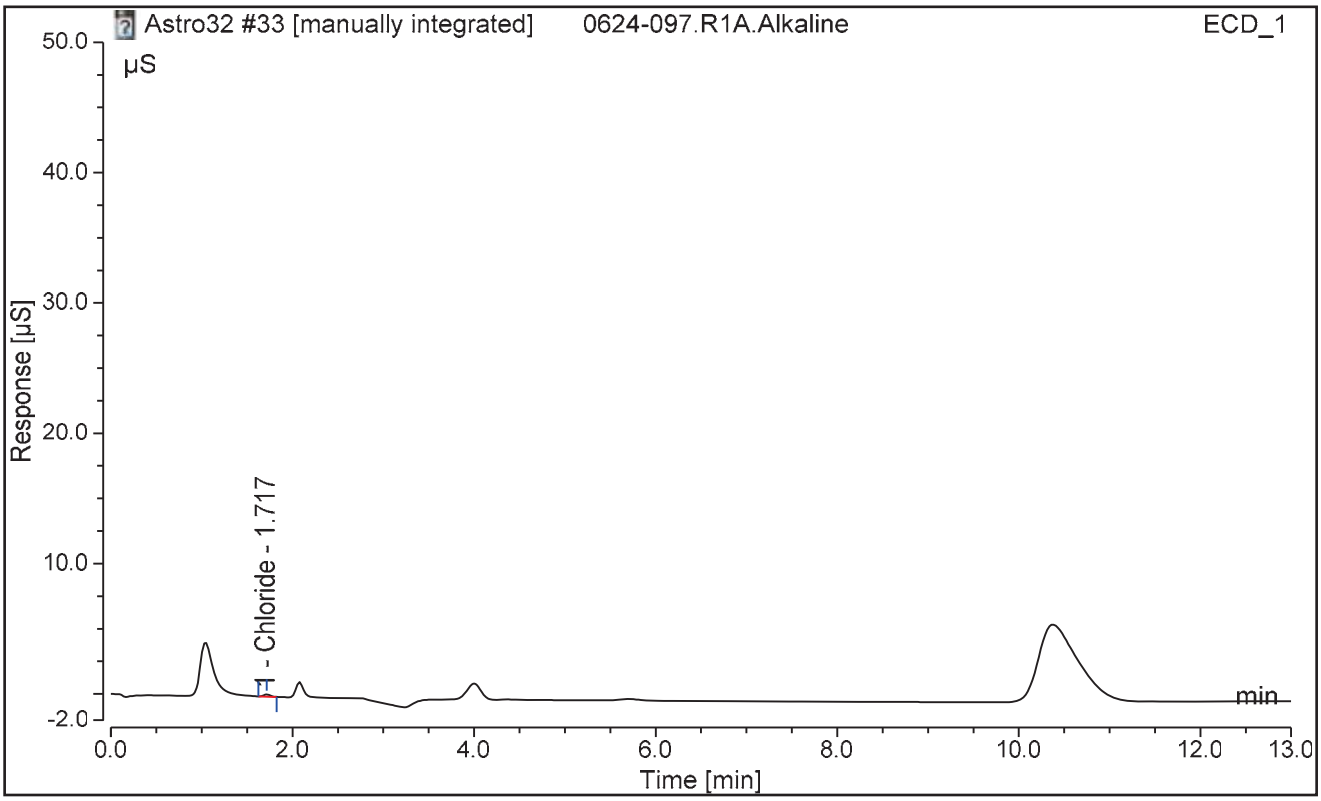
Montrose Air Quality Services- 30 Monroe Drive, Pelham Alabama 35124 • 205.358.1011 • Fax 205.358.1036 • www.montrose-env.com Rev. 10/29/2014 KMR

22.5°C Fluke 1, good condition Amm3 06.11.24

Raw Data

Peak Analysis Report

Sample Name:	**0624-097.R1A.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**2.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 22:45**	Run Time:	**13.00**

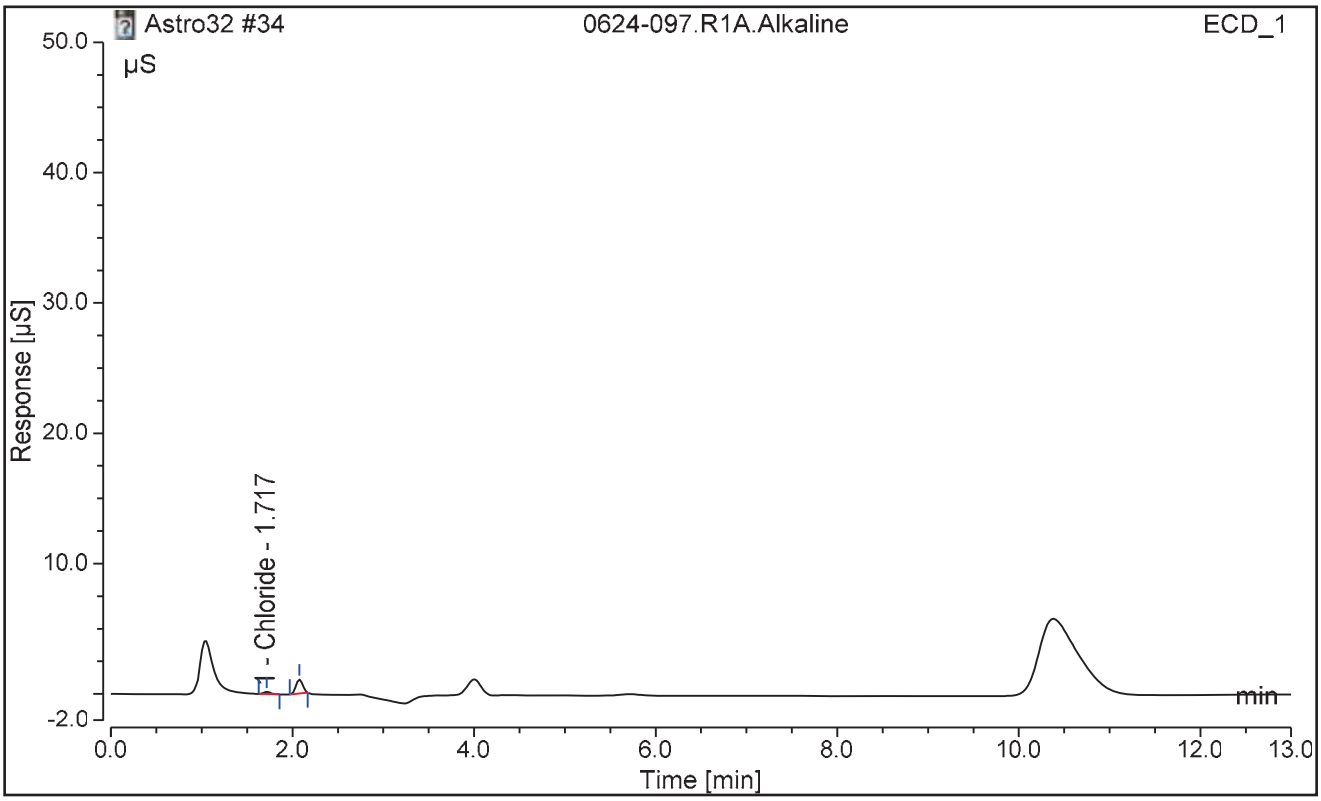


Analyst Comment: NI KLB 6/14/24

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.72	Chloride	0.013	0.174	0.18864	FALSE	TRUE

Peak Analysis Report

Sample Name:	**0624-097.R1A.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**2.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 23:00**	Run Time:	**13.00**

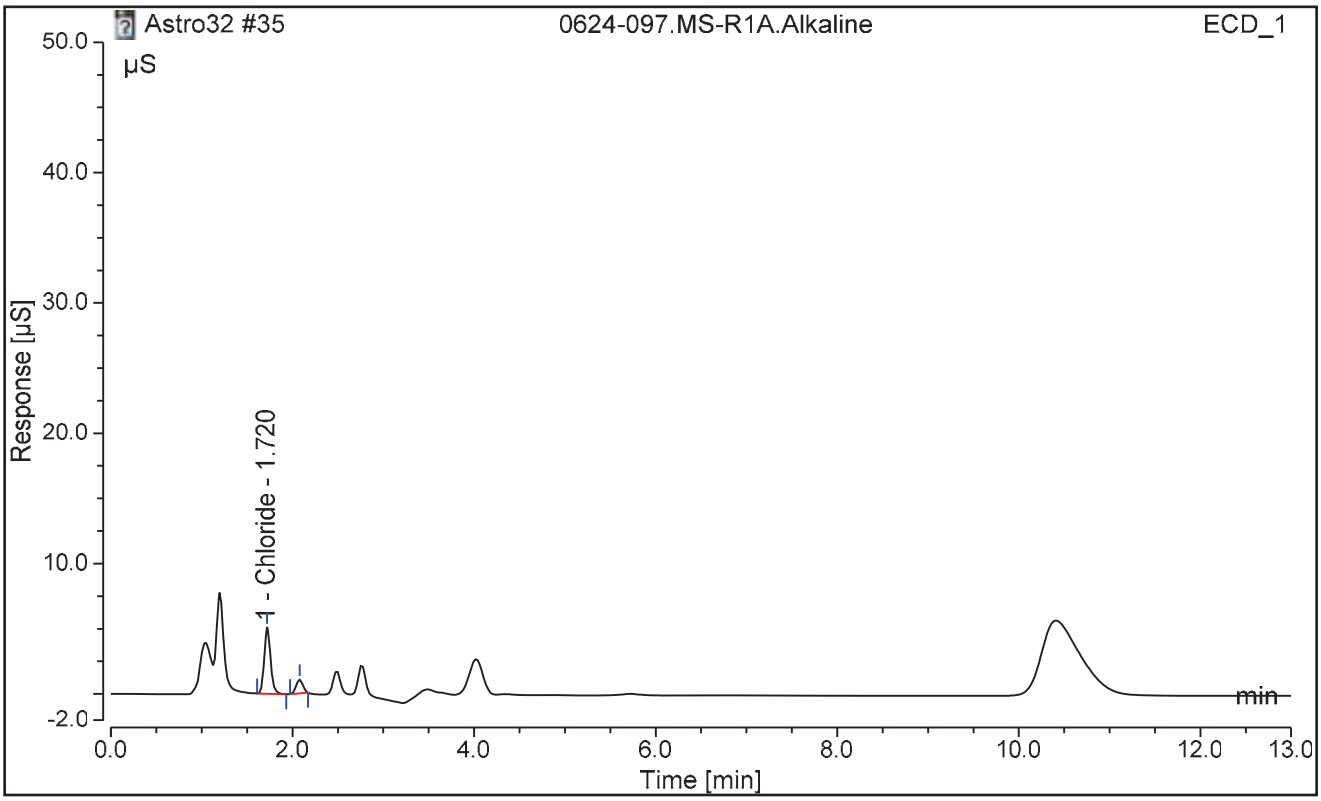


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.72	Chloride	0.014	0.172	0.18996	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.MS-R1A.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 23:15**	Run Time:	**13.00**

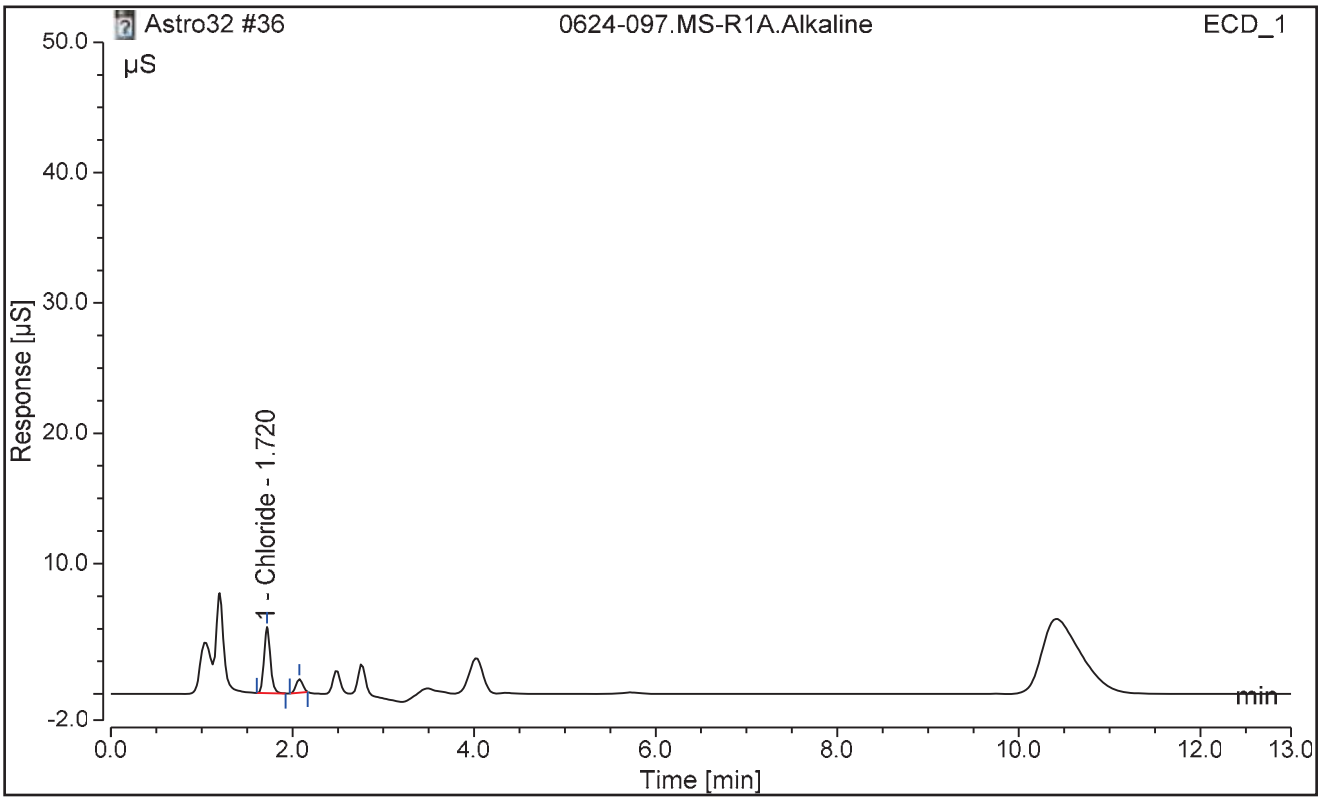


Analyst Comment: 2x

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.72	Chloride	0.411	5.081	4.93717	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.MS-R1A.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 23:31**	Run Time:	**13.00**

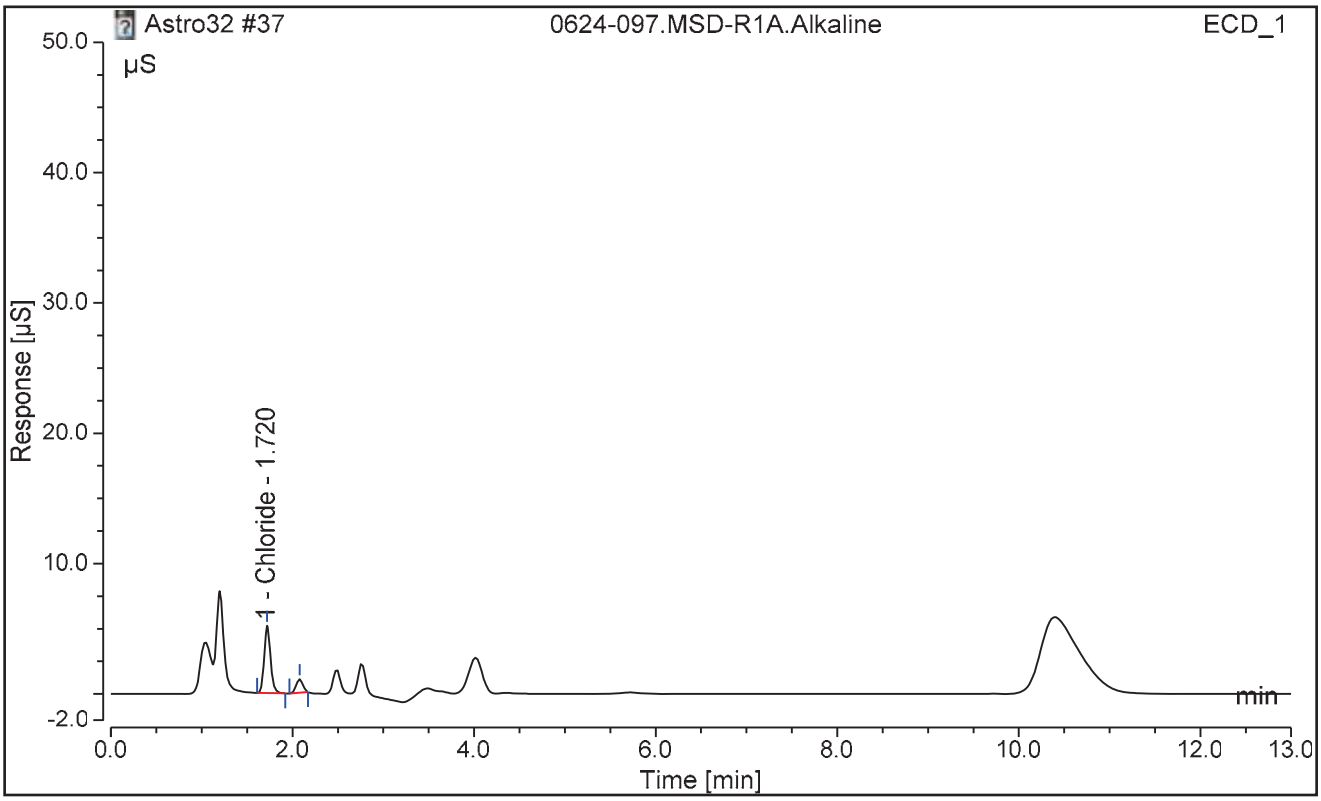


Analyst Comment: 2x

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.72	Chloride	0.409	5.062	4.91584	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.MSD-R1A.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 23:46**	Run Time:	**13.00**

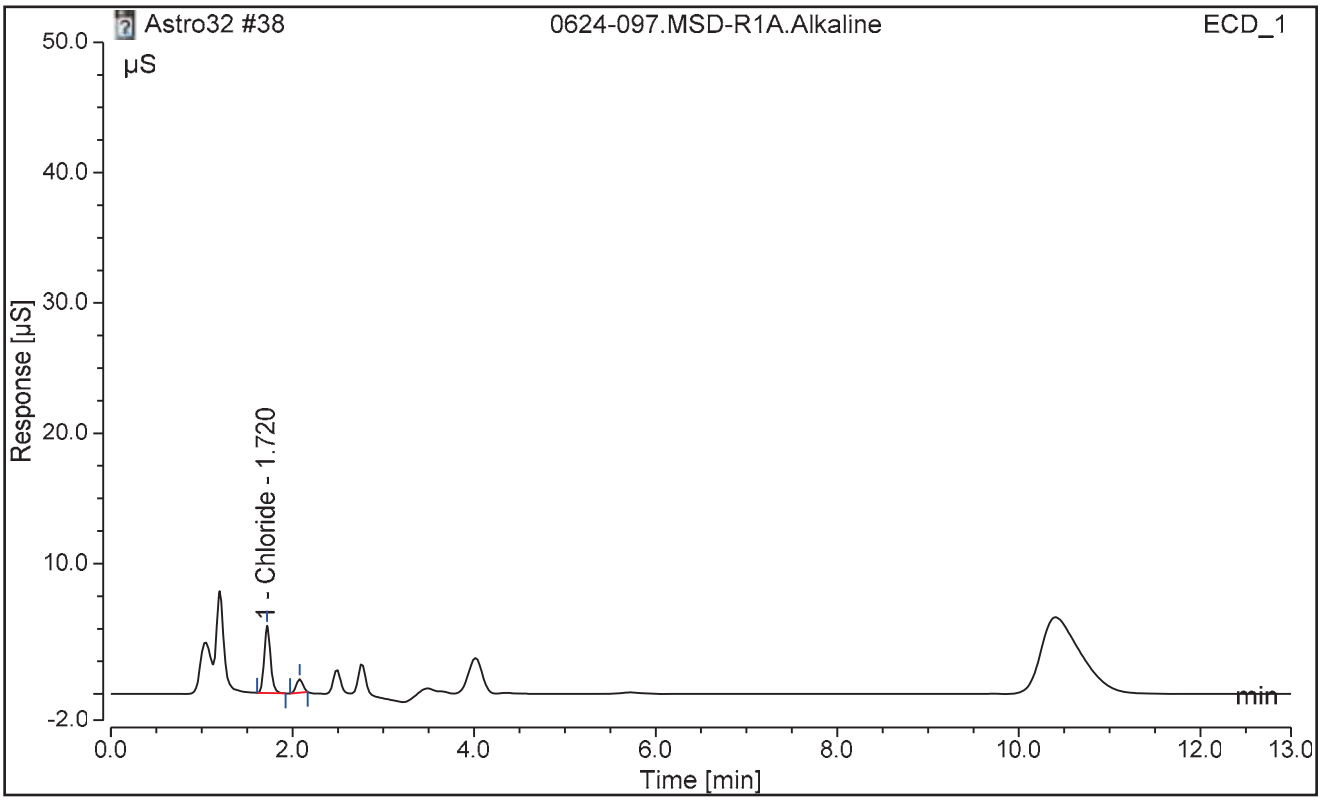


Analyst Comment: 2x

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.72	Chloride	0.416	5.163	5.00006	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.MSD-R1A.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 00:01**	Run Time:	**13.00**

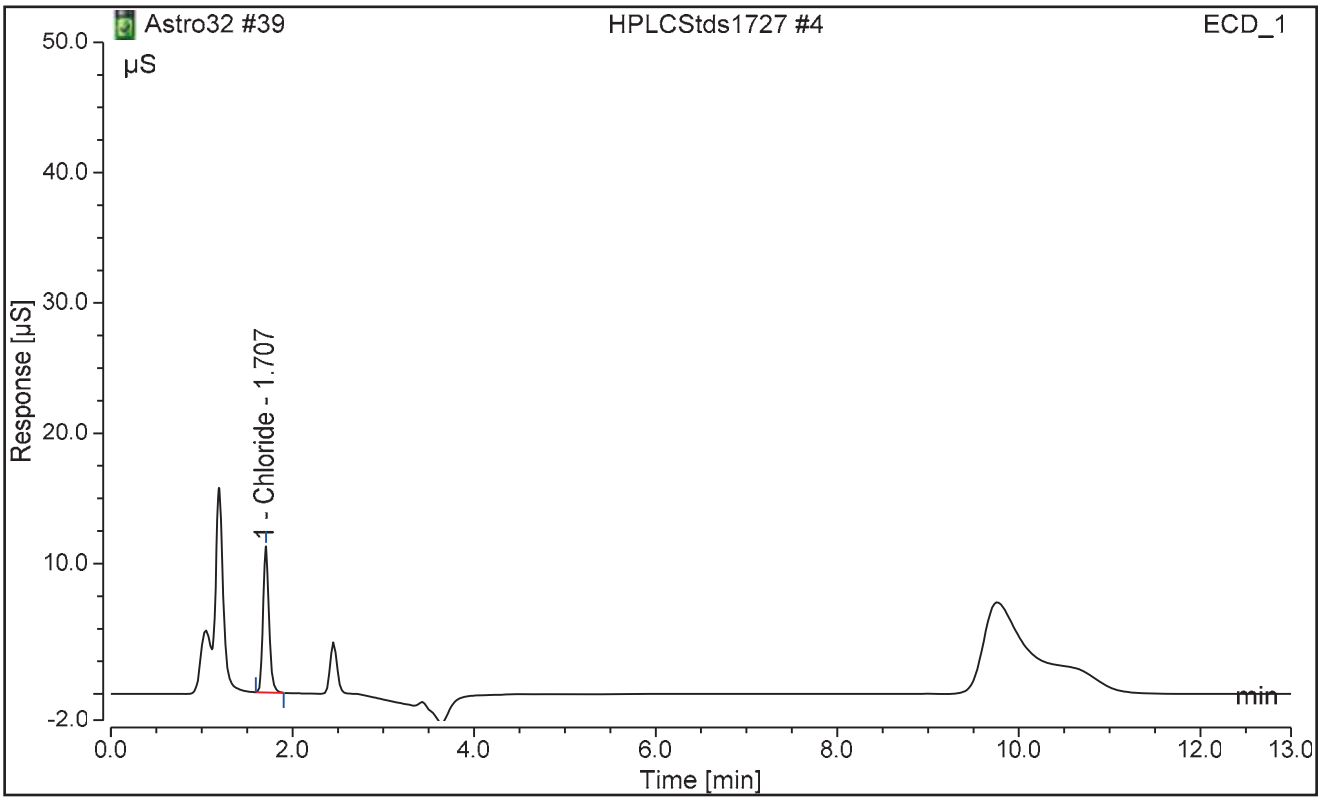


Analyst Comment: 2x

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.72	Chloride	0.418	5.165	5.01505	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 00:16**	Run Time:	**13.00**

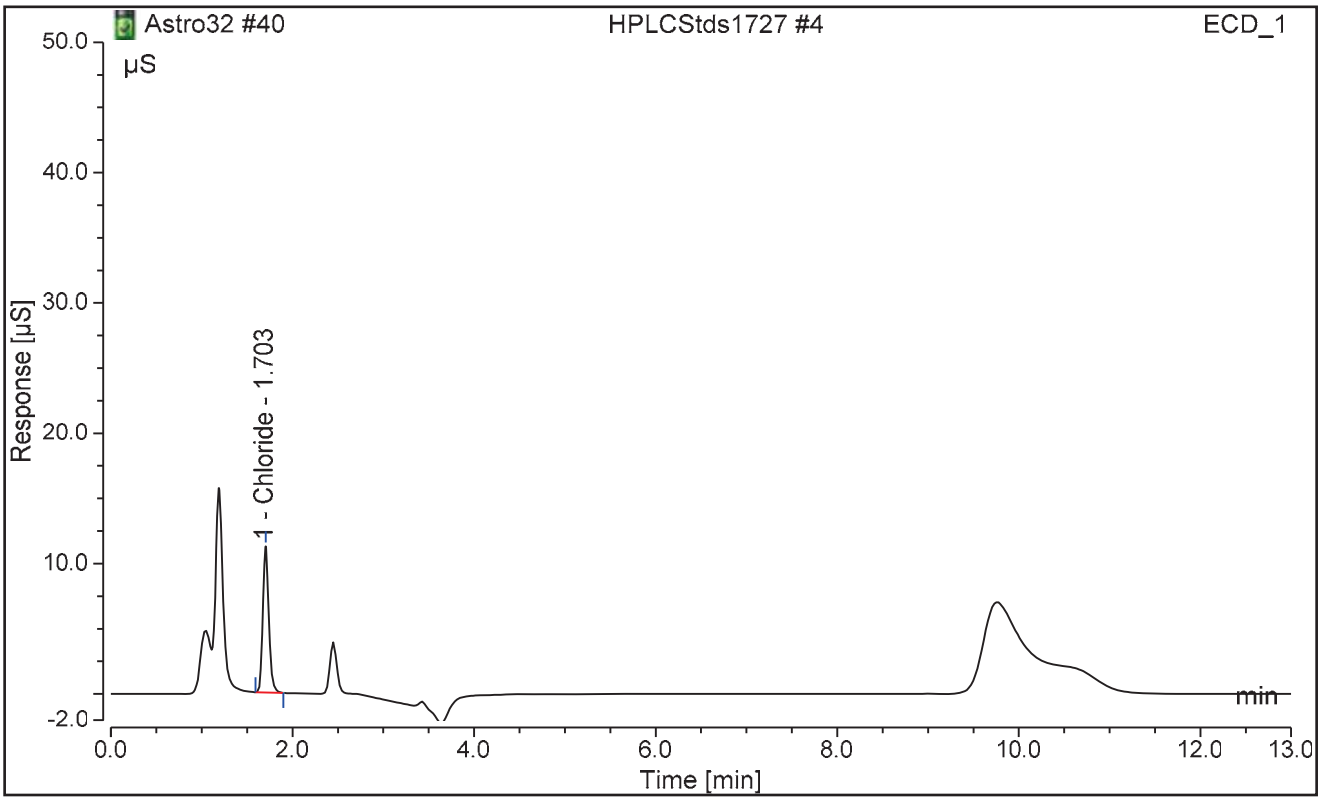


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.71	Chloride	0.853	11.200	9.92060	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 00:31**	Run Time:	**13.00**

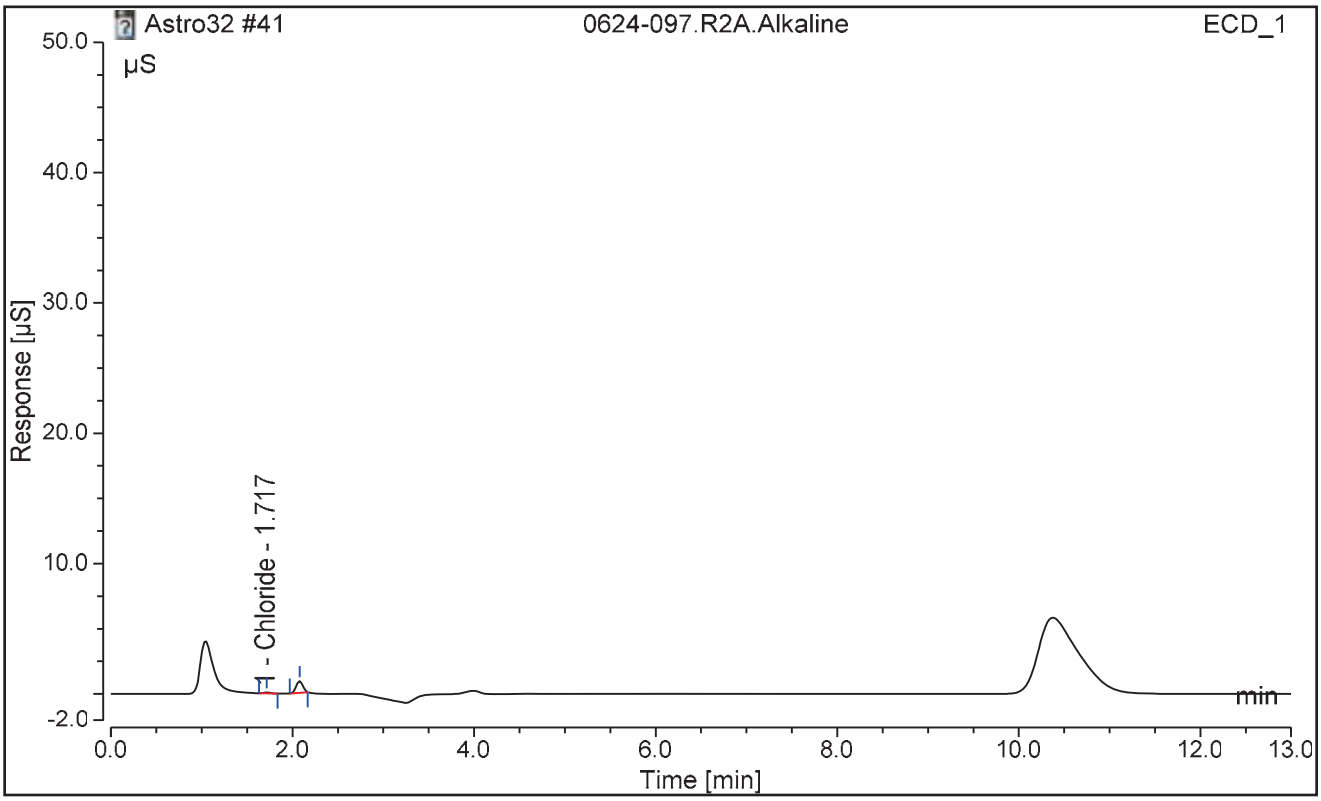


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	0.852	11.216	9.91097	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.R2A.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**2.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 00:46**	Run Time:	**13.00**

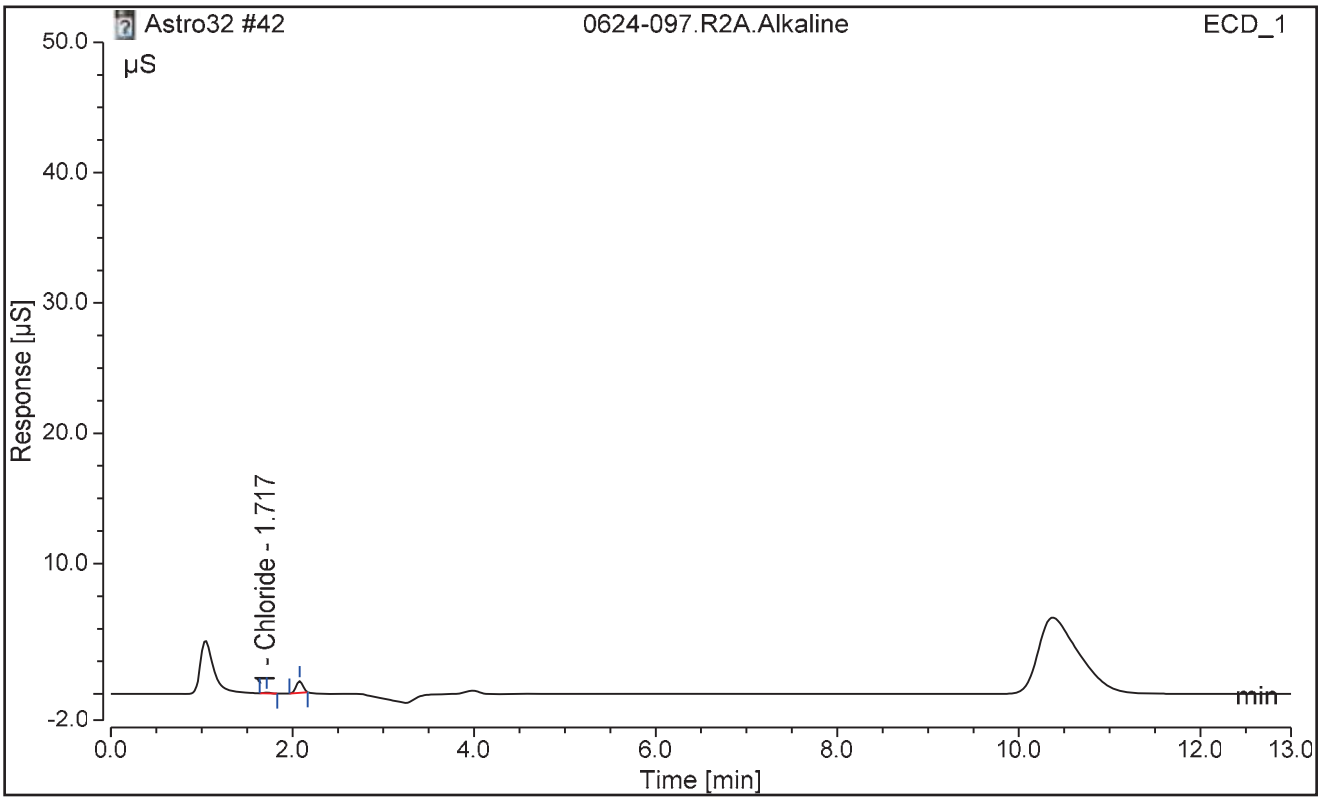


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.72	Chloride	0.006	0.084	0.10231	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.R2A.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**2.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 01:01**	Run Time:	**13.00**

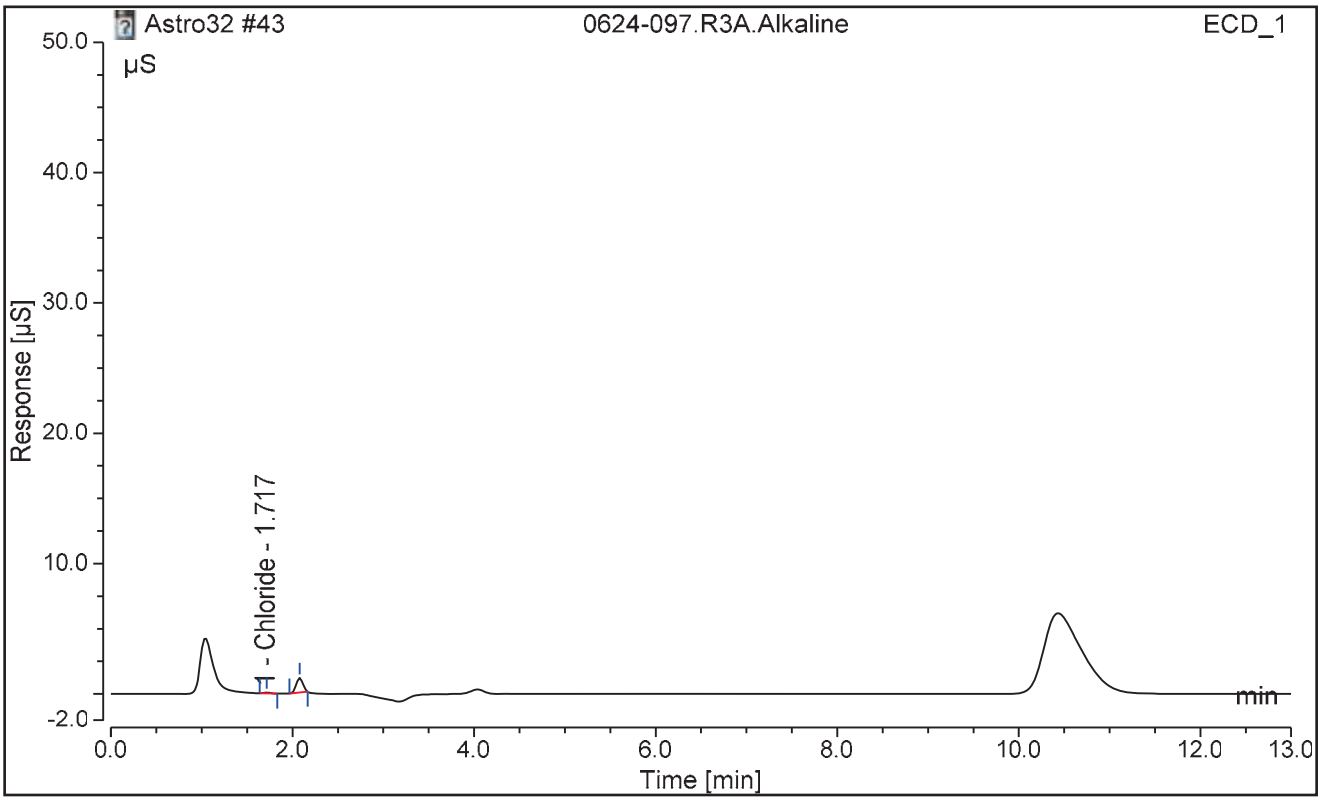


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.72	Chloride	0.006	0.078	0.09647	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.R3A.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**2.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 01:16**	Run Time:	**13.00**

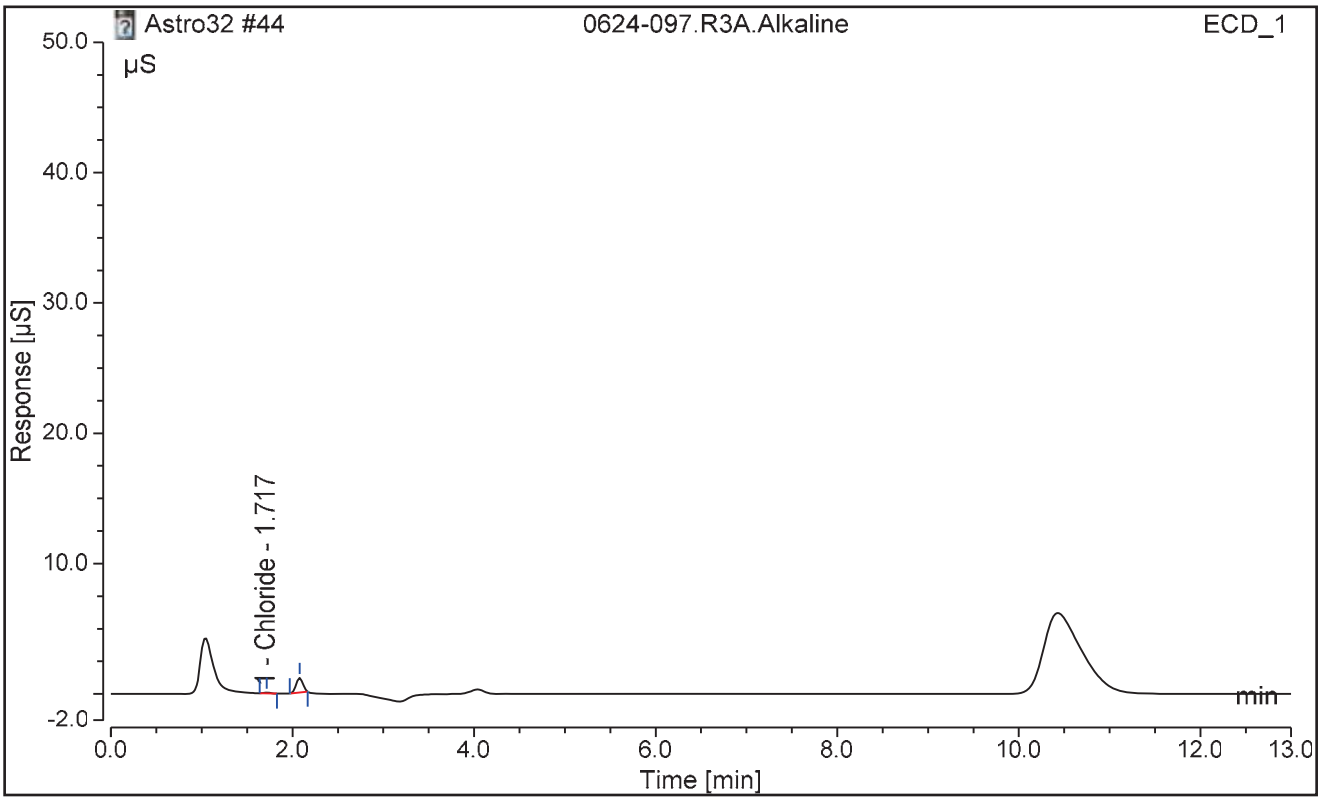


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.72	Chloride	0.005	0.066	0.08571	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.R3A.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**2.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 01:32**	Run Time:	**13.00**

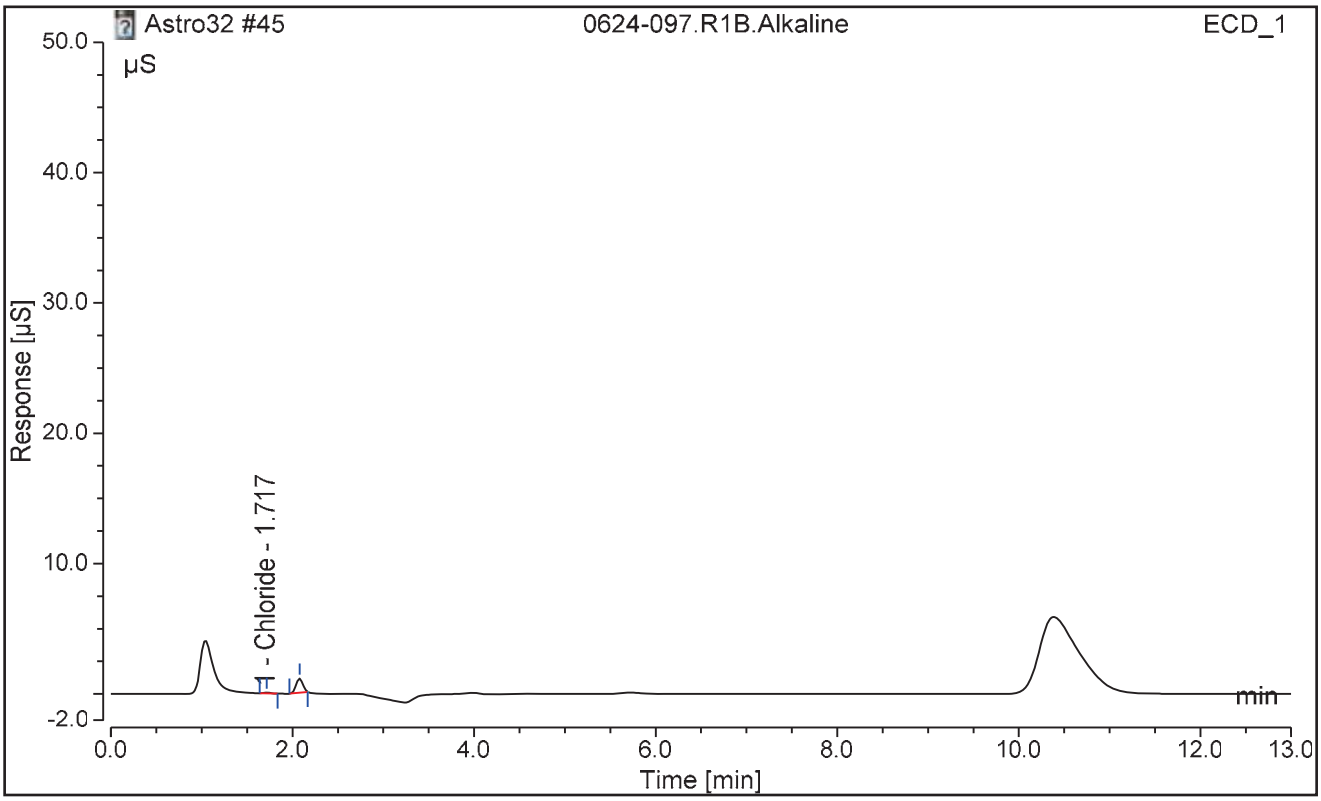


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.72	Chloride	0.005	0.065	0.08456	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.R1B.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**2.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 01:47**	Run Time:	**13.00**

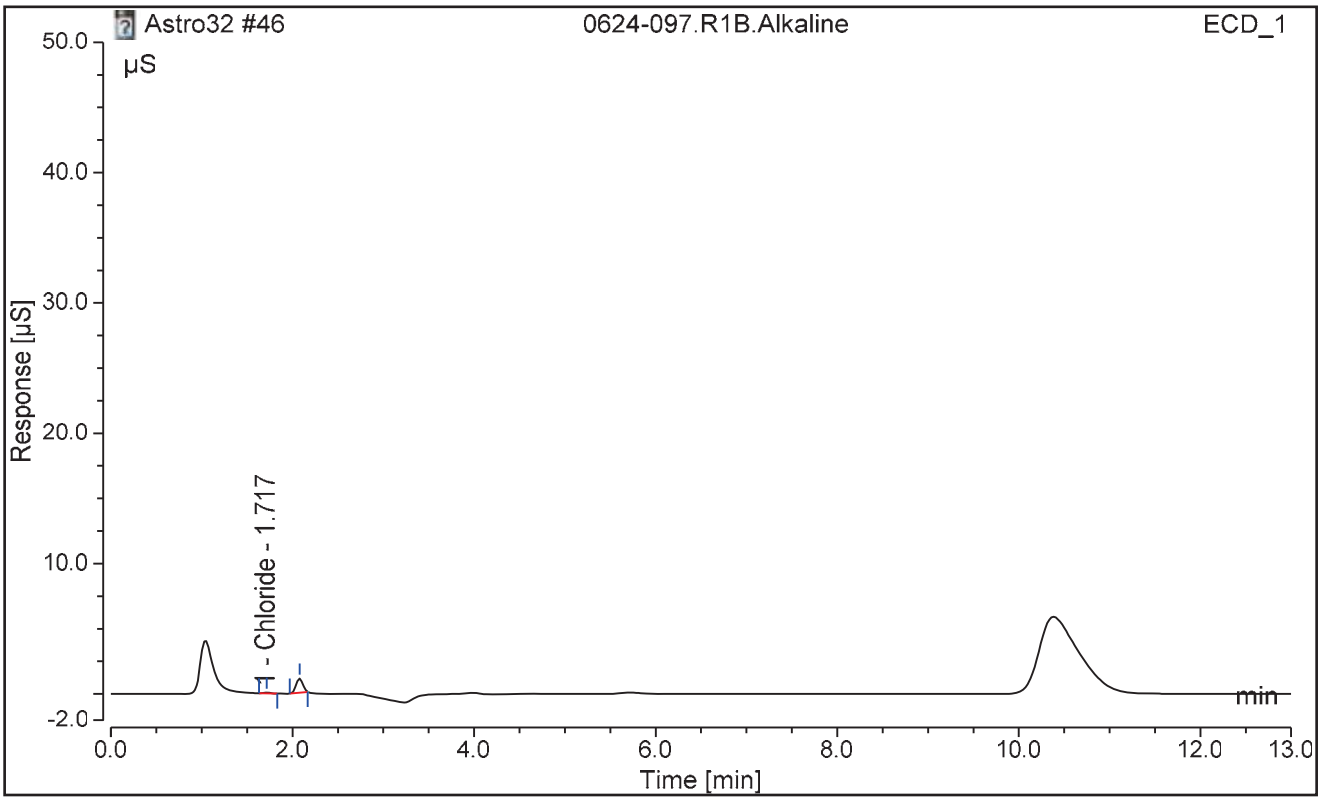


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.72	Chloride	0.005	0.070	0.08947	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.R1B.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**2.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 02:02**	Run Time:	**13.00**

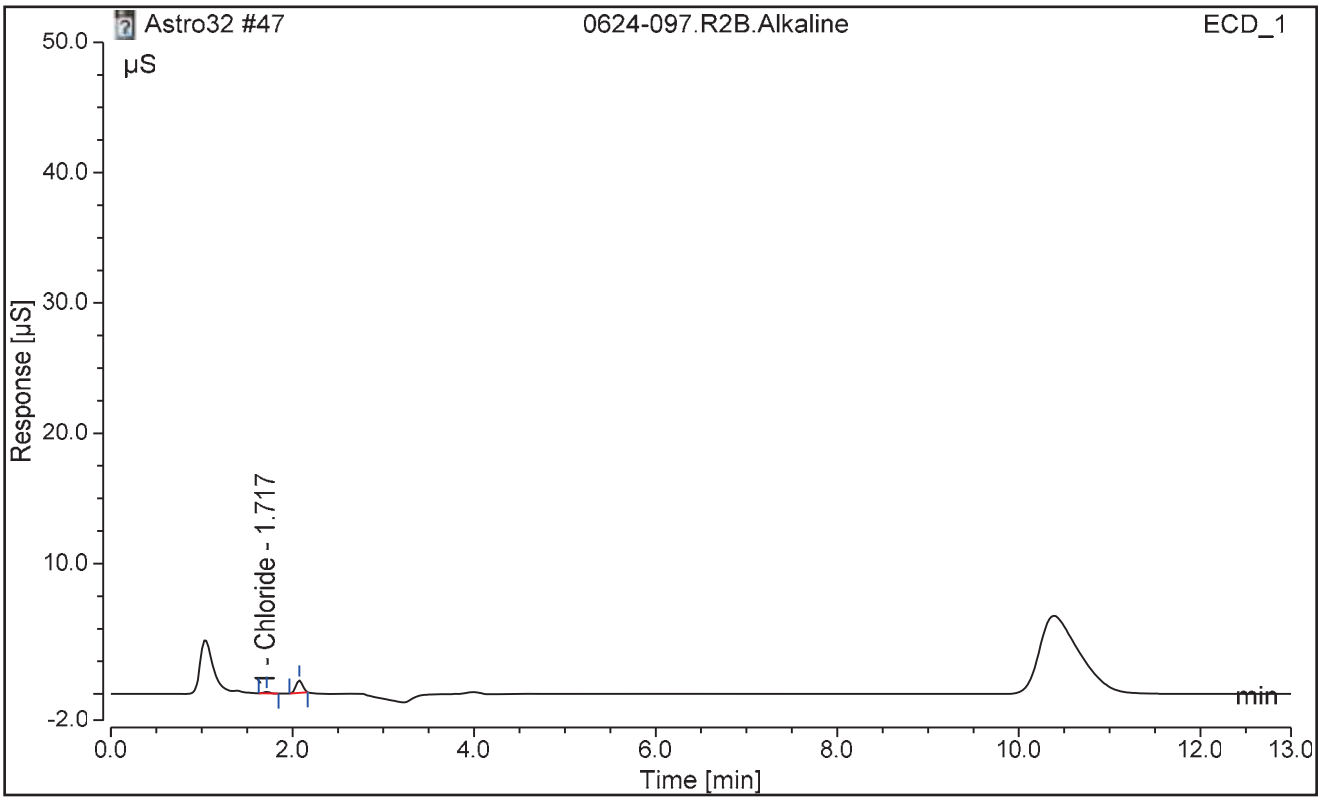


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.72	Chloride	0.005	0.070	0.08928	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.R2B.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**2.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 02:17**	Run Time:	**13.00**

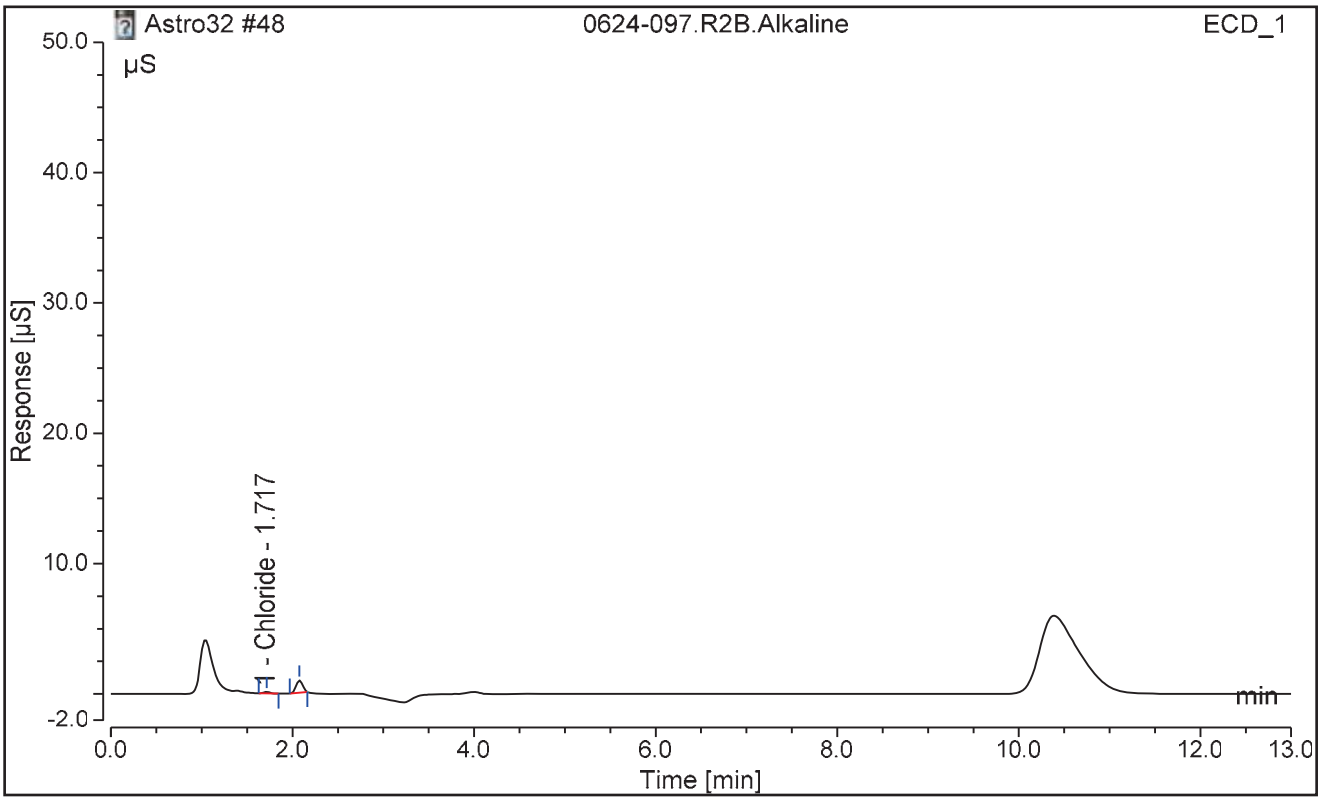


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.72	Chloride	0.010	0.124	0.14234	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.R2B.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**2.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 02:32**	Run Time:	**13.00**

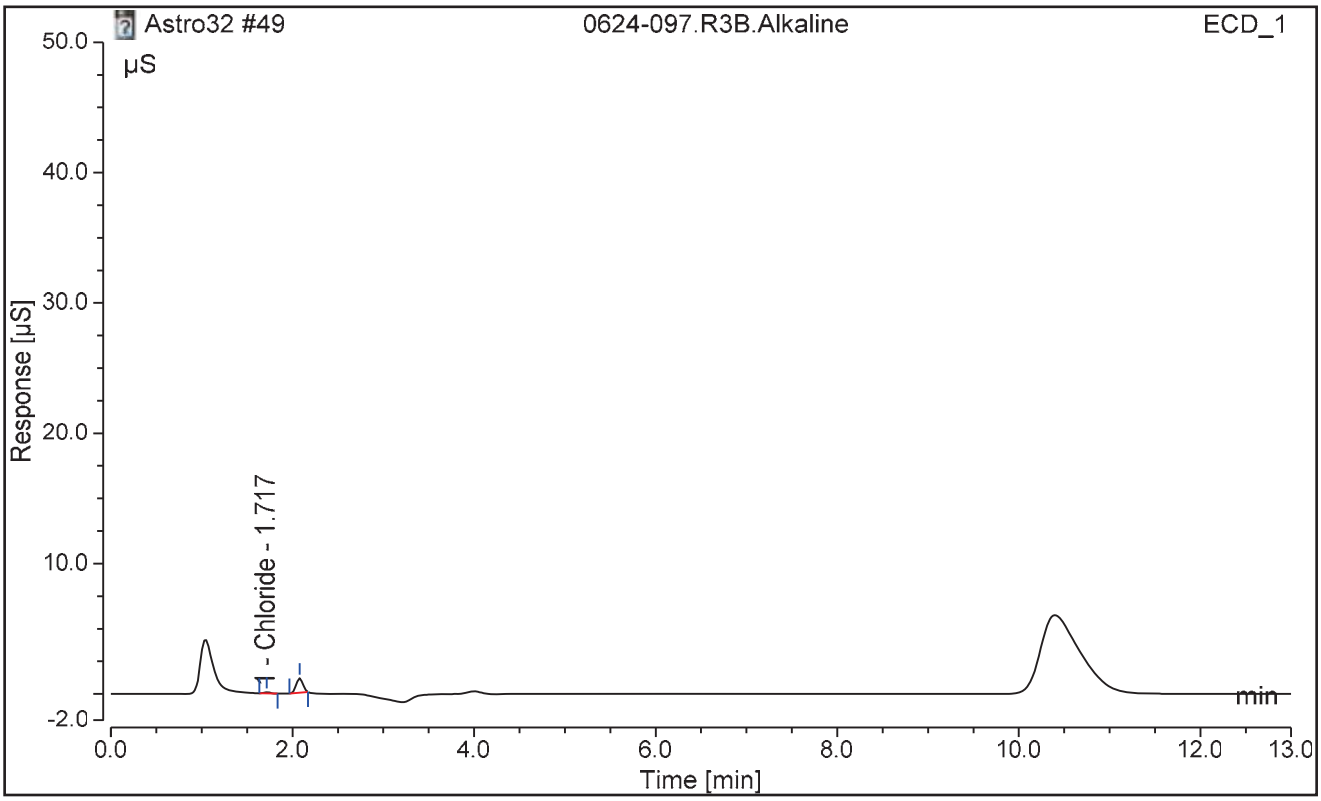


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.72	Chloride	0.010	0.124	0.14243	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.R3B.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**2.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 02:47**	Run Time:	**13.00**

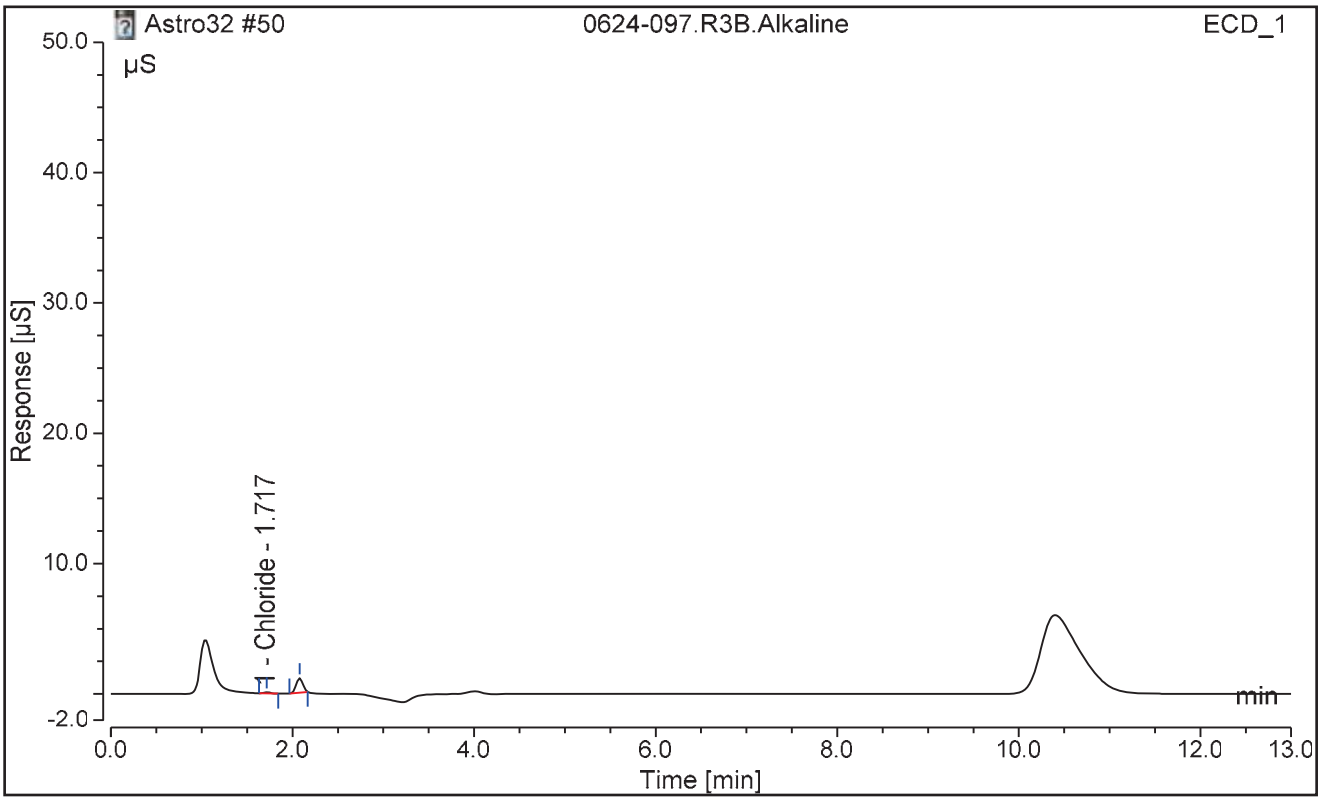


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.72	Chloride	0.007	0.089	0.10774	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.R3B.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**2.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 03:02**	Run Time:	**13.00**

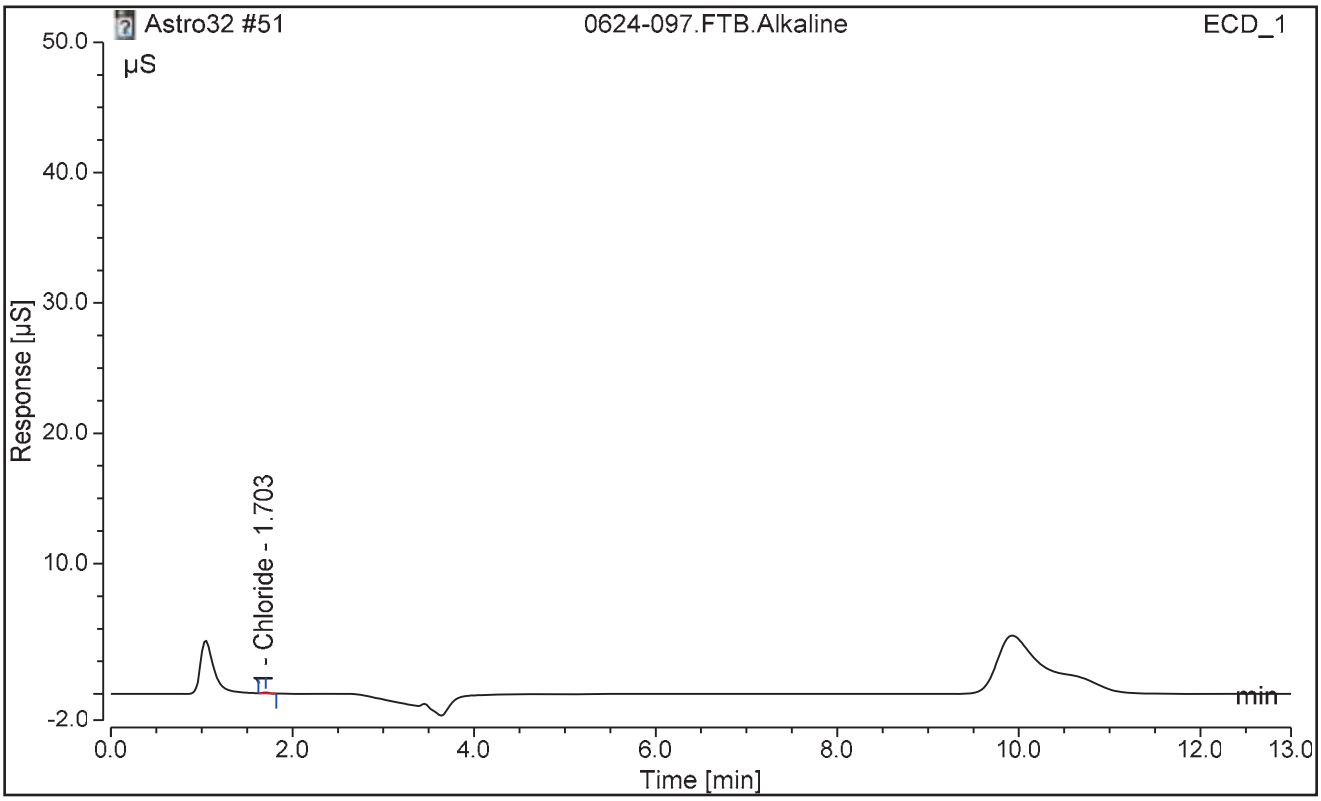


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.72	Chloride	0.007	0.088	0.10766	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.FTB.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**2.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 03:17**	Run Time:	**13.00**

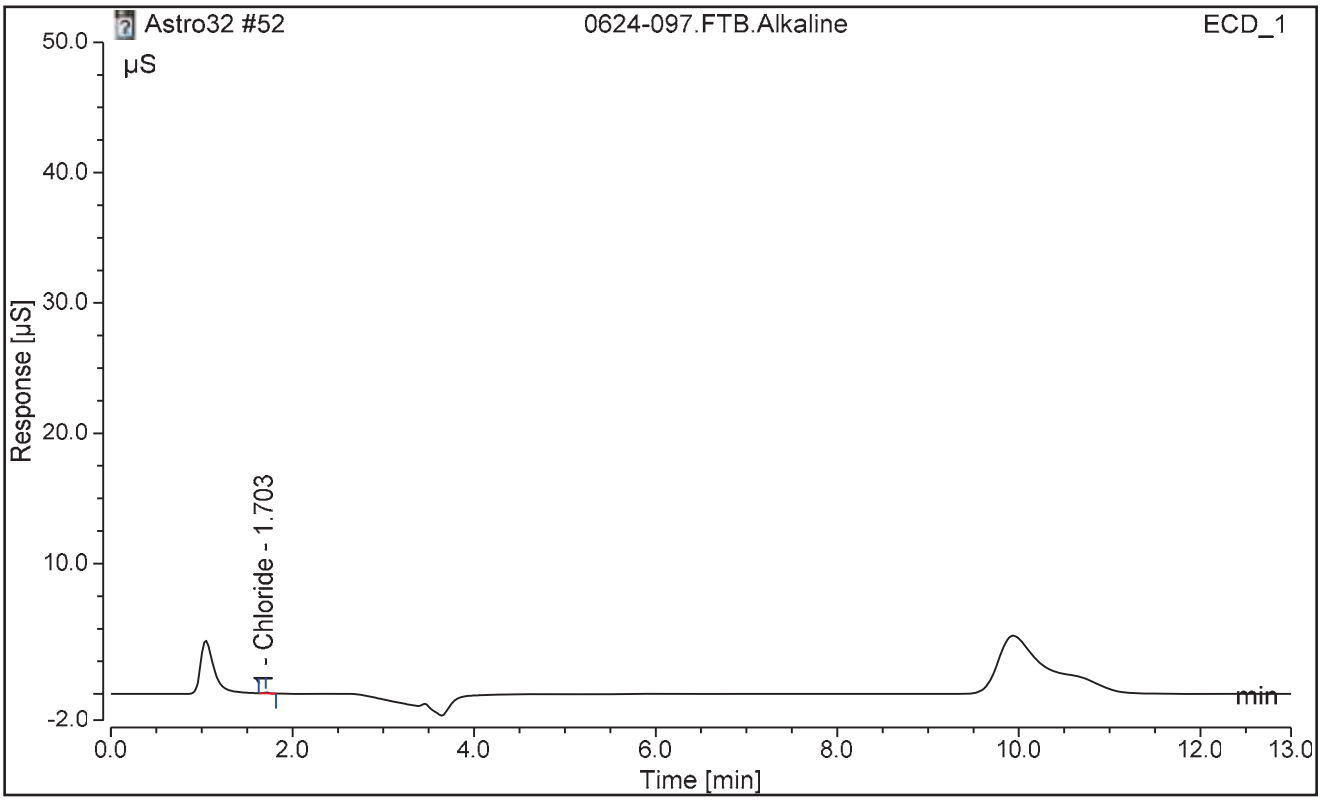


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	0.005	0.072	0.08520	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.FTB.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**2.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 03:33**	Run Time:	**13.00**

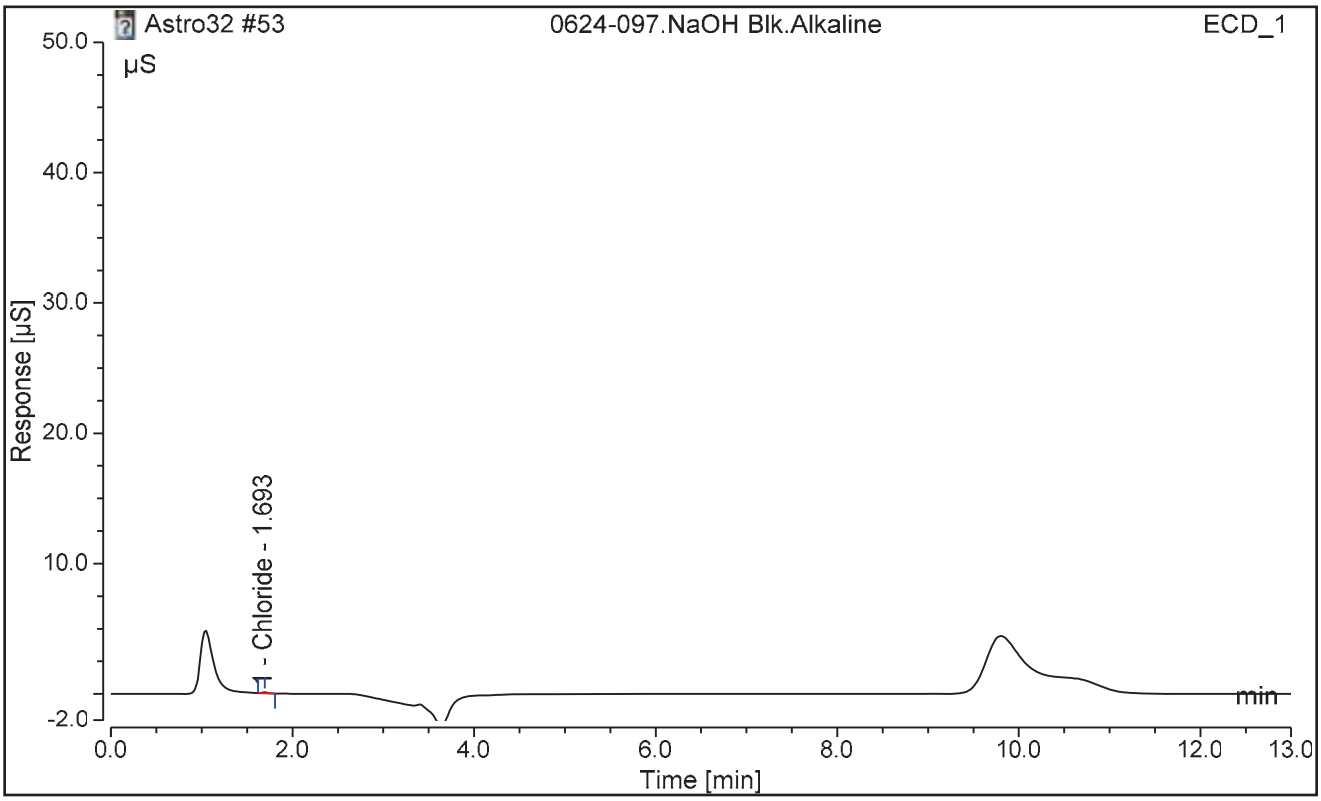


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	0.005	0.072	0.08581	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.NaOH Blk.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**2.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 03:48**	Run Time:	**13.00**

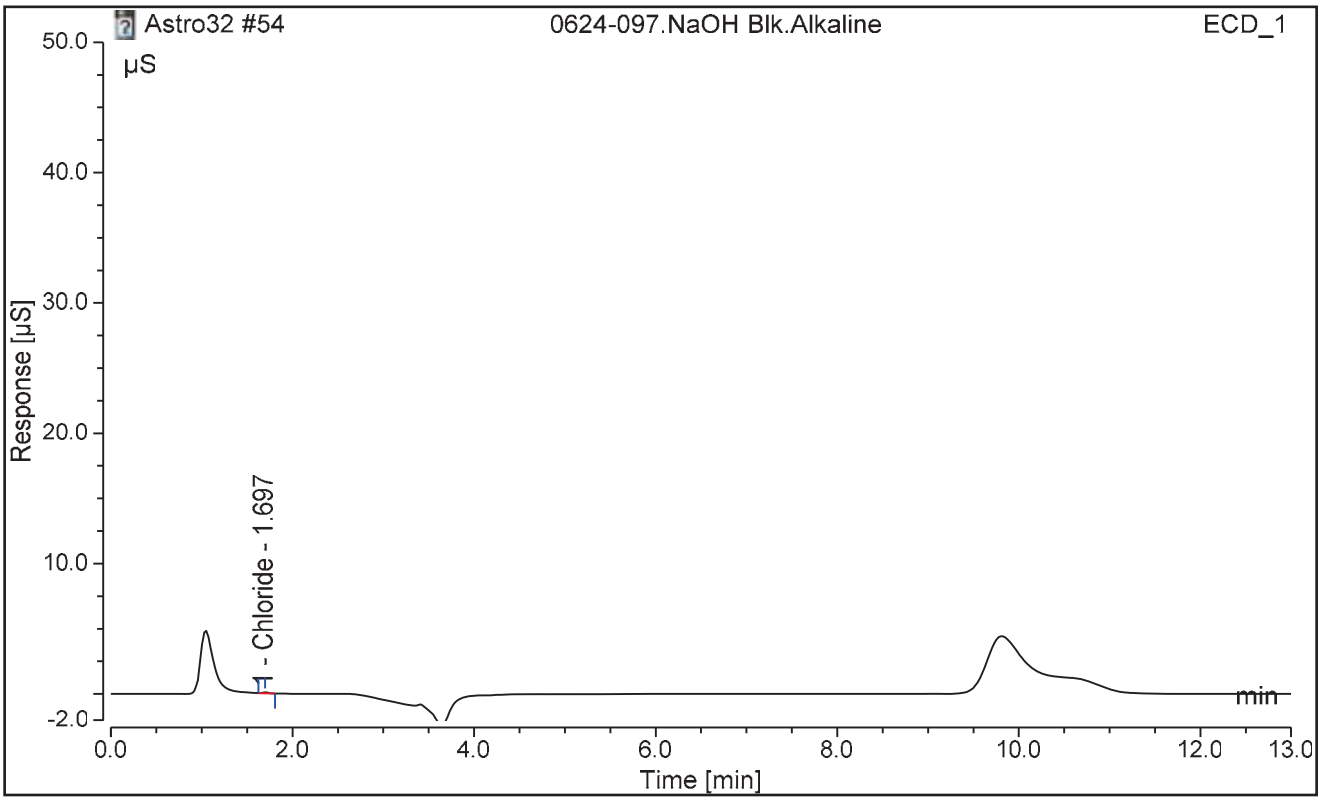


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.69	Chloride	0.005	0.074	0.08584	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.NaOH Blk.Alkaline**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**2.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 04:03**	Run Time:	**13.00**

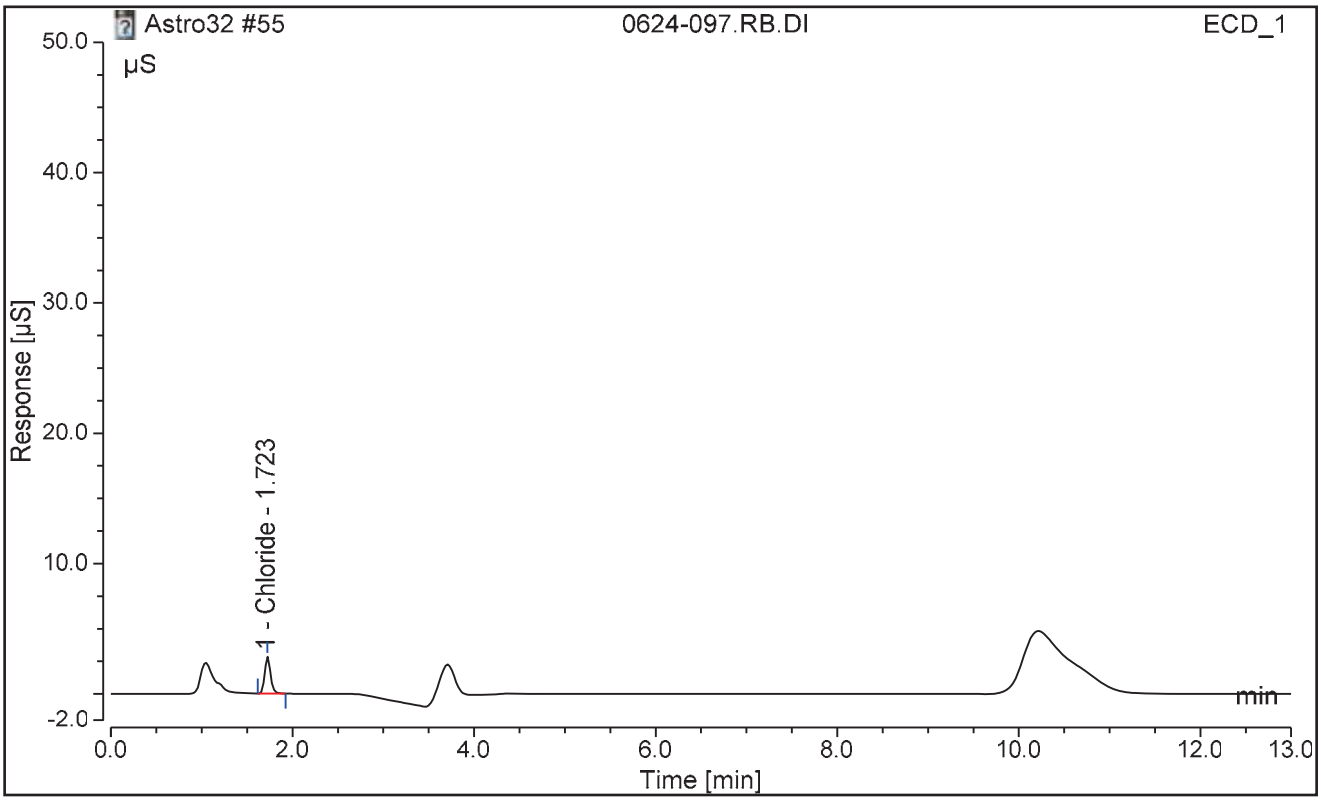


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	0.005	0.073	0.08568	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.RB.DI**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**2.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 04:18**	Run Time:	**13.00**

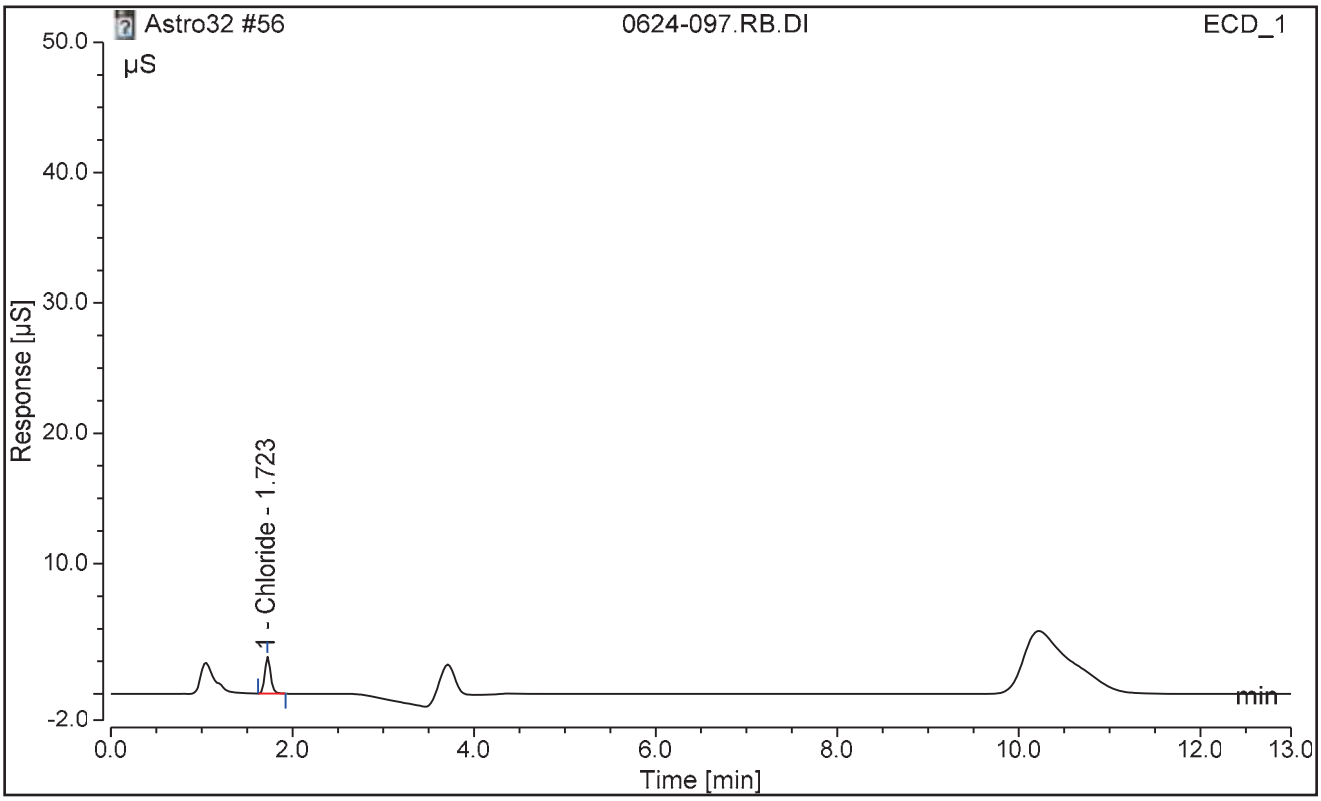


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.72	Chloride	0.212	2.831	2.59359	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.RB.DI**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**2.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 04:33**	Run Time:	**13.00**

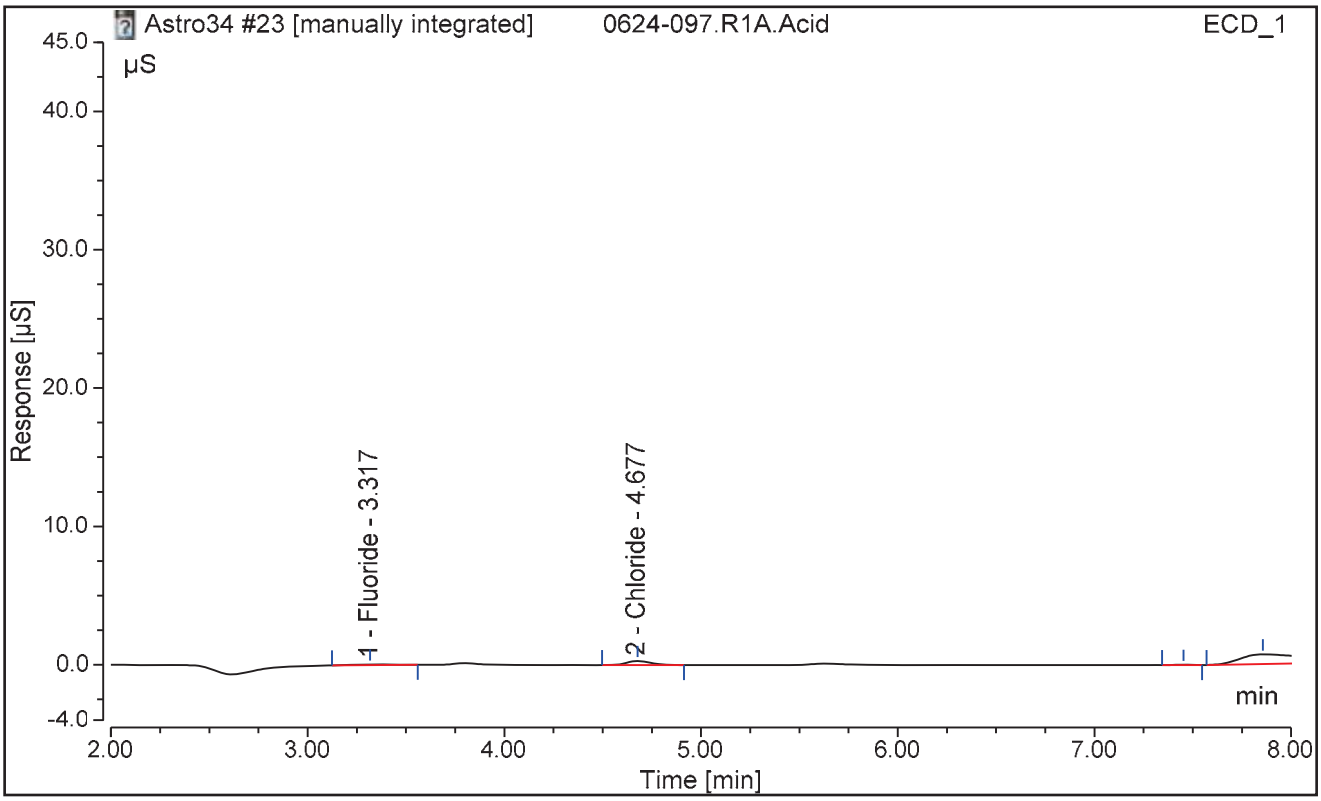


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.72	Chloride	0.213	2.835	2.60310	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.R1A.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 13:12**	Run Time:	**14.50**

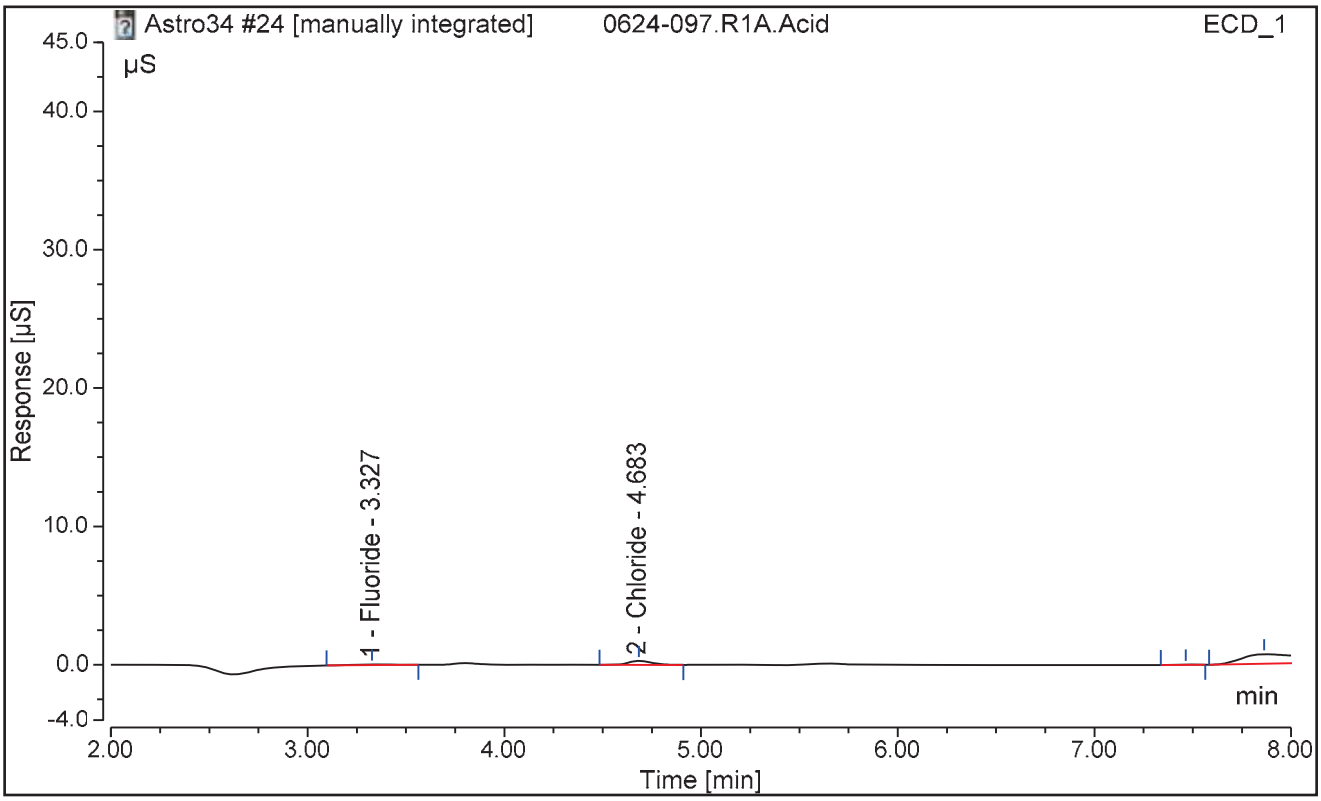


Analyst Comment: II KLB 6/17/24

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.012	0.064	0.11720	FALSE	TRUE

Peak Analysis Report

Sample Name:	**0624-097.R1A.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 13:29**	Run Time:	**14.50**



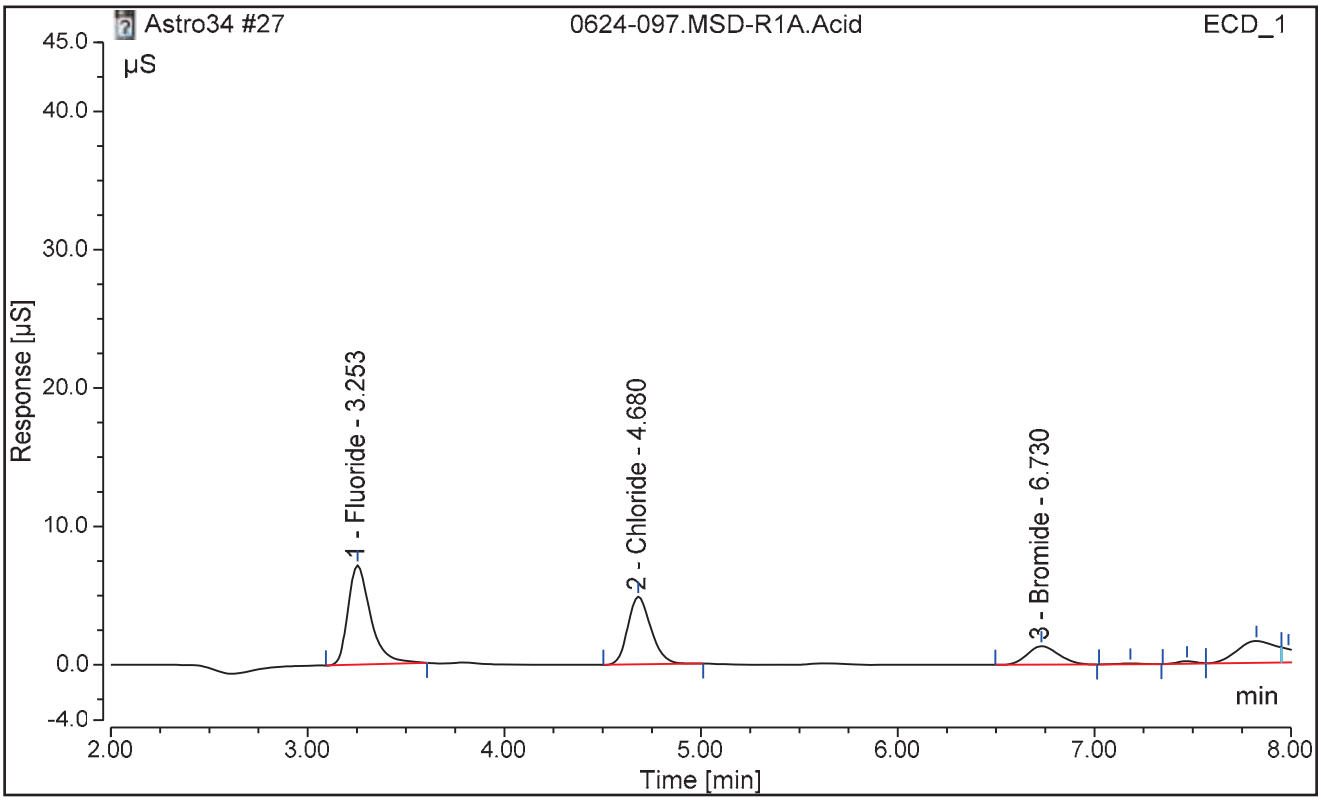
Analyst Comment: II KLB 6/17/24

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.012	0.059	0.11577	FALSE	TRUE

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Version 7.2.10.26812
SE010AS-031486-RT-2611-R1

Peak Analysis Report

Sample Name:	**0624-097.MSD-R1A.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 14:19**	Run Time:	**14.50**

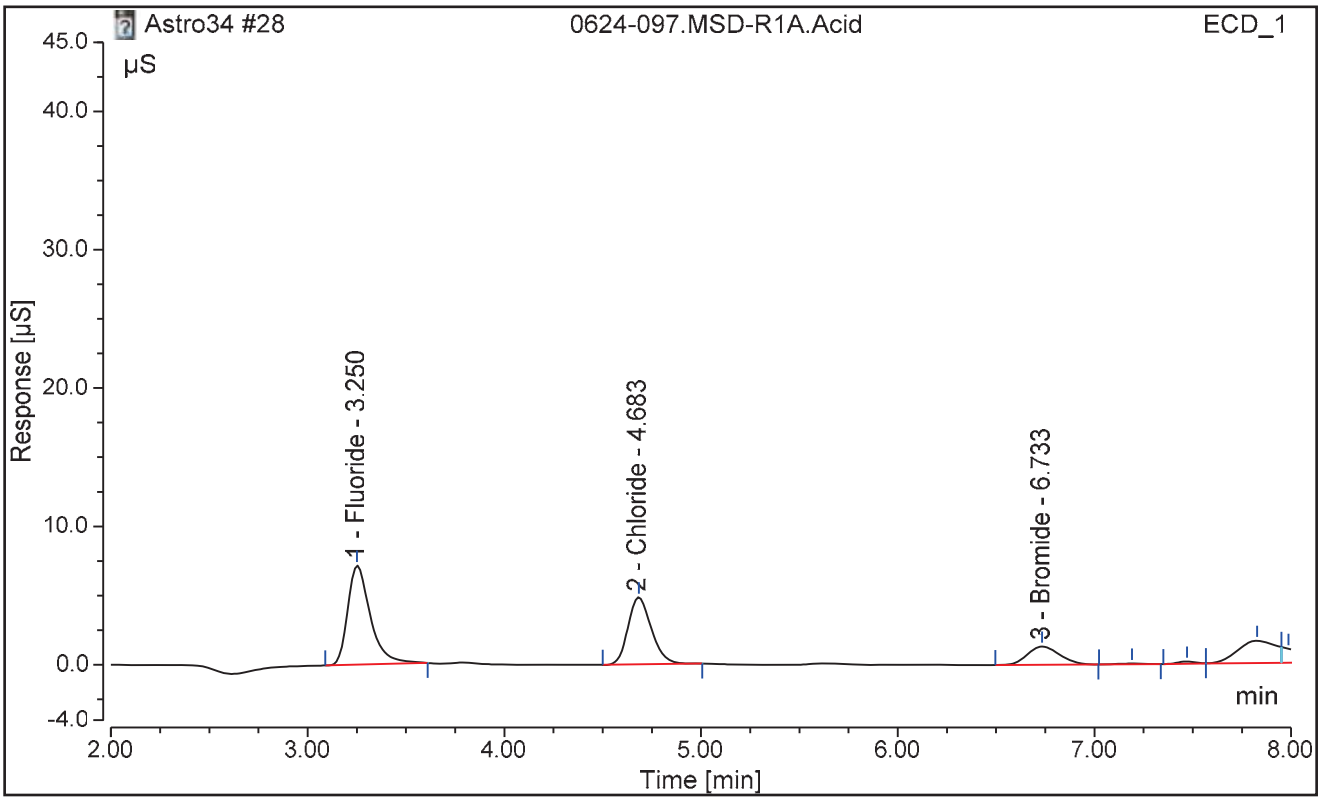


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.25	Fluoride	0.954	7.180	4.82772	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.MSD-R1A.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 14:36**	Run Time:	**14.50**

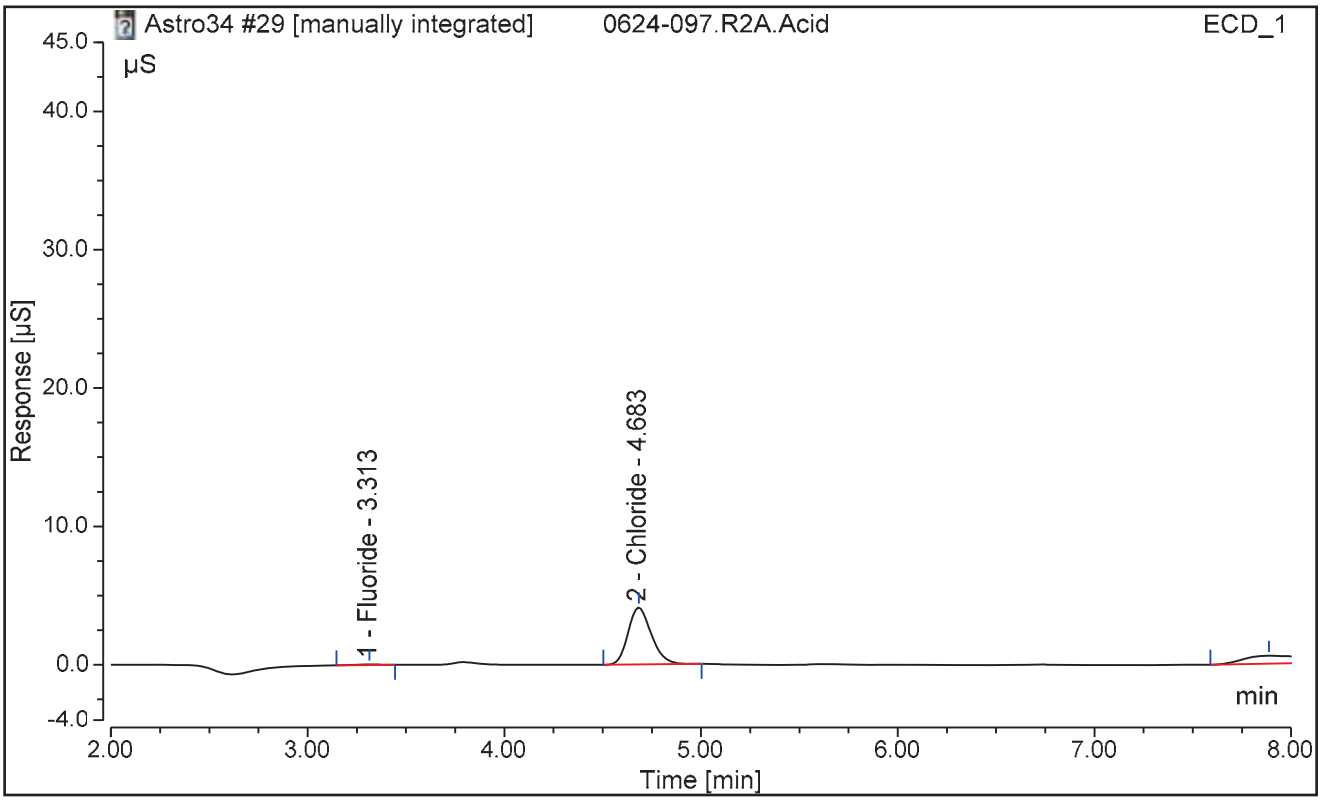


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.25	Fluoride	0.958	7.161	4.84889	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.R2A.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 14:52**	Run Time:	**14.50**

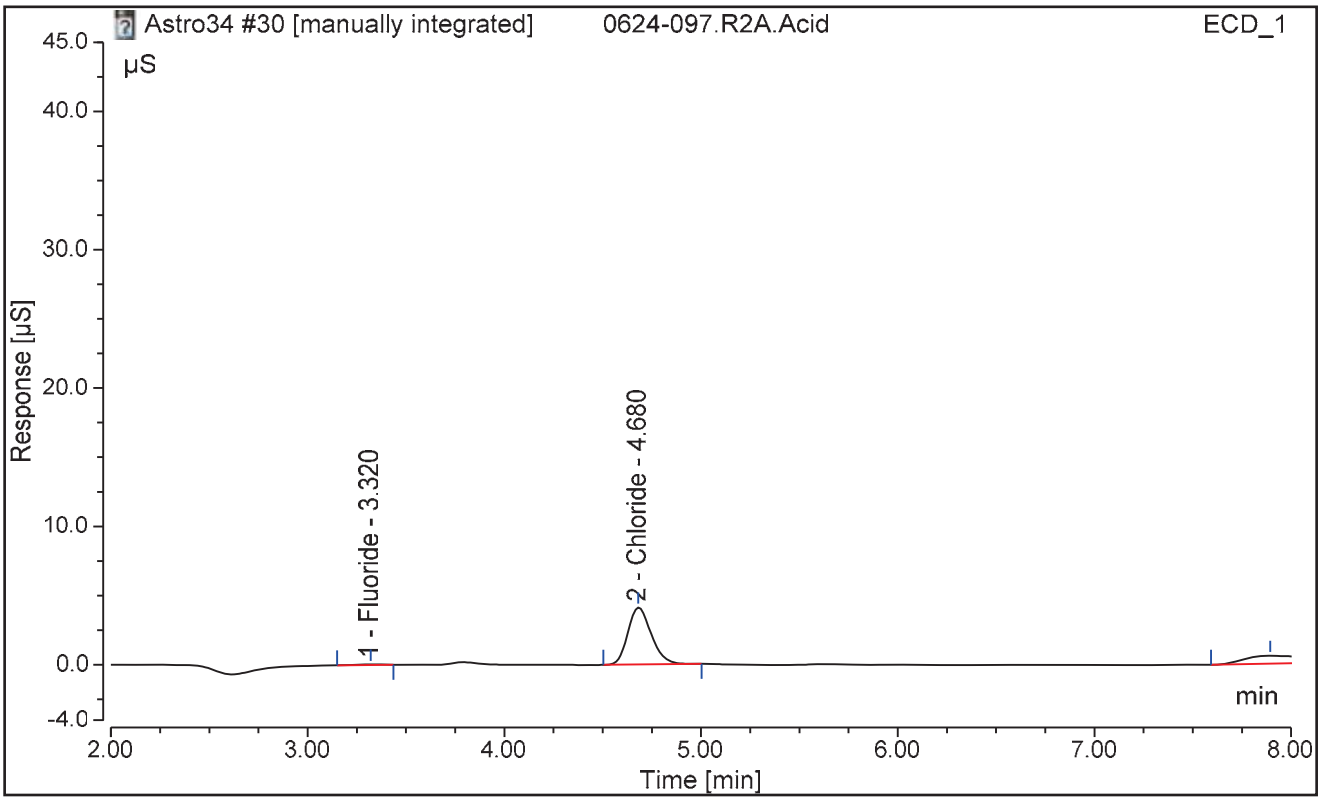


Analyst Comment: NI KLB 6/17/24

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.31	Fluoride	0.006	0.035	0.08362	FALSE	TRUE

Peak Analysis Report

Sample Name:	**0624-097.R2A.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 15:09**	Run Time:	**14.50**



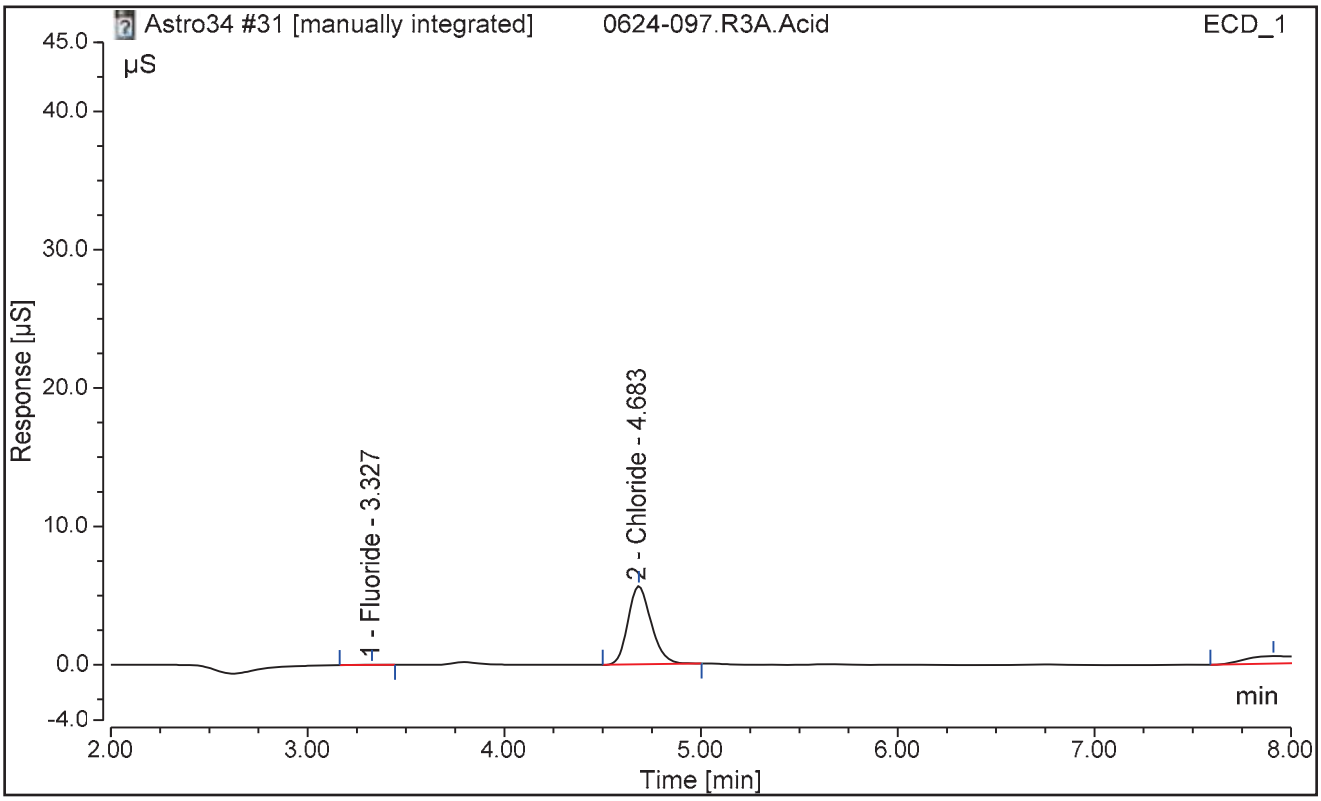
Analyst Comment: NI KLB 6/17/24

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.004	0.027	0.07705	FALSE	TRUE

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Version 7.2.10.26812
SE010AS-031486-RT-2611-R1

Peak Analysis Report

Sample Name:	**0624-097.R3A.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 15:25**	Run Time:	**14.50**

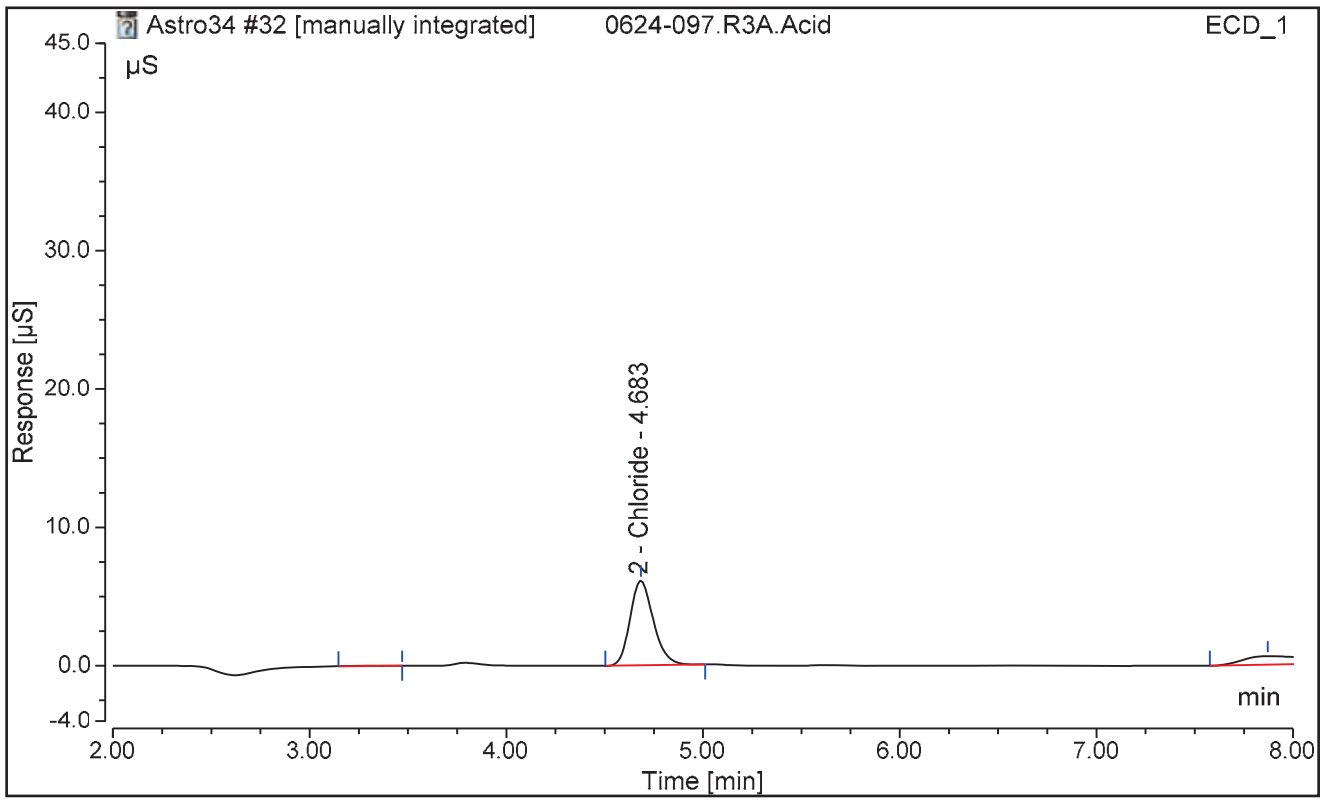


Analyst Comment: NI KLB 6/17/24

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.003	0.017	0.06891	FALSE	TRUE

Peak Analysis Report

Sample Name:	**0624-097.R3A.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 15:42**	Run Time:	**14.50**

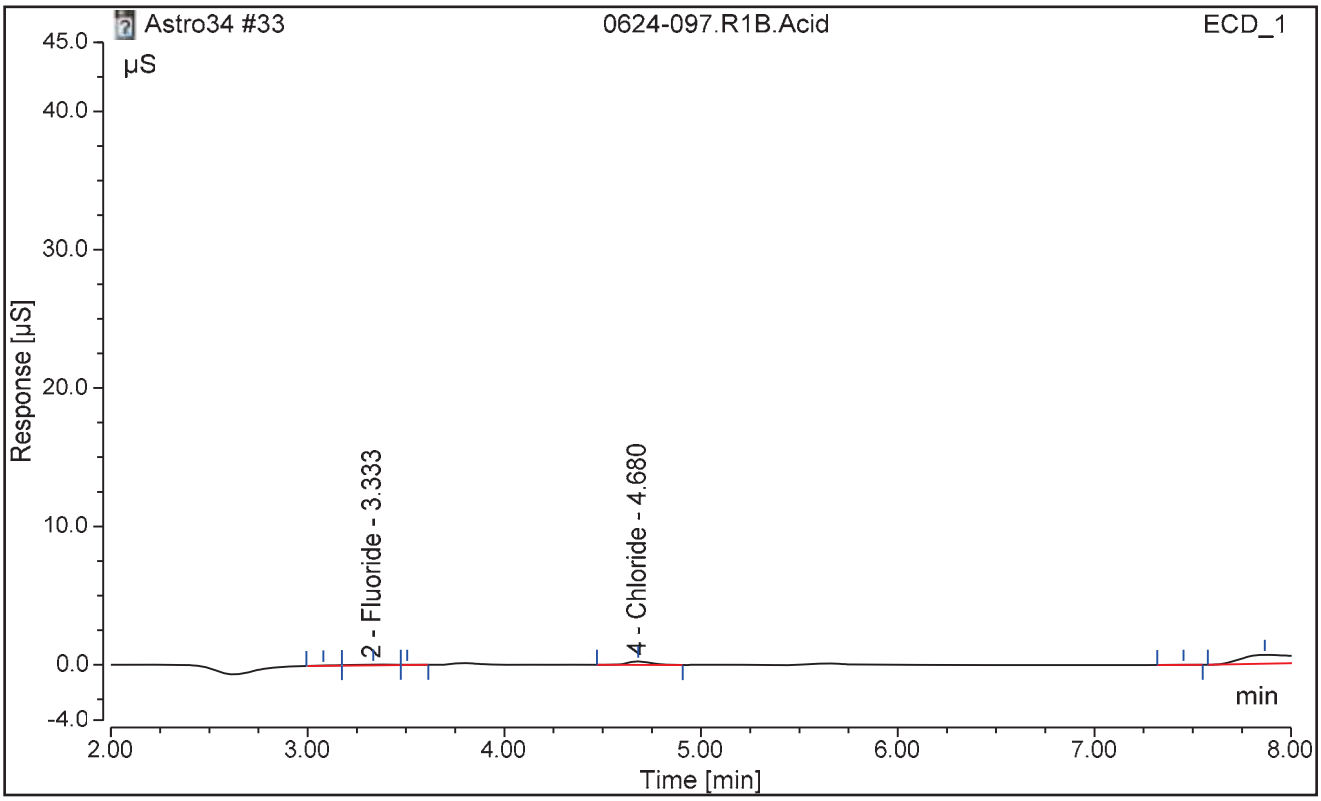


Analyst Comment: NI KLB 6/17/24

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?

Peak Analysis Report

Sample Name:	**0624-097.R1B.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 15:59**	Run Time:	**14.50**



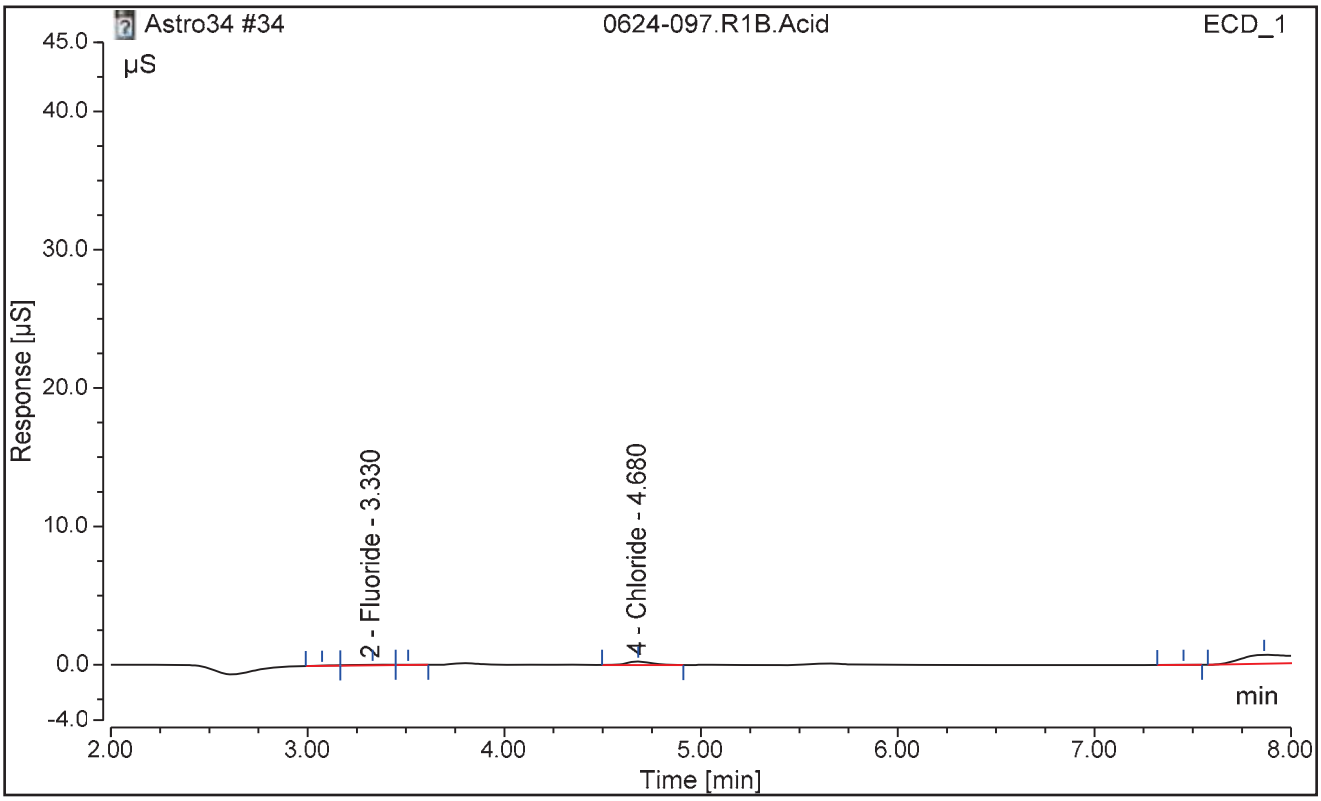
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.33	Fluoride	0.012	0.054	0.11524	FALSE	FALSE

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SE010AS-031486-RT-2611-R1

Peak Analysis Report

Sample Name:	**0624-097.R1B.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 16:15**	Run Time:	**14.50**

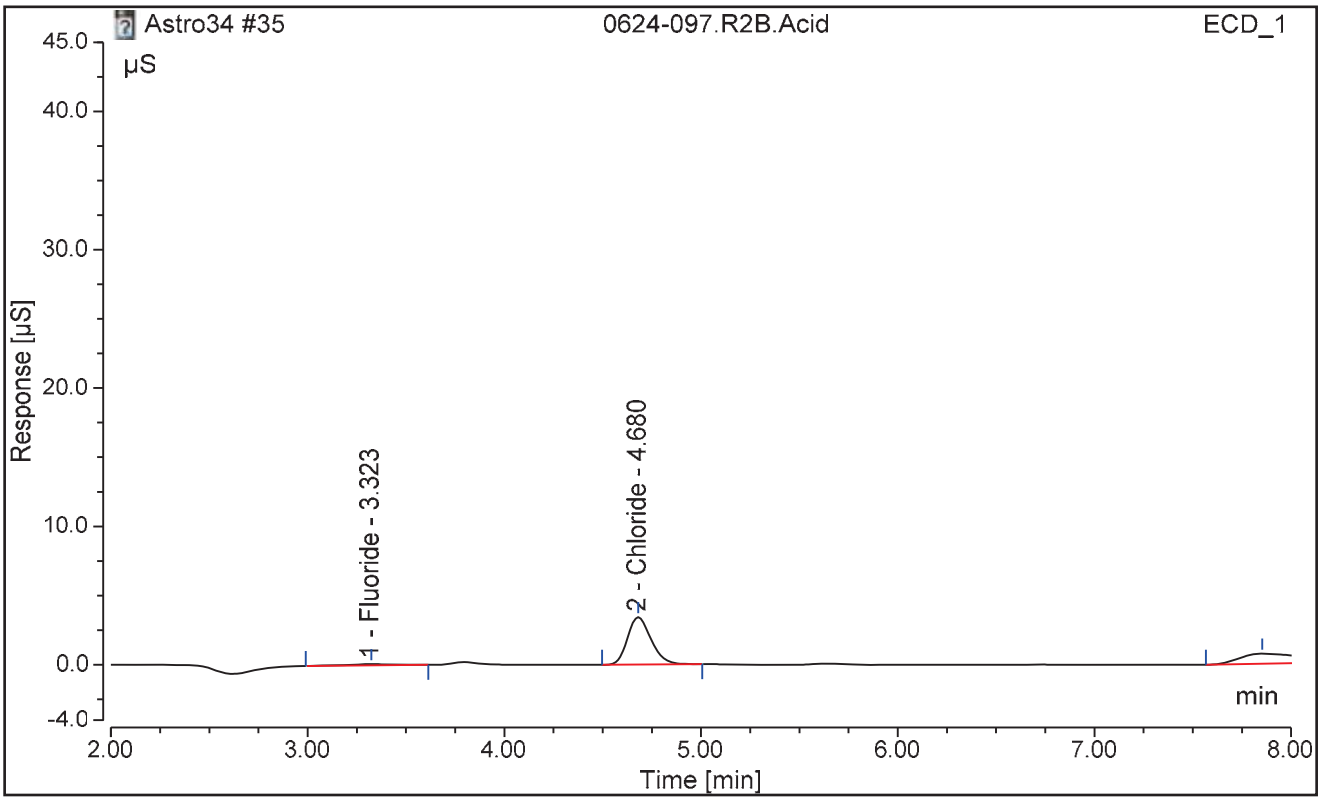


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.33	Fluoride	0.011	0.053	0.11105	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.R2B.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 16:32**	Run Time:	**14.50**

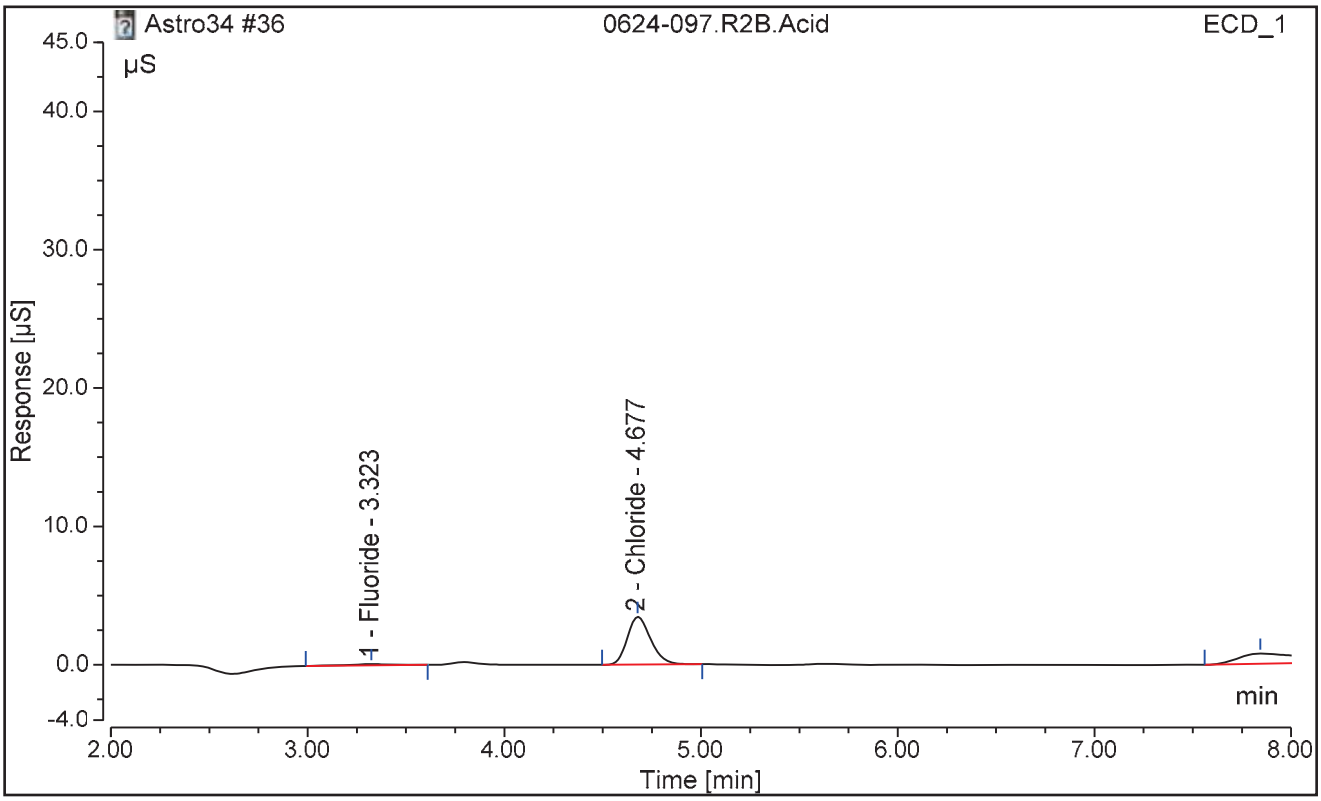


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.022	0.086	0.16705	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.R2B.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 16:49**	Run Time:	**14.50**

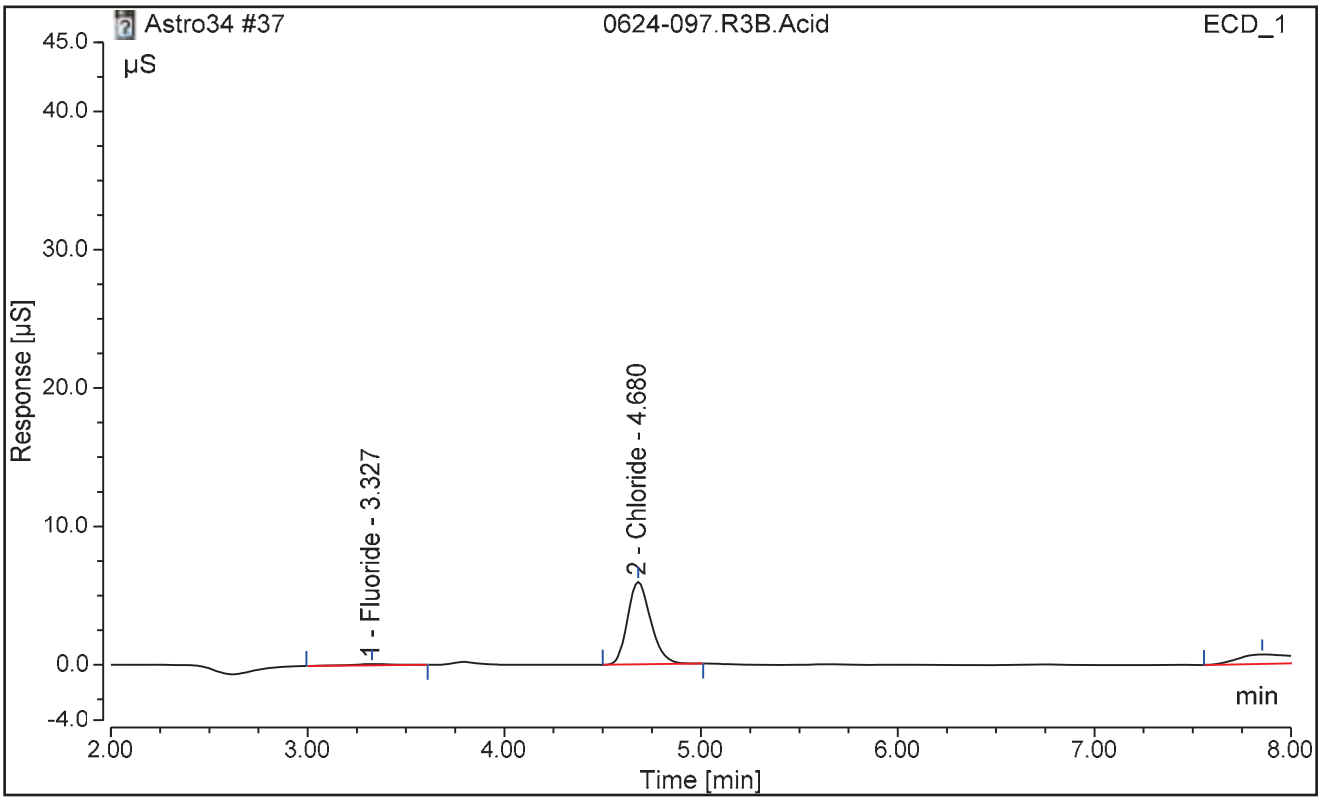


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.022	0.085	0.16571	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.R3B.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 17:05**	Run Time:	**14.50**

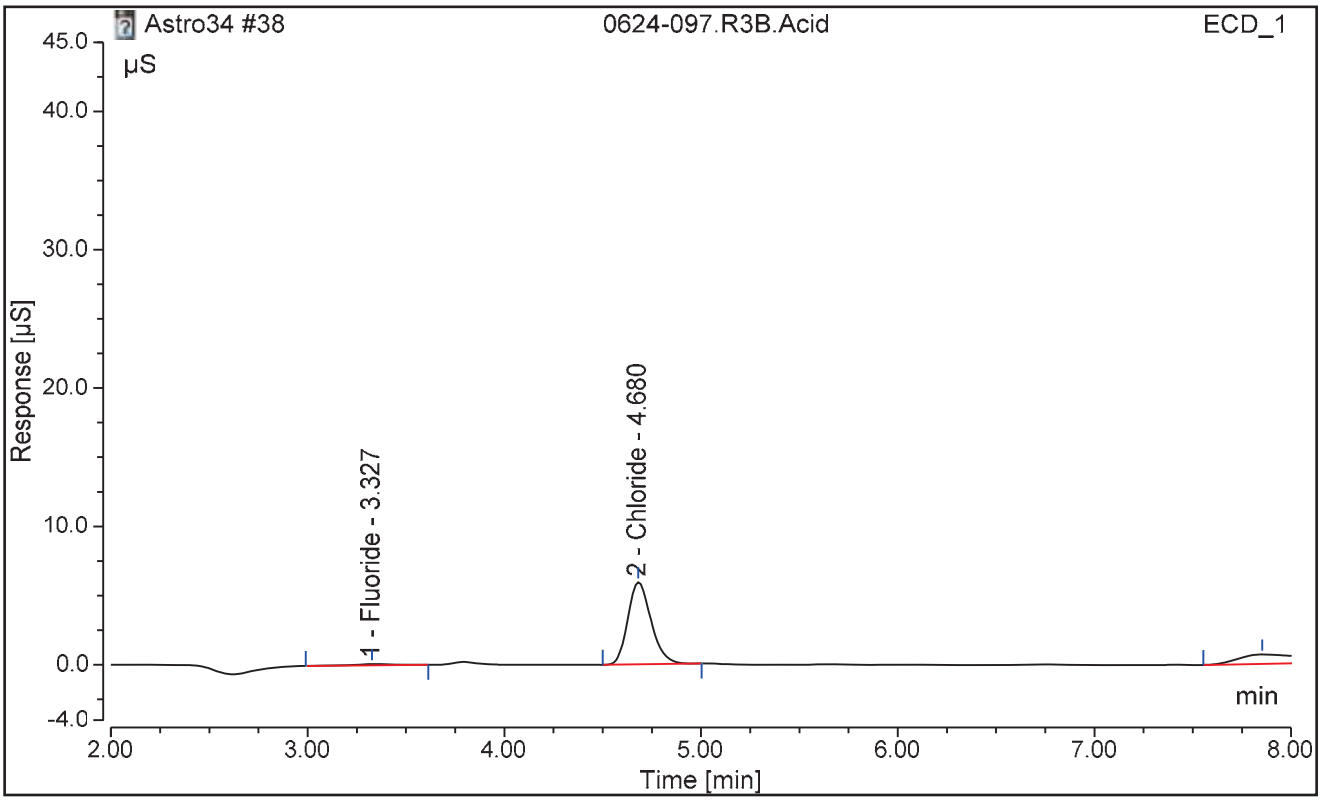


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.023	0.095	0.17054	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.R3B.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 17:22**	Run Time:	**14.50**



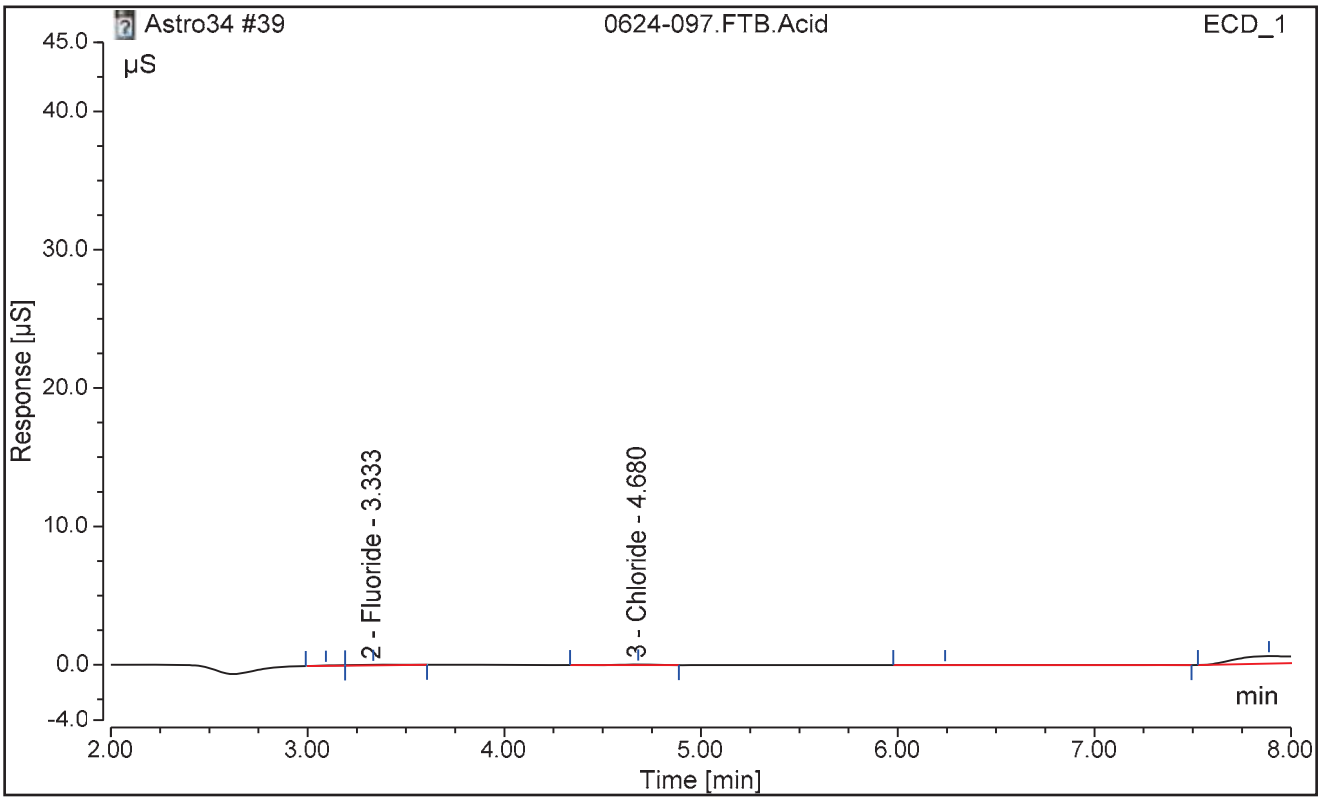
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.023	0.095	0.17180	FALSE	FALSE

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Version 7.2.10.26812
SE010AS-031486-RT-2611-R1

Peak Analysis Report

Sample Name:	**0624-097.FTB.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 17:38**	Run Time:	**14.50**

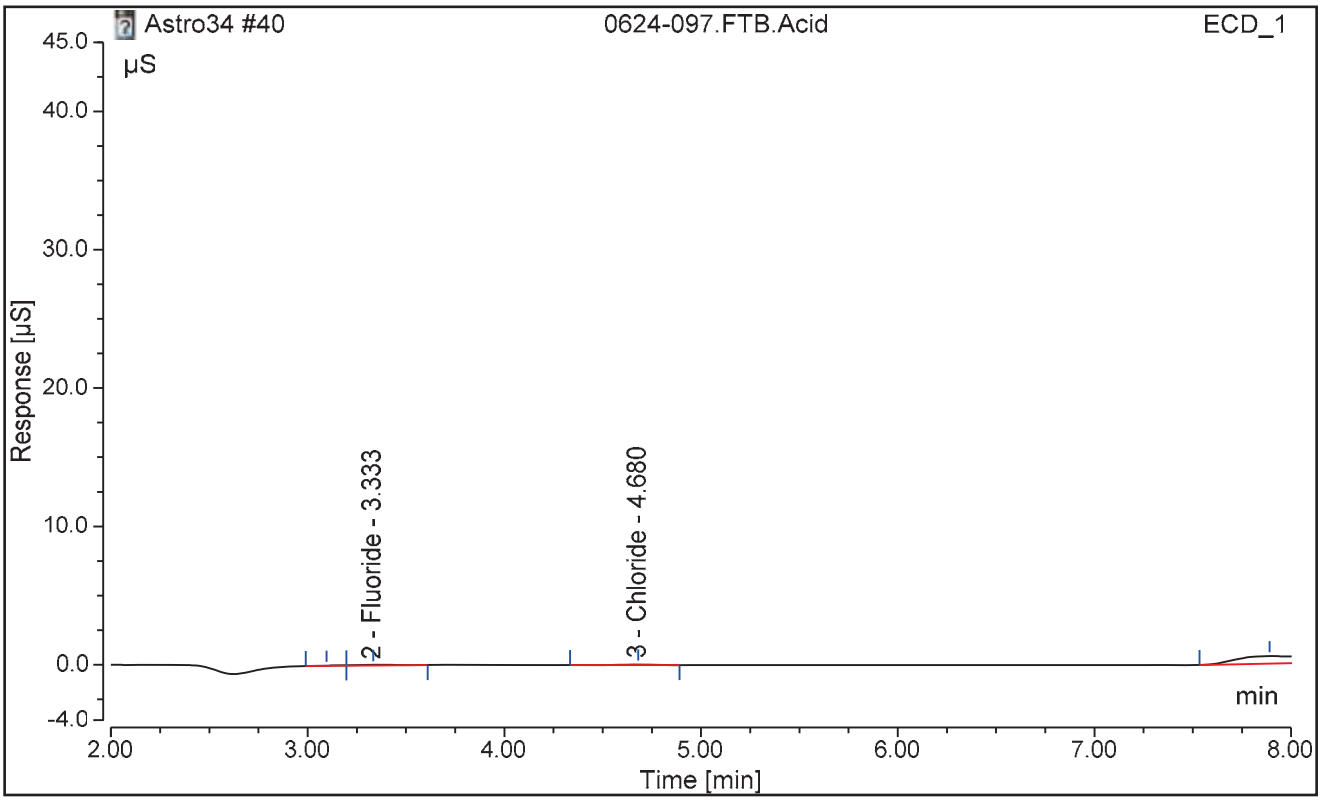


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.33	Fluoride	0.011	0.044	0.11041	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.FTB.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 17:55**	Run Time:	**14.50**

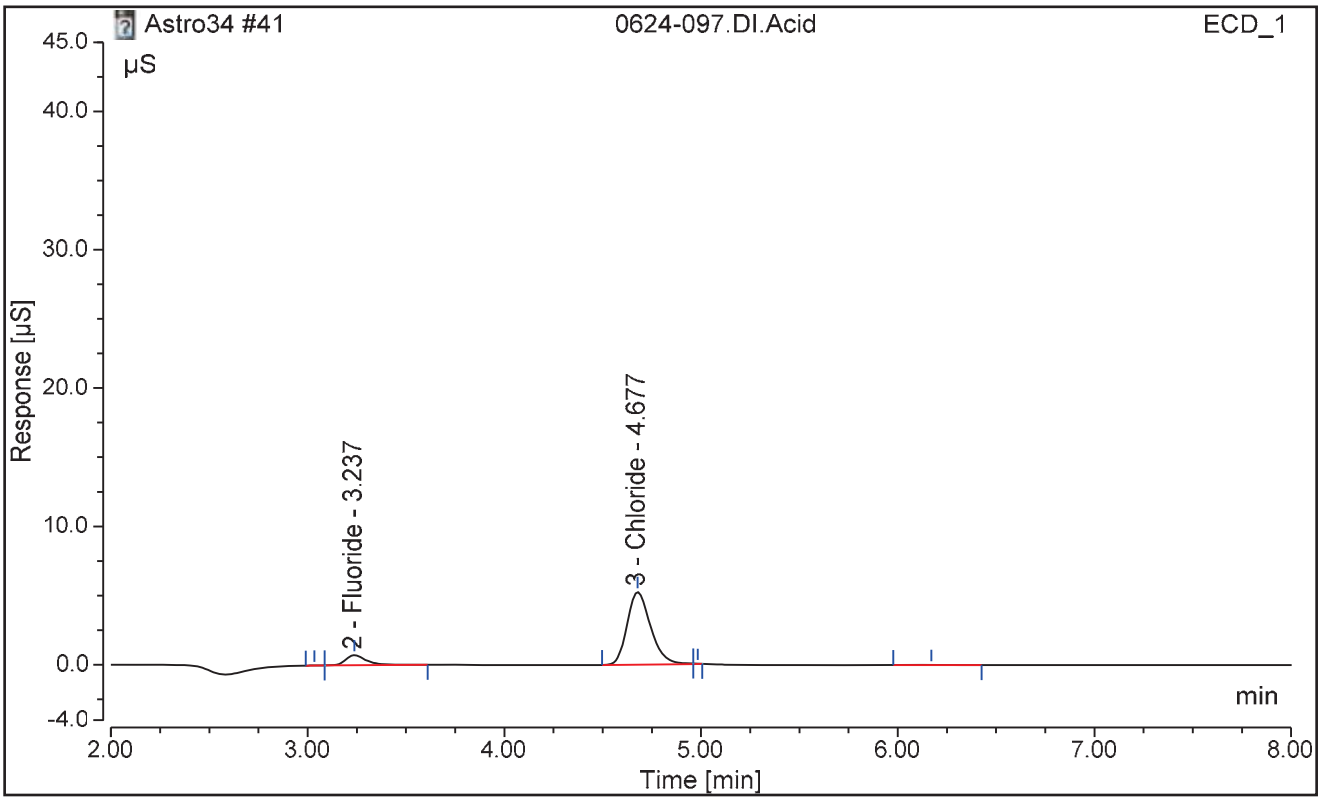


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.33	Fluoride	0.011	0.043	0.10894	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.DI.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 18:12**	Run Time:	**14.50**

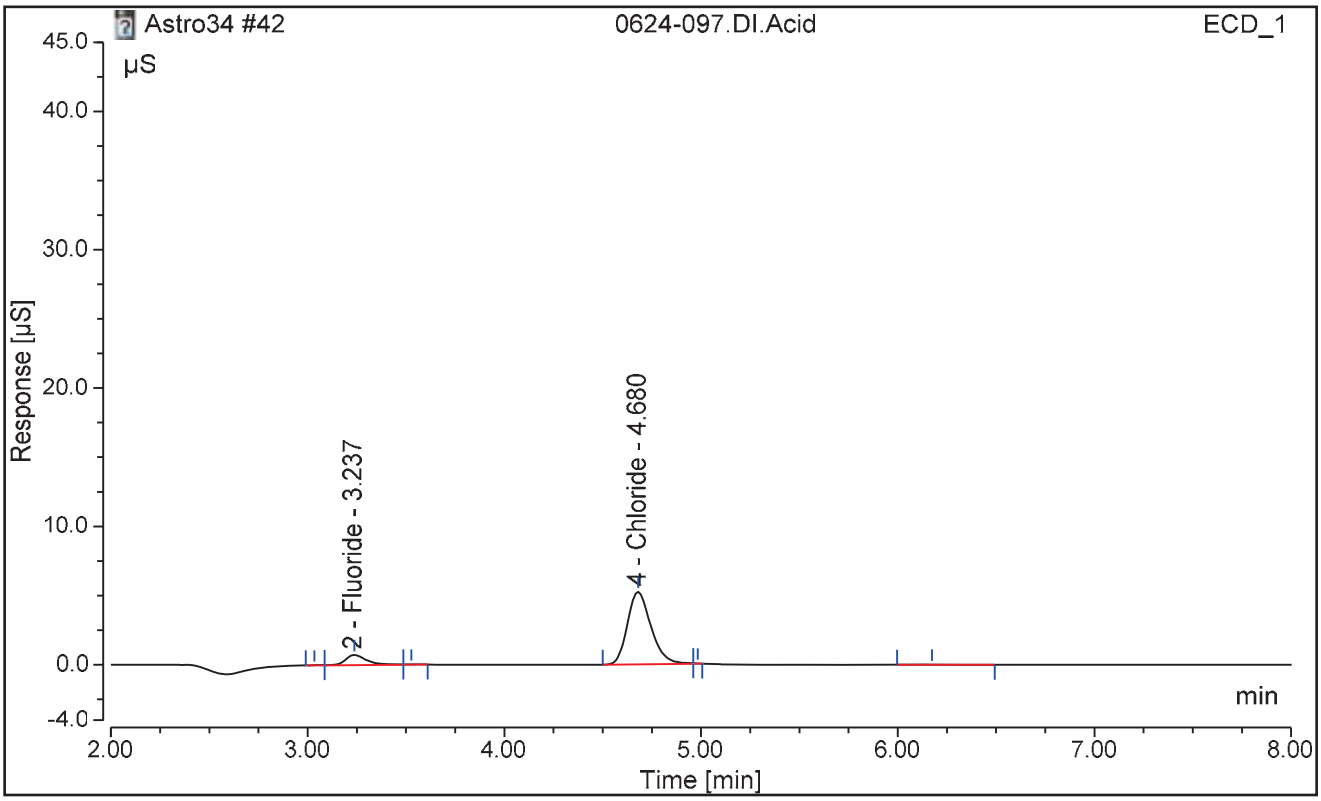


Analyst Comment: Needs confirmation

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.24	Fluoride	0.093	0.730	0.52609	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.DI.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 18:28**	Run Time:	**14.50**

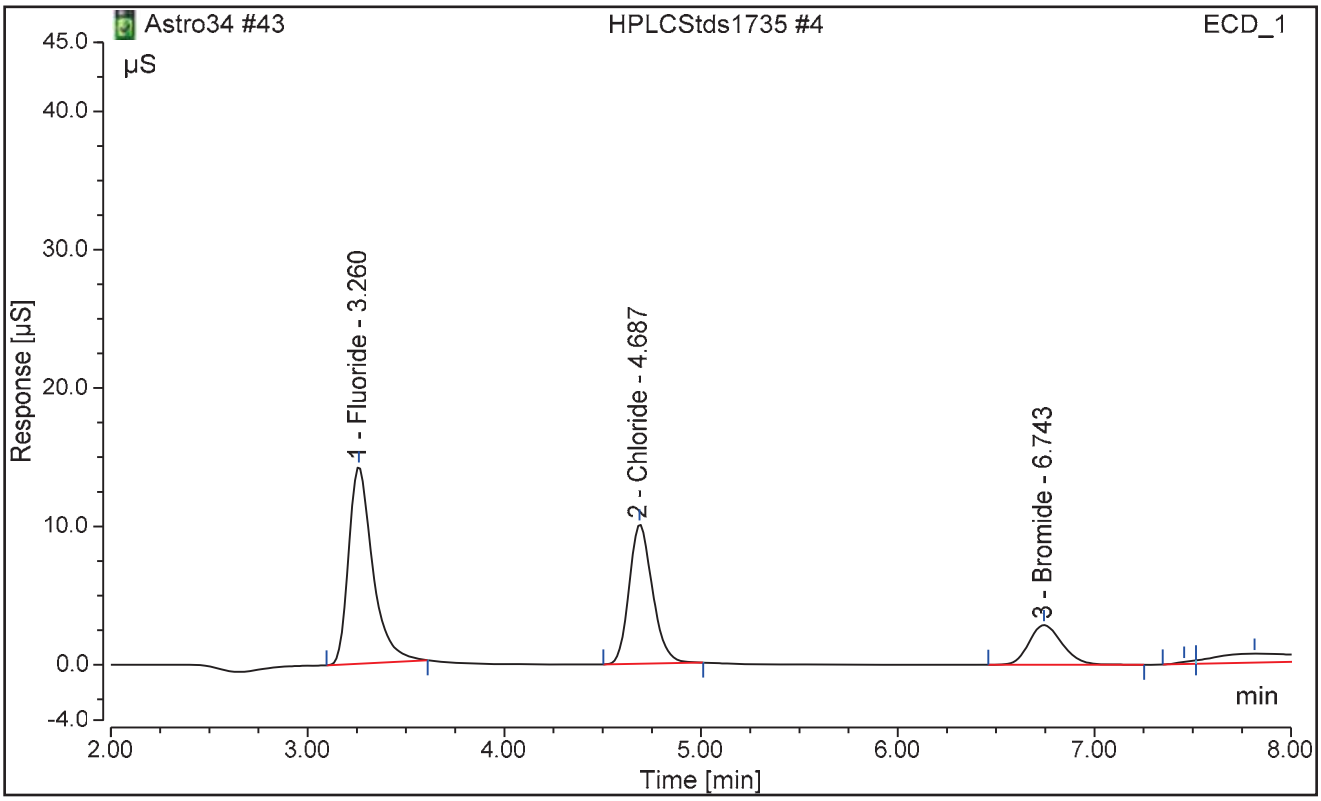


Analyst Comment: Needs confirmation

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.24	Fluoride	0.091	0.729	0.51872	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1735 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 18:45**	Run Time:	**14.50**

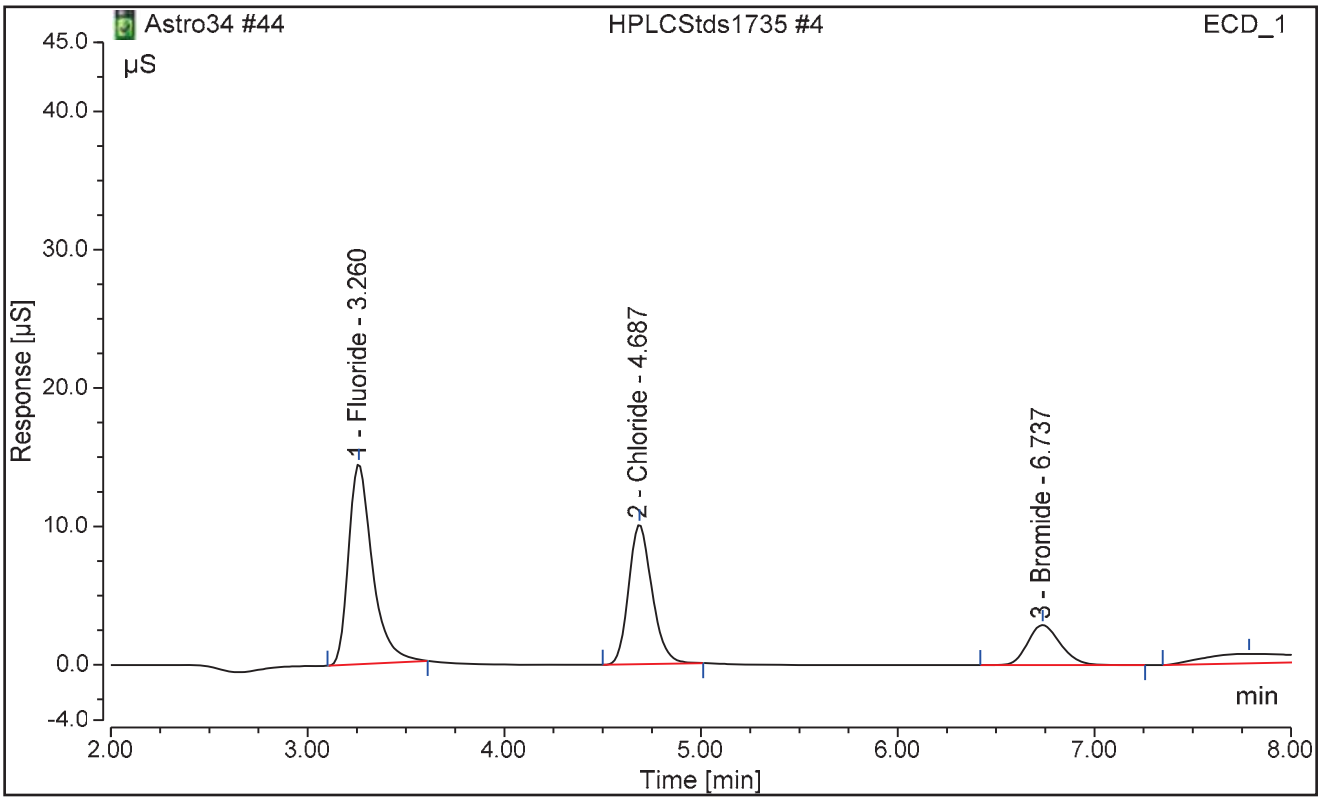


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.26	Fluoride	2.026	14.279	9.98433	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1735 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 19:02**	Run Time:	**14.50**

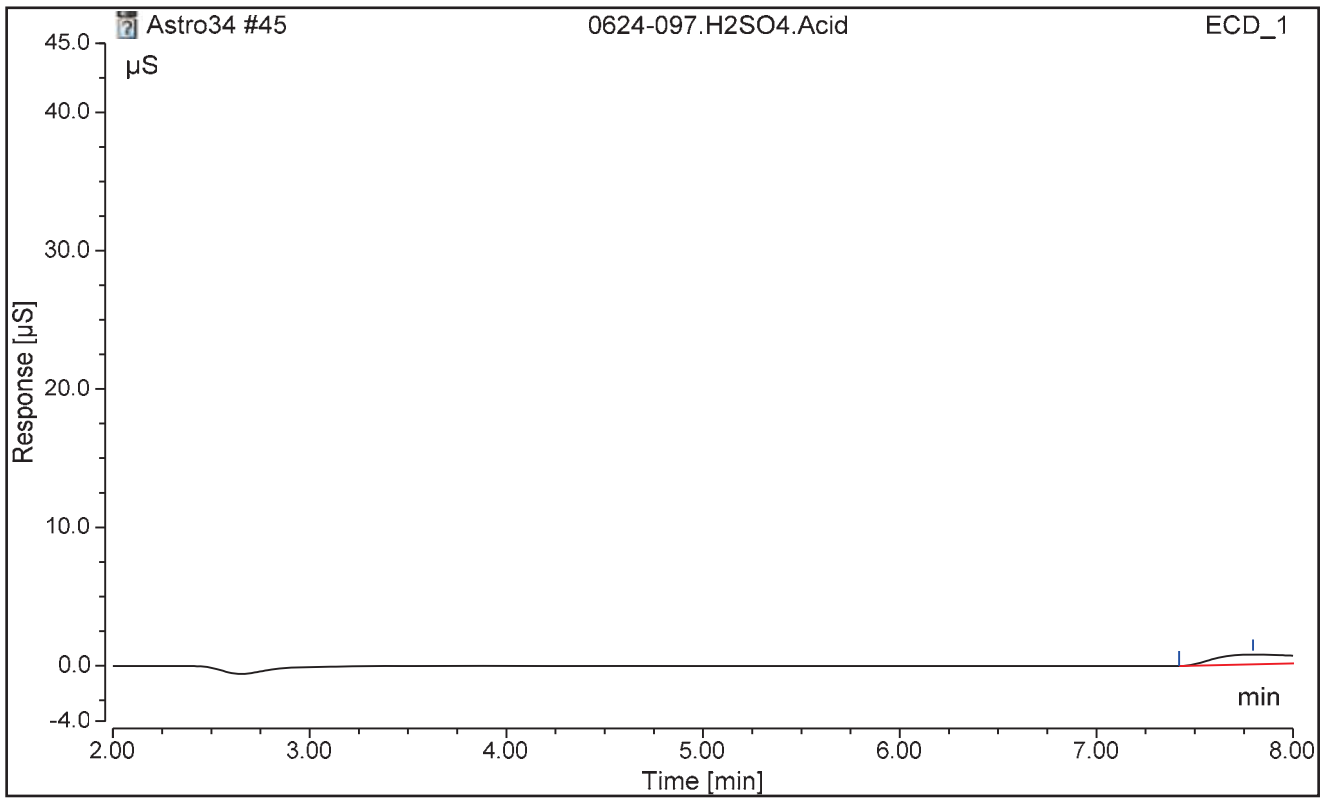


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.26	Fluoride	2.040	14.488	10.04836	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.H2SO4.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 19:18**	Run Time:	**14.50**

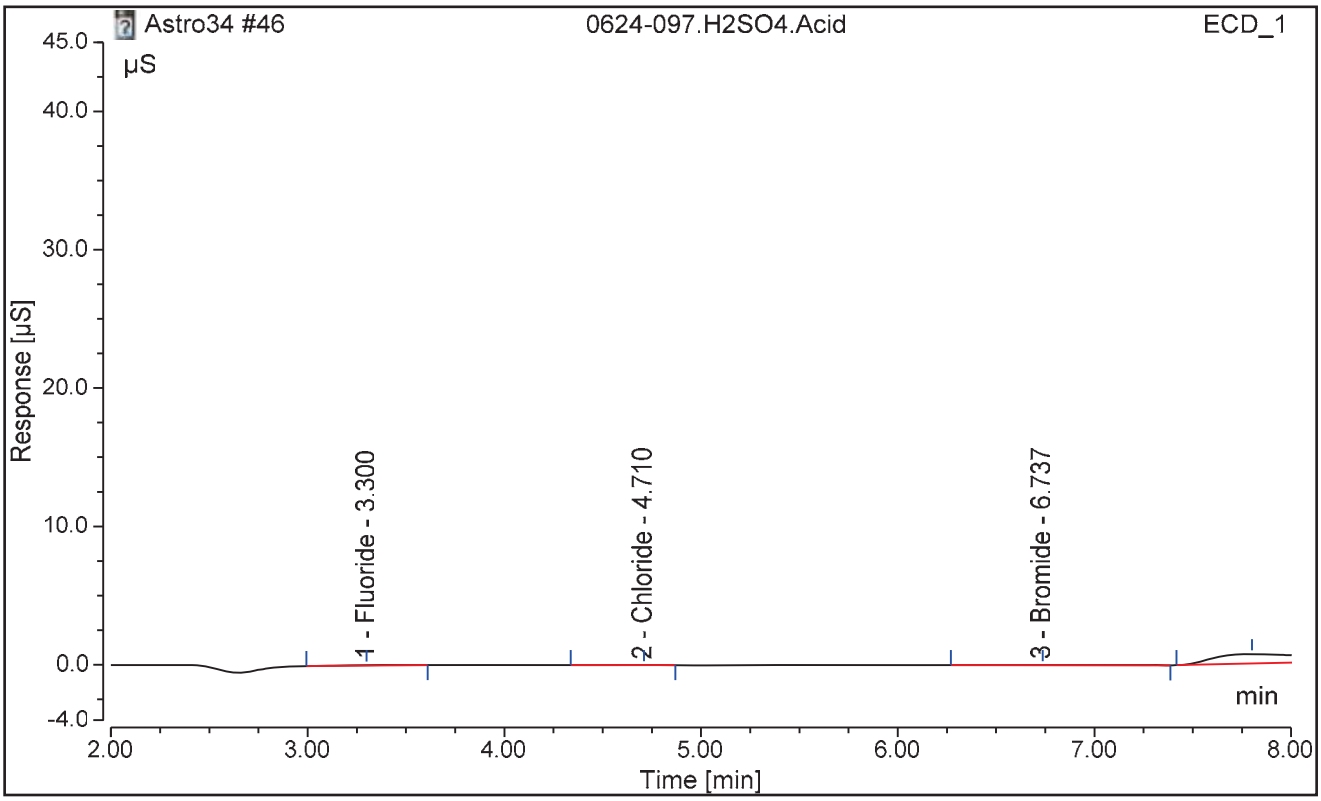


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?

Peak Analysis Report

Sample Name:	**0624-097.H2SO4.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 19:35**	Run Time:	**14.50**

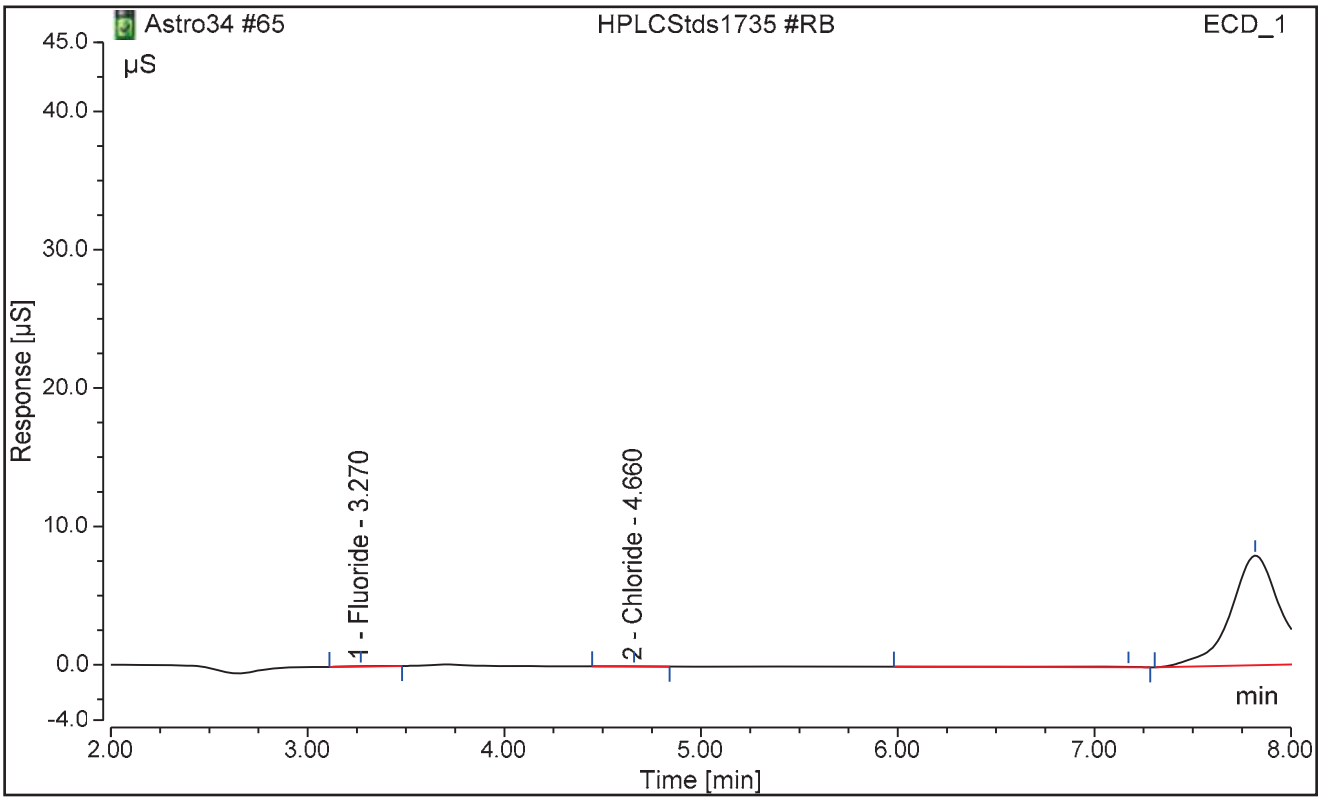


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.30	Fluoride	0.009	0.028	0.09986	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1735 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**16-Jun-2024 / 00:51**	Run Time:	**14.50**

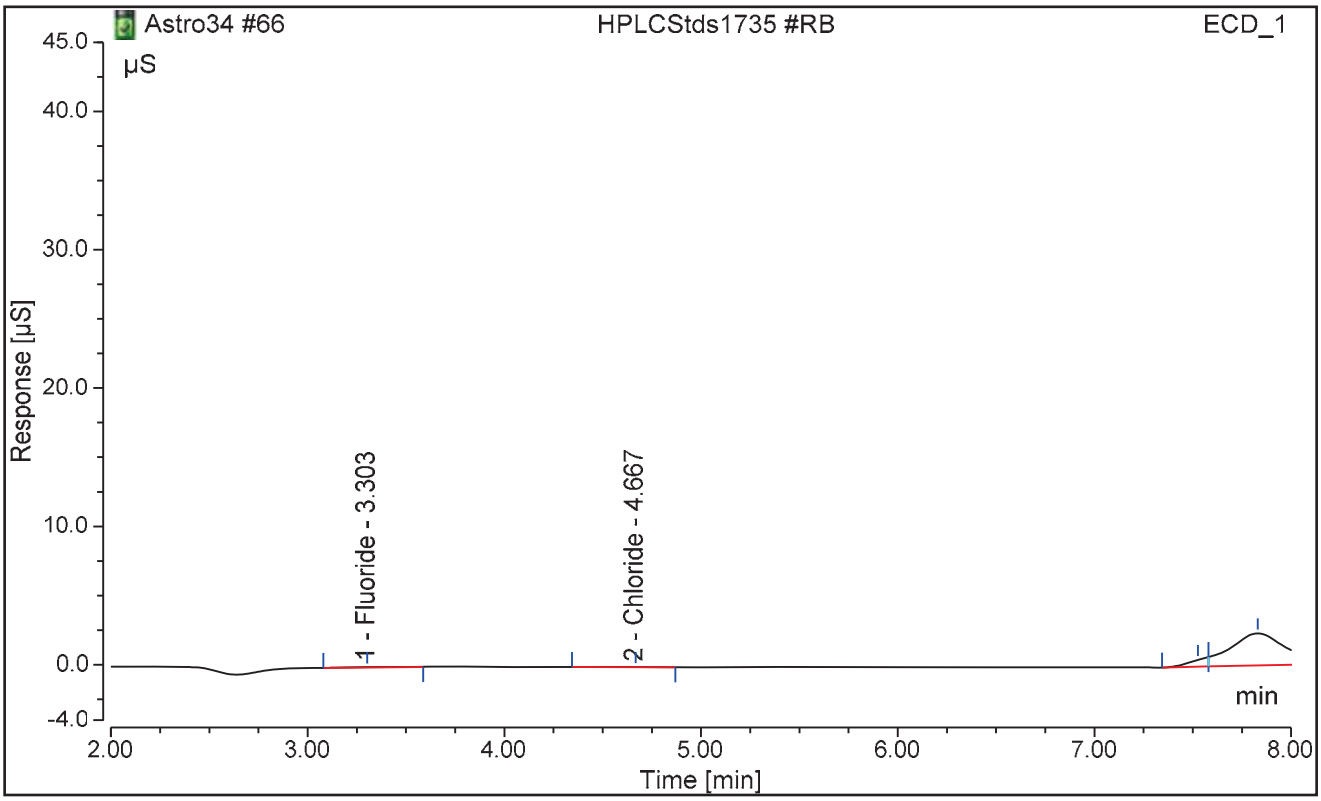


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.27	Fluoride	0.004	0.023	0.07624	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1735 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**16-Jun-2024 / 01:07**	Run Time:	**14.50**

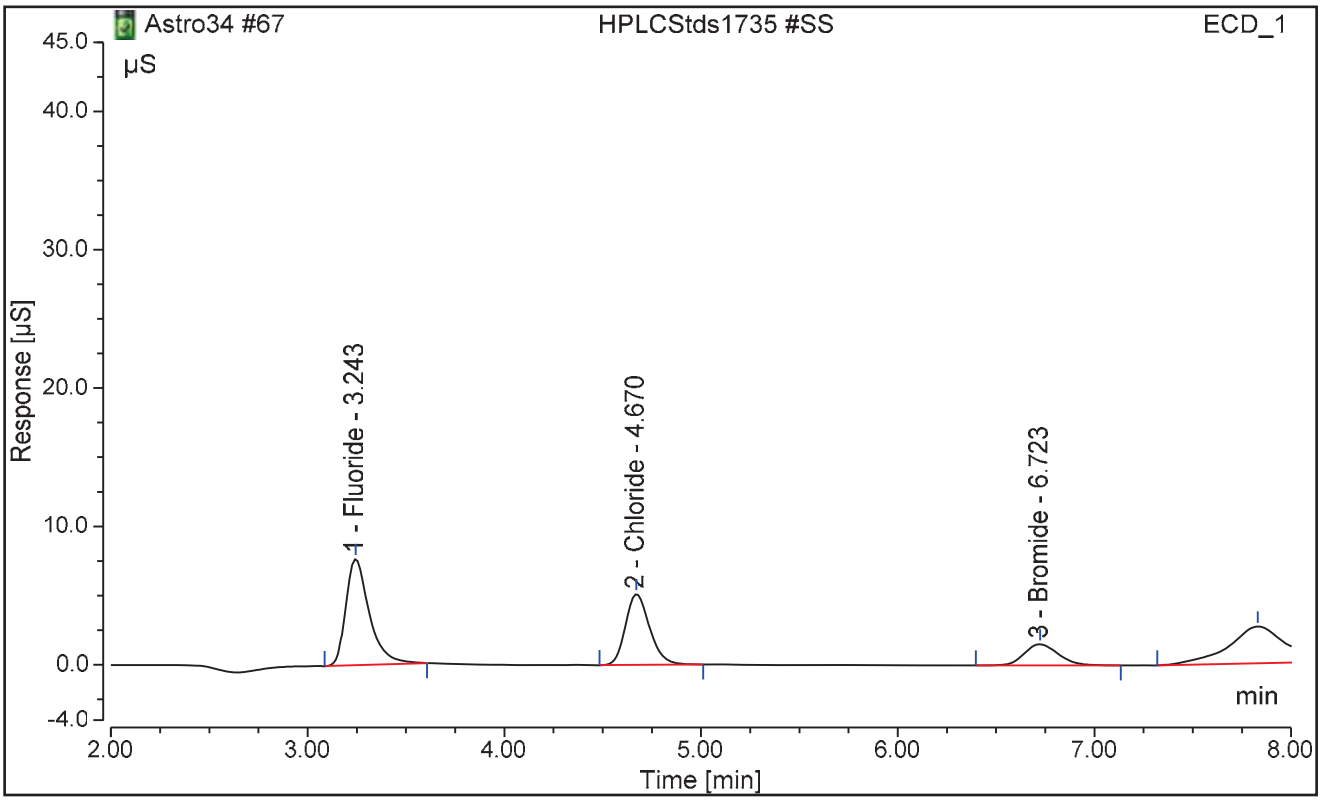


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.30	Fluoride	0.005	0.020	0.07992	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1735 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**16-Jun-2024 / 01:24**	Run Time:	**14.50**

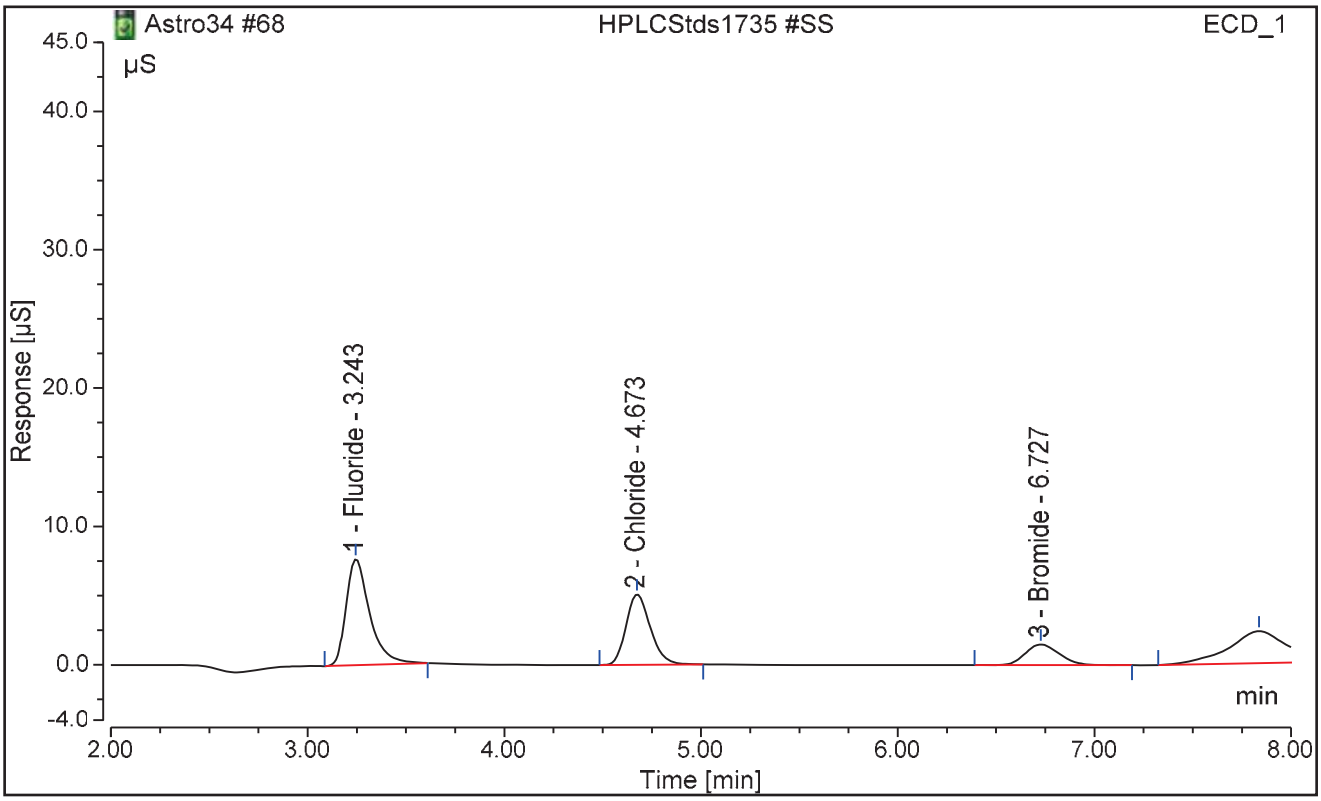


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.24	Fluoride	1.060	7.681	5.34927	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1735 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**16-Jun-2024 / 01:40**	Run Time:	**14.50**

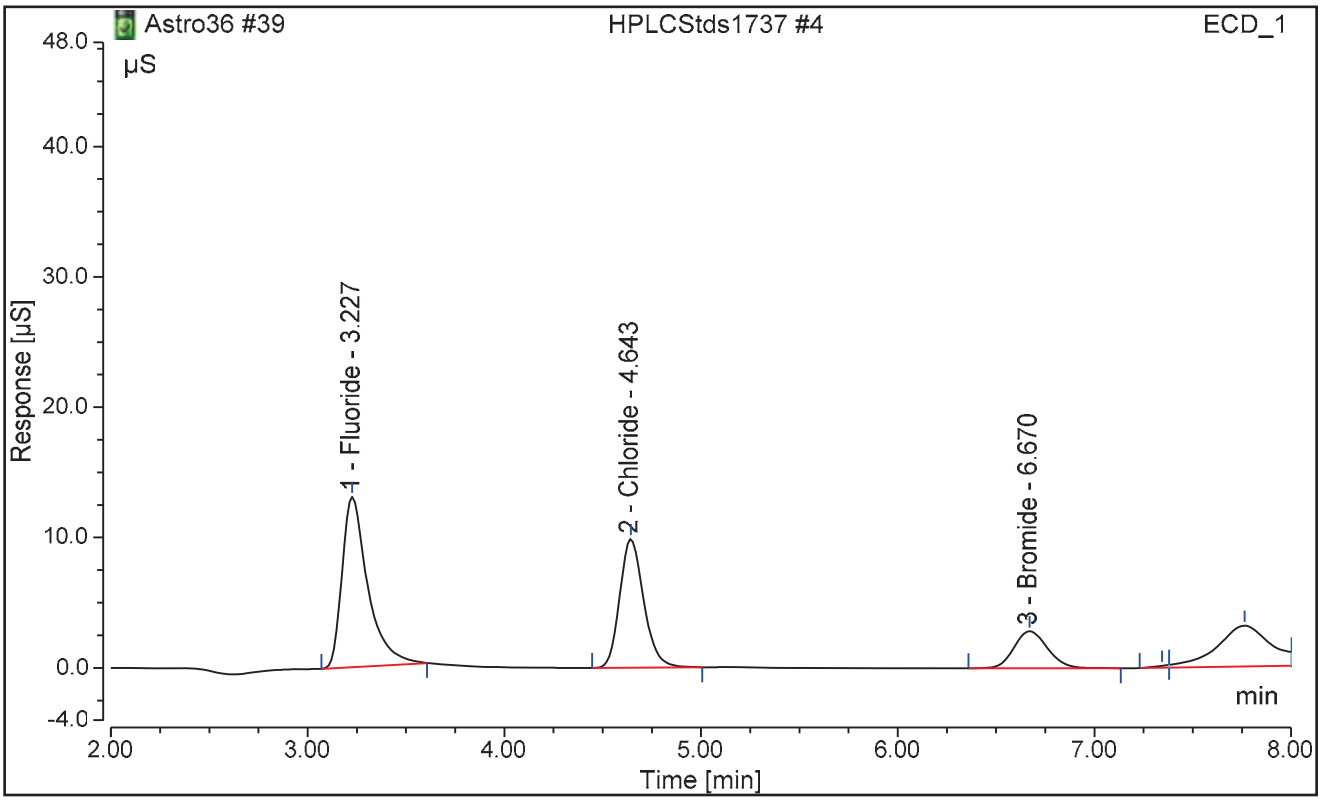


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.24	Fluoride	1.063	7.674	5.36287	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**18-Jun-2024 / 12:57**	Run Time:	**14.50**

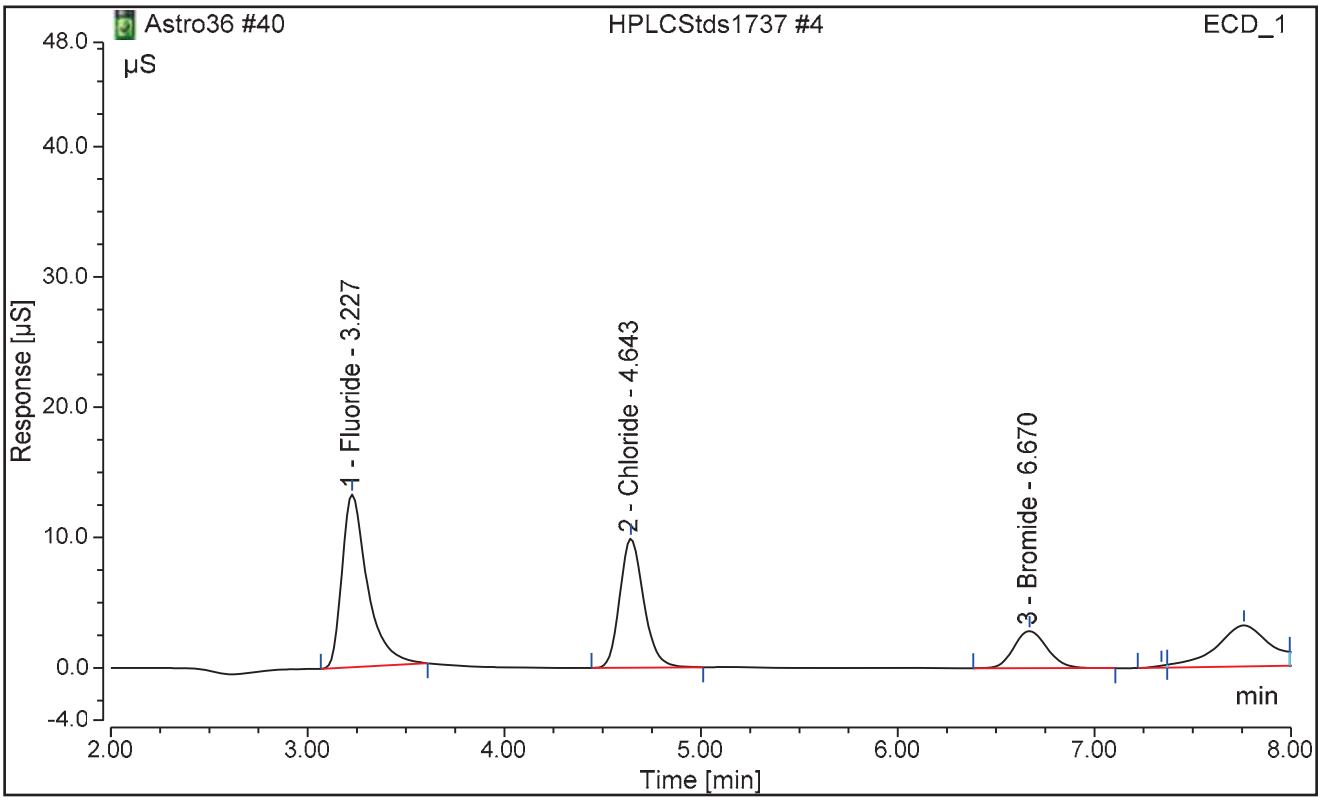


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.23	Fluoride	1.978	13.069	9.57534	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**18-Jun-2024 / 13:14**	Run Time:	**14.50**

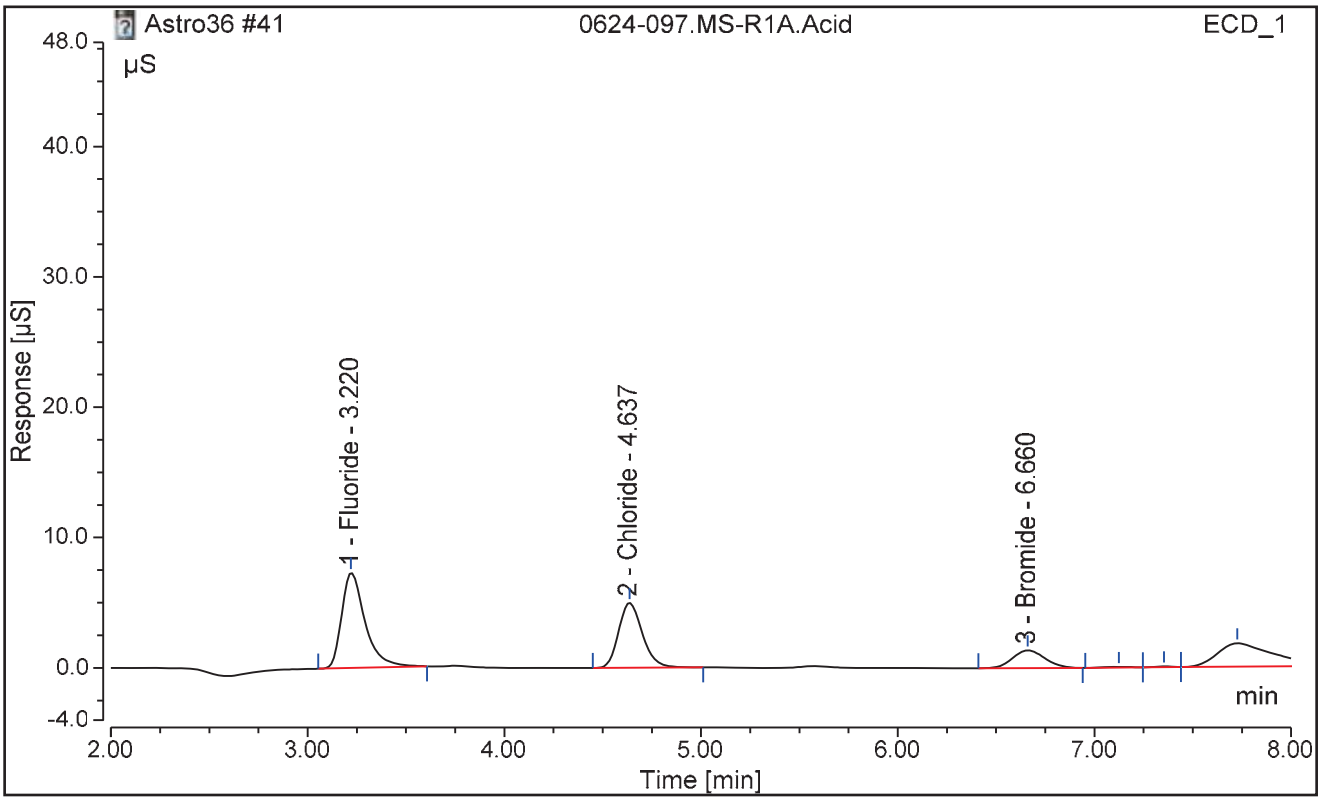


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.23	Fluoride	1.995	13.257	9.65295	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.MS-R1A.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**18-Jun-2024 / 13:30**	Run Time:	**14.50**

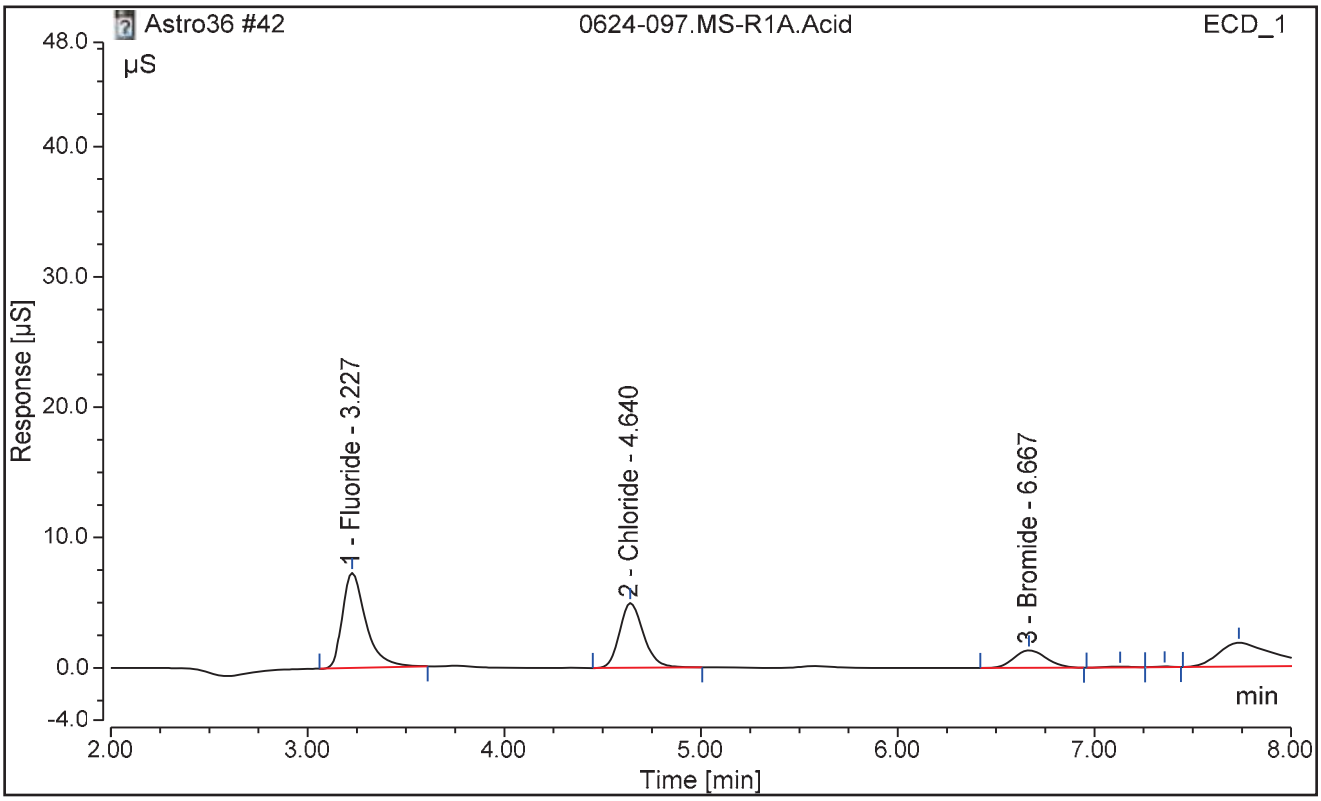


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.22	Fluoride	1.009	7.313	4.99342	FALSE	FALSE

Peak Analysis Report

Sample Name:	**0624-097.MS-R1A.Acid**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**18-Jun-2024 / 13:47**	Run Time:	**14.50**



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.23	Fluoride	1.008	7.299	4.98936	FALSE	FALSE

Calibration Table

No.	Injection Name	Inject Time	Pos.	Level	Ref.Amount	Calibration Point Status	Dil.Factor	Volume
					µg/mL ECD_1 Chloride	 ECD_1 Chloride		µL
3	HPLCStds1727 #6	13/Jun/2024 15:11	BA6	06	30.0000	Ok	1.0000	25.00
4	HPLCStds1727 #6	13/Jun/2024 15:26	BA6	06	30.0000	Ok	1.0000	25.00
5	HPLCStds1727 #5	13/Jun/2024 15:42	BA5	05	15.0000	Ok	1.0000	25.00
6	HPLCStds1727 #5	13/Jun/2024 15:57	BA5	05	15.0000	Ok	1.0000	25.00
7	HPLCStds1727 #4	13/Jun/2024 16:12	BA4	04	10.0000	Ok	1.0000	25.00
8	HPLCStds1727 #4	13/Jun/2024 16:27	BA4	04	10.0000	Ok	1.0000	25.00
9	HPLCStds1727 #3	13/Jun/2024 16:42	BA3	03	5.0000	Ok	1.0000	25.00
10	HPLCStds1727 #3	13/Jun/2024 16:57	BA3	03	5.0000	Ok	1.0000	25.00
11	HPLCStds1727 #2	13/Jun/2024 17:12	BA2	02	1.0000	Ok	1.0000	25.00
12	HPLCStds1727 #2	13/Jun/2024 17:28	BA2	02	1.0000	Ok	1.0000	25.00
13	HPLCStds1727 #1	13/Jun/2024 17:43	BA1	01	0.5000	Ok	1.0000	25.00
14	HPLCStds1727 #1	13/Jun/2024 17:58	BA1	01	0.5000	Ok	1.0000	25.00
57	HPLCStds1727 #6	14/Jun/2024 04:48	BA6	06	30.0000	Ok	1.0000	25.00
58	HPLCStds1727 #6	14/Jun/2024 05:03	BA6	06	30.0000	Ok	1.0000	25.00
59	HPLCStds1727 #5	14/Jun/2024 05:18	BA5	05	15.0000	Ok	1.0000	25.00
60	HPLCStds1727 #5	14/Jun/2024 05:34	BA5	05	15.0000	Ok	1.0000	25.00
61	HPLCStds1727 #4	14/Jun/2024 05:49	BA4	04	10.0000	Ok	1.0000	25.00
62	HPLCStds1727 #4	14/Jun/2024 06:04	BA4	04	10.0000	Ok	1.0000	25.00
63	HPLCStds1727 #3	14/Jun/2024 06:19	BA3	03	5.0000	Ok	1.0000	25.00
64	HPLCStds1727 #3	14/Jun/2024 06:34	BA3	03	5.0000	Ok	1.0000	25.00
65	HPLCStds1727 #2	14/Jun/2024 06:49	BA2	02	1.0000	Ok	1.0000	25.00
66	HPLCStds1727 #2	14/Jun/2024 07:04	BA2	02	1.0000	Ok	1.0000	25.00
67	HPLCStds1727 #1	14/Jun/2024 07:19	BA1	01	0.5000	Ok	1.0000	25.00
68	HPLCStds1727 #1	14/Jun/2024 07:35	BA1	01	0.5000	Ok	1.0000	25.00

Detection Parameters

Ret. Time min	Param. Name	Param. Value	Inj. Type	Channel
Always	Baseline Noise Auto Range	Off	Any	All Channels
Always	Baseline Noise Start Time	0.000 [min]	Any	All Channels
Always	Baseline Noise End Time	0.776 [min]	Any	All Channels
Always	Cobra Smoothing Width	Auto	Any	All Channels
Always	Consider Void Peak	Off	Any	All Channels
0.000	Maximum Rider Ratio	10 [%]	Any	All Channels
0.000	Tailing Sensitivity Factor	0.250 [%]	Any	All Channels
0.000	Inhibit Integration	On	Any	All Channels
0.000	Minimum Area	Auto	Any	All Channels
1.550	Inhibit Integration	Off	Any	All Channels
2.171	Inhibit Integration	On	Any	All Channels

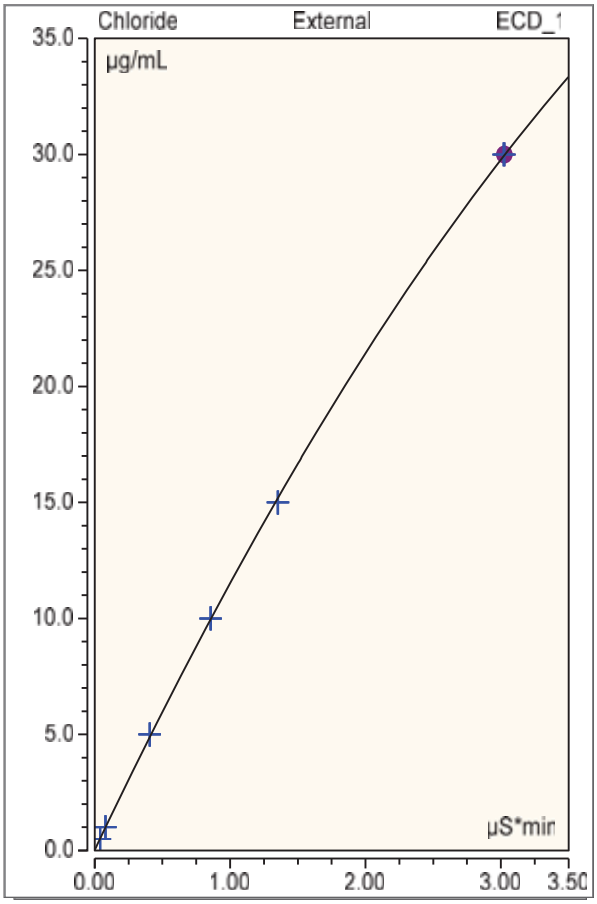
Calibration Batch Report

Sequence:	Astro32	*Injection Volume:*	25.00
Instrument Method:	AS22 FAST ASAP Base2	*Operator:*	kenbell
Inj. Date / Time:	13-Jun-2024 / 15:11	*Run Time:*	13

Calibration Summary

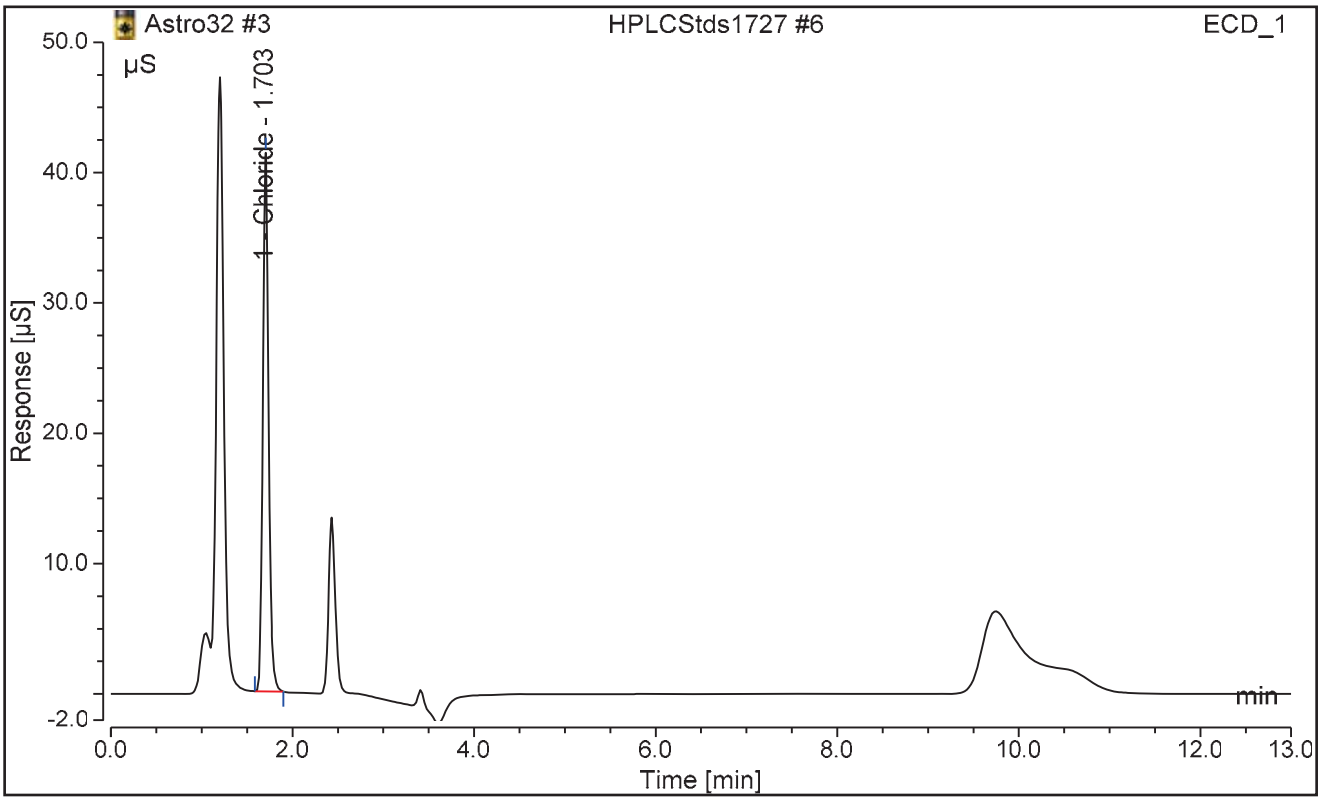
Peak Name	Eval.Type	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
Chloride	Area	Quad, WithOffset, 1/A	24.000	0.024	12.280	-0.788	99.989
		AVERAGE:		0.0240	12.2800	-0.7883	99.9888

Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount µg/mL ECD_1
	Chloride	Chloride	Chloride	Chloride
HPLCStds1727 #6	1.703	3.026	41.327	29.964
HPLCStds1727 #6	1.703	3.018	41.267	29.902
HPLCStds1727 #5	1.697	1.352	18.076	15.181
HPLCStds1727 #5	1.697	1.351	18.125	15.174
HPLCStds1727 #4	1.697	0.856	11.325	9.955
HPLCStds1727 #4	1.697	0.858	11.312	9.978
HPLCStds1727 #3	1.697	0.406	5.281	4.885
HPLCStds1727 #3	1.700	0.405	5.262	4.867
HPLCStds1727 #2	1.693	0.080	1.038	1.001
HPLCStds1727 #2	1.697	0.079	1.033	0.995
HPLCStds1727 #1	1.693	0.040	0.519	0.509
HPLCStds1727 #1	1.697	0.040	0.518	0.508
HPLCStds1727 #6	1.710	3.021	40.999	29.927
HPLCStds1727 #6	1.710	3.028	41.168	29.977
HPLCStds1727 #5	1.707	1.356	18.054	15.221
HPLCStds1727 #5	1.707	1.354	18.029	15.210
HPLCStds1727 #4	1.703	0.858	11.275	9.978
HPLCStds1727 #4	1.707	0.854	11.248	9.942
HPLCStds1727 #3	1.703	0.407	5.280	4.895
HPLCStds1727 #3	1.703	0.407	5.285	4.893
HPLCStds1727 #2	1.703	0.080	1.034	1.002
HPLCStds1727 #2	1.703	0.080	1.030	0.996
HPLCStds1727 #1	1.703	0.040	0.519	0.509
HPLCStds1727 #1	1.700	0.040	0.518	0.509



Peak Analysis Report

Sample Name:	**HPLCStds1727 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 15:11**	Run Time:	**13.00**

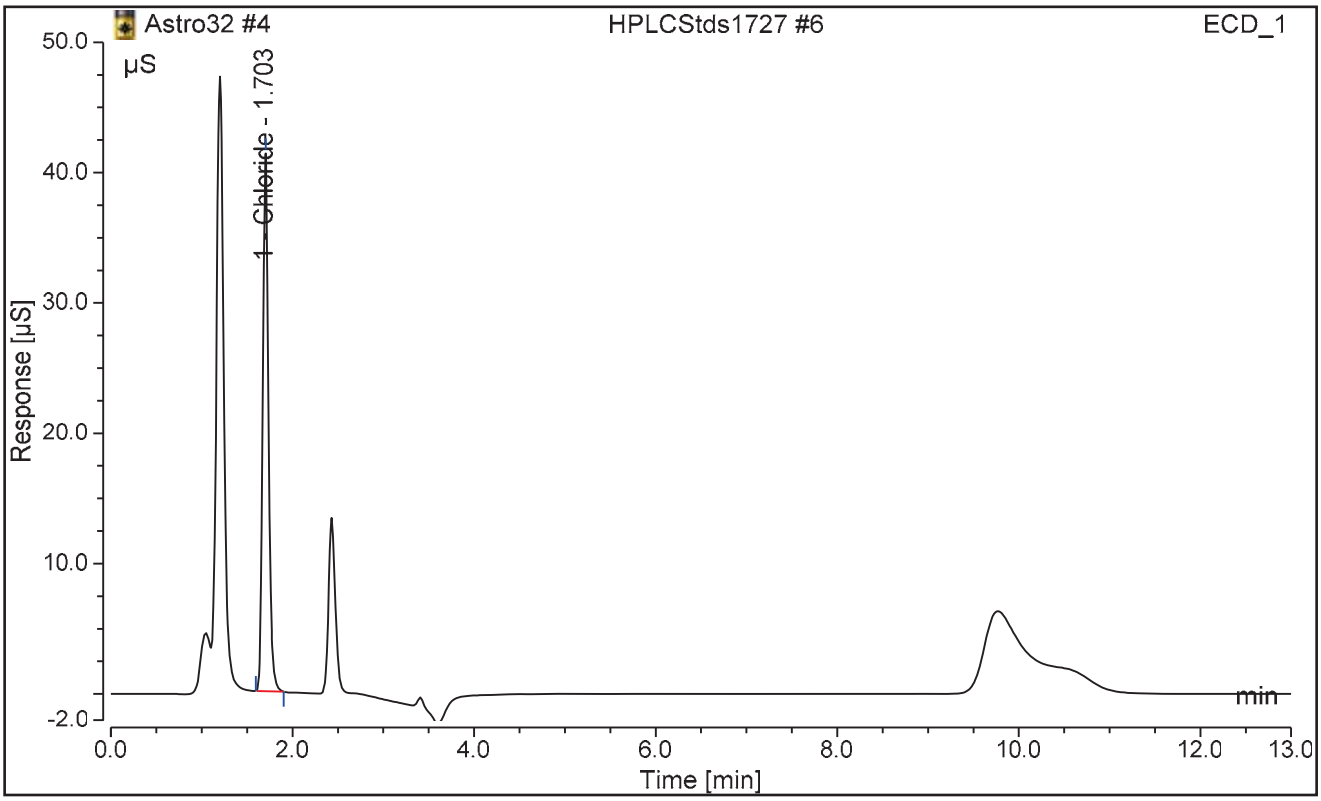


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	3.026	41.327	29.96434	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 15:26**	Run Time:	**13.00**

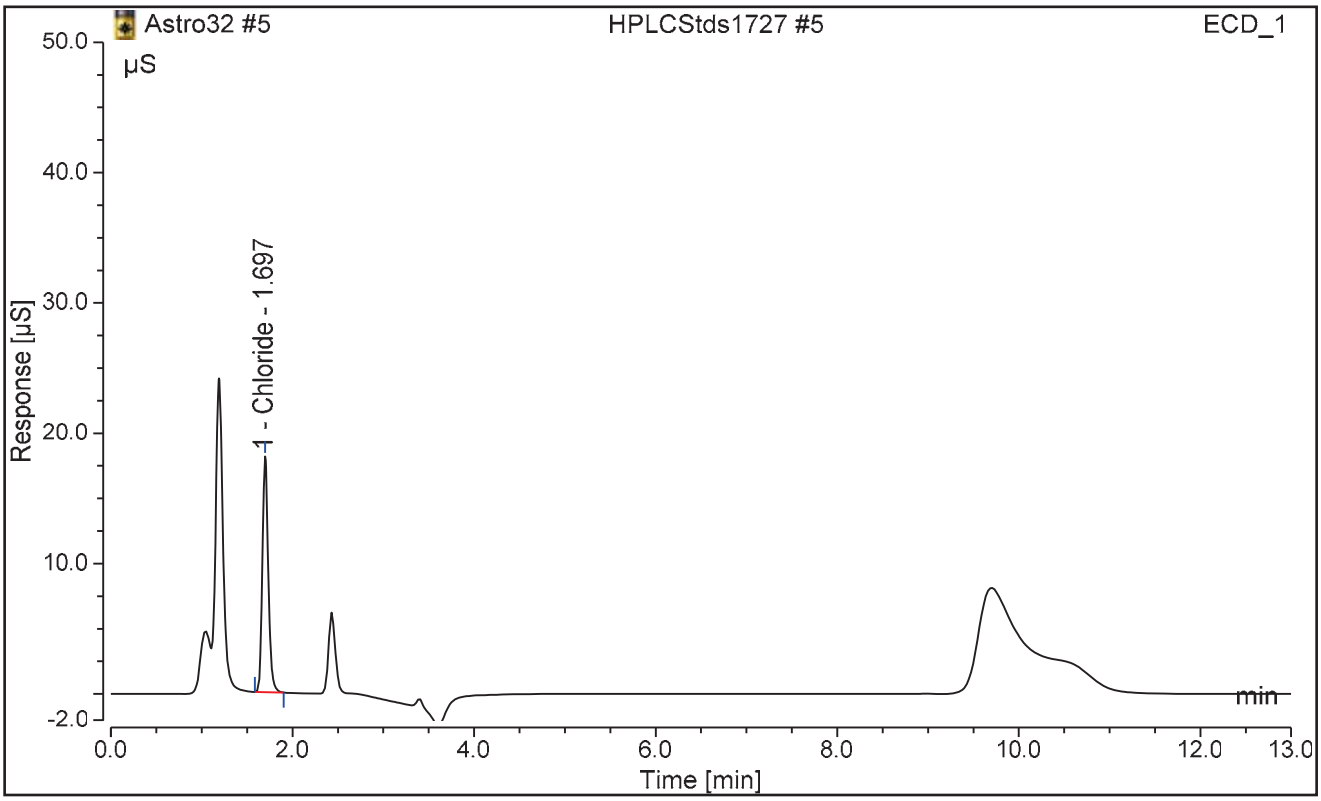


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	3.018	41.267	29.90174	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 15:42**	Run Time:	**13.00**

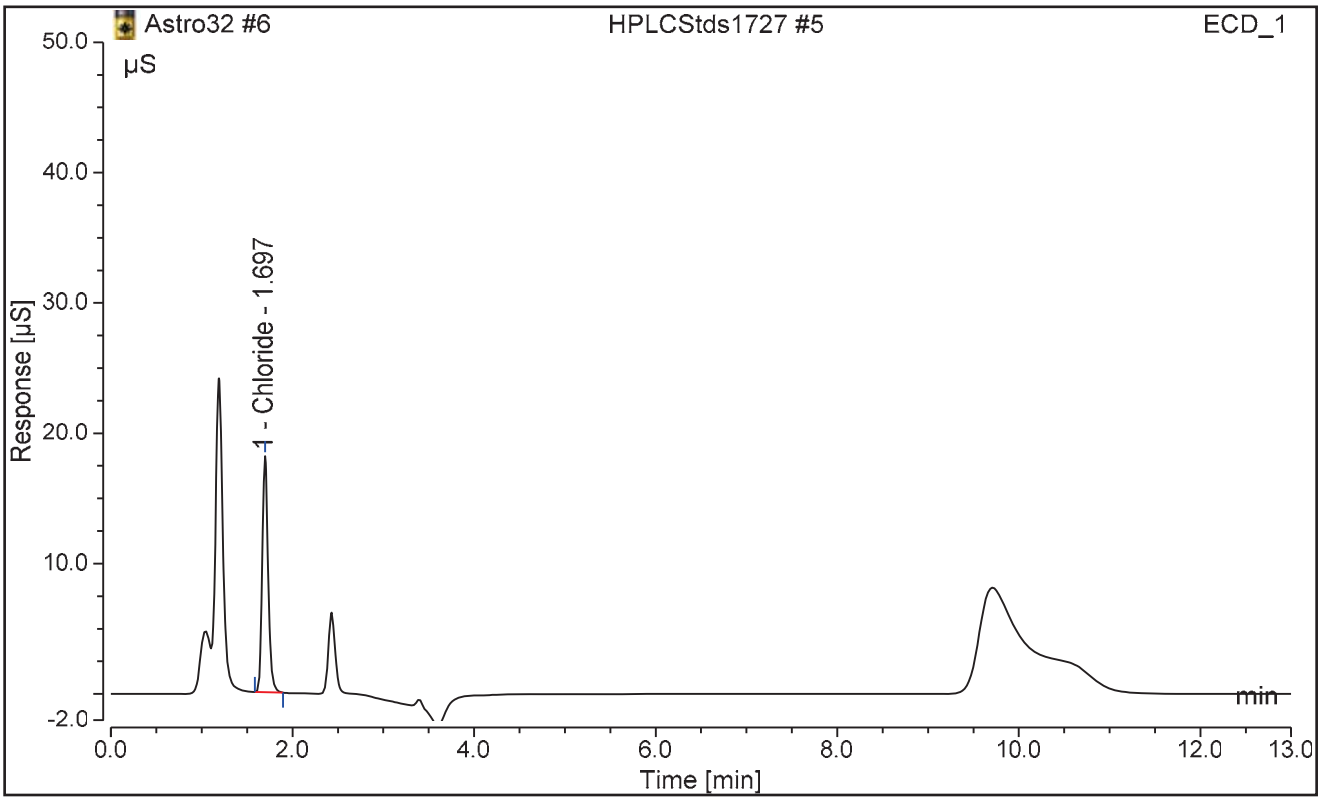


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	1.352	18.076	15.18102	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 15:57**	Run Time:	**13.00**

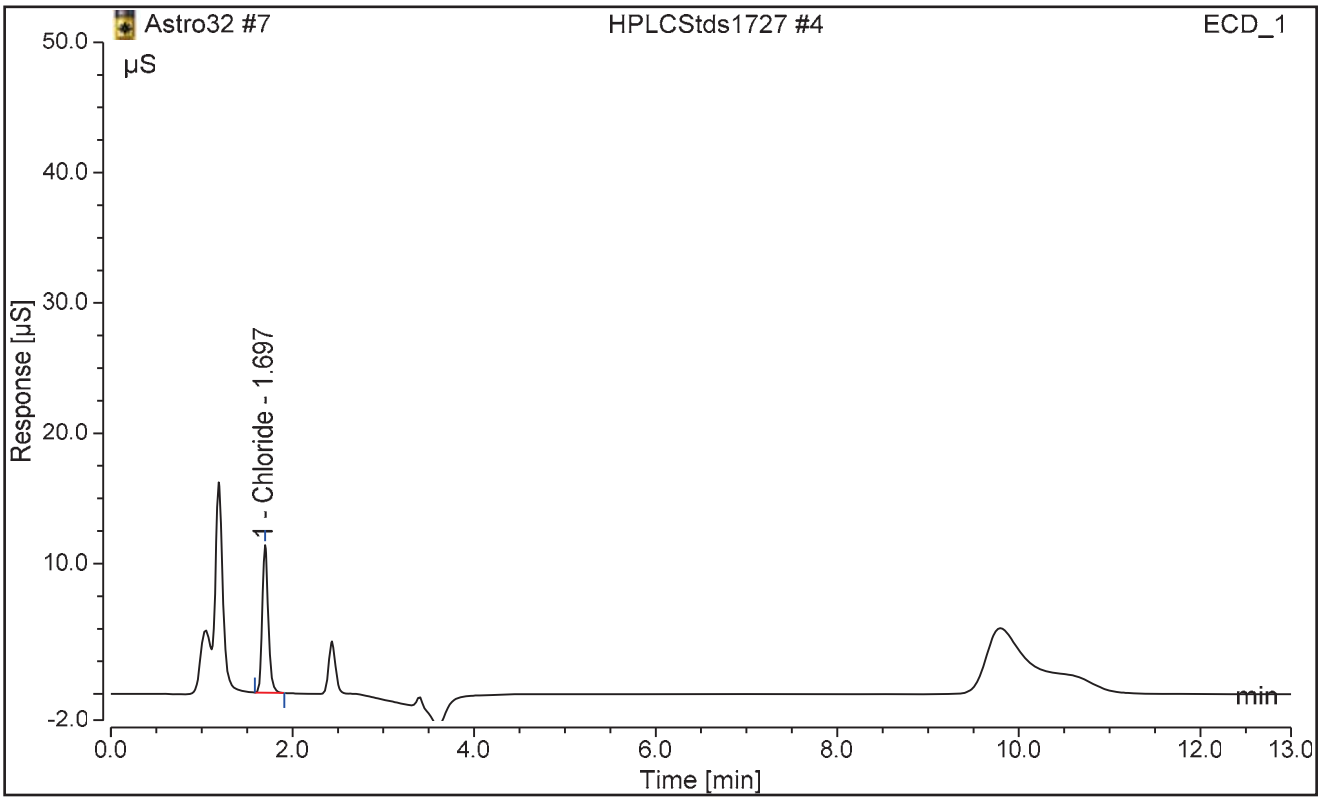


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	1.351	18.125	15.17418	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 16:12**	Run Time:	**13.00**

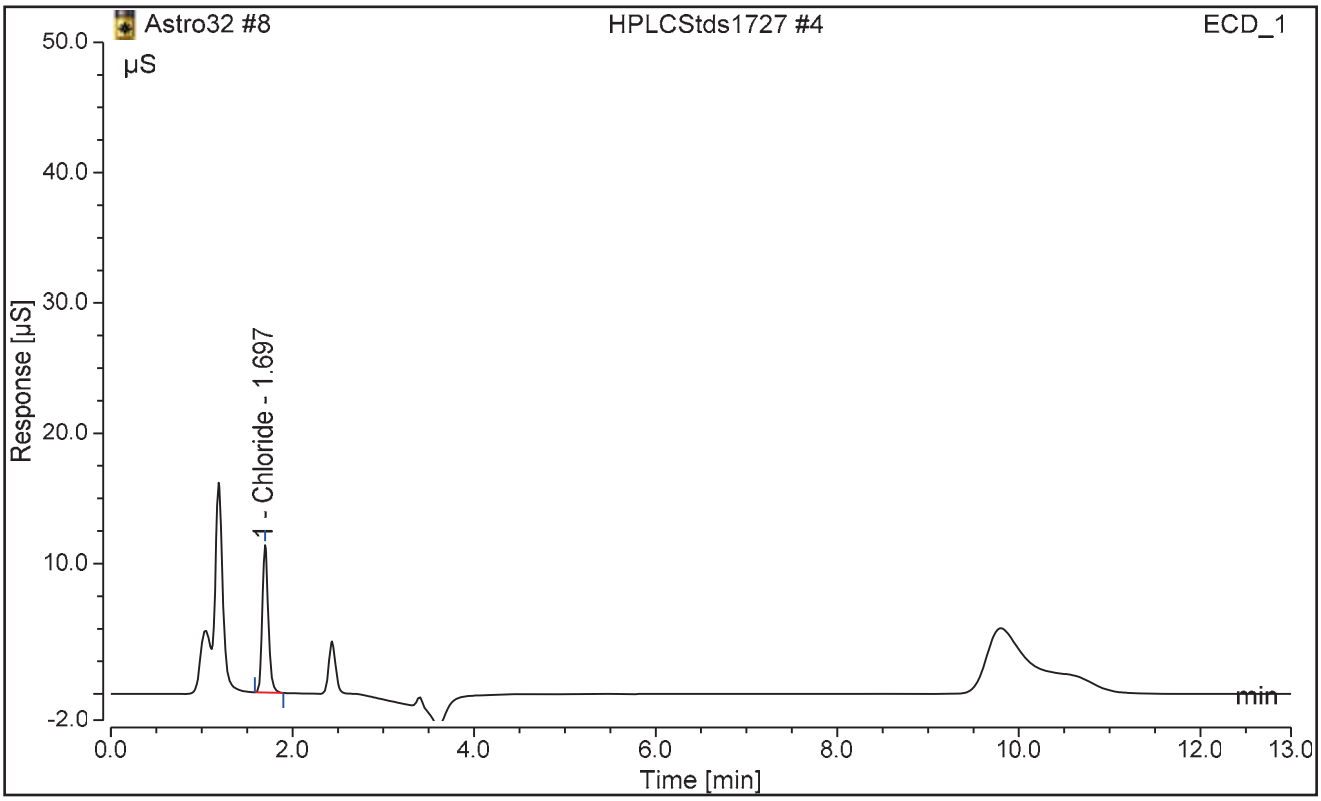


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	0.856	11.325	9.95541	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 16:27**	Run Time:	**13.00**

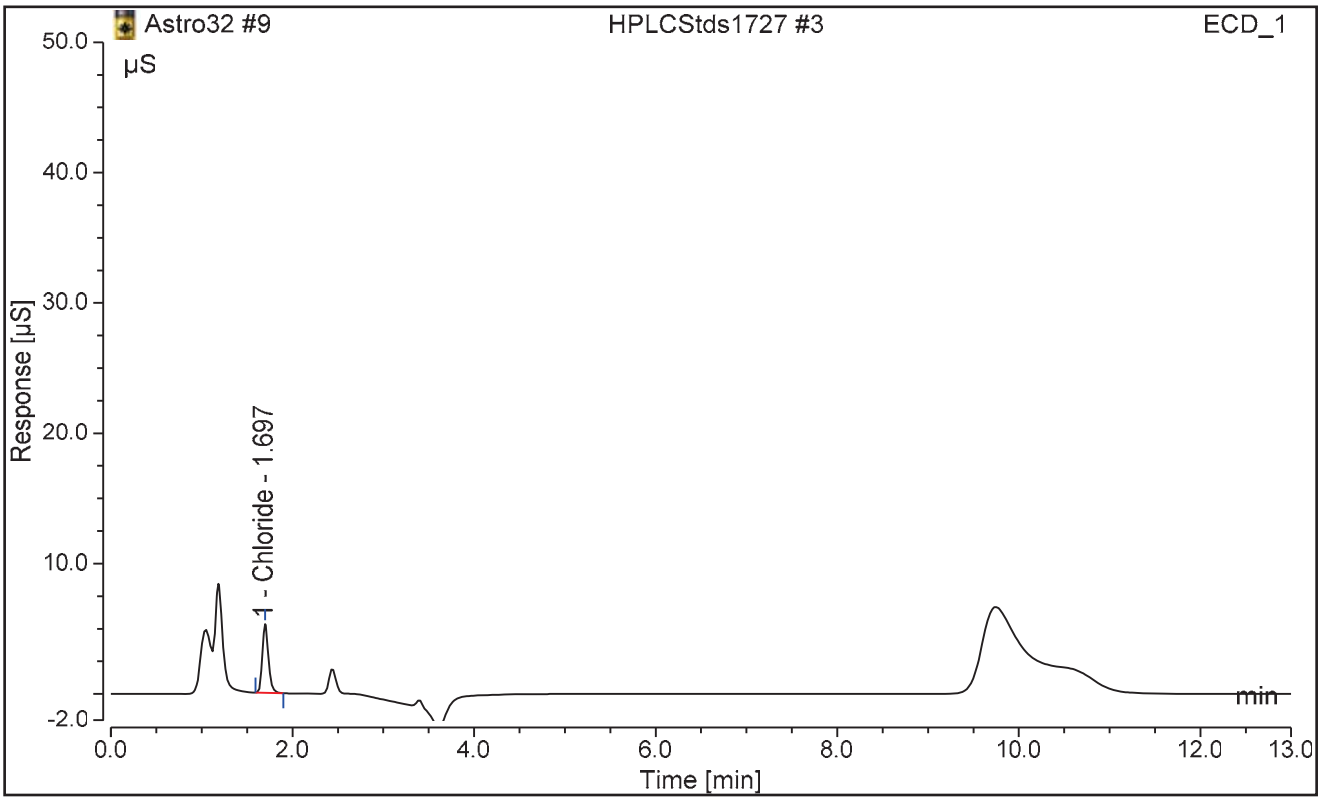


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	0.858	11.312	9.97833	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 16:42**	Run Time:	**13.00**



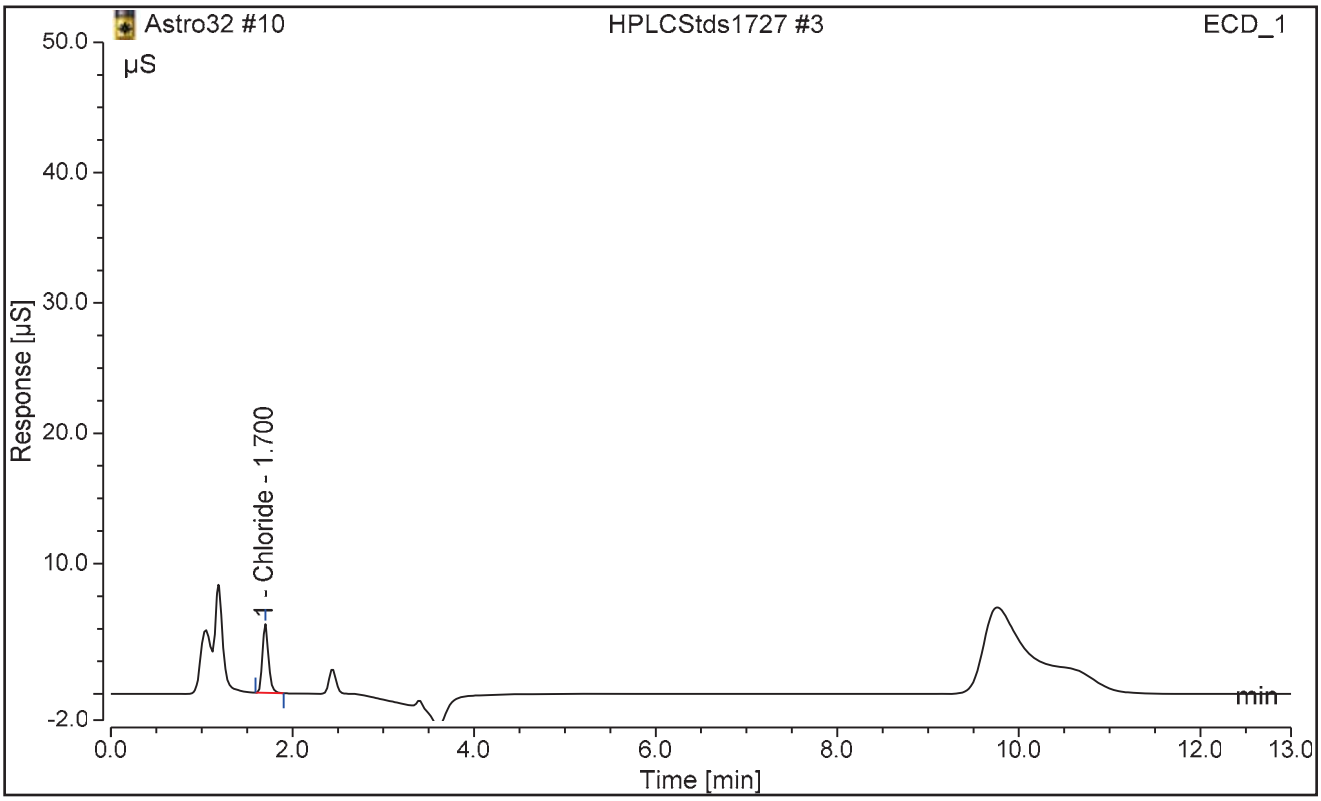
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	0.406	5.281	4.88471	FALSE	FALSE

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Peak Analysis Report

Sample Name:	**HPLCStds1727 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 16:57**	Run Time:	**13.00**

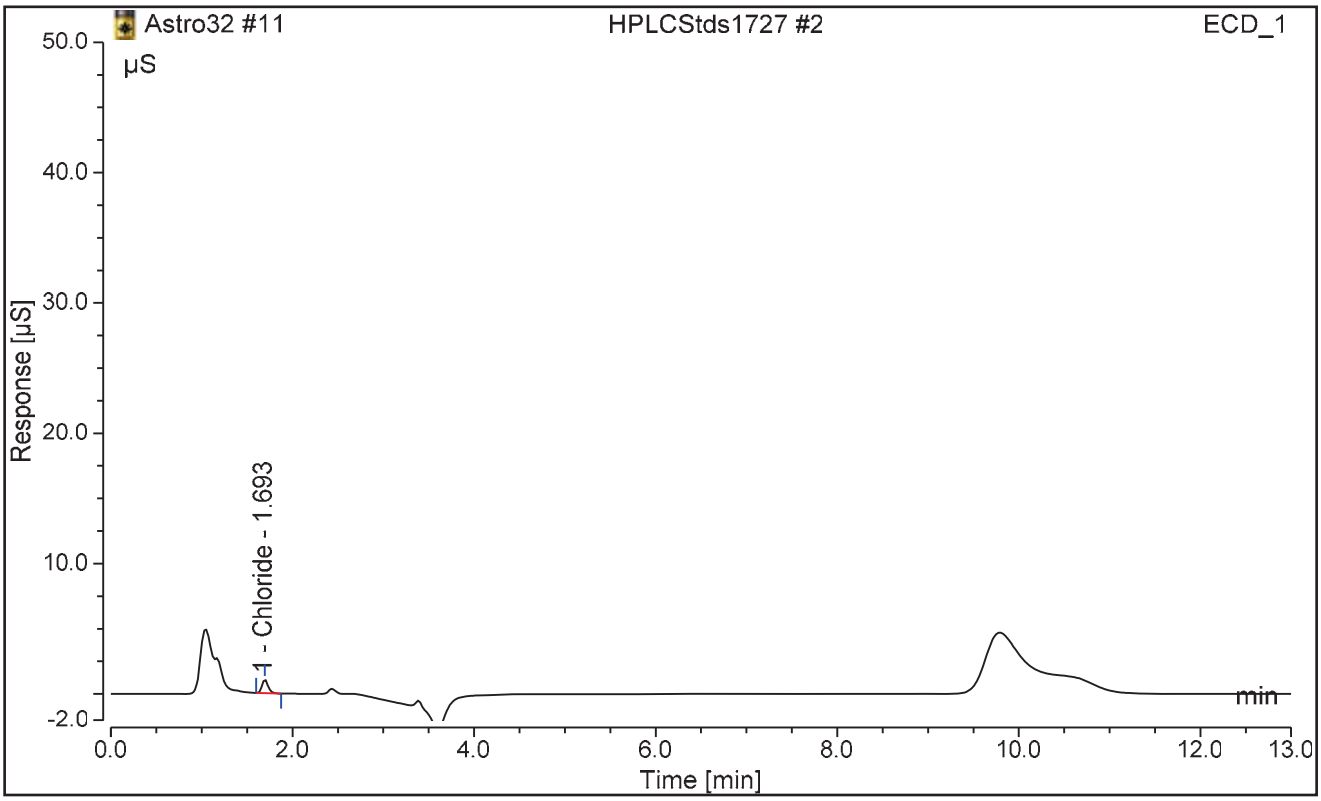


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	0.405	5.262	4.86723	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 17:12**	Run Time:	**13.00**

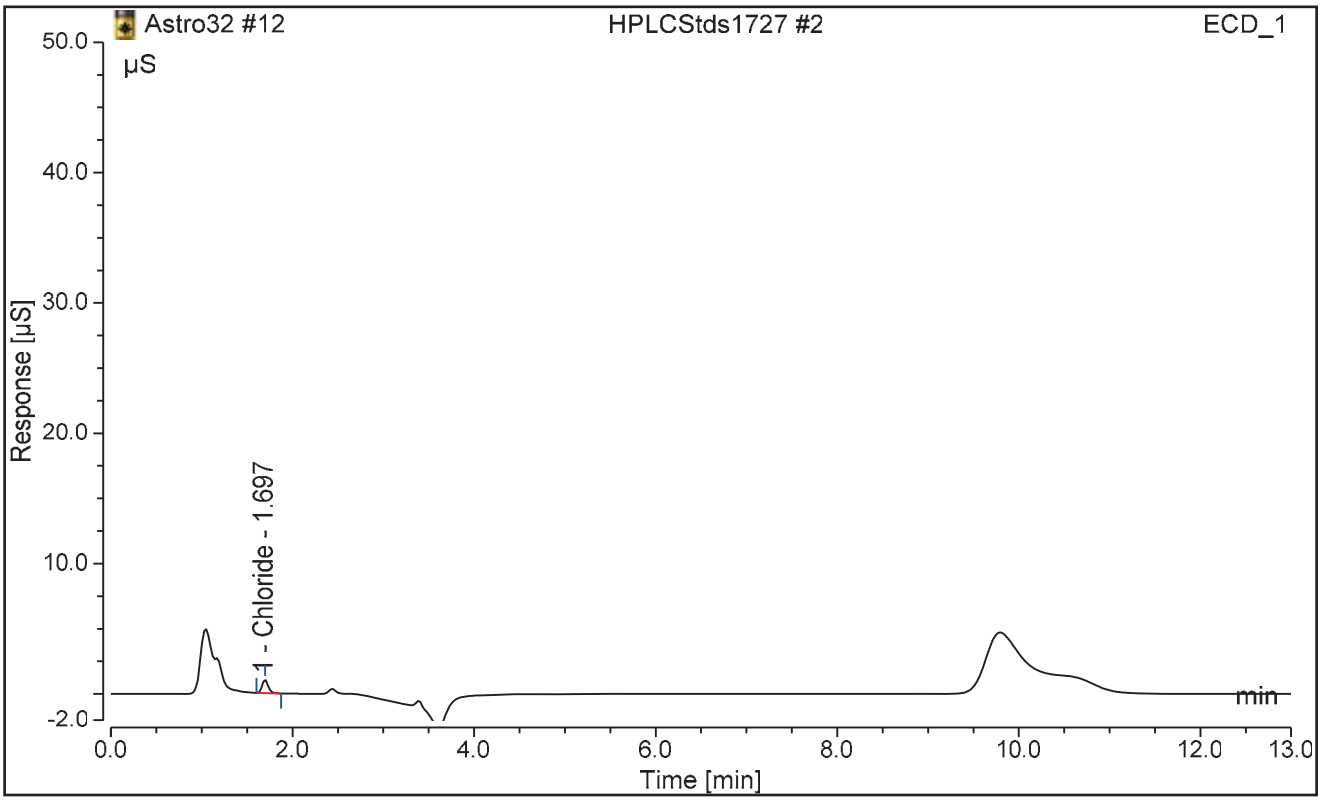


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.69	Chloride	0.080	1.038	1.00118	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 17:28**	Run Time:	**13.00**

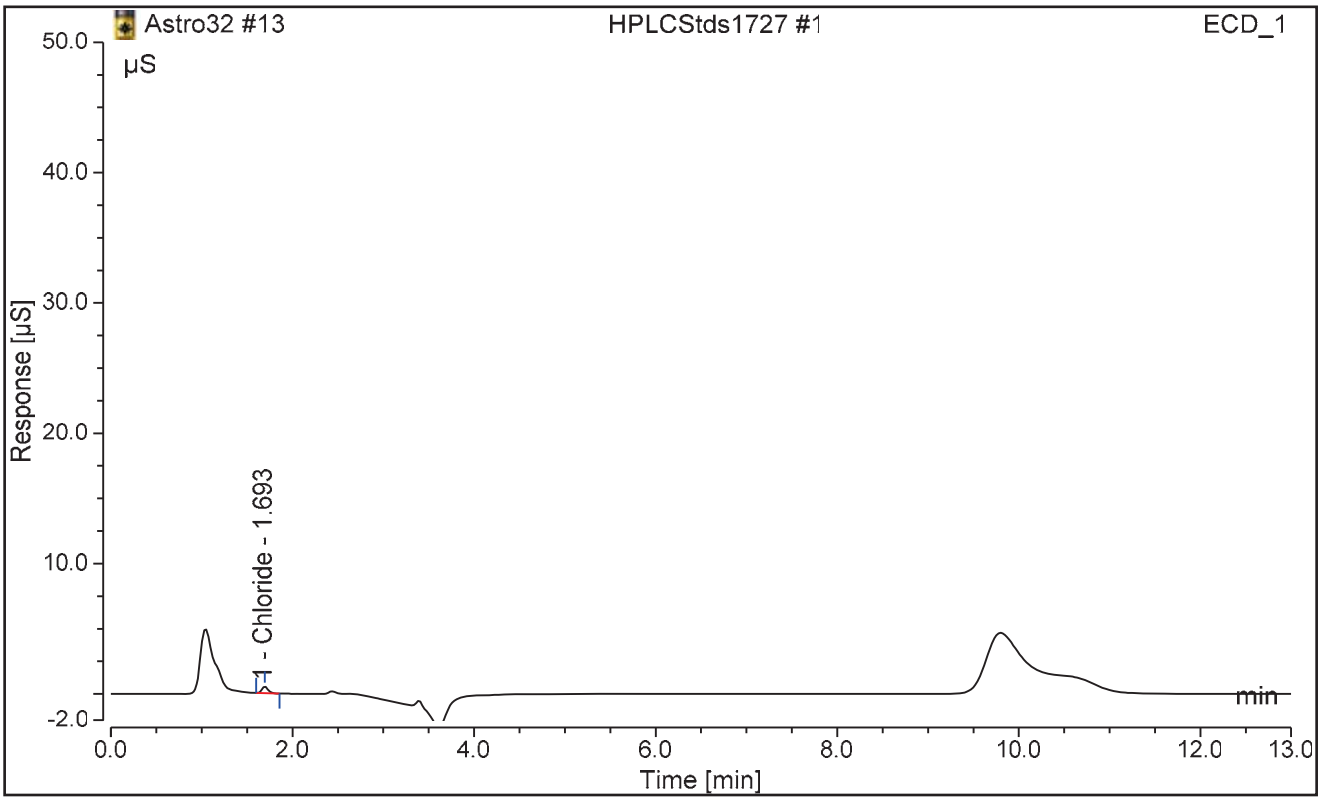


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	0.079	1.033	0.99524	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 17:43**	Run Time:	**13.00**

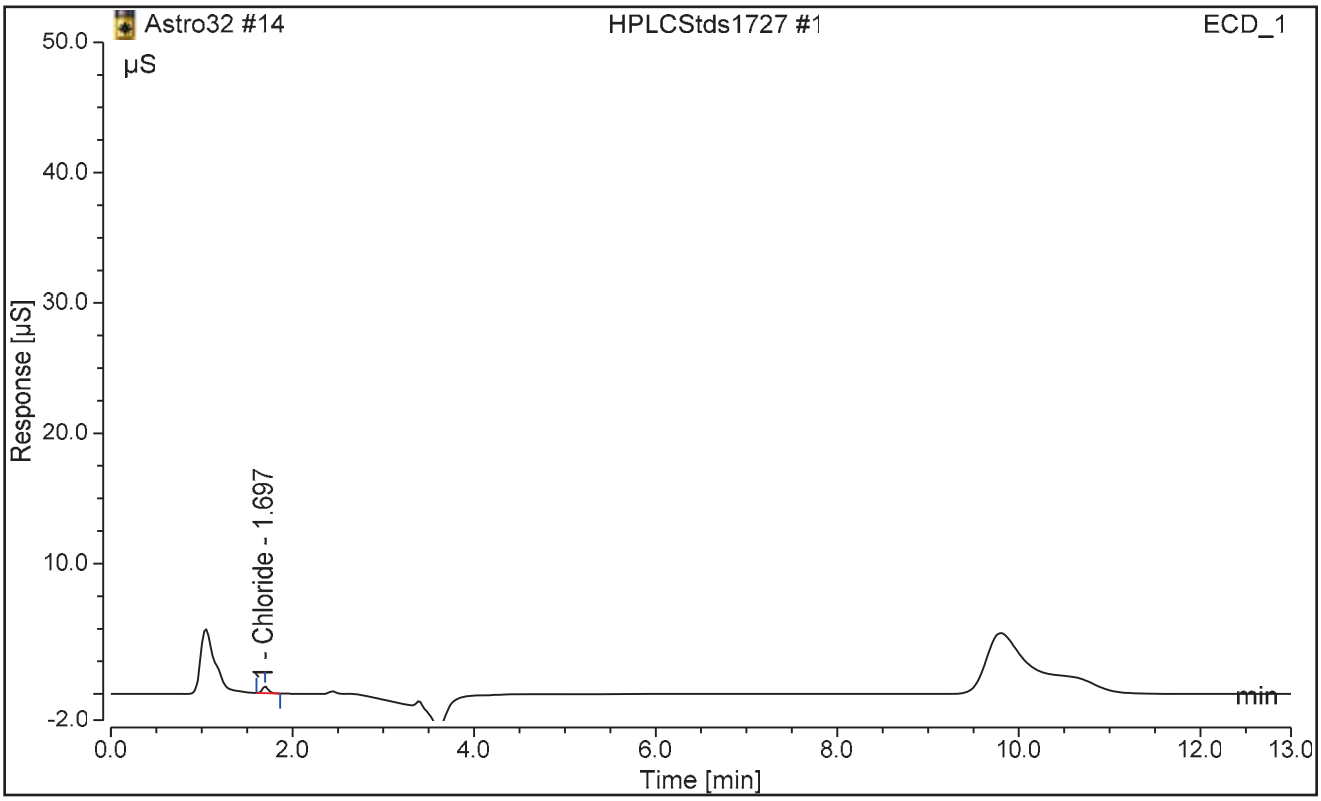


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.69	Chloride	0.040	0.519	0.50855	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 17:58**	Run Time:	**13.00**

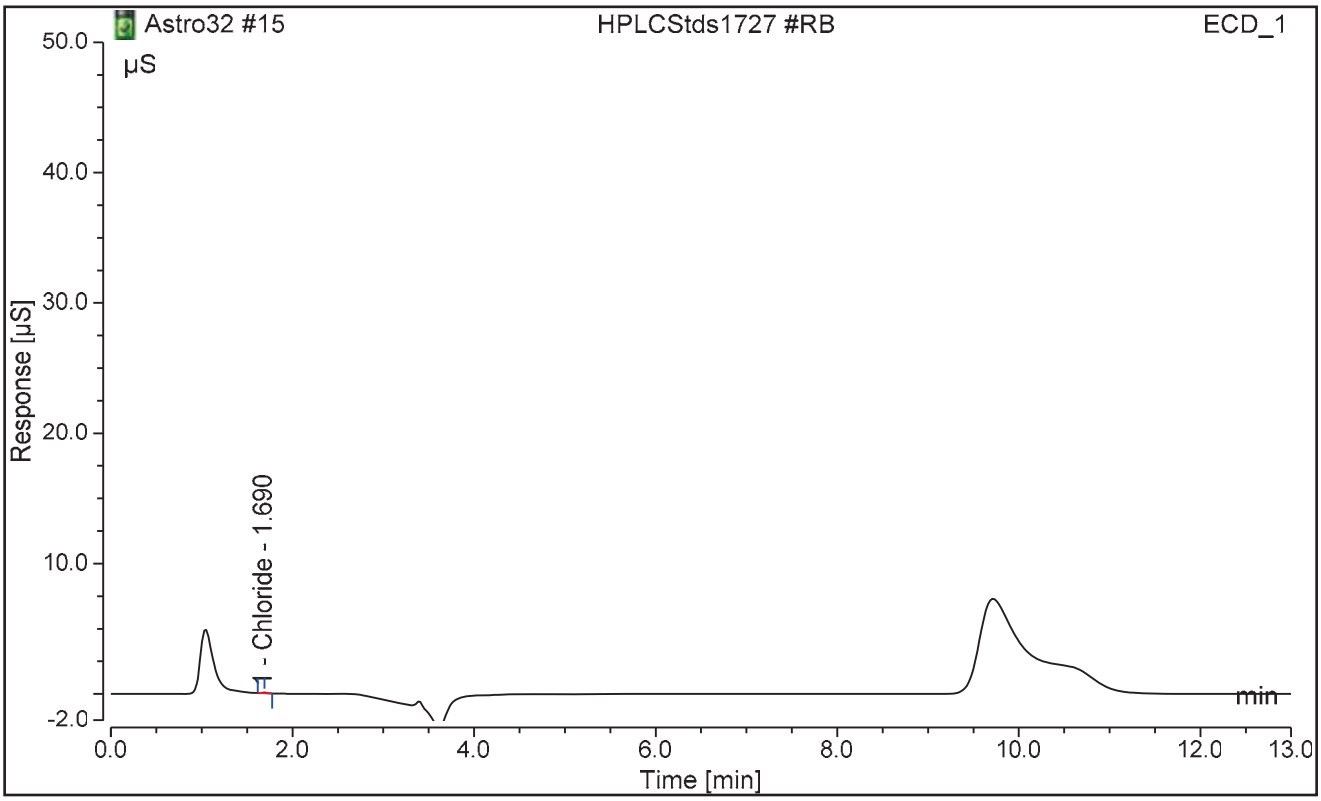


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	0.040	0.518	0.50795	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 18:13**	Run Time:	**13.00**

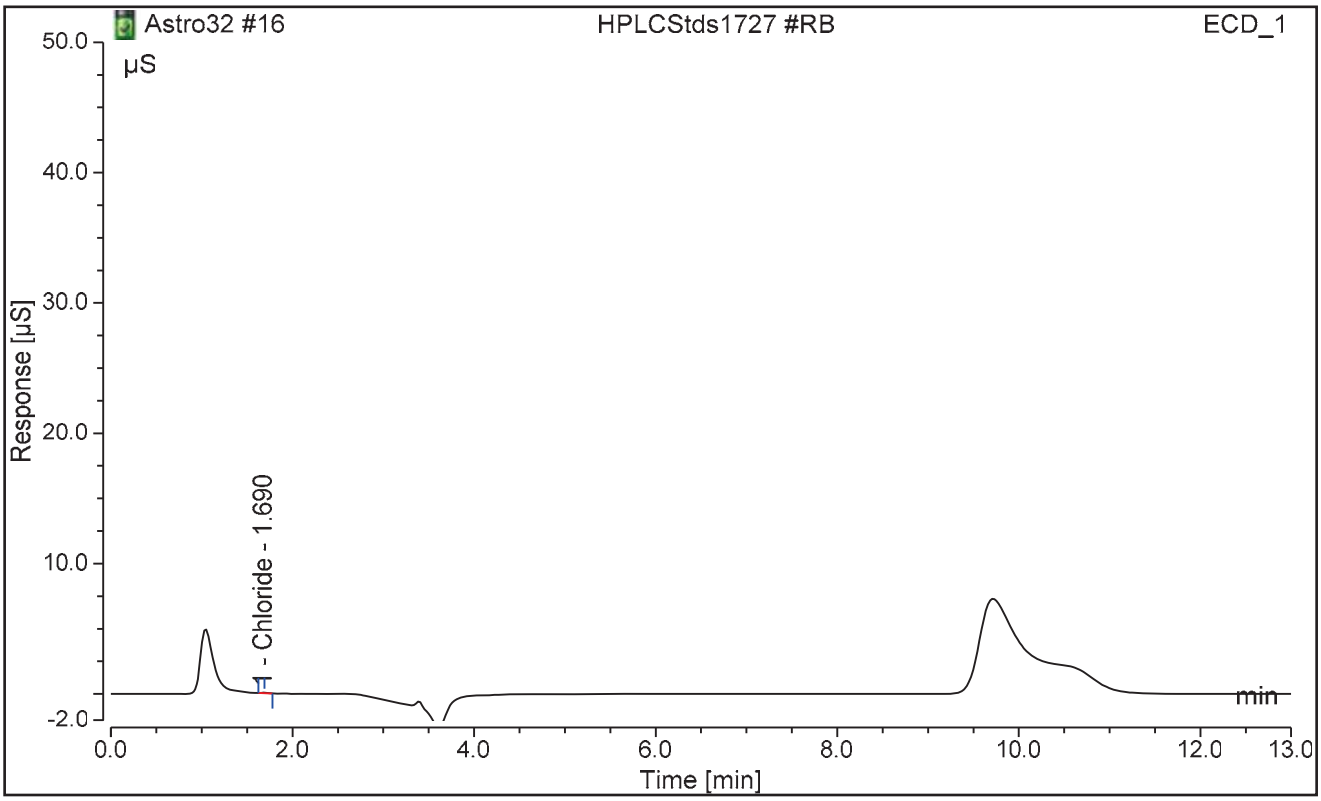


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.69	Chloride	0.003	0.048	0.06148	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 18:28**	Run Time:	**13.00**

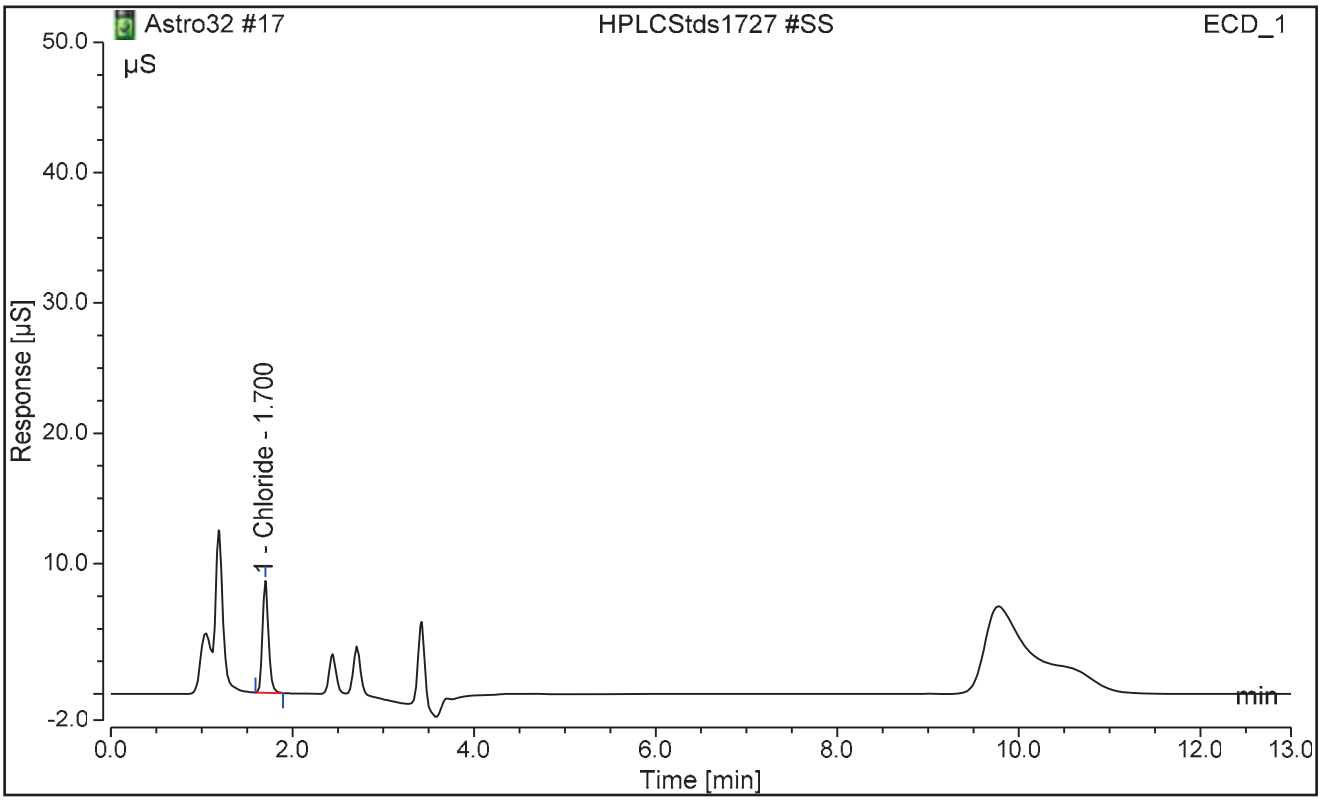


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.69	Chloride	0.003	0.048	0.06159	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 18:43**	Run Time:	**13.00**

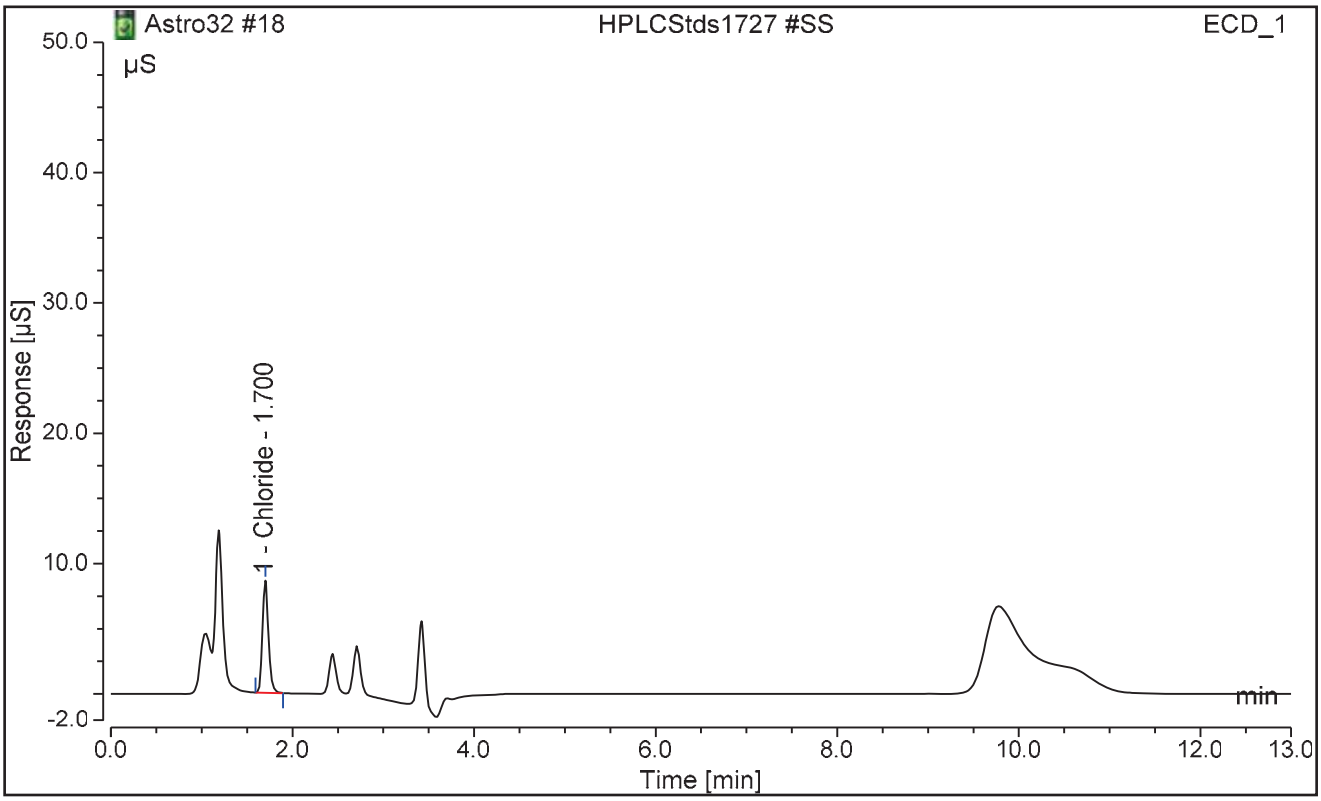


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	0.651	8.584	7.68963	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**13-Jun-2024 / 18:58**	Run Time:	**13.00**

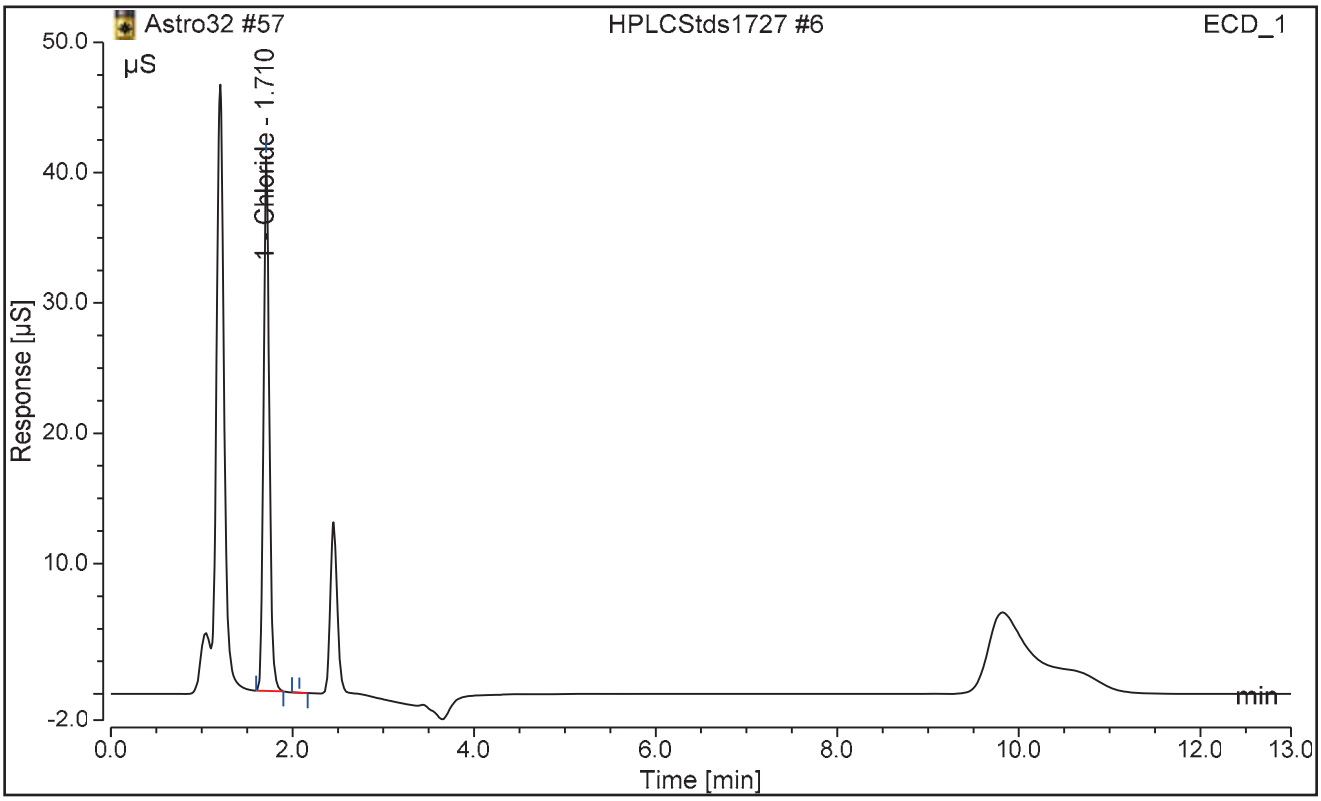


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	0.654	8.599	7.71507	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 04:48**	Run Time:	**13.00**

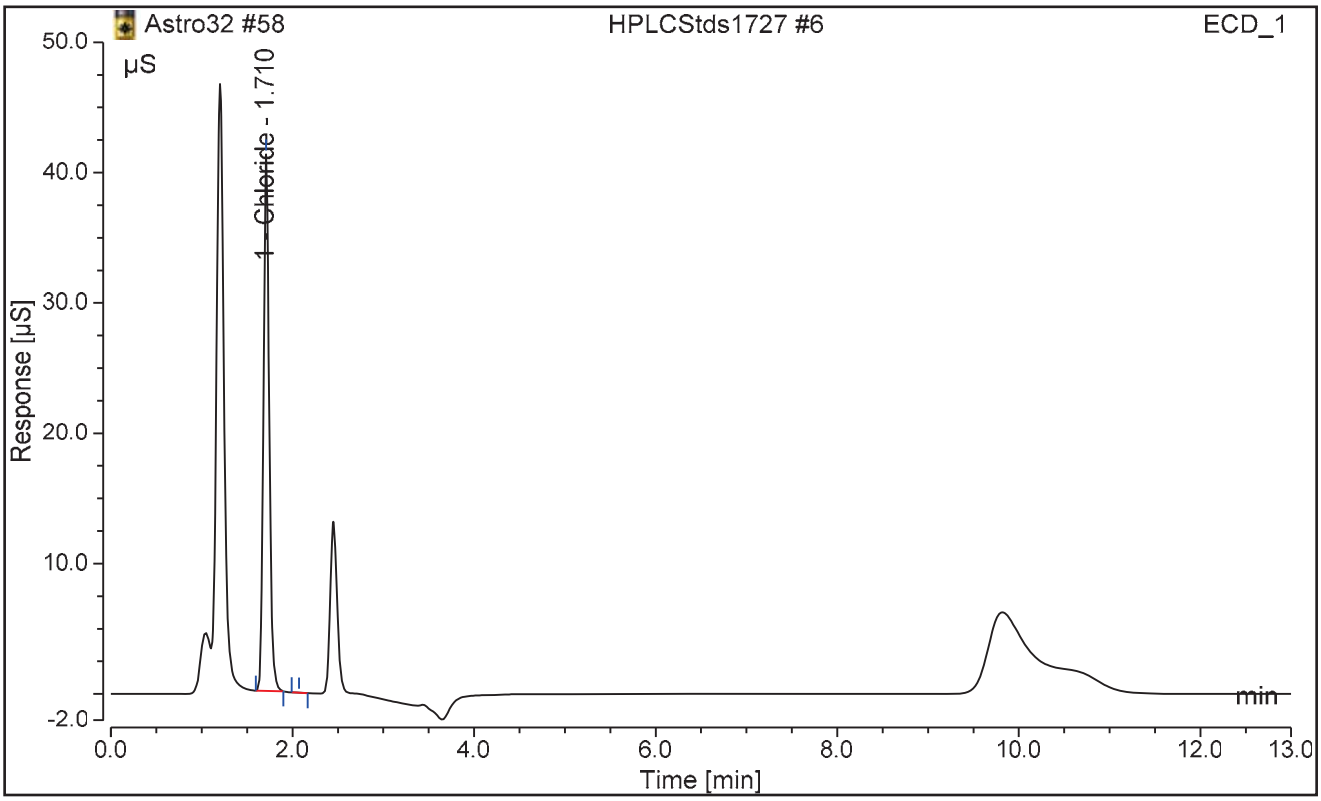


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.71	Chloride	3.021	40.999	29.92657	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 05:03**	Run Time:	**13.00**

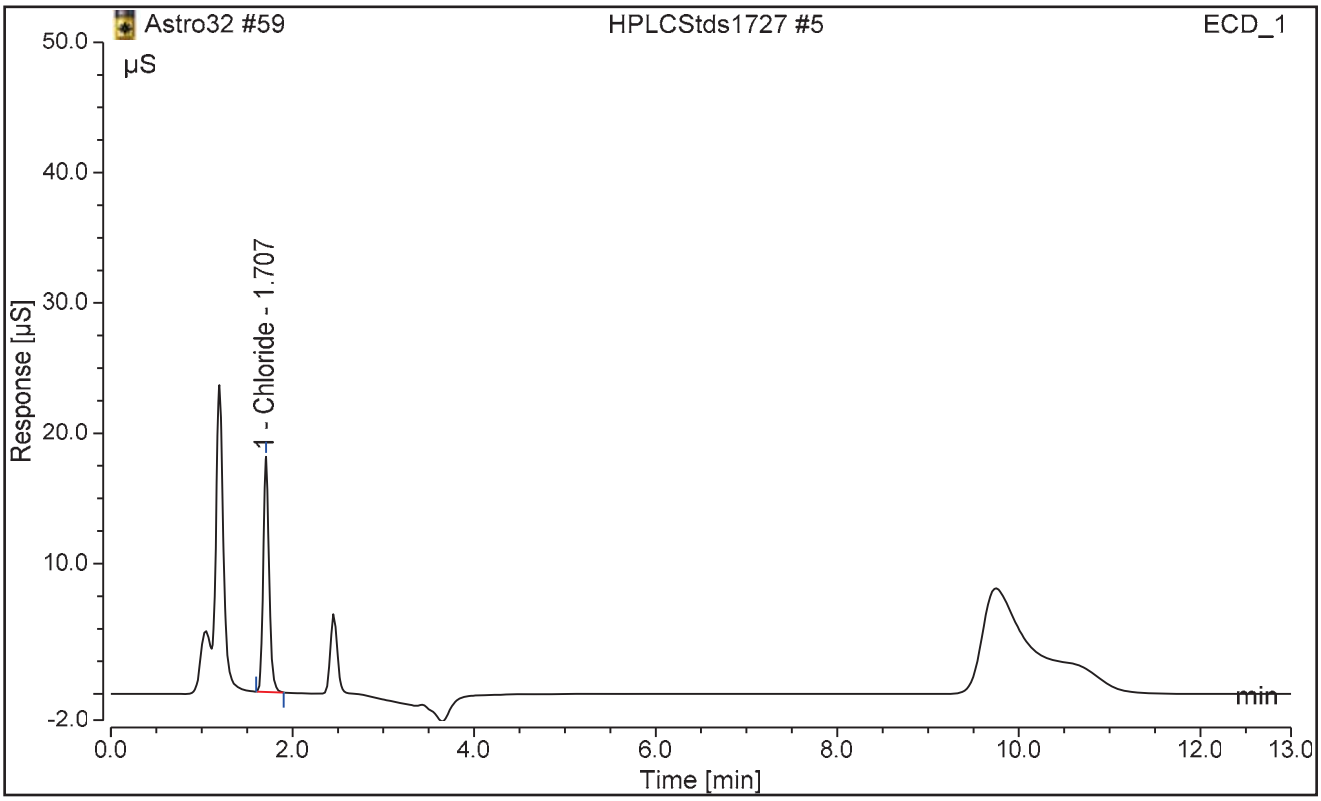


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.71	Chloride	3.028	41.168	29.97683	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 05:18**	Run Time:	**13.00**

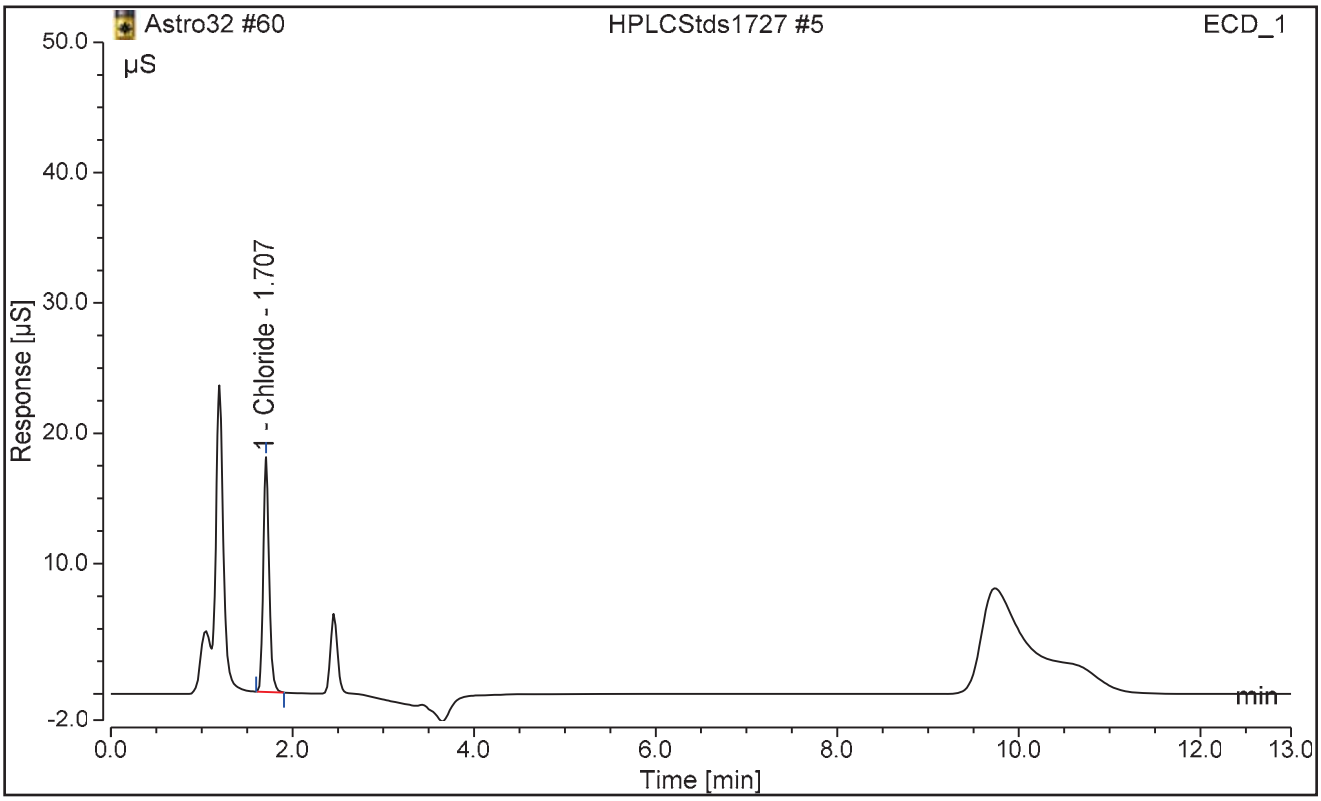


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.71	Chloride	1.356	18.054	15.22128	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 05:34**	Run Time:	**13.00**

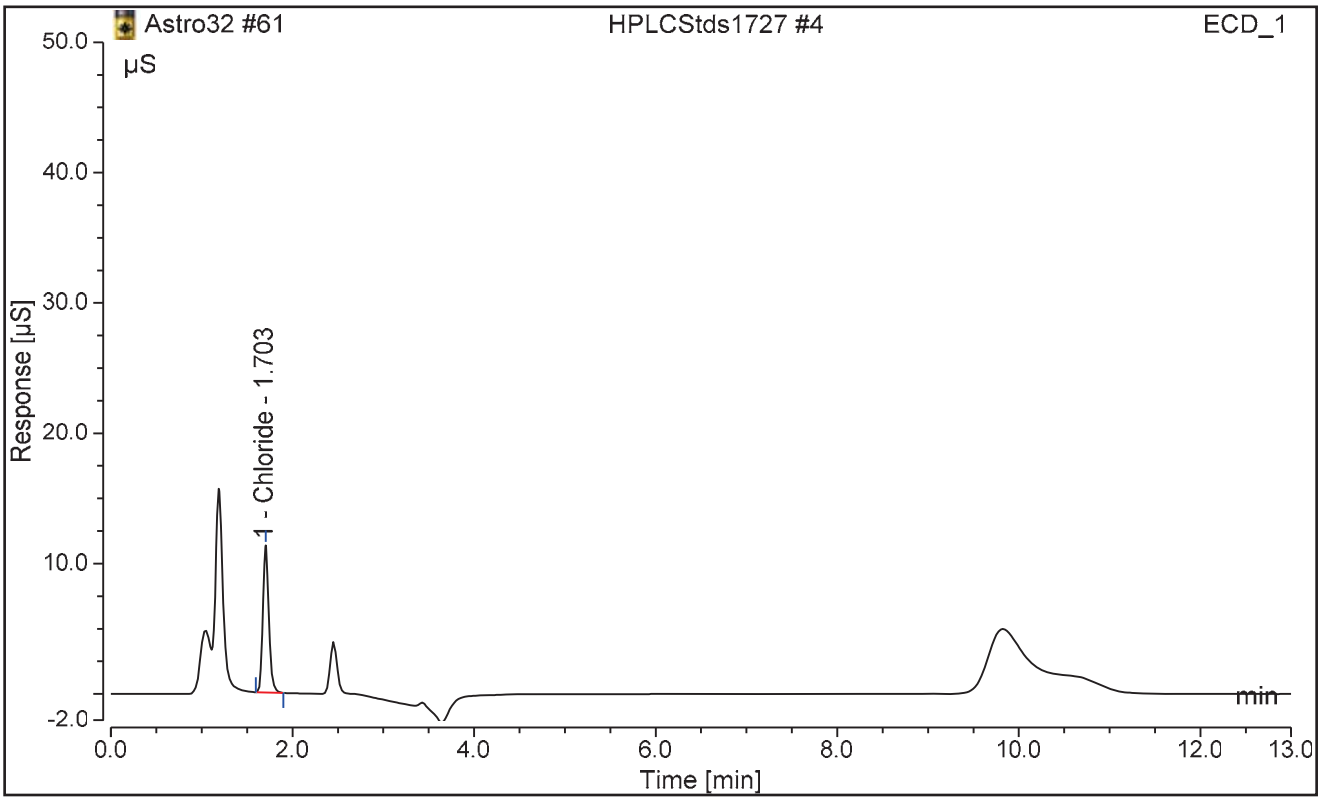


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.71	Chloride	1.354	18.029	15.20957	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 05:49**	Run Time:	**13.00**

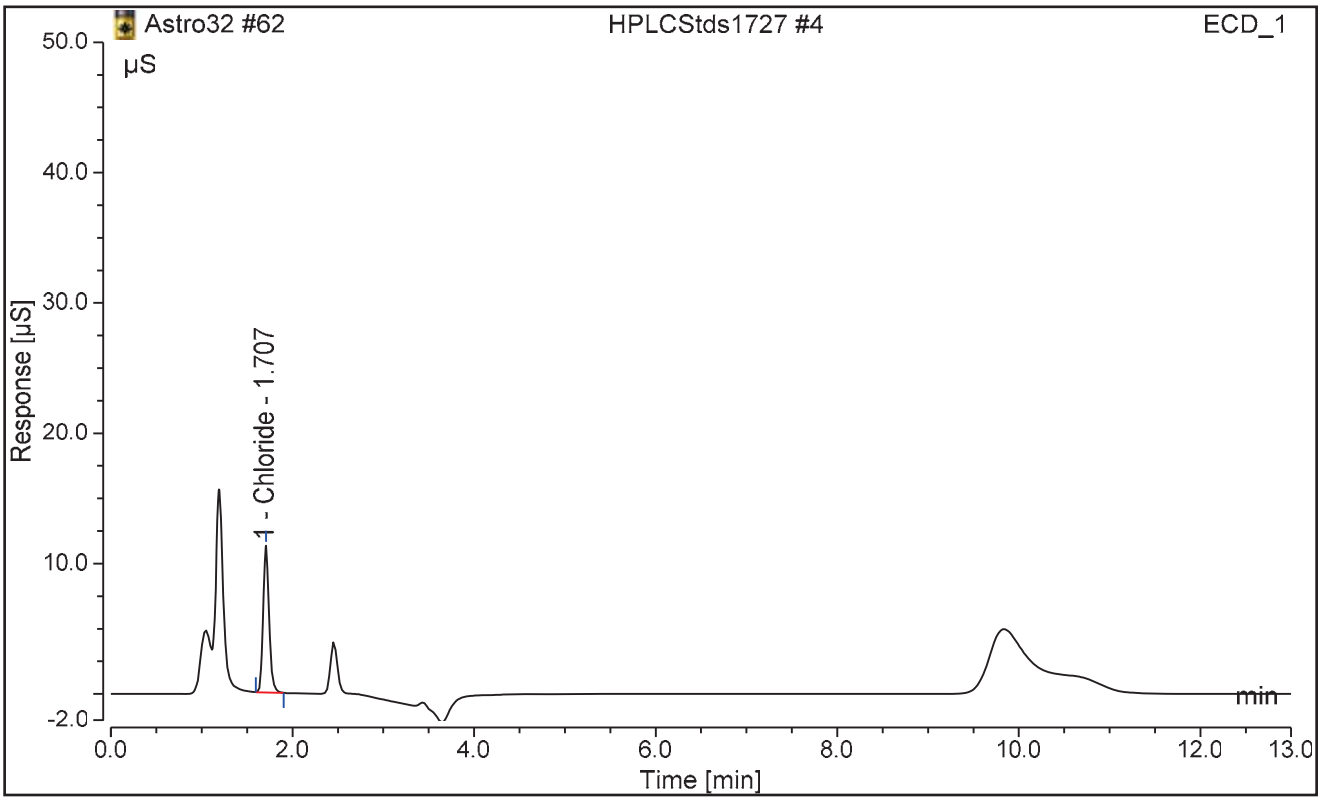


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	0.858	11.275	9.97848	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 06:04**	Run Time:	**13.00**

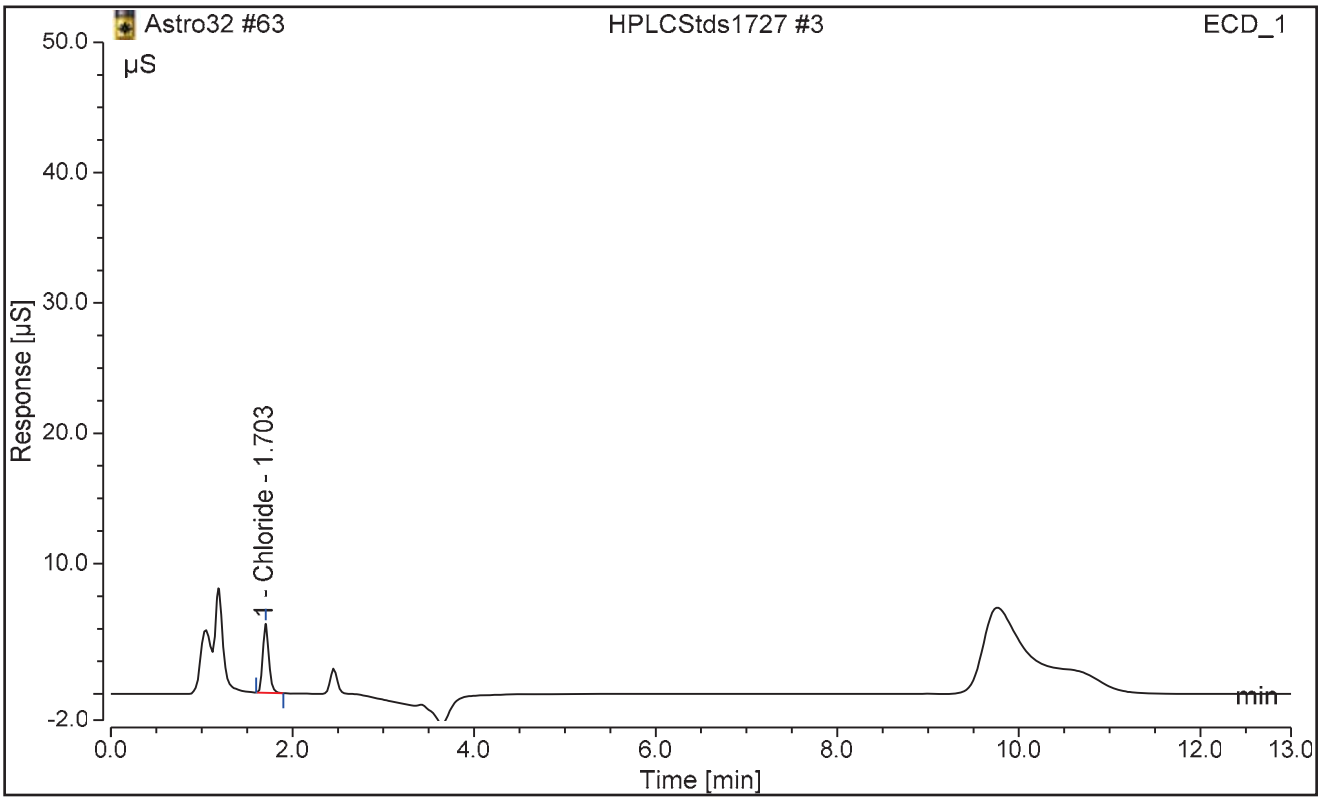


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.71	Chloride	0.854	11.248	9.94151	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 06:19**	Run Time:	**13.00**

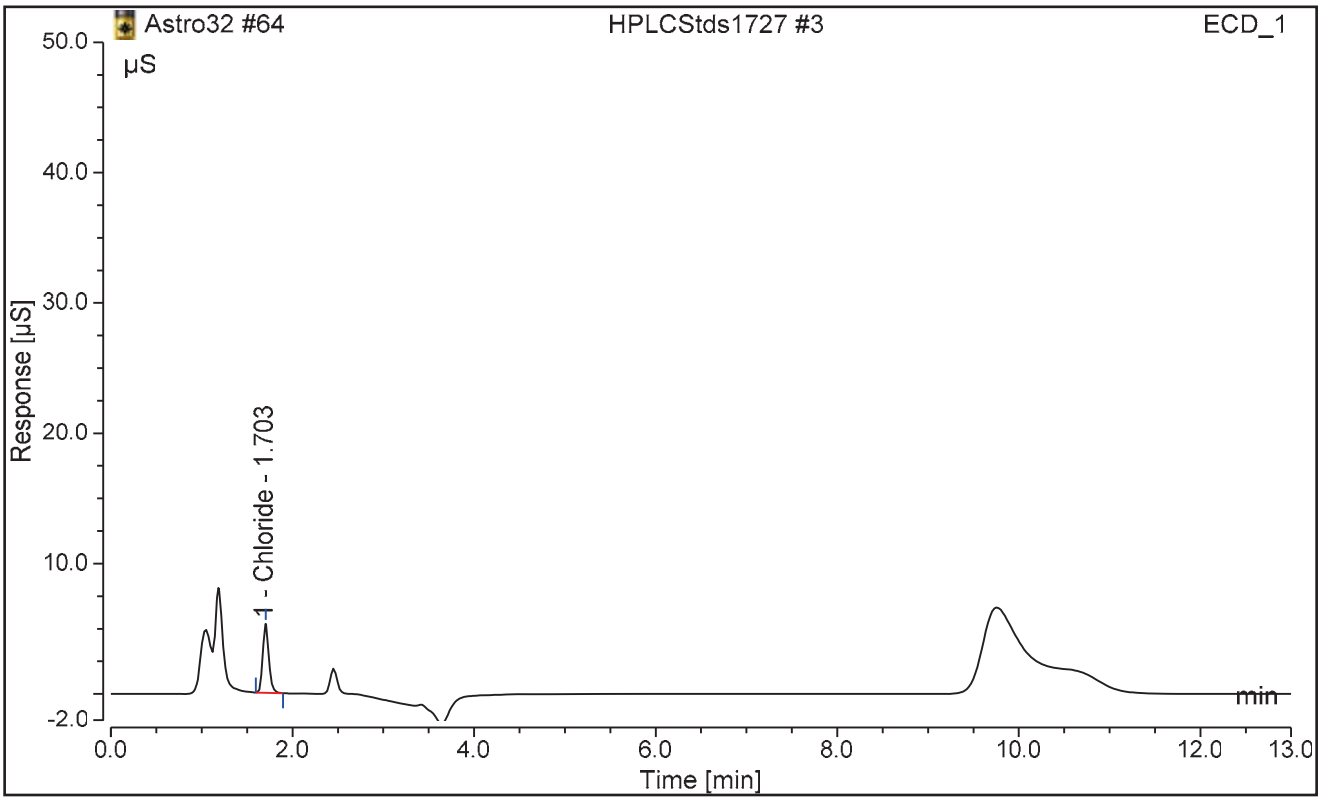


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	0.407	5.280	4.89462	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 06:34**	Run Time:	**13.00**

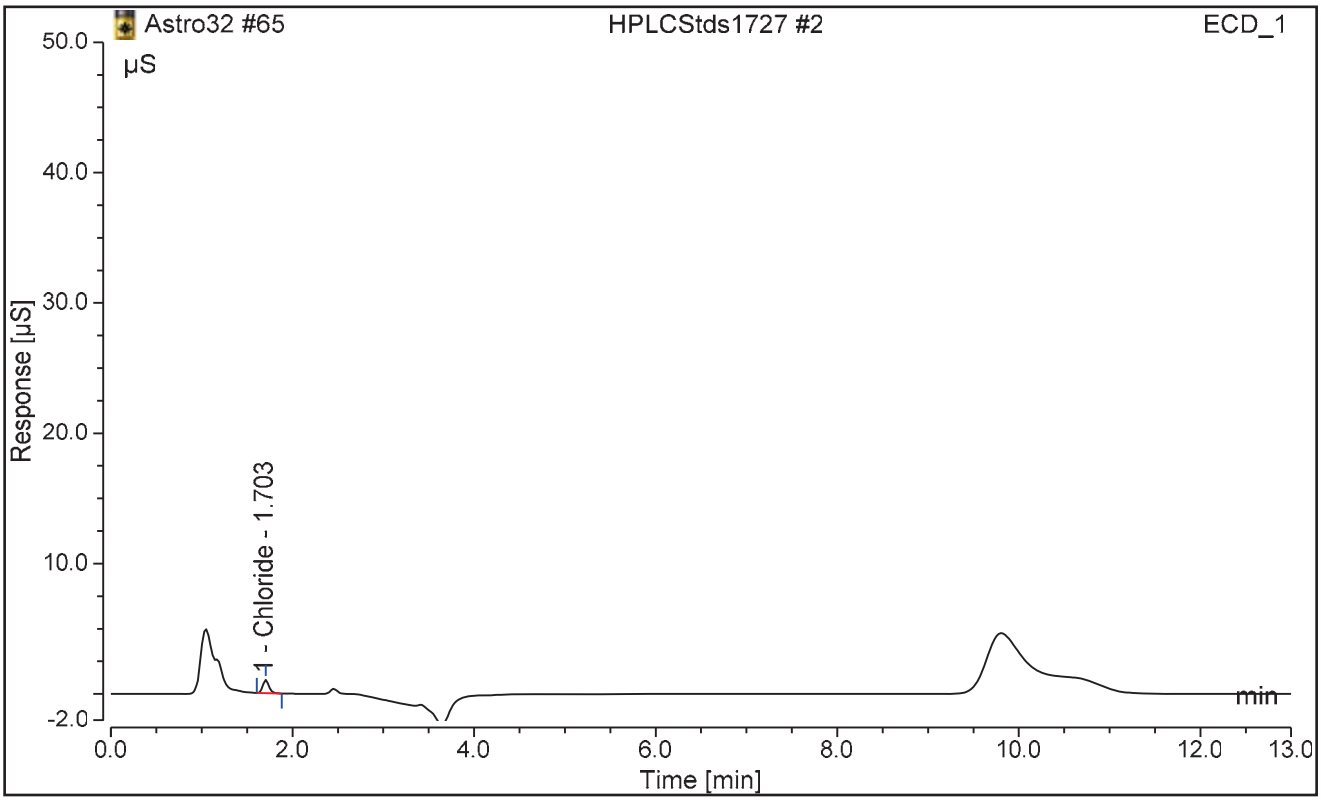


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	0.407	5.285	4.89319	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 06:49**	Run Time:	**13.00**

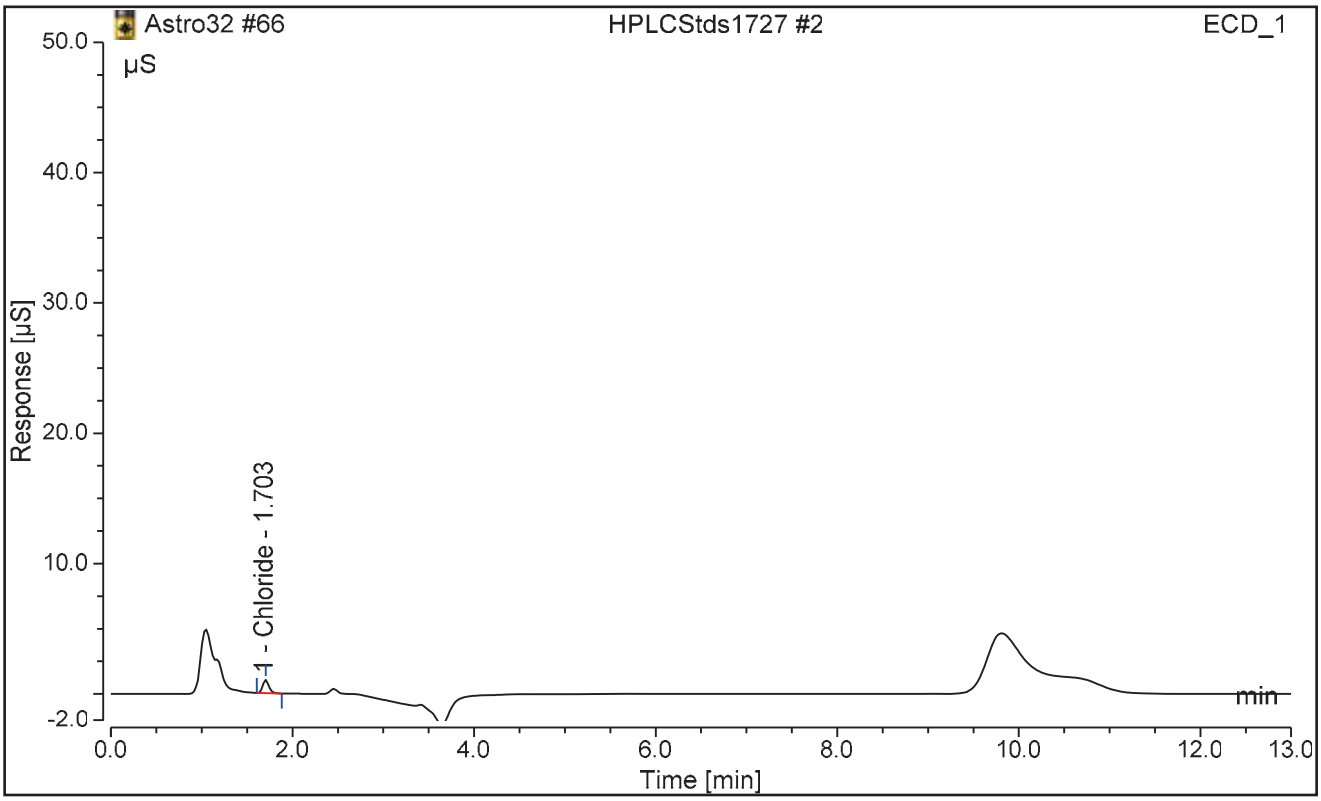


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	0.080	1.034	1.00159	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 07:04**	Run Time:	**13.00**

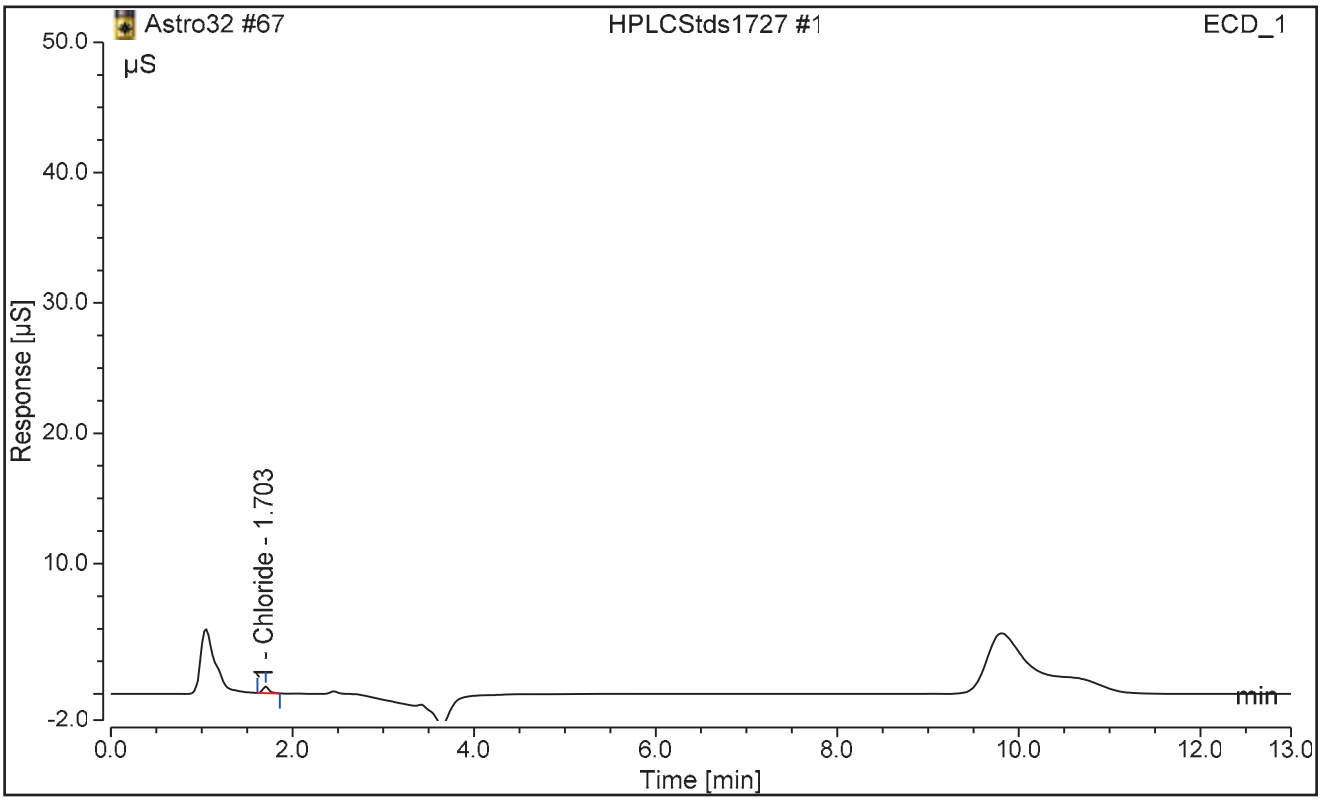


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	0.080	1.030	0.99620	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 07:19**	Run Time:	**13.00**

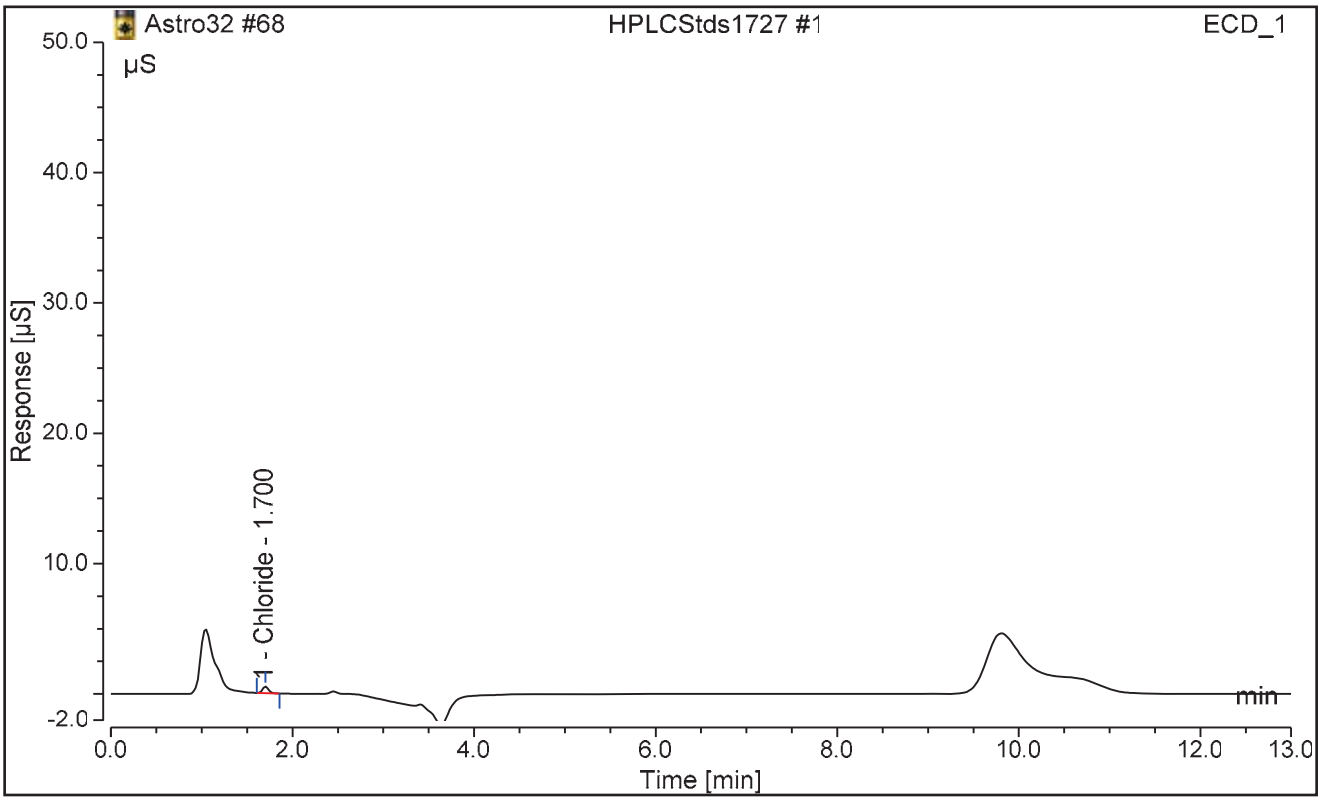


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	0.040	0.519	0.50880	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1727 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**kenbell**
Inj. Date / Time:	**14-Jun-2024 / 07:35**	Run Time:	**13.00**



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.70	Chloride	0.040	0.518	0.50857	FALSE	FALSE

Calibration Table

No.	Injection Name	Inject Time	Pos.	Level	Ref.Amount	Calibration Point Status	Ref.Amount	Calibration Point Status	Ref.Amount	Calibration Point Status	Dil.Factor	Volume
					µg/mL ECD_1 Chloride	ECD_1 Chloride	µg/mL ECD_1 Bromide	ECD_1 Bromide	µg/mL ECD_1 Fluoride	ECD_1 Fluoride		µL
7	HPLCStds1735 #6	15/Jun/2024 08:46	RA6	06	30.0000	Ok	30.0000	Ok	30.0000	Ok	1.0000	25.00
8	HPLCStds1735 #6	15/Jun/2024 09:03	RA6	06	30.0000	Ok	30.0000	Ok	30.0000	Ok	1.0000	25.00
9	HPLCStds1735 #5	15/Jun/2024 09:20	RA5	05	15.0000	Ok	15.0000	Ok	15.0000	Ok	1.0000	25.00
10	HPLCStds1735 #5	15/Jun/2024 09:36	RA5	05	15.0000	Ok	15.0000	Ok	15.0000	Ok	1.0000	25.00
11	HPLCStds1735 #4	15/Jun/2024 09:53	RA4	04	10.0000	Ok	10.0000	Ok	10.0000	Ok	1.0000	25.00
12	HPLCStds1735 #4	15/Jun/2024 10:09	RA4	04	10.0000	Ok	10.0000	Ok	10.0000	Ok	1.0000	25.00
13	HPLCStds1735 #3	15/Jun/2024 10:26	RA3	03	5.0000	Ok	5.0000	Ok	5.0000	Ok	1.0000	25.00
14	HPLCStds1735 #3	15/Jun/2024 10:43	RA3	03	5.0000	Ok	5.0000	Ok	5.0000	Ok	1.0000	25.00
15	HPLCStds1735 #2	15/Jun/2024 10:59	RA2	02	1.0000	Ok	1.0000	Ok	1.0000	Ok	1.0000	25.00
16	HPLCStds1735 #2	15/Jun/2024 11:16	RA2	02	1.0000	Ok	1.0000	Ok	1.0000	Ok	1.0000	25.00
17	HPLCStds1735 #1	15/Jun/2024 11:33	RA1	01	0.5000	Ok	0.5000	Ok	0.5000	Ok	1.0000	25.00
18	HPLCStds1735 #1	15/Jun/2024 11:49	RA1	01	0.5000	Ok	0.5000	Ok	0.5000	Ok	1.0000	25.00
99	HPLCStds1735 #6	16/Jun/2024 10:16	RA6	06	30.0000	Ok	30.0000	Ok	30.0000	Ok	1.0000	25.00
100	HPLCStds1735 #6	16/Jun/2024 10:33	RA6	06	30.0000	Ok	30.0000	Ok	30.0000	Ok	1.0000	25.00
101	HPLCStds1735 #5	16/Jun/2024 10:49	RA5	05	15.0000	Ok	15.0000	Ok	15.0000	Ok	1.0000	25.00
102	HPLCStds1735 #5	16/Jun/2024 11:06	RA5	05	15.0000	Ok	15.0000	Ok	15.0000	Ok	1.0000	25.00
104	HPLCStds1735 #4	16/Jun/2024 13:53	RA4	04	10.0000	Ok	10.0000	Ok	10.0000	Ok	1.0000	25.00
105	HPLCStds1735 #4	16/Jun/2024 14:09	RA4	04	10.0000	Ok	10.0000	Ok	10.0000	Ok	1.0000	25.00
106	HPLCStds1735 #3	16/Jun/2024 14:26	RA3	03	5.0000	Ok	5.0000	Ok	5.0000	Ok	1.0000	25.00
107	HPLCStds1735 #3	16/Jun/2024 14:43	RA3	03	5.0000	Ok	5.0000	Ok	5.0000	Ok	1.0000	25.00
108	HPLCStds1735 #2	16/Jun/2024 14:59	RA2	02	1.0000	Ok	1.0000	Ok	1.0000	Ok	1.0000	25.00
109	HPLCStds1735 #2	16/Jun/2024 15:16	RA2	02	1.0000	Ok	1.0000	Ok	1.0000	Ok	1.0000	25.00
110	HPLCStds1735 #1	16/Jun/2024 15:33	RA1	01	0.5000	Ok	0.5000	Ok	0.5000	Ok	1.0000	25.00
111	HPLCStds1735 #1	16/Jun/2024 15:49	RA1	01	0.5000	Ok	0.5000	Ok	0.5000	Ok	1.0000	25.00

Detection Parameters

Ret. Time min	Param. Name	Param. Value	Inj. Type	Channel
Always	Baseline Noise Auto Range	On	Any	All Channels
Always	Cobra Smoothing Width	Auto	Any	All Channels
Always	Consider Void Peak	Off	Any	All Channels
0.000	Maximum Rider Ratio	10 [%]	Any	All Channels
0.000	Tailing Sensitivity Factor	0.100 [%]	Any	All Channels
0.000	Inhibit Integration	On	Any	All Channels
0.000	Minimum Area	Auto	Any	All Channels
2.987	Inhibit Integration	Off	Any	All Channels
3.614	Inhibit Integration	On	Any	All Channels
4.331	Inhibit Integration	Off	Any	All Channels
5.012	Inhibit Integration	On	Any	All Channels
5.973	Inhibit Integration	Off	Any	All Channels
8.629	Inhibit Integration	On	Any	All Channels

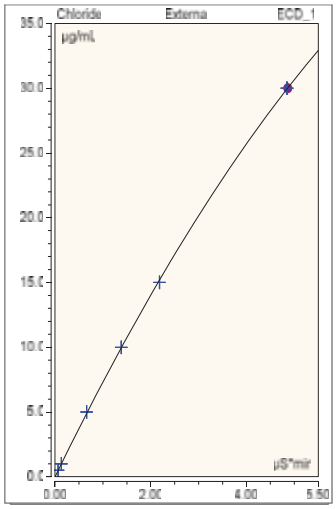
Calibration Batch Report

Sequence:	Astro34	*Injection Volume:*	25.00
Instrument Method:	AS22 ASAP new	*Operator:*	kenbell
Inj. Date / Time:	15-Jun-2024 / 08:46	*Run Time:*	14.5

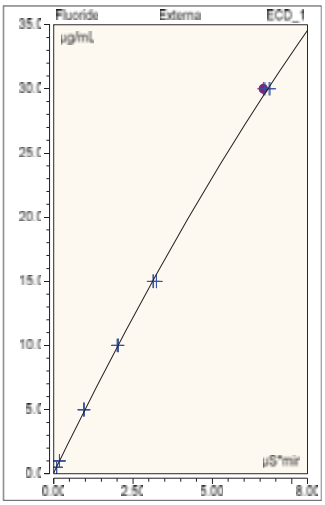
Calibration Summary

Peak Name	Eval.Type	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
Fluoride	Area	Quad, WithOffset, 1/A	24.000	0.054	5.099	-0.098	99.957
Chloride	Area	Quad, WithOffset, 1/A	24.000	0.017	7.594	-0.293	99.989
Bromide	Area	Quad, WithOffset, 1/A	24.000	-0.018	18.661	-0.937	99.998
		AVERAGE:		0.0177	10.4515	-0.4427	99.9813

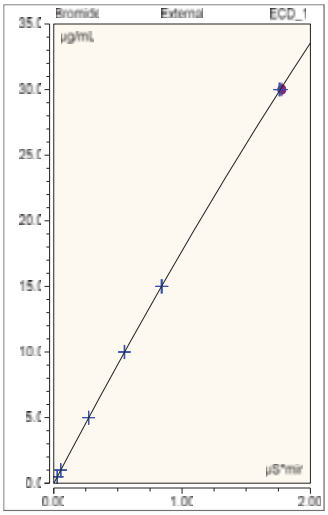
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount µg/mL ECD_1
	Chloride	Chloride	Chloride	Chloride
HPLCStds1735 #6	4.703	4.861	36.893	30.020
HPLCStds1735 #6	4.700	4.842	36.502	29.928
HPLCStds1735 #5	4.690	2.184	16.086	15.207
HPLCStds1735 #5	4.693	2.184	16.118	15.207
HPLCStds1735 #4	4.690	1.382	10.033	9.952
HPLCStds1735 #4	4.690	1.384	9.992	9.968
HPLCStds1735 #3	4.680	0.659	4.688	4.894
HPLCStds1735 #3	4.680	0.659	4.675	4.896
HPLCStds1735 #2	4.687	0.130	0.896	0.997
HPLCStds1735 #2	4.697	0.129	0.900	0.992
HPLCStds1735 #1	4.680	0.065	0.450	0.508
HPLCStds1735 #1	4.673	0.065	0.447	0.507
HPLCStds1735 #6	4.700	4.837	35.913	29.904
HPLCStds1735 #6	4.690	4.839	35.678	29.917
HPLCStds1735 #5	4.680	2.179	15.602	15.174
HPLCStds1735 #5	4.683	2.181	15.805	15.191
HPLCStds1735 #4	4.690	1.385	9.942	9.976
HPLCStds1735 #4	4.690	1.382	9.900	9.950
HPLCStds1735 #3	4.677	0.660	4.619	4.900
HPLCStds1735 #3	4.680	0.657	4.637	4.877
HPLCStds1735 #2	4.680	0.129	0.899	0.995
HPLCStds1735 #2	4.680	0.130	0.889	0.996
HPLCStds1735 #1	4.677	0.066	0.450	0.514
HPLCStds1735 #1	4.683	0.065	0.450	0.511



Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount µg/mL ECD_1
	Fluoride	Fluoride	Fluoride	Fluoride
HPLCStds1735 #6	3.283	6.609	43.800	29.470
HPLCStds1735 #6	3.283	6.654	44.634	29.641
HPLCStds1735 #5	3.267	3.132	21.257	15.061
HPLCStds1735 #5	3.267	3.145	21.655	15.120
HPLCStds1735 #4	3.263	2.002	13.687	9.871
HPLCStds1735 #4	3.260	2.015	13.825	9.932
HPLCStds1735 #3	3.250	0.947	6.261	4.797
HPLCStds1735 #3	3.250	0.949	6.322	4.804
HPLCStds1735 #2	3.257	0.181	1.065	0.976
HPLCStds1735 #2	3.267	0.180	1.068	0.967
HPLCStds1735 #1	3.257	0.091	0.509	0.518
HPLCStds1735 #1	3.250	0.092	0.511	0.522
HPLCStds1735 #6	3.280	6.790	48.762	30.156
HPLCStds1735 #6	3.277	6.816	48.857	30.254
HPLCStds1735 #5	3.257	3.240	23.803	15.547
HPLCStds1735 #5	3.260	3.235	23.922	15.524
HPLCStds1735 #4	3.260	2.035	14.811	10.023
HPLCStds1735 #4	3.257	2.026	14.868	9.983
HPLCStds1735 #3	3.247	0.965	6.829	4.884
HPLCStds1735 #3	3.250	0.958	6.849	4.850
HPLCStds1735 #2	3.250	0.183	1.164	0.982
HPLCStds1735 #2	3.250	0.182	1.153	0.977
HPLCStds1735 #1	3.253	0.092	0.554	0.525
HPLCStds1735 #1	3.257	0.093	0.554	0.527

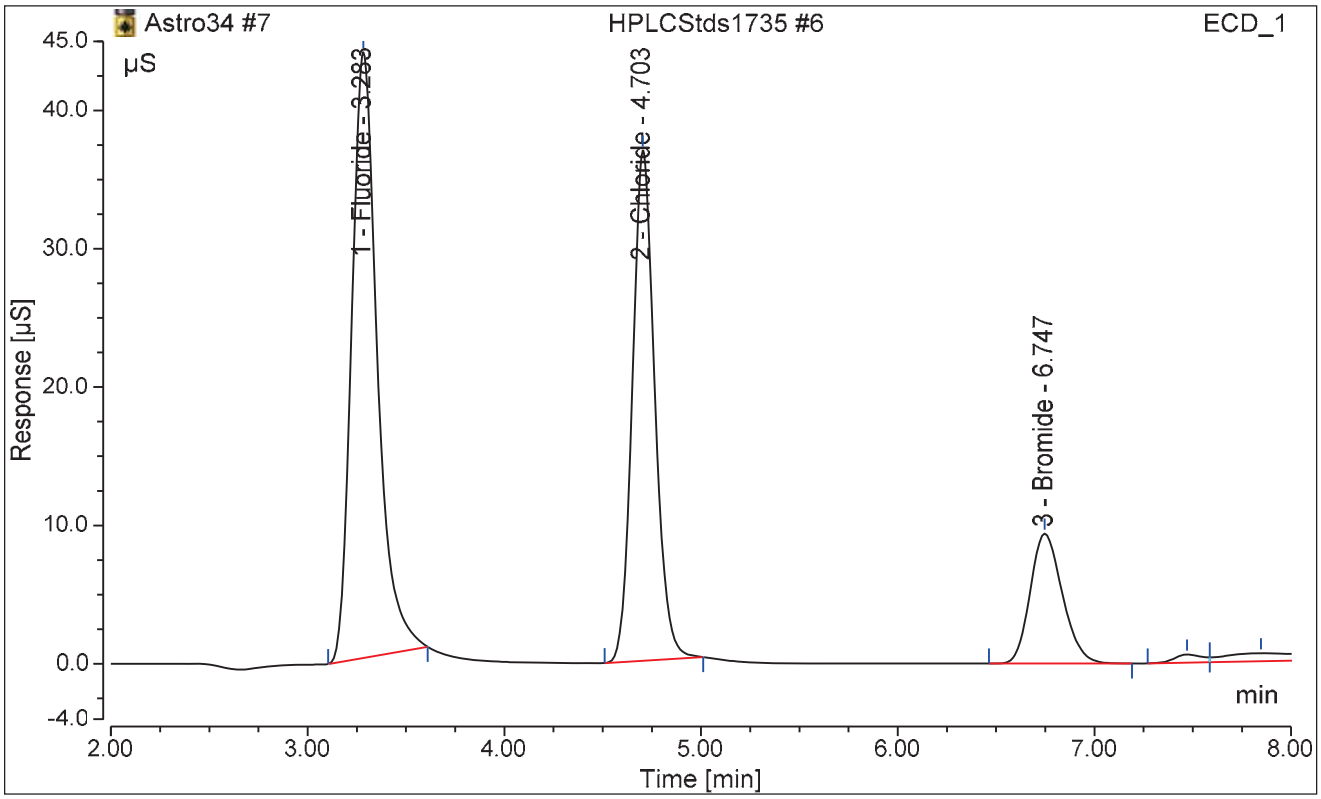


Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount µg/mL ECD_1
	Bromide	Bromide	Bromide	Bromide
HPLCStds1735 #6	6.747	1.777	9.402	30.186
HPLCStds1735 #6	6.740	1.767	9.279	30.024
HPLCStds1735 #5	6.740	0.845	4.381	15.078
HPLCStds1735 #5	6.740	0.844	4.382	15.070
HPLCStds1735 #4	6.747	0.553	2.852	10.016
HPLCStds1735 #4	6.743	0.552	2.833	10.002
HPLCStds1735 #3	6.733	0.272	1.401	4.996
HPLCStds1735 #3	6.737	0.272	1.397	4.996
HPLCStds1735 #2	6.747	0.055	0.278	1.004
HPLCStds1735 #2	6.753	0.055	0.281	1.006
HPLCStds1735 #1	6.740	0.028	0.141	0.503
HPLCStds1735 #1	6.730	0.028	0.140	0.501
HPLCStds1735 #6	6.743	1.758	8.957	29.886
HPLCStds1735 #6	6.733	1.757	8.901	29.869
HPLCStds1735 #5	6.730	0.839	4.153	14.980
HPLCStds1735 #5	6.733	0.839	4.224	14.984
HPLCStds1735 #4	6.743	0.551	2.773	9.979
HPLCStds1735 #4	6.740	0.549	2.775	9.944
HPLCStds1735 #3	6.733	0.273	1.358	5.001
HPLCStds1735 #3	6.733	0.272	1.363	4.988
HPLCStds1735 #2	6.733	0.054	0.275	0.995
HPLCStds1735 #2	6.740	0.054	0.270	0.989
HPLCStds1735 #1	6.733	0.027	0.137	0.490
HPLCStds1735 #1	6.737	0.028	0.141	0.510



Peak Analysis Report

Sample Name:	**HPLCStds1735 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 08:46**	Run Time:	**14.50**



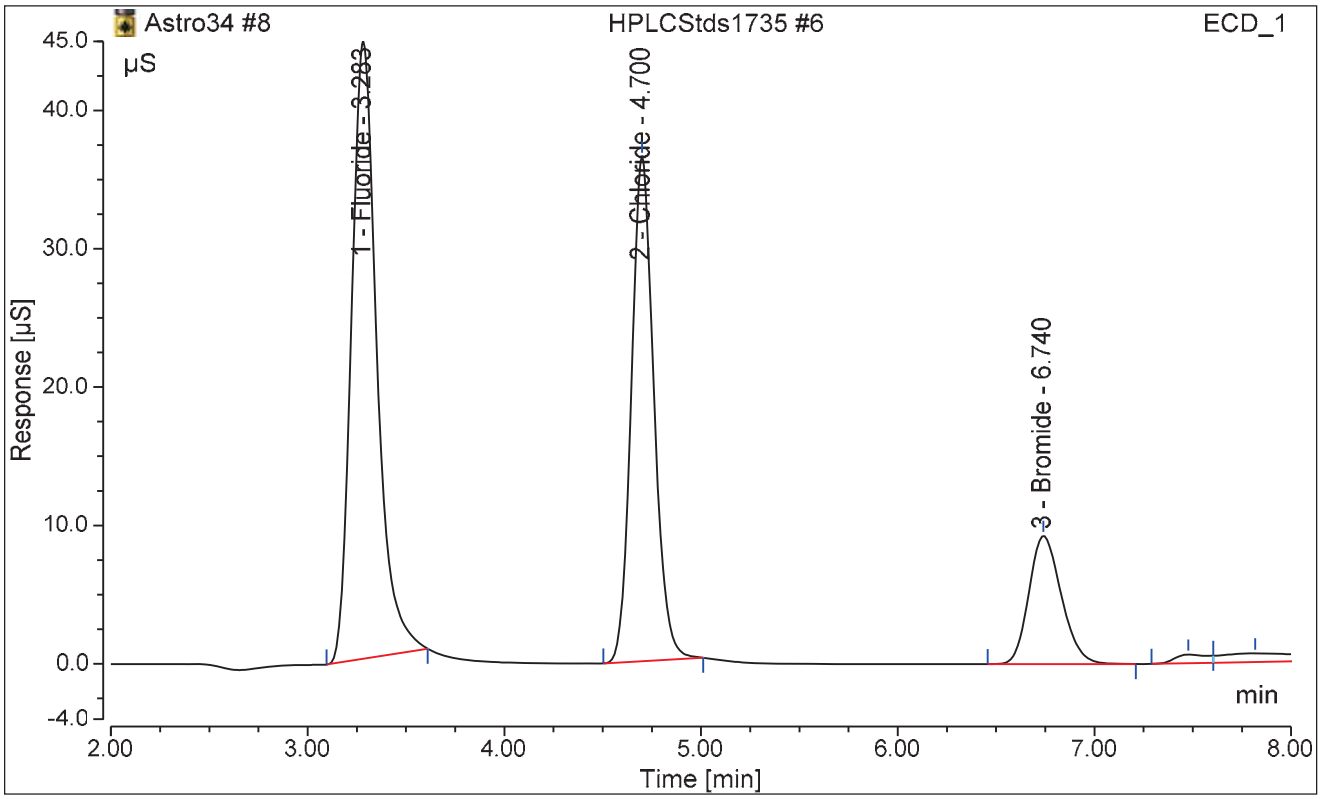
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	6.609	43.800	29.47028	FALSE	FALSE
2	4.70	Chloride	4.861	36.893	30.01970	FALSE	FALSE
3	6.75	Bromide	1.777	9.402	30.18569	FALSE	FALSE

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Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 09:03**	Run Time:	**14.50**



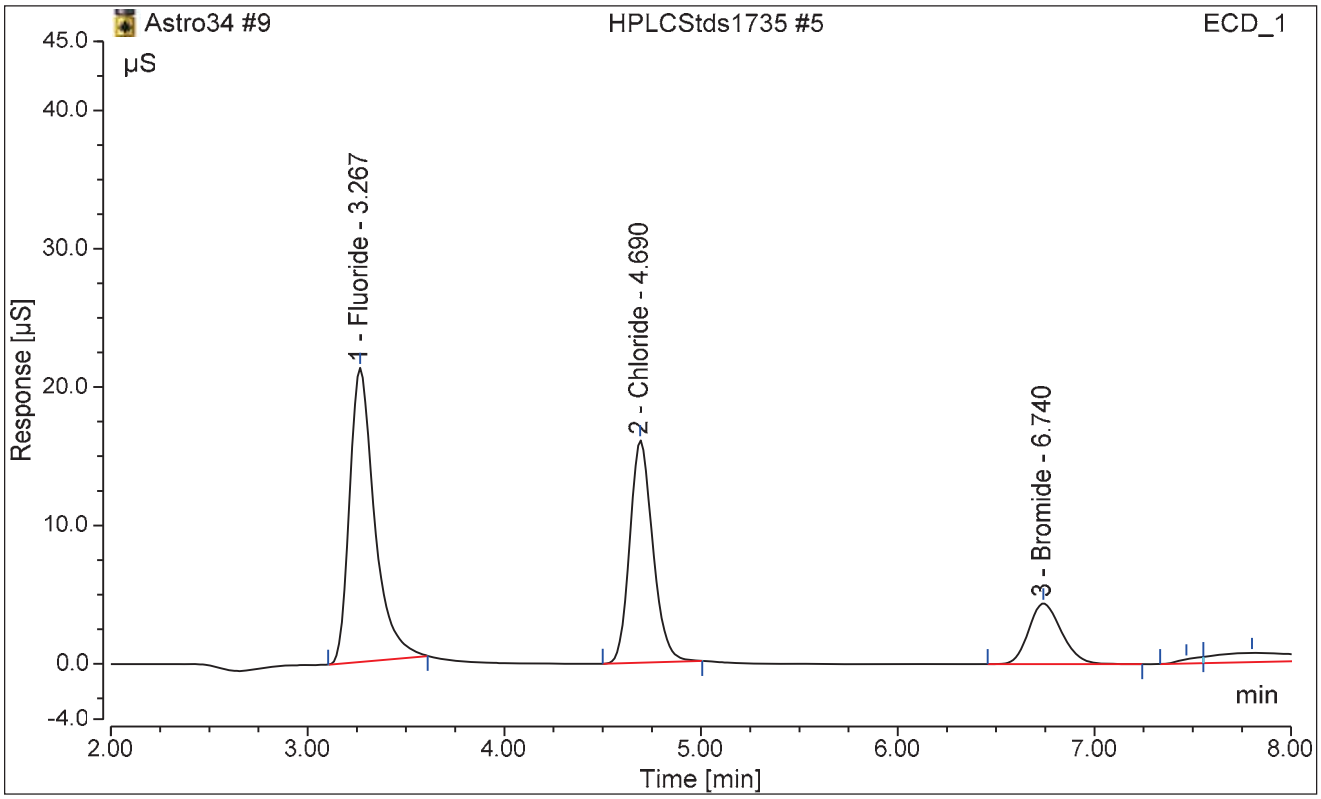
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	6.654	44.634	29.64148	FALSE	FALSE
2	4.70	Chloride	4.842	36.502	29.92814	FALSE	FALSE
3	6.74	Bromide	1.767	9.279	30.02399	FALSE	FALSE

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Peak Analysis Report

Sample Name:	**HPLCStds1735 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 09:20**	Run Time:	**14.50**



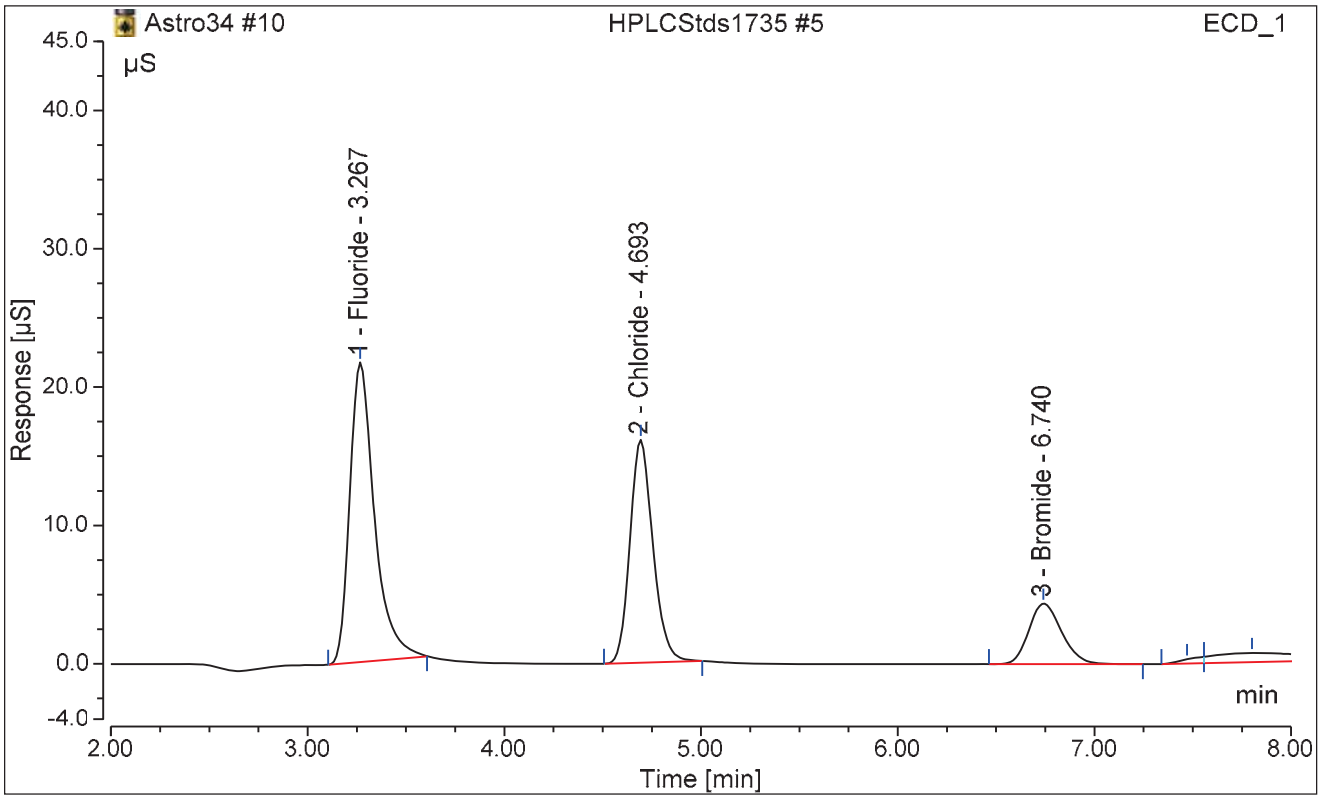
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.27	Fluoride	3.132	21.257	15.06129	FALSE	FALSE
2	4.69	Chloride	2.184	16.086	15.20700	FALSE	FALSE
3	6.74	Bromide	0.845	4.381	15.07751	FALSE	FALSE

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Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 09:36**	Run Time:	**14.50**



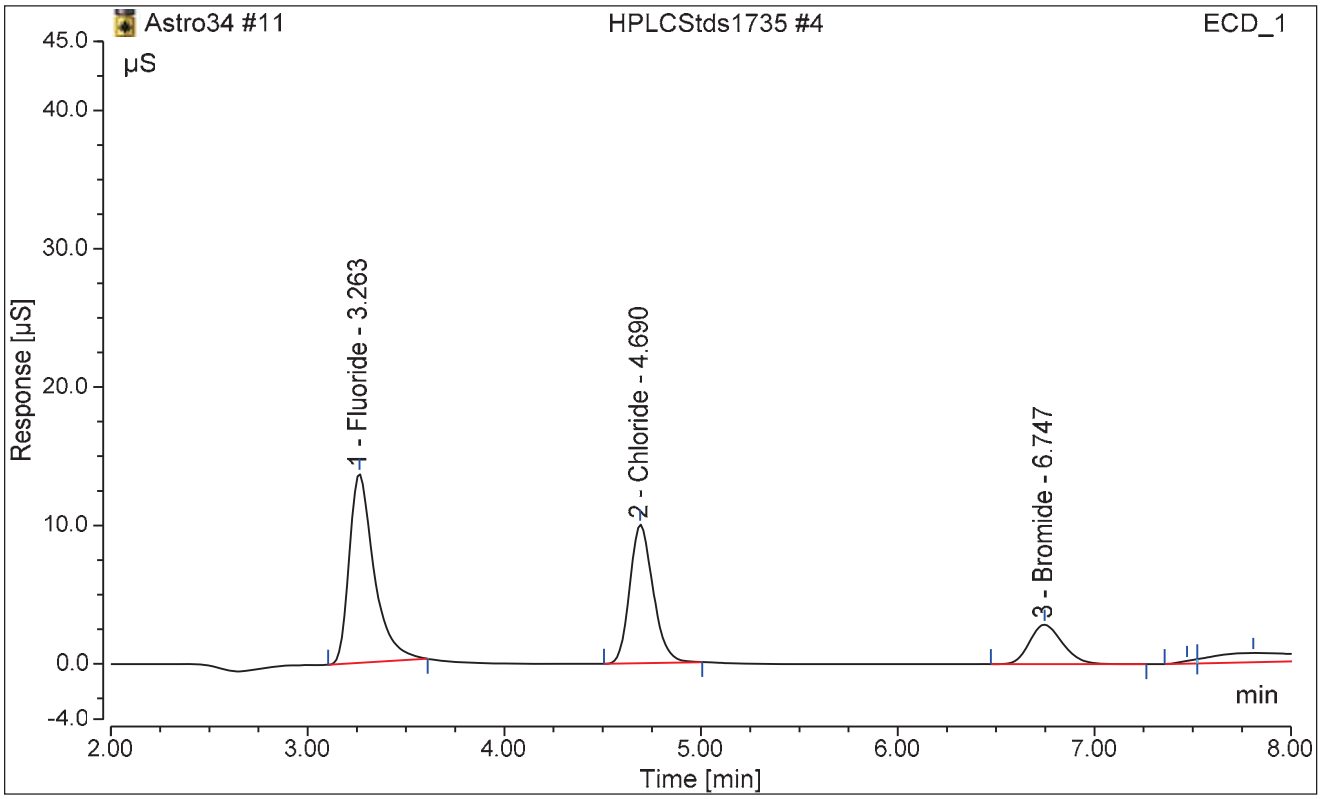
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.27	Fluoride	3.145	21.655	15.11999	FALSE	FALSE
2	4.69	Chloride	2.184	16.118	15.20740	FALSE	FALSE
3	6.74	Bromide	0.844	4.382	15.07036	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 09:53**	Run Time:	**14.50**

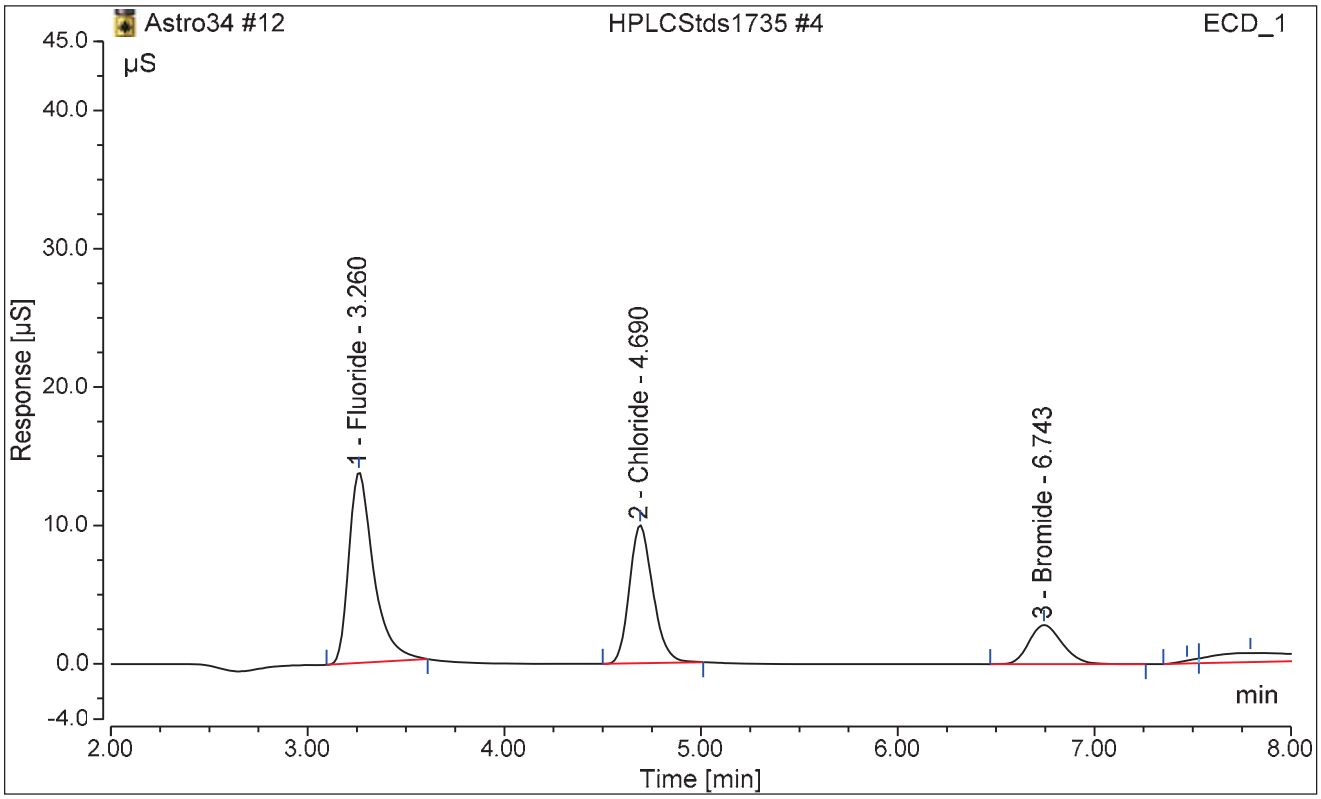


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.26	Fluoride	2.002	13.687	9.87136	FALSE	FALSE
2	4.69	Chloride	1.382	10.033	9.95194	FALSE	FALSE
3	6.75	Bromide	0.553	2.852	10.01648	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1735 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 10:09**	Run Time:	**14.50**



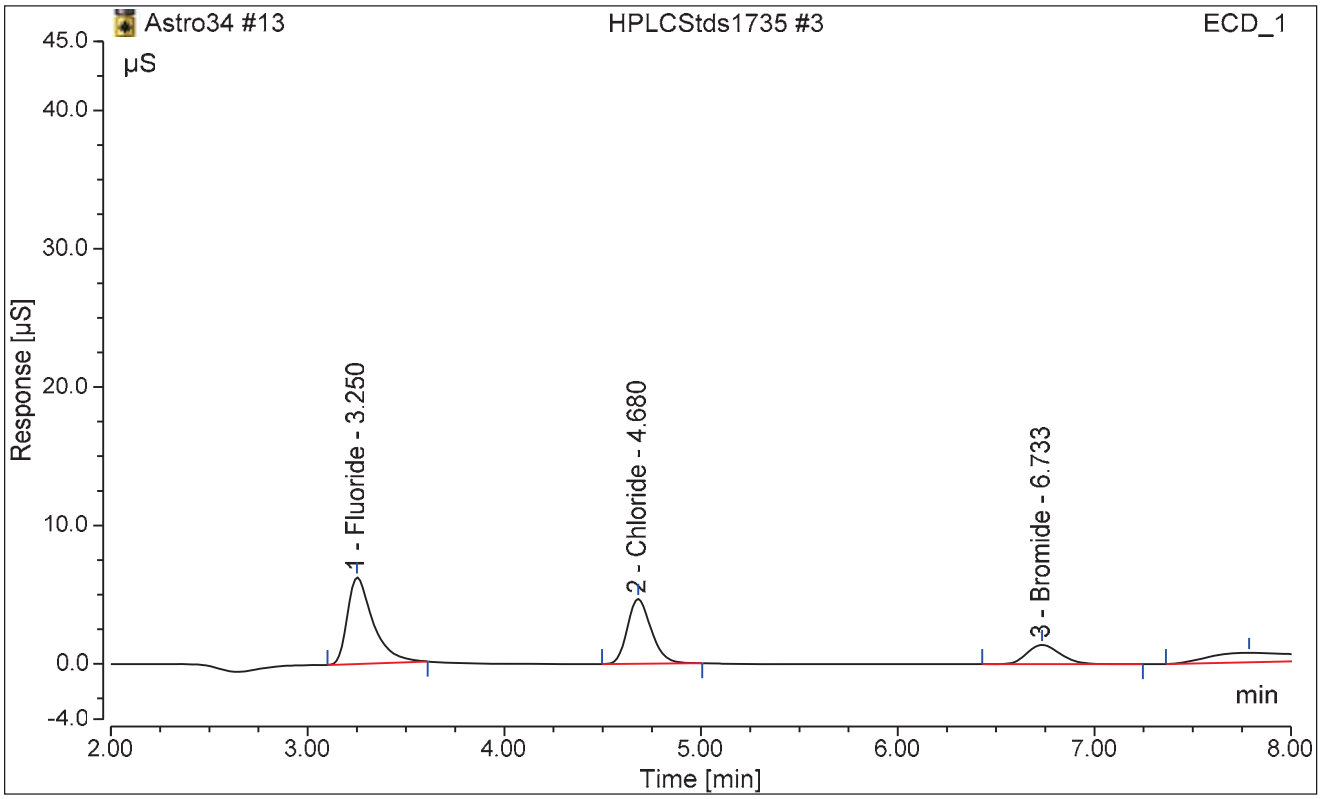
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.26	Fluoride	2.015	13.825	9.93225	FALSE	FALSE
2	4.69	Chloride	1.384	9.992	9.96777	FALSE	FALSE
3	6.74	Bromide	0.552	2.833	10.00156	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812
SE010AS-031486-RT-2611-R1

Peak Analysis Report

Sample Name:	**HPLCStds1735 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 10:26**	Run Time:	**14.50**



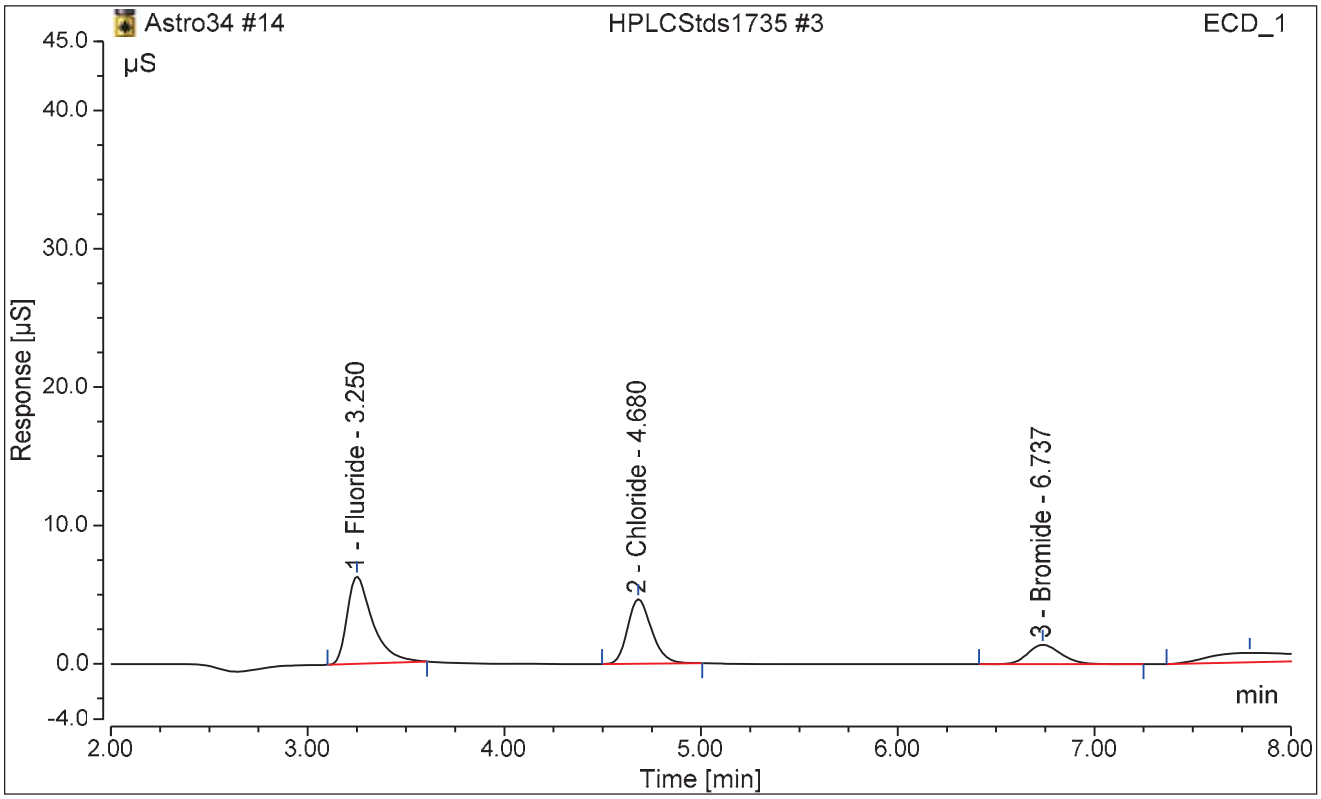
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.25	Fluoride	0.947	6.261	4.79748	FALSE	FALSE
2	4.68	Chloride	0.659	4.688	4.89369	FALSE	FALSE
3	6.73	Bromide	0.272	1.401	4.99559	FALSE	FALSE

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Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 10:43**	Run Time:	**14.50**



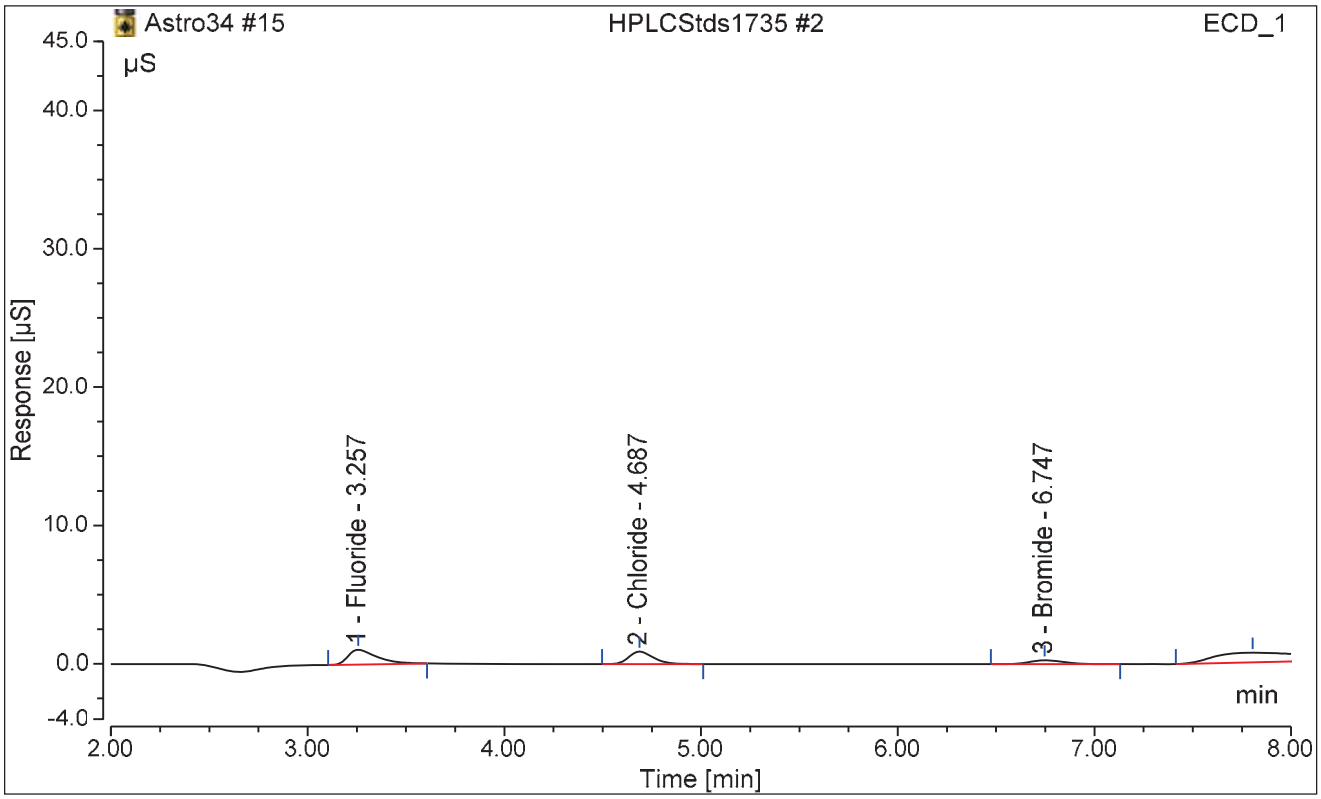
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.25	Fluoride	0.949	6.322	4.80415	FALSE	FALSE
2	4.68	Chloride	0.659	4.675	4.89558	FALSE	FALSE
3	6.74	Bromide	0.272	1.397	4.99575	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 10:59**	Run Time:	**14.50**



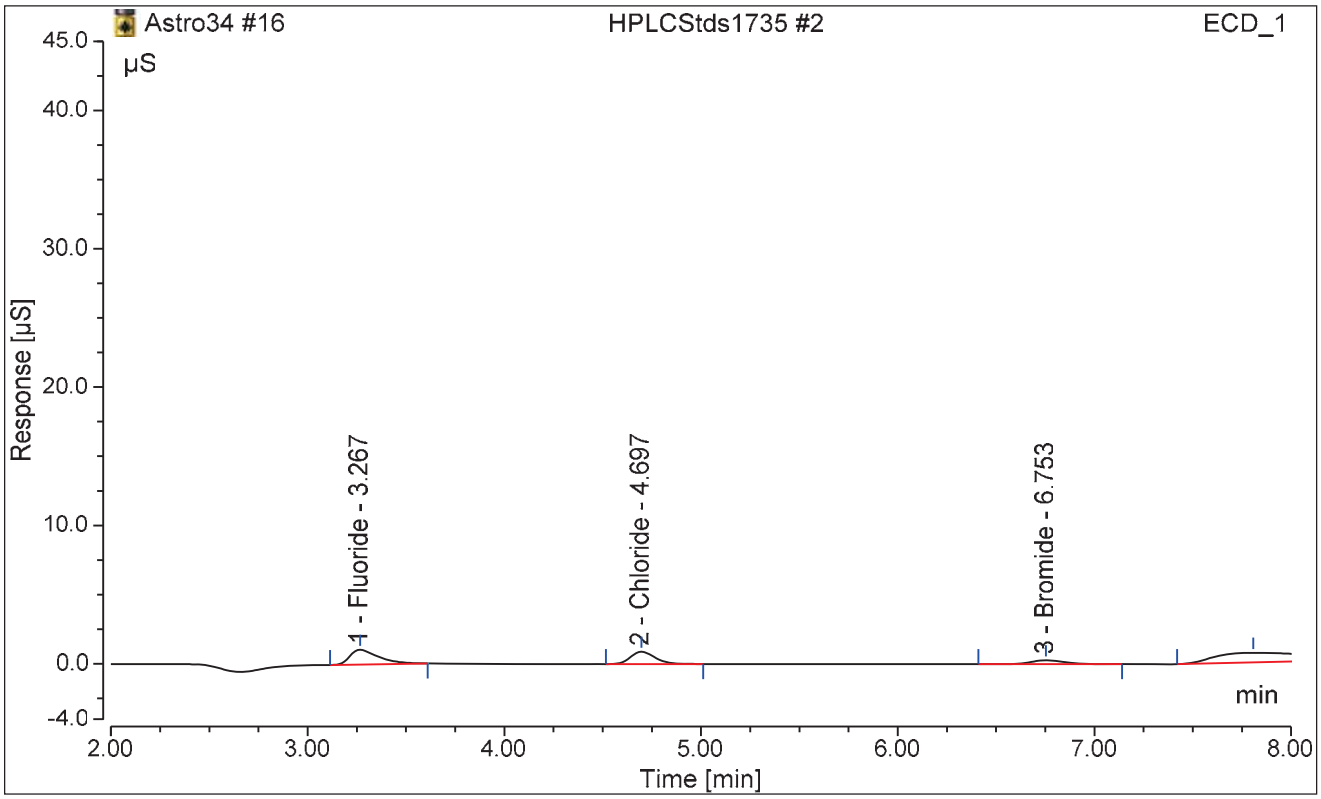
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.26	Fluoride	0.181	1.065	0.97625	FALSE	FALSE
2	4.69	Chloride	0.130	0.896	0.99702	FALSE	FALSE
3	6.75	Bromide	0.055	0.278	1.00428	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 11:16**	Run Time:	**14.50**



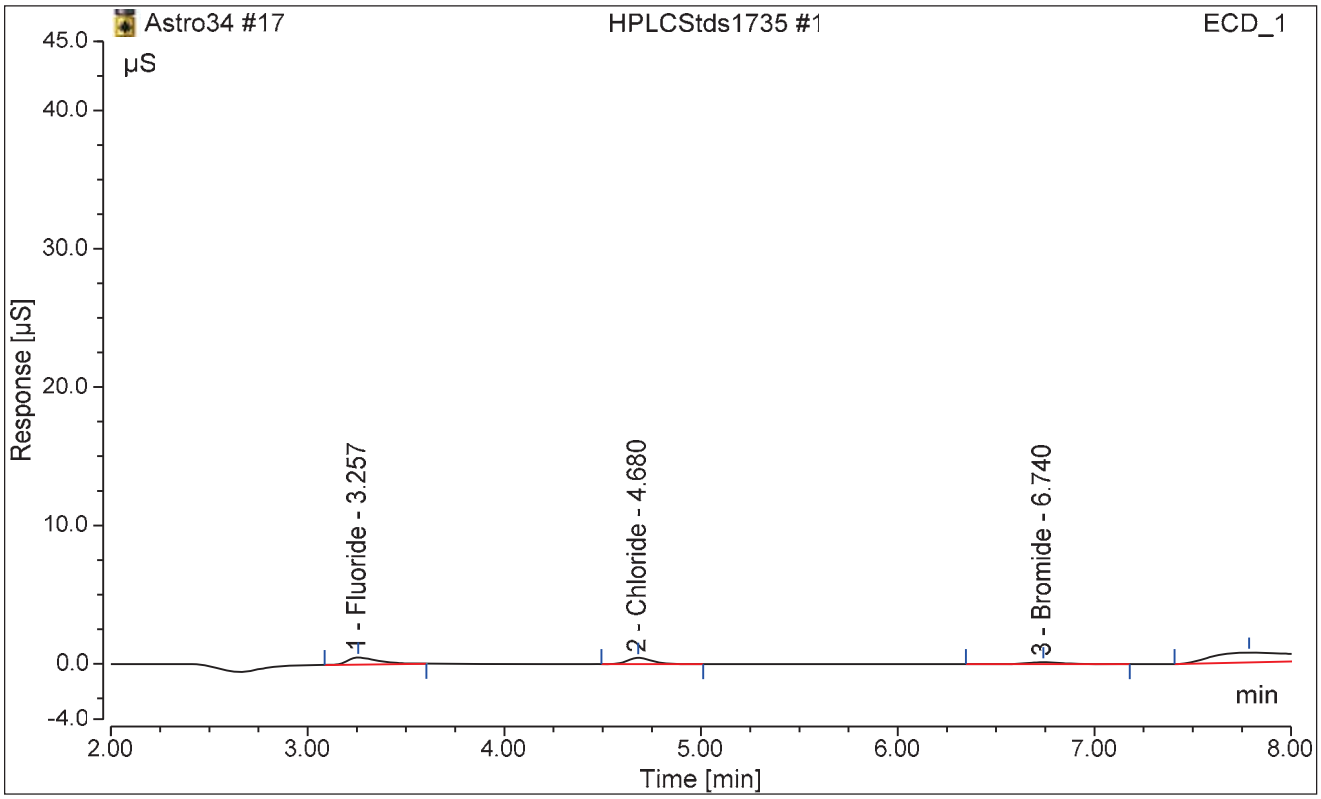
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.27	Fluoride	0.180	1.068	0.96741	FALSE	FALSE
2	4.70	Chloride	0.129	0.900	0.99196	FALSE	FALSE
3	6.75	Bromide	0.055	0.281	1.00626	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 11:33**	Run Time:	**14.50**



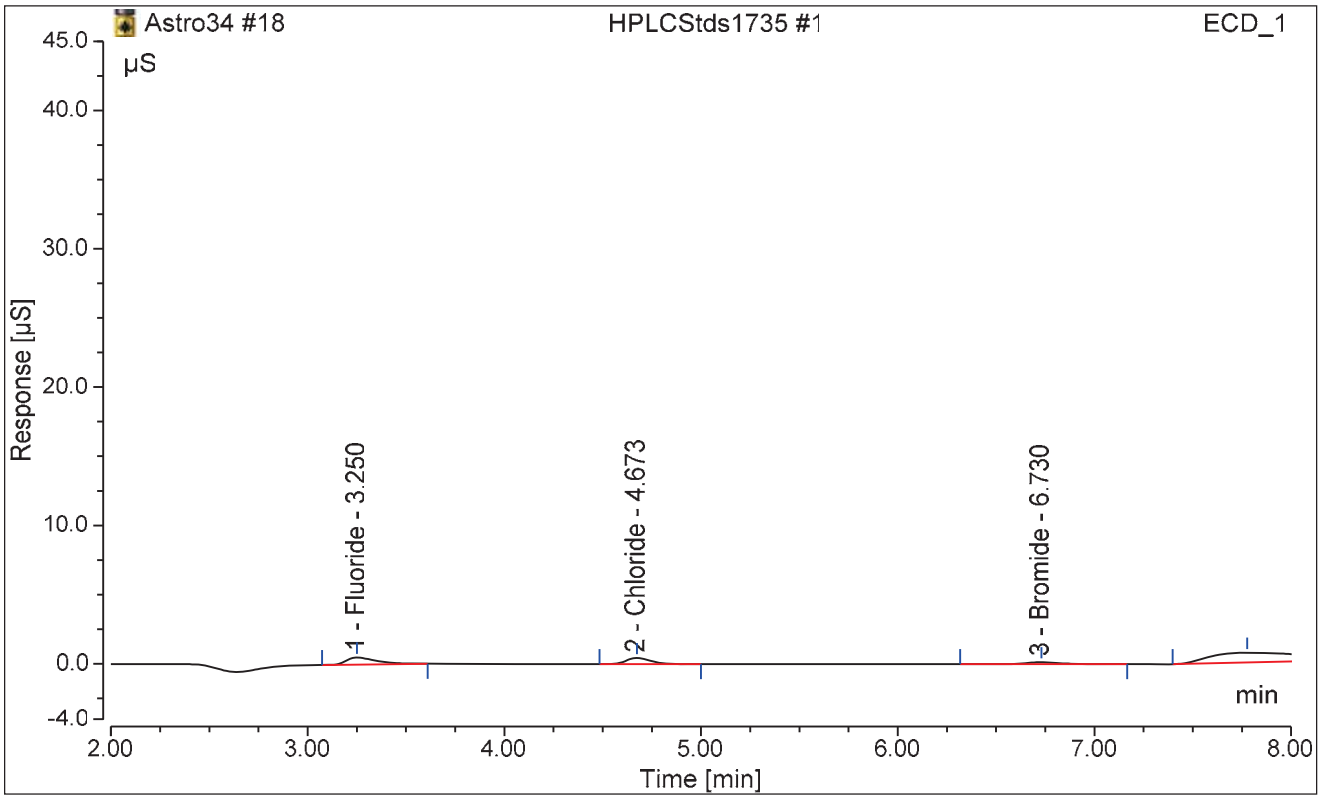
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.26	Fluoride	0.091	0.509	0.51790	FALSE	FALSE
2	4.68	Chloride	0.065	0.450	0.50788	FALSE	FALSE
3	6.74	Bromide	0.028	0.141	0.50319	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 11:49**	Run Time:	**14.50**



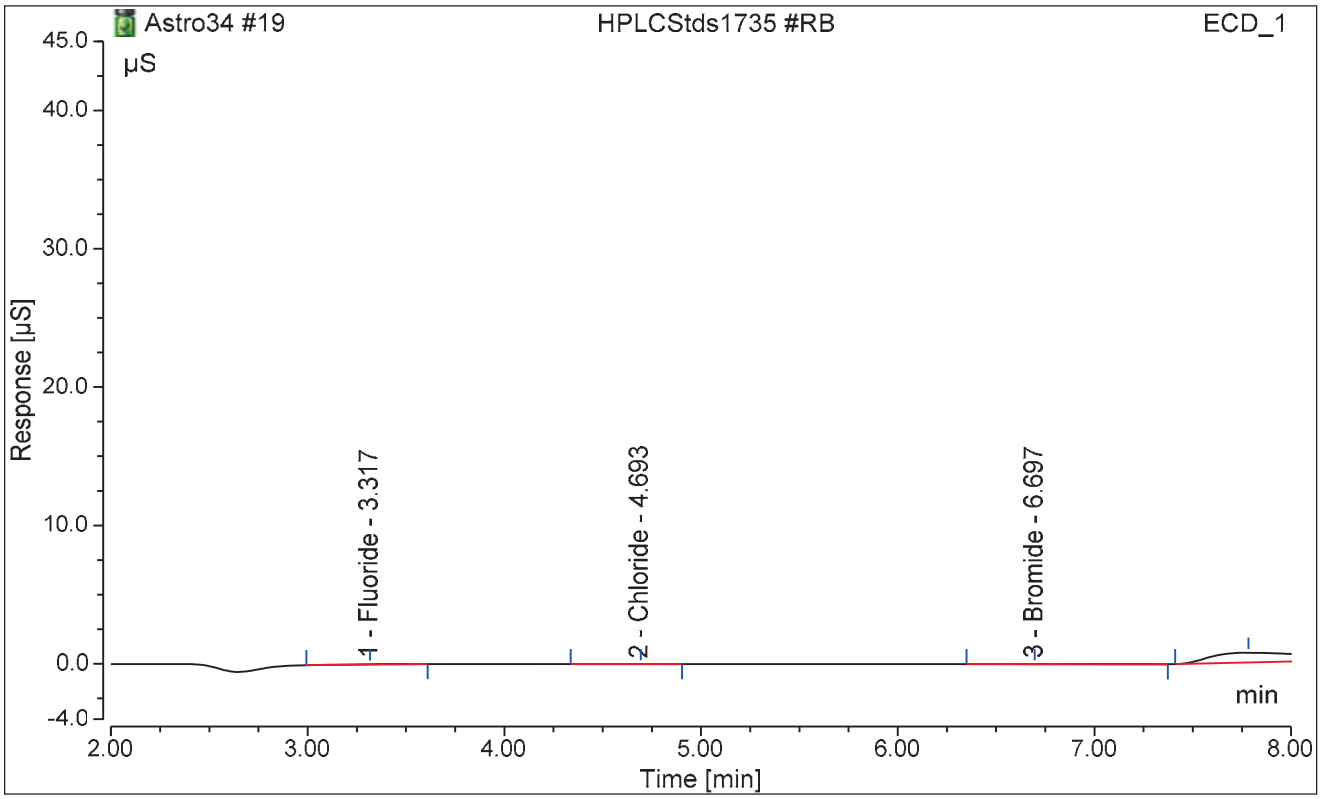
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.25	Fluoride	0.092	0.511	0.52151	FALSE	FALSE
2	4.67	Chloride	0.065	0.447	0.50673	FALSE	FALSE
3	6.73	Bromide	0.028	0.140	0.50090	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 12:06**	Run Time:	**14.50**



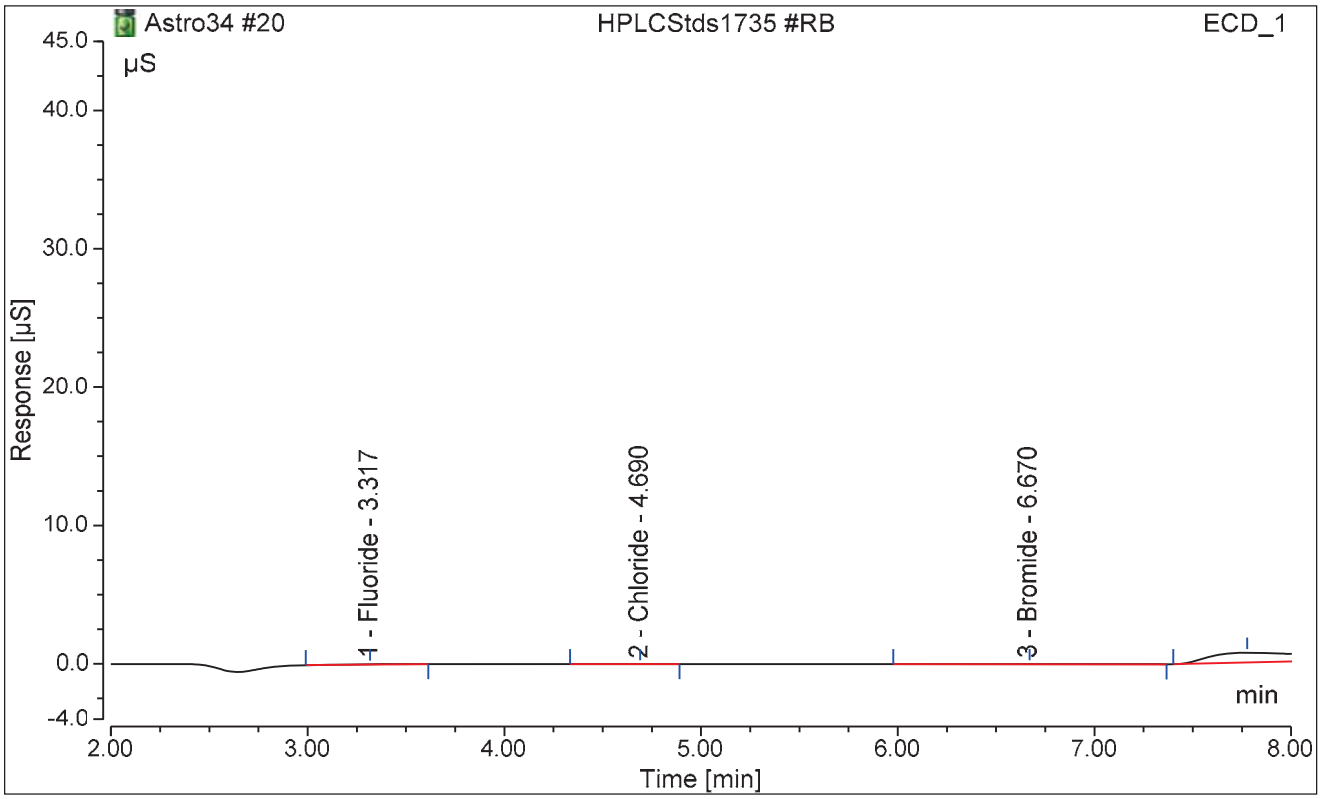
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.008	0.027	0.09744	FALSE	FALSE
2	4.69	Chloride	0.002	0.009	0.03205	FALSE	FALSE
3	6.70	Bromide	0.004	0.004	0.06100	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 12:23**	Run Time:	**14.50**



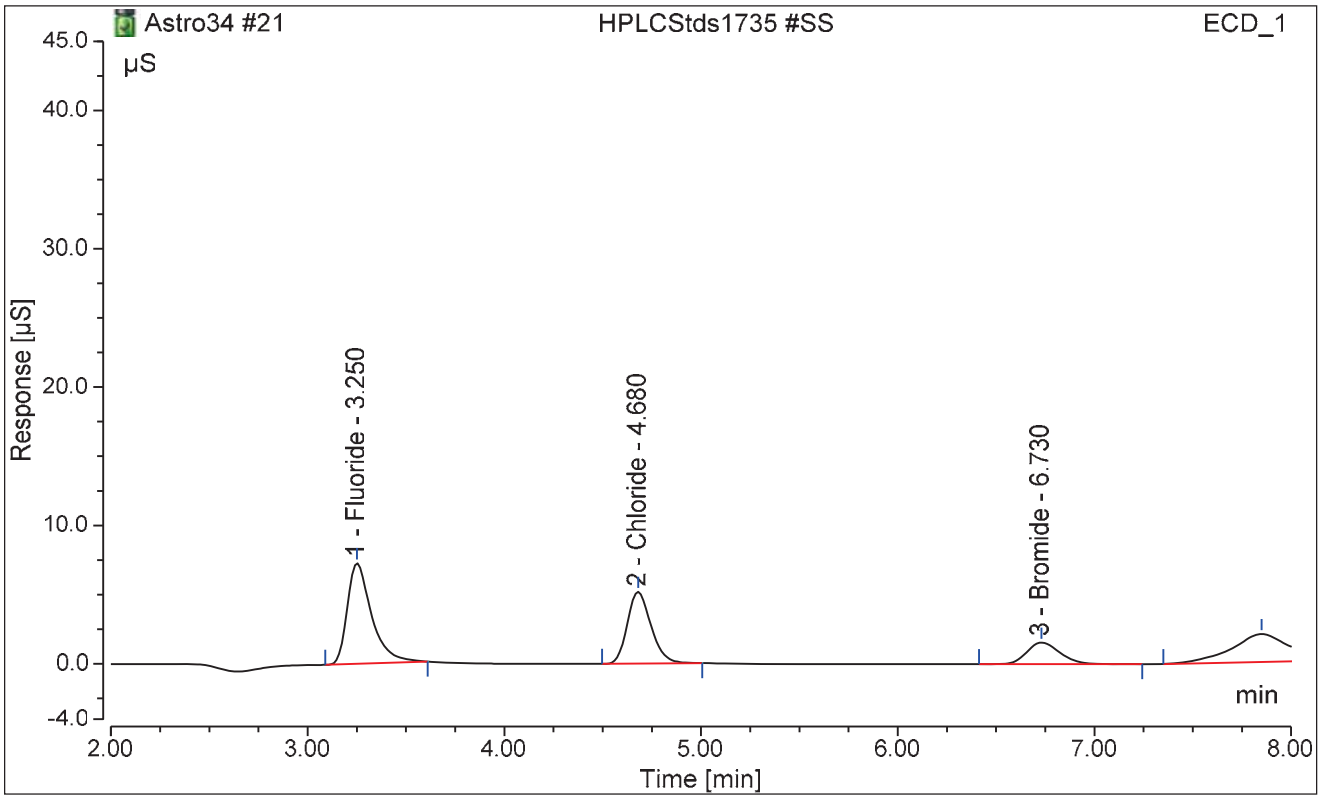
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.008	0.025	0.09665	FALSE	FALSE
2	4.69	Chloride	0.002	0.009	0.03190	FALSE	FALSE
3	6.67	Bromide	0.007	0.006	0.10759	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 12:39**	Run Time:	**14.50**



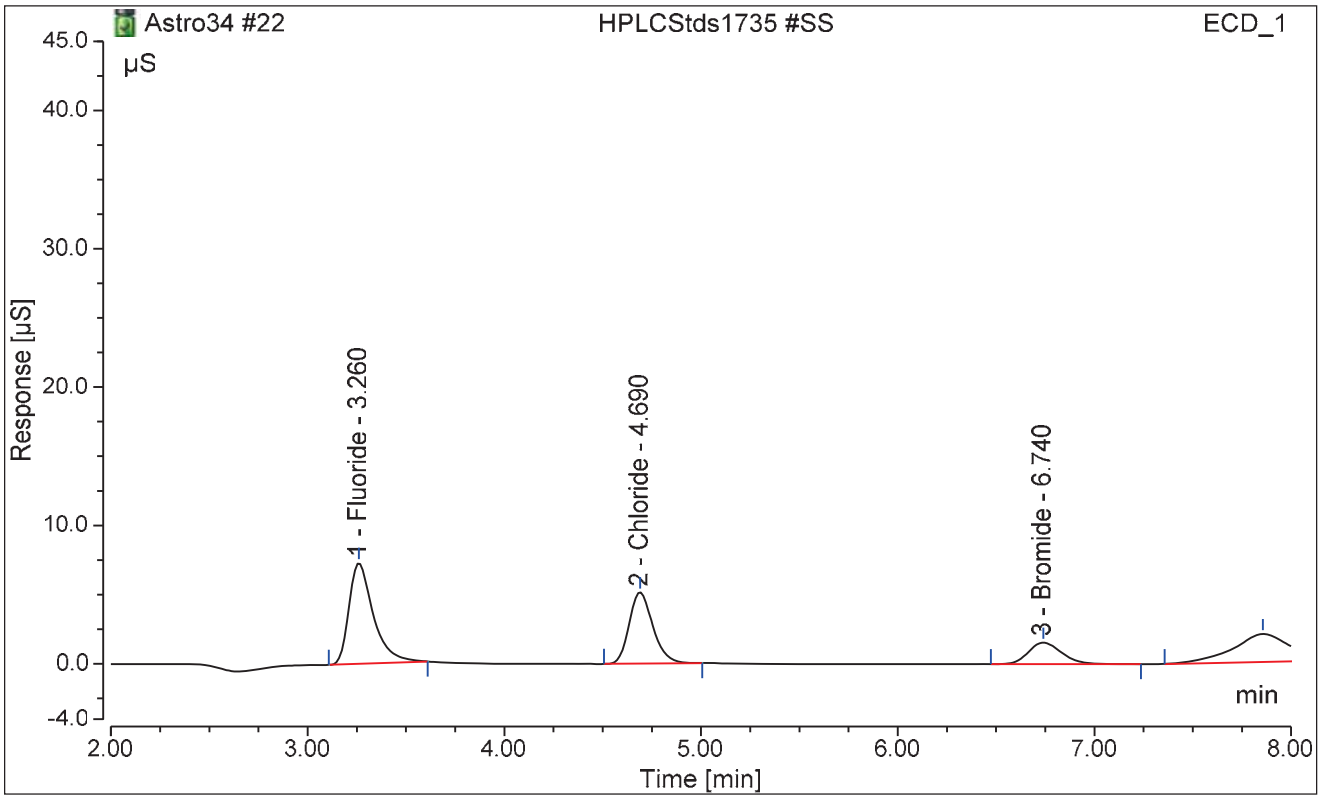
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.25	Fluoride	1.045	7.288	5.27524	FALSE	FALSE
2	4.68	Chloride	0.726	5.192	5.37672	FALSE	FALSE
3	6.73	Bromide	0.303	1.560	5.55290	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**15-Jun-2024 / 12:56**	Run Time:	**14.50**



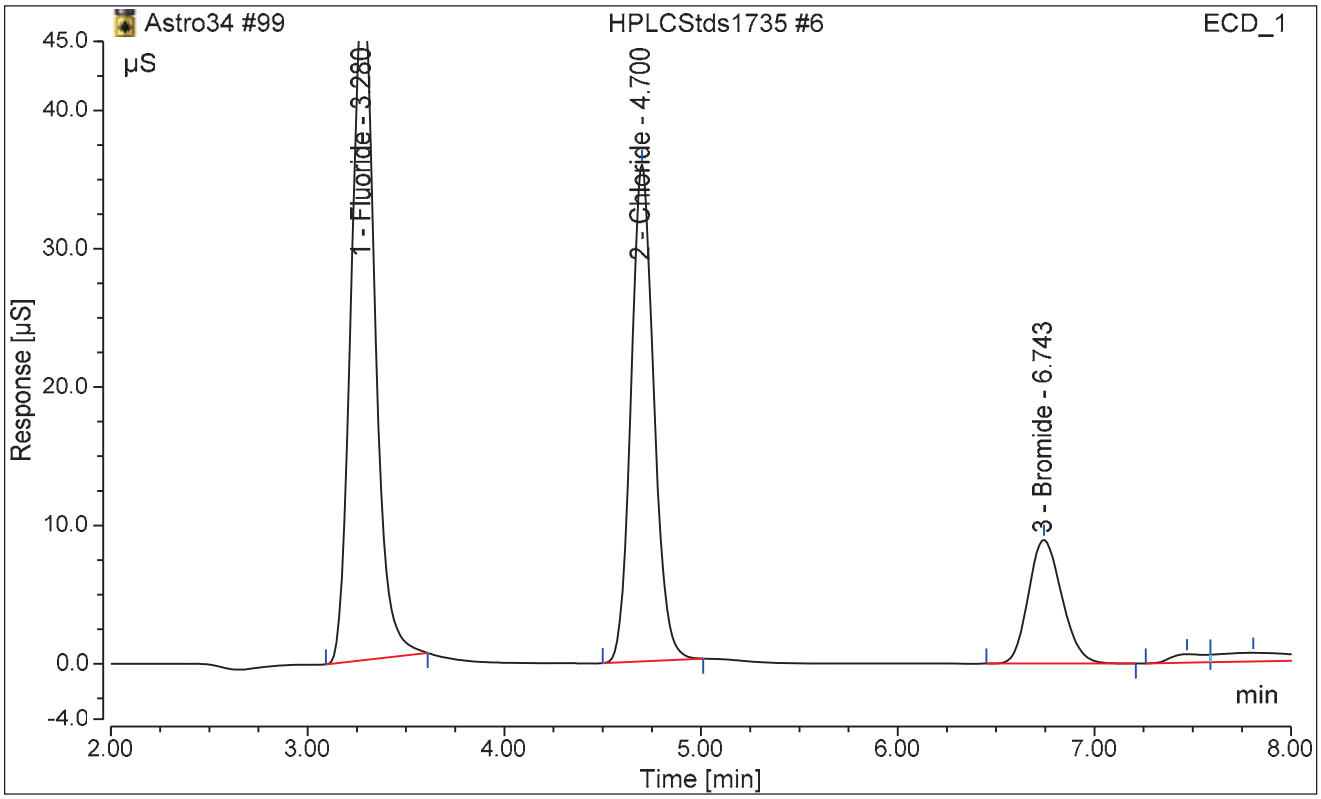
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.26	Fluoride	1.046	7.307	5.28070	FALSE	FALSE
2	4.69	Chloride	0.723	5.161	5.35802	FALSE	FALSE
3	6.74	Bromide	0.302	1.556	5.52627	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**16-Jun-2024 / 10:16**	Run Time:	**14.50**



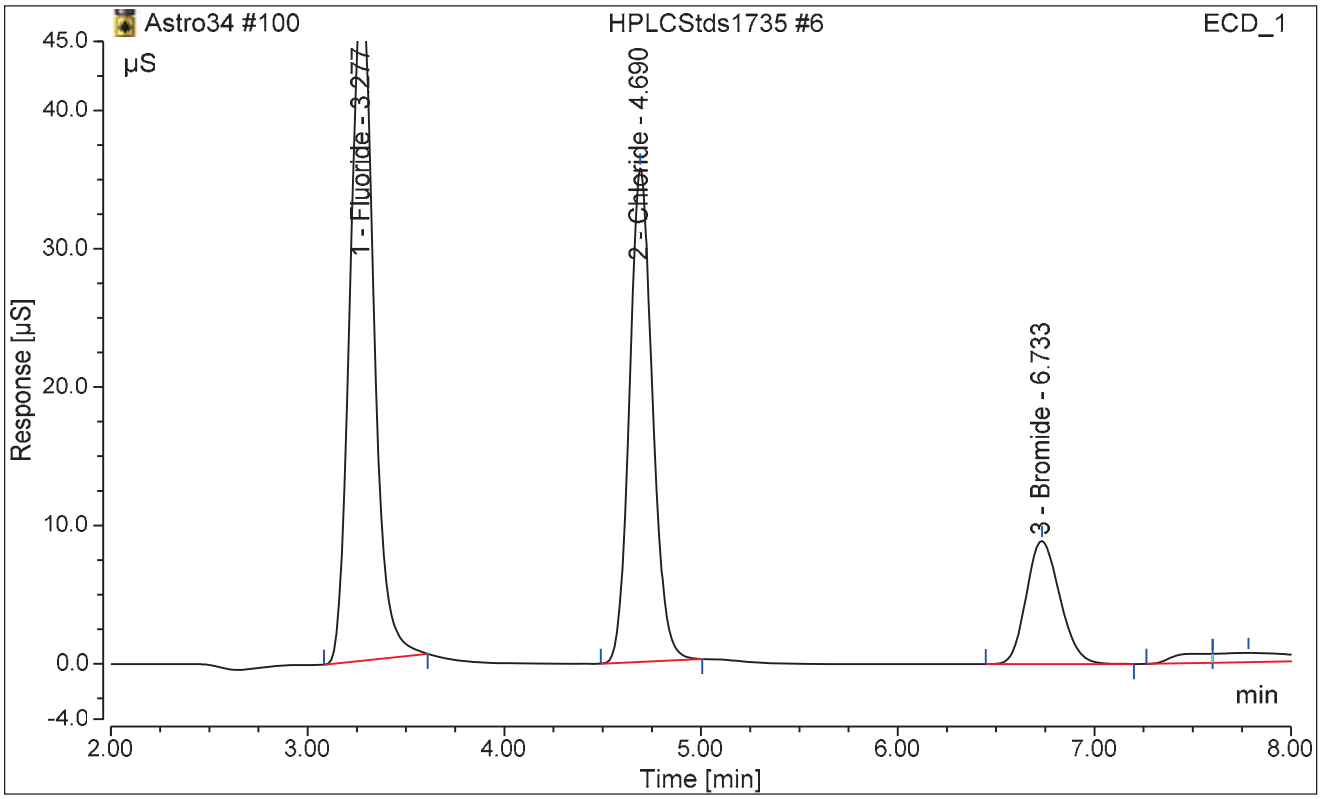
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	6.790	48.762	30.15557	FALSE	FALSE
2	4.70	Chloride	4.837	35.913	29.90402	FALSE	FALSE
3	6.74	Bromide	1.758	8.957	29.88572	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**16-Jun-2024 / 10:33**	Run Time:	**14.50**



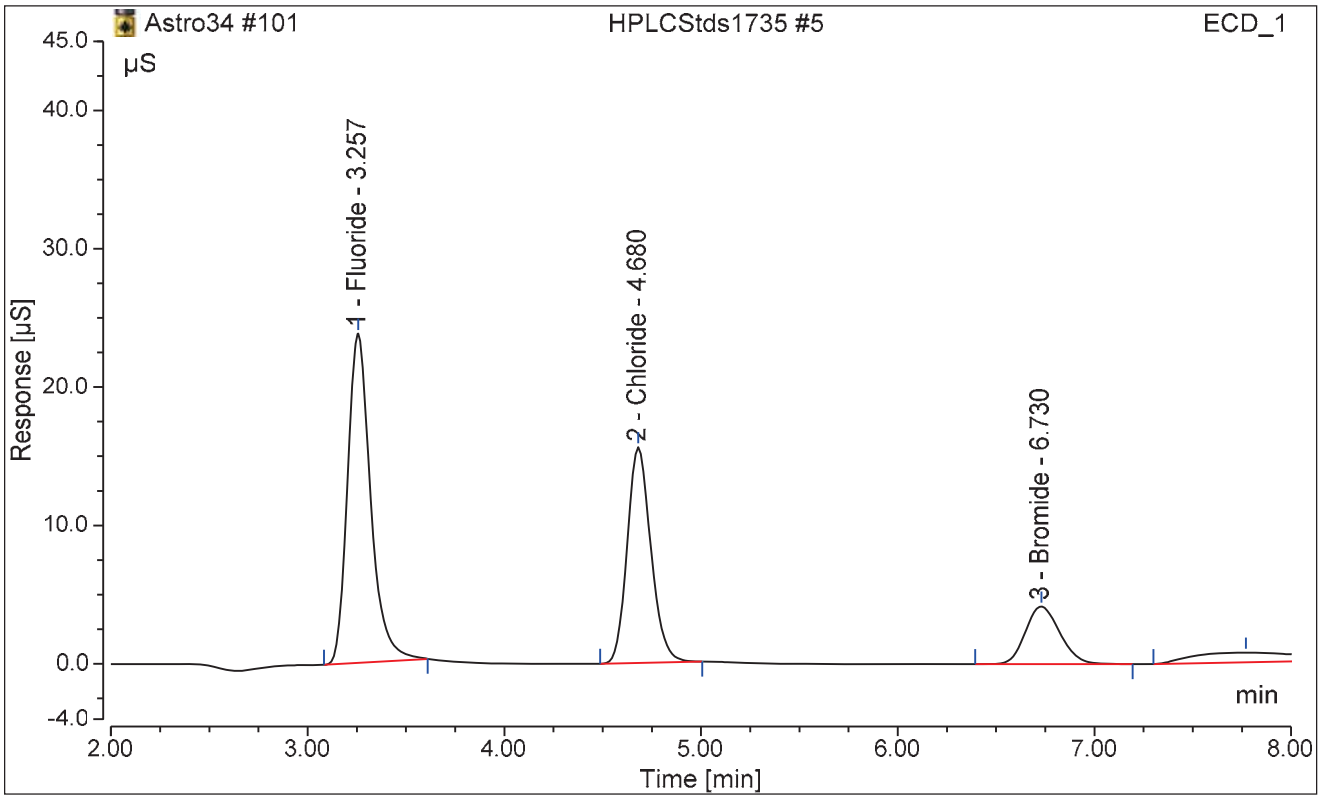
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	6.816	48.857	30.25355	FALSE	FALSE
2	4.69	Chloride	4.839	35.678	29.91723	FALSE	FALSE
3	6.73	Bromide	1.757	8.901	29.86852	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**16-Jun-2024 / 10:49**	Run Time:	**14.50**

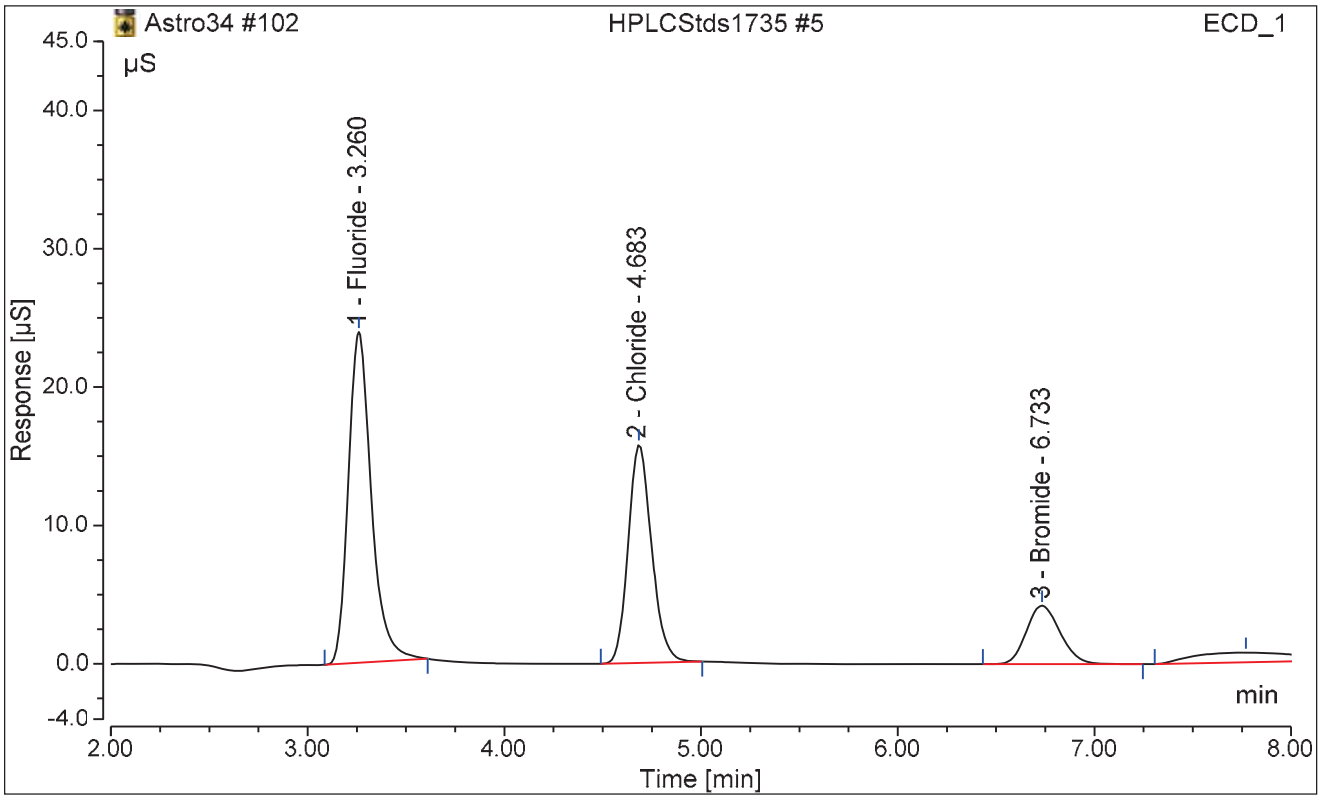


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.26	Fluoride	3.240	23.803	15.54682	FALSE	FALSE
2	4.68	Chloride	2.179	15.602	15.17396	FALSE	FALSE
3	6.73	Bromide	0.839	4.153	14.97986	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1735 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**16-Jun-2024 / 11:06**	Run Time:	**14.50**



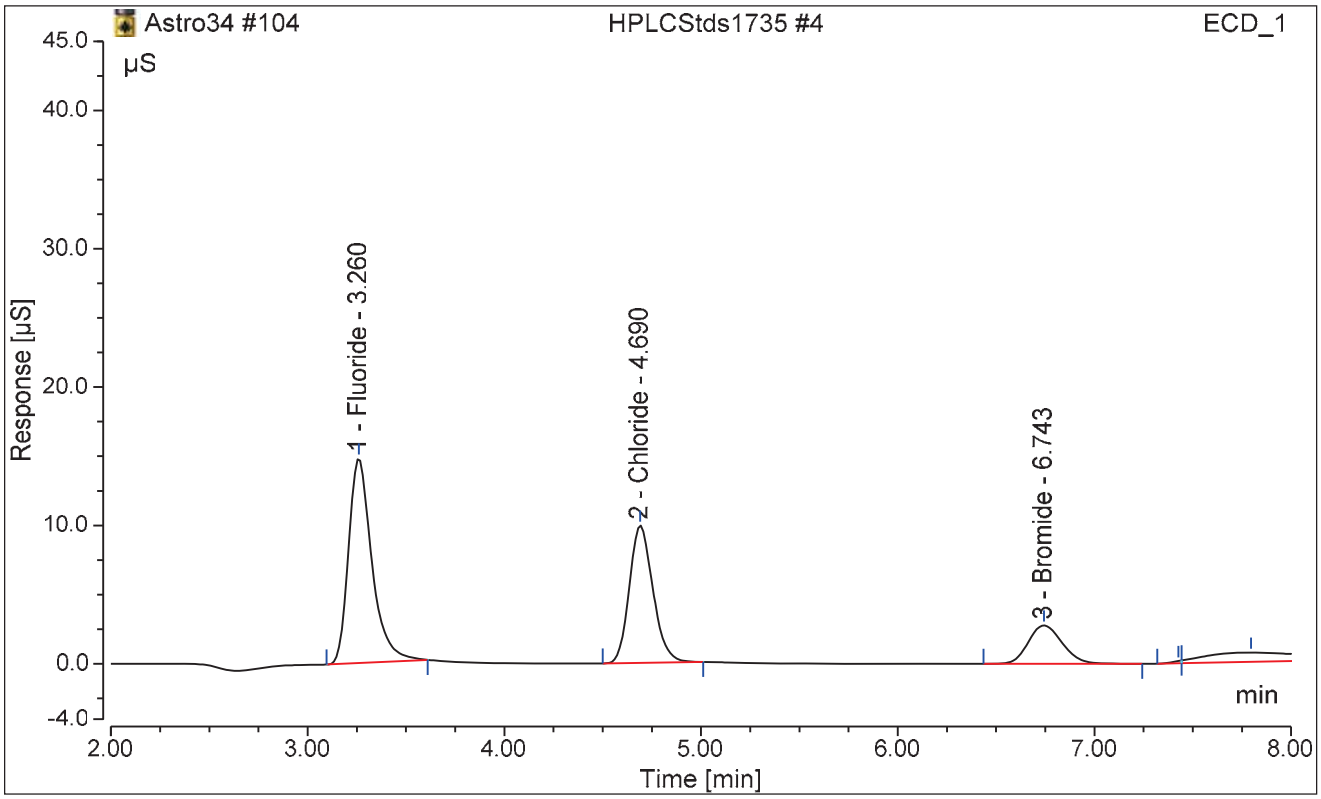
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.26	Fluoride	3.235	23.922	15.52411	FALSE	FALSE
2	4.68	Chloride	2.181	15.805	15.19068	FALSE	FALSE
3	6.73	Bromide	0.839	4.224	14.98375	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**16-Jun-2024 / 13:53**	Run Time:	**14.50**



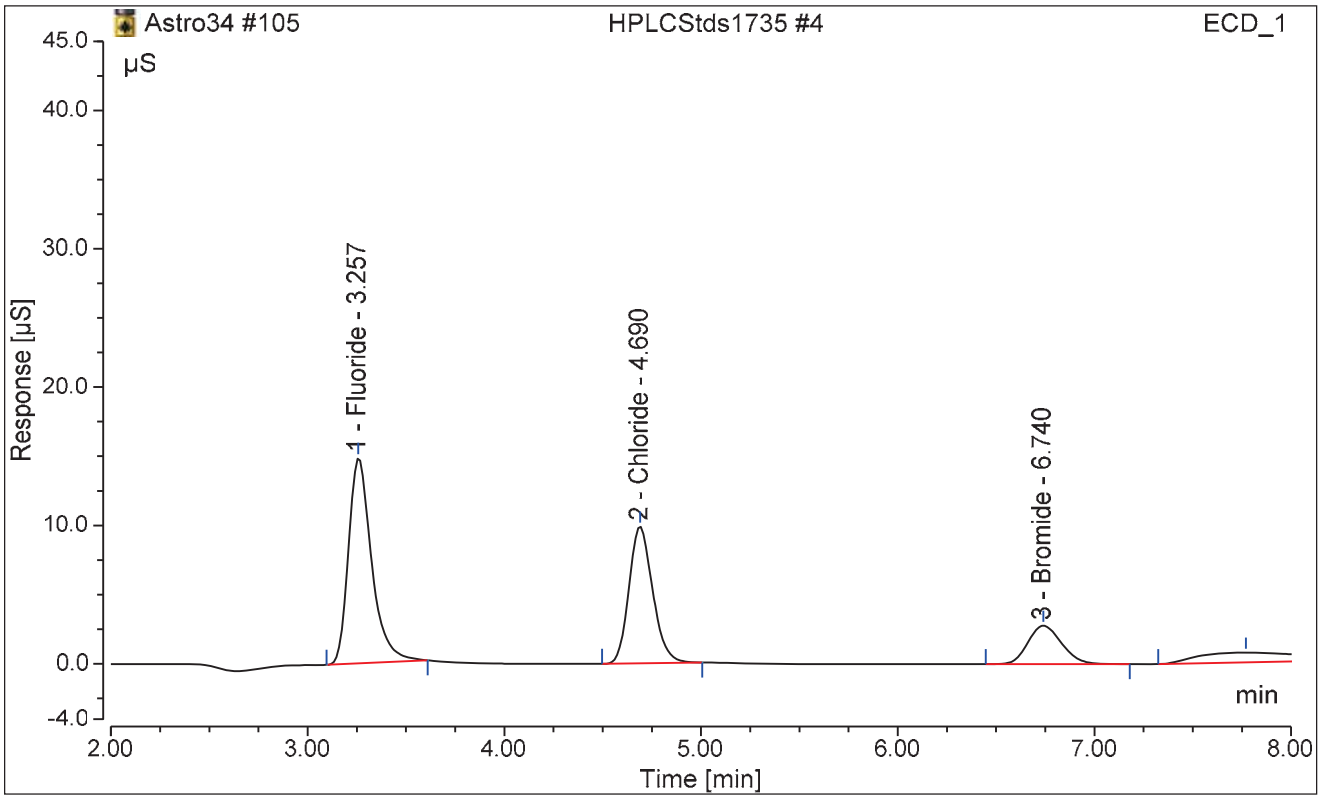
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.26	Fluoride	2.035	14.811	10.02293	FALSE	FALSE
2	4.69	Chloride	1.385	9.942	9.97578	FALSE	FALSE
3	6.74	Bromide	0.551	2.773	9.97872	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**16-Jun-2024 / 14:09**	Run Time:	**14.50**

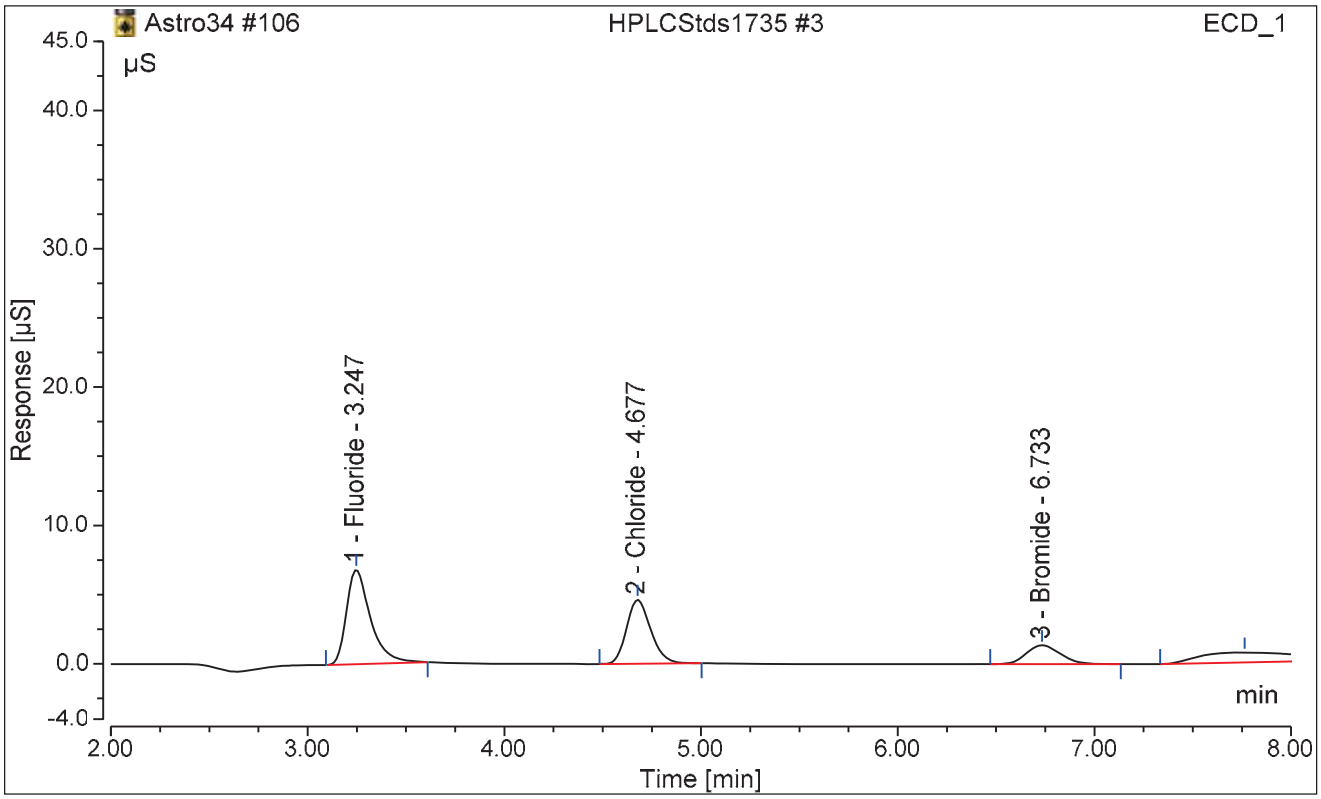


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.26	Fluoride	2.026	14.868	9.98322	FALSE	FALSE
2	4.69	Chloride	1.382	9.900	9.94996	FALSE	FALSE
3	6.74	Bromide	0.549	2.775	9.94394	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1735 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**16-Jun-2024 / 14:26**	Run Time:	**14.50**



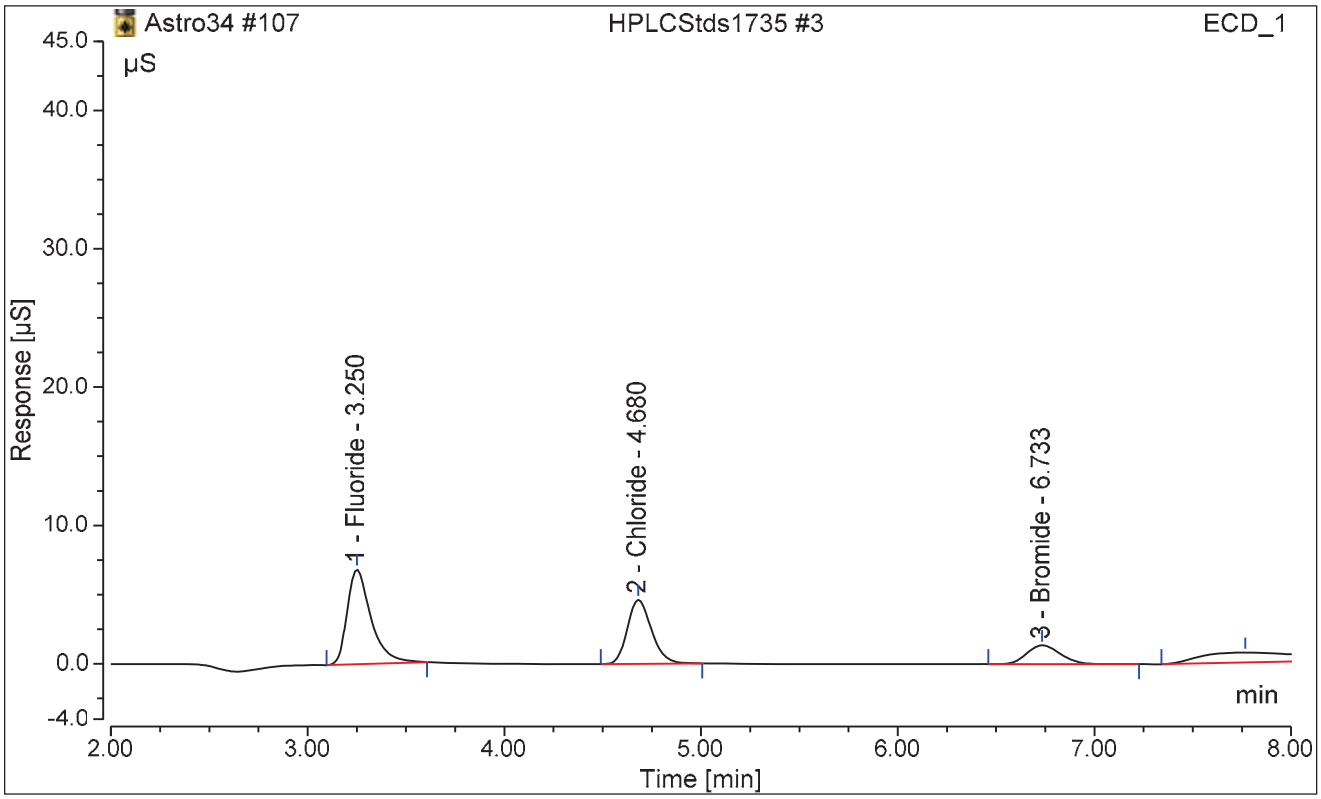
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.25	Fluoride	0.965	6.829	4.88353	FALSE	FALSE
2	4.68	Chloride	0.660	4.619	4.89978	FALSE	FALSE
3	6.73	Bromide	0.273	1.358	5.00107	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**16-Jun-2024 / 14:43**	Run Time:	**14.50**



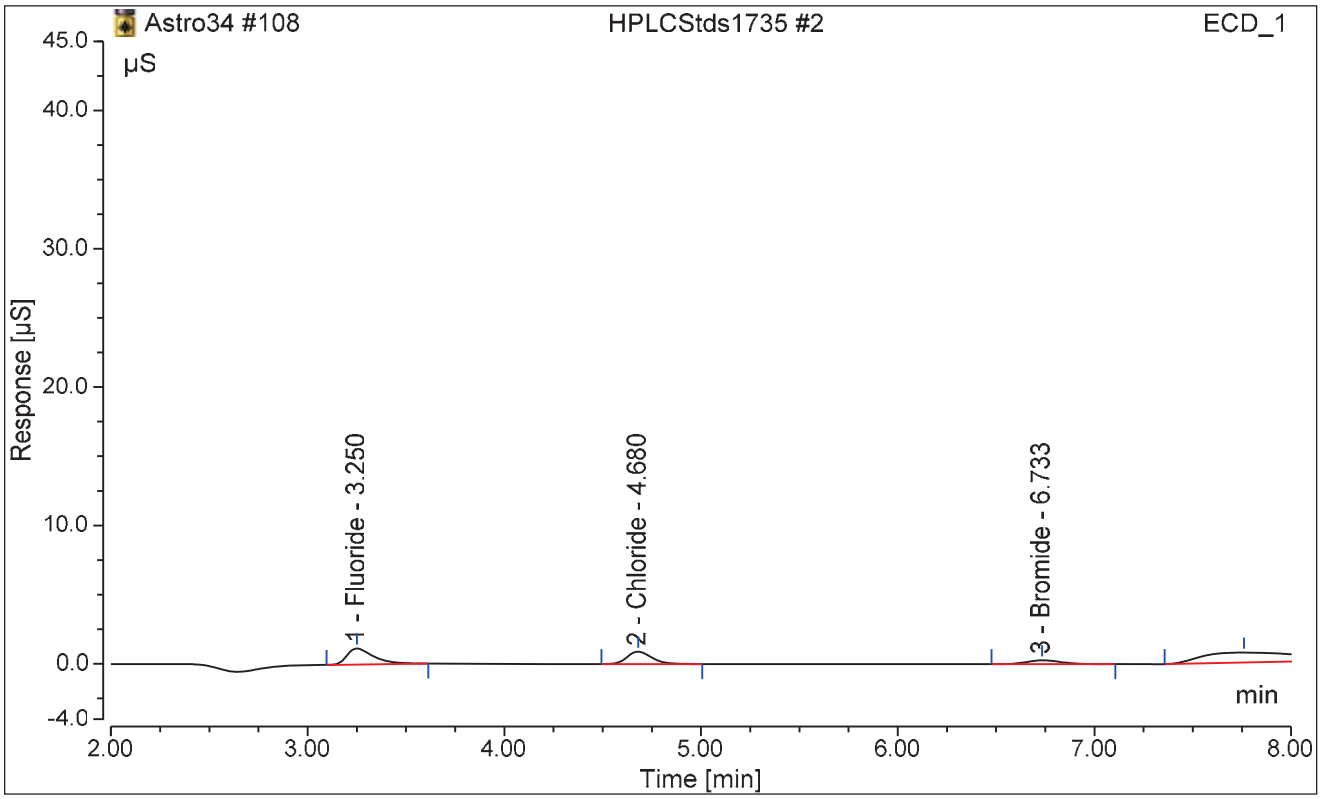
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.25	Fluoride	0.958	6.849	4.85019	FALSE	FALSE
2	4.68	Chloride	0.657	4.637	4.87680	FALSE	FALSE
3	6.73	Bromide	0.272	1.363	4.98795	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**16-Jun-2024 / 14:59**	Run Time:	**14.50**

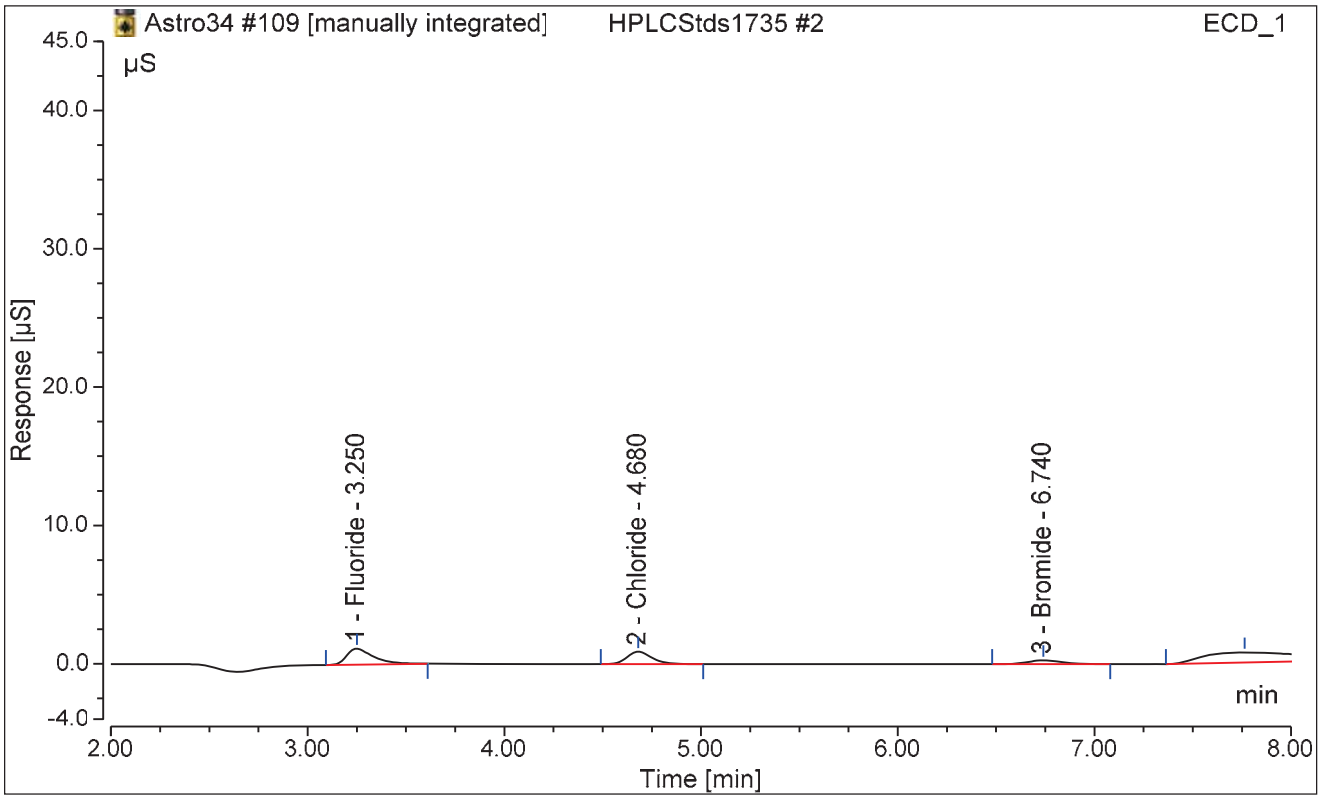


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.25	Fluoride	0.183	1.164	0.98241	FALSE	FALSE
2	4.68	Chloride	0.129	0.899	0.99462	FALSE	FALSE
3	6.73	Bromide	0.054	0.275	0.99550	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1735 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**16-Jun-2024 / 15:16**	Run Time:	**14.50**

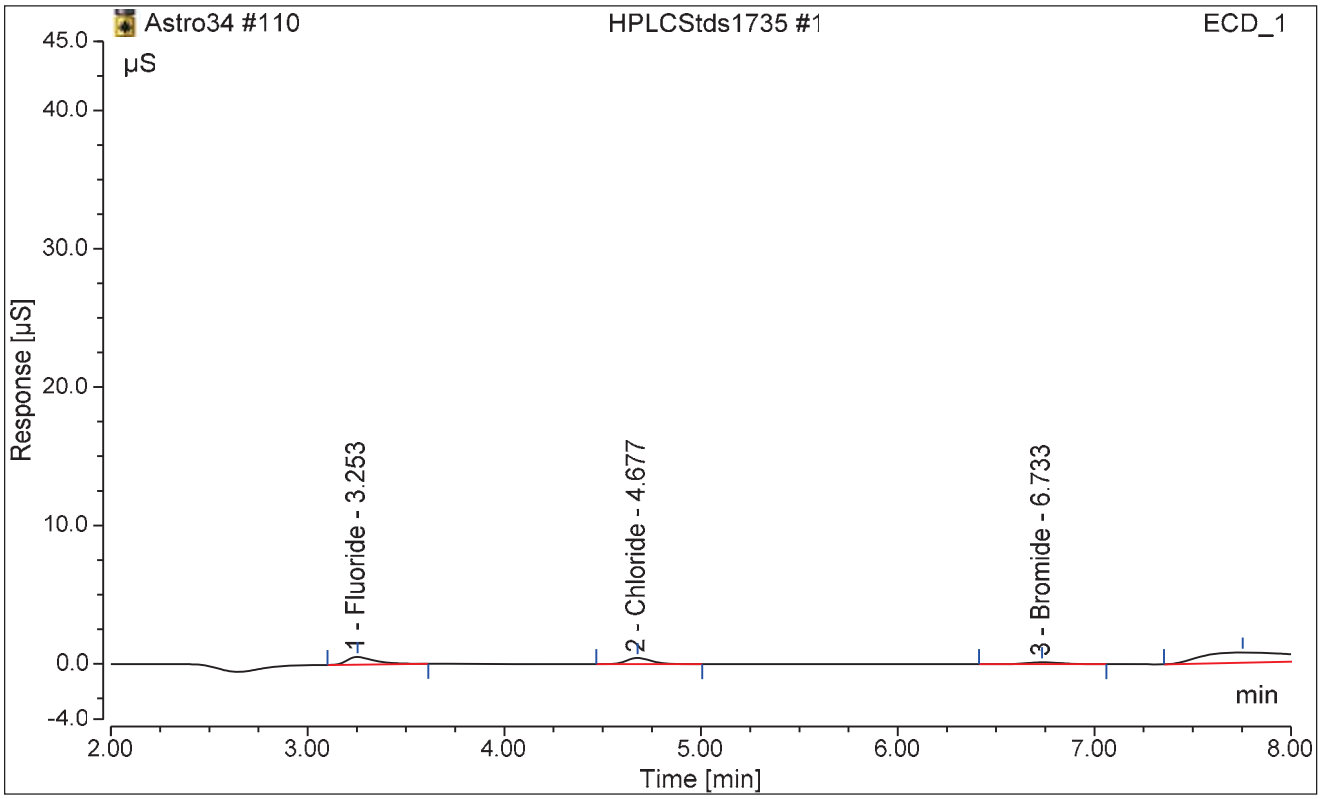


Analyst Comment: II KLB 6/17/24

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.25	Fluoride	0.182	1.153	0.97715	FALSE	FALSE
2	4.68	Chloride	0.130	0.889	0.99556	FALSE	FALSE
3	6.74	Bromide	0.054	0.270	0.98936	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1735 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**16-Jun-2024 / 15:33**	Run Time:	**14.50**



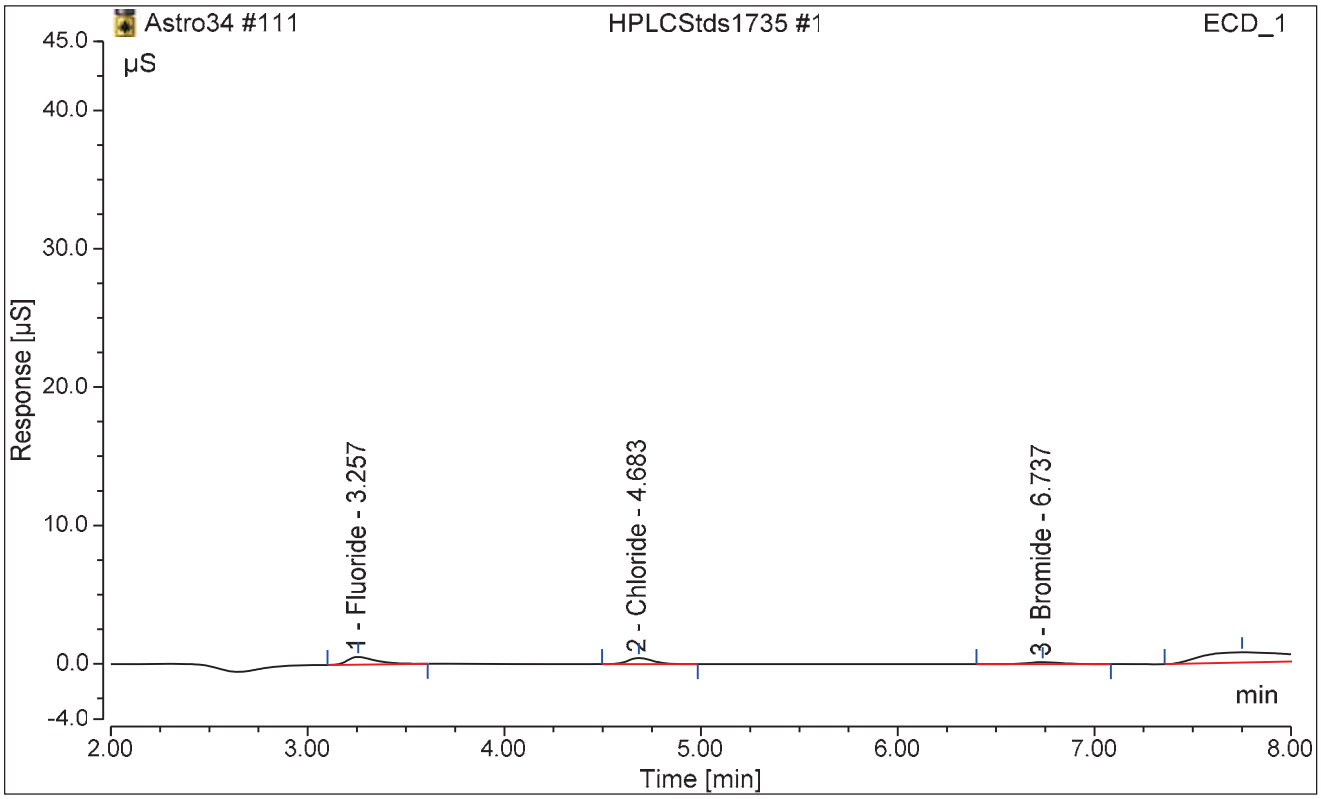
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.25	Fluoride	0.092	0.554	0.52453	FALSE	FALSE
2	4.68	Chloride	0.066	0.450	0.51413	FALSE	FALSE
3	6.73	Bromide	0.027	0.137	0.48972	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1735 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**16-Jun-2024 / 15:49**	Run Time:	**14.50**



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.26	Fluoride	0.093	0.554	0.52668	FALSE	FALSE
2	4.68	Chloride	0.065	0.450	0.51070	FALSE	FALSE
3	6.74	Bromide	0.028	0.141	0.51031	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Calibration Table

No.	Injection Name	Inject Time	Pos.	Level	Ref.Amount	Calibration Point Status	Dil.Factor	Volume
					µg/mL ECD_1 Fluoride	ECD_1 Fluoride		µL
3	HPLCStds1737 #6	17/Jun/2024 18:06	GA6	06	30.0000	Ok	1.0000	25.00
4	HPLCStds1737 #6	17/Jun/2024 18:23	GA6	06	30.0000	Ok	1.0000	25.00
5	HPLCStds1737 #5	17/Jun/2024 18:40	GA5	05	20.0000	Ok	1.0000	25.00
6	HPLCStds1737 #5	17/Jun/2024 18:56	GA5	05	20.0000	Ok	1.0000	25.00
7	HPLCStds1737 #4	17/Jun/2024 19:13	GA4	04	10.0000	Ok	1.0000	25.00
8	HPLCStds1737 #4	17/Jun/2024 19:29	GA4	04	10.0000	Ok	1.0000	25.00
9	HPLCStds1737 #3	17/Jun/2024 19:46	GA3	03	5.0000	Ok	1.0000	25.00
10	HPLCStds1737 #3	17/Jun/2024 20:03	GA3	03	5.0000	Ok	1.0000	25.00
11	HPLCStds1737 #2	17/Jun/2024 20:19	GA2	02	1.0000	Ok	1.0000	25.00
12	HPLCStds1737 #2	17/Jun/2024 20:36	GA2	02	1.0000	Ok	1.0000	25.00
13	HPLCStds1737 #1	17/Jun/2024 20:53	GA1	01	0.5000	Ok	1.0000	25.00
14	HPLCStds1737 #1	17/Jun/2024 21:09	GA1	01	0.5000	Ok	1.0000	25.00
43	HPLCStds1737 #6	18/Jun/2024 14:04	GA6	06	30.0000	Ok	1.0000	25.00
44	HPLCStds1737 #6	18/Jun/2024 14:20	GA6	06	30.0000	Ok	1.0000	25.00
45	HPLCStds1737 #5	18/Jun/2024 14:37	GA5	05	20.0000	Ok	1.0000	25.00
46	HPLCStds1737 #5	18/Jun/2024 14:54	GA5	05	20.0000	Ok	1.0000	25.00
47	HPLCStds1737 #4	18/Jun/2024 15:10	GA4	04	10.0000	Ok	1.0000	25.00
48	HPLCStds1737 #4	18/Jun/2024 15:27	GA4	04	10.0000	Ok	1.0000	25.00
49	HPLCStds1737 #3	18/Jun/2024 15:44	GA3	03	5.0000	Ok	1.0000	25.00
50	HPLCStds1737 #3	18/Jun/2024 16:00	GA3	03	5.0000	Ok	1.0000	25.00
51	HPLCStds1737 #2	18/Jun/2024 16:17	GA2	02	1.0000	Ok	1.0000	25.00
52	HPLCStds1737 #2	18/Jun/2024 16:33	GA2	02	1.0000	Ok	1.0000	25.00
53	HPLCStds1737 #1	18/Jun/2024 16:50	GA1	01	0.5000	Ok	1.0000	25.00
54	HPLCStds1737 #1	18/Jun/2024 17:07	GA1	01	0.5000	Ok	1.0000	25.00

Detection Parameters

Ret. Time min	Param. Name	Param. Value	Inj. Type	Channel
Always	Baseline Noise Auto Range	On	Any	All Channels
Always	Cobra Smoothing Width	Auto	Any	All Channels
Always	Consider Void Peak	Off	Any	All Channels
0.000	Maximum Rider Ratio	10 [%]	Any	All Channels
0.000	Tailing Sensitivity Factor	0.100 [%]	Any	All Channels
0.000	Inhibit Integration	On	Any	All Channels
0.000	Minimum Area	Auto	Any	All Channels
2.987	Inhibit Integration	Off	Any	All Channels
3.614	Inhibit Integration	On	Any	All Channels
4.331	Inhibit Integration	Off	Any	All Channels
5.012	Inhibit Integration	On	Any	All Channels
5.973	Inhibit Integration	Off	Any	All Channels
8.629	Inhibit Integration	On	Any	All Channels

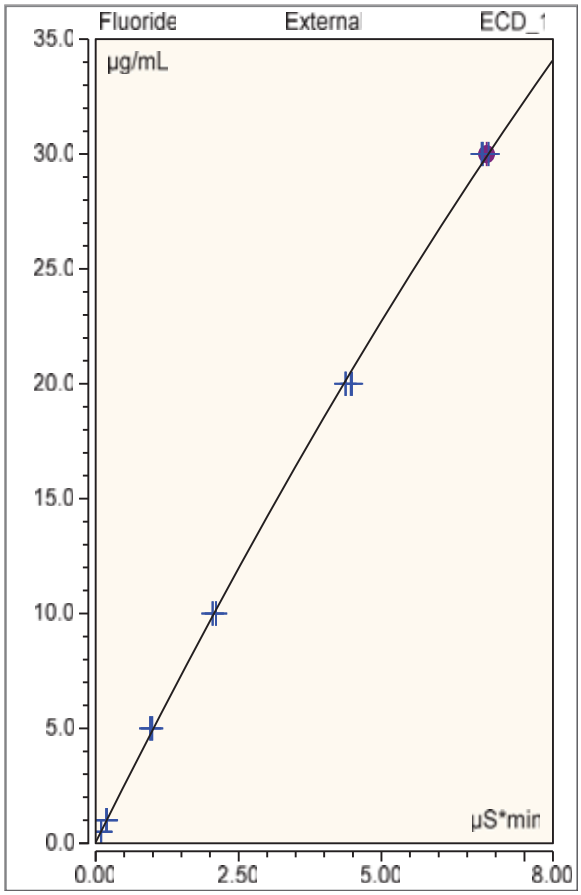
Calibration Batch Report

Sequence:	Astro36	*Injection Volume:*	25.00
Instrument Method:	AS22 ASAP new	*Operator:*	kenbell
Inj. Date / Time:	17-Jun-2024 / 18:06	*Run Time:*	14.5

Calibration Summary

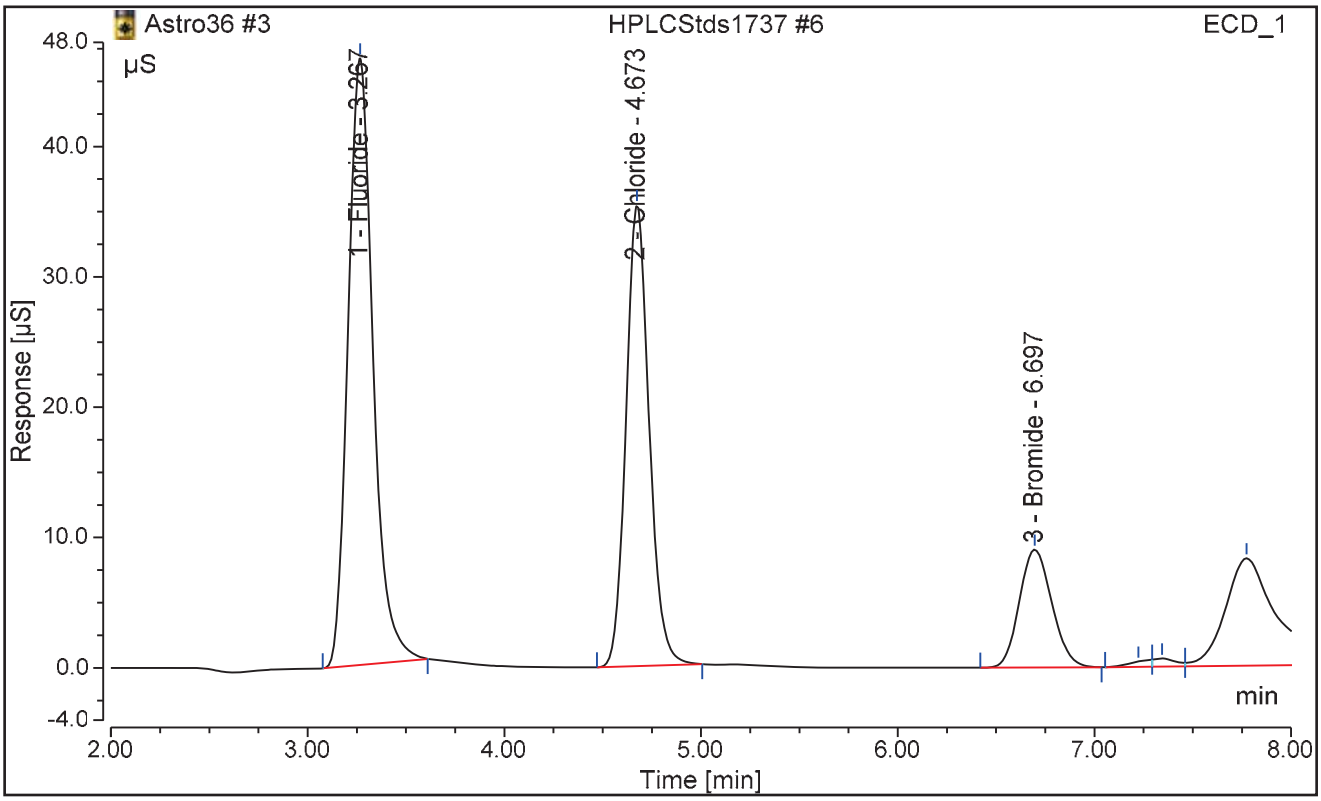
Peak Name	Eval.Type	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
Fluoride	Area	Quad, WithOffset, 1/A	24.000	0.038	5.006	-0.094	99.959
Chloride	Area	Quad, WithOffset, 1/A	22.000	0.020	7.542	-0.284	99.984
Bromide	Area	Quad, WithOffset, 1/A	22.000	-0.053	18.591	-0.811	99.991
		AVERAGE:		0.0018	10.3793	-0.3964	99.9783

Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount µg/mL ECD_1
	Fluoride	Fluoride	Fluoride	Fluoride
HPLCStds1737 #6	3.267	6.840	46.555	29.895
HPLCStds1737 #6	3.257	6.878	47.663	30.036
HPLCStds1737 #5	3.253	4.463	31.054	20.514
HPLCStds1737 #5	3.247	4.485	31.483	20.604
HPLCStds1737 #4	3.230	2.106	14.524	10.165
HPLCStds1737 #4	3.230	2.105	14.572	10.160
HPLCStds1737 #3	3.233	0.988	6.595	4.894
HPLCStds1737 #3	3.227	0.986	6.633	4.883
HPLCStds1737 #2	3.227	0.195	1.154	1.009
HPLCStds1737 #2	3.220	0.194	1.158	1.004
HPLCStds1737 #1	3.227	0.097	0.550	0.525
HPLCStds1737 #1	3.227	0.097	0.550	0.524
HPLCStds1737 #6	3.257	6.753	47.047	29.572
HPLCStds1737 #6	3.250	6.777	47.257	29.662
HPLCStds1737 #5	3.233	4.364	30.446	20.101
HPLCStds1737 #5	3.233	4.377	30.603	20.155
HPLCStds1737 #4	3.223	2.044	13.981	9.876
HPLCStds1737 #4	3.227	2.050	13.994	9.906
HPLCStds1737 #3	3.223	0.953	6.303	4.725
HPLCStds1737 #3	3.217	0.955	6.348	4.734
HPLCStds1737 #2	3.220	0.187	1.086	0.972
HPLCStds1737 #2	3.220	0.186	1.089	0.965
HPLCStds1737 #1	3.220	0.096	0.519	0.517
HPLCStds1737 #1	3.220	0.094	0.515	0.509



Peak Analysis Report

Sample Name:	**HPLCStds1737 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**17-Jun-2024 / 18:06**	Run Time:	**14.50**

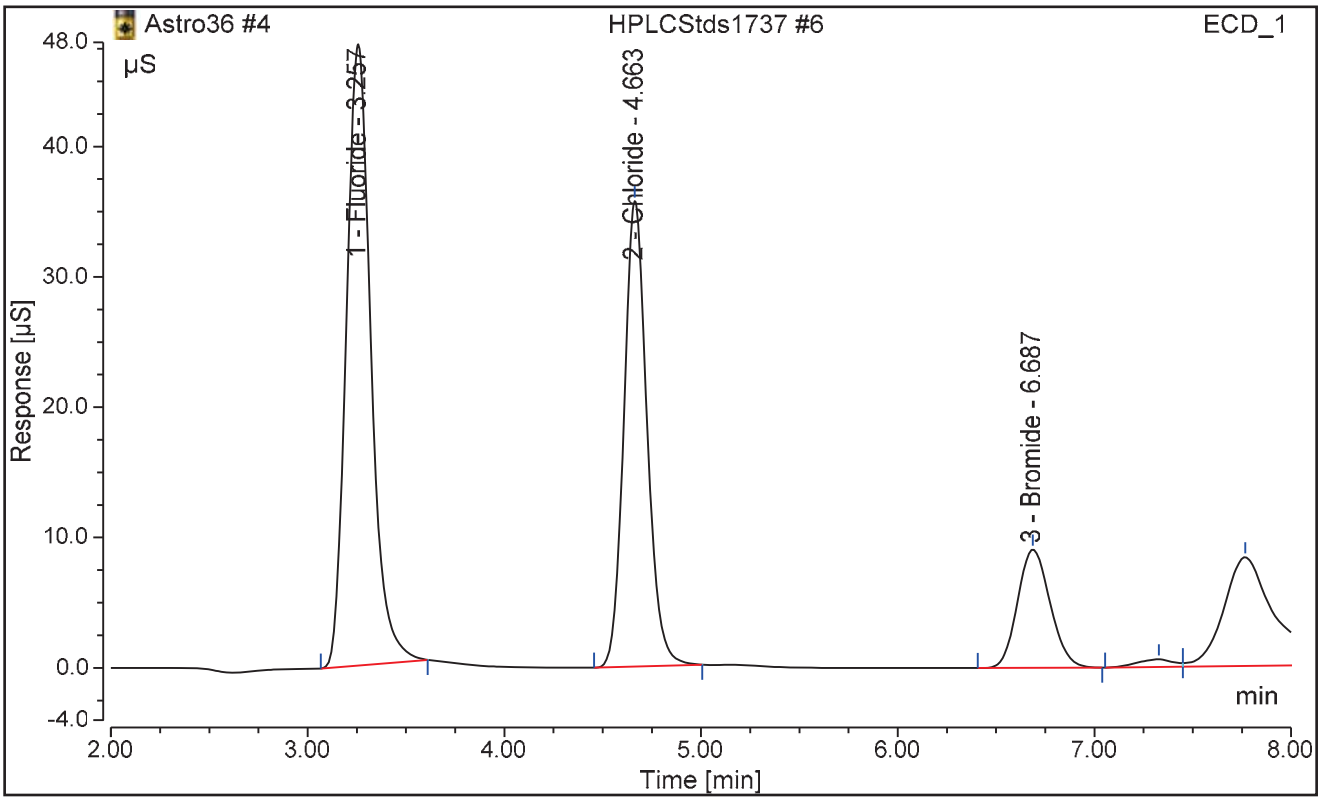


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.27	Fluoride	6.840	46.555	29.89485	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**17-Jun-2024 / 18:23**	Run Time:	**14.50**

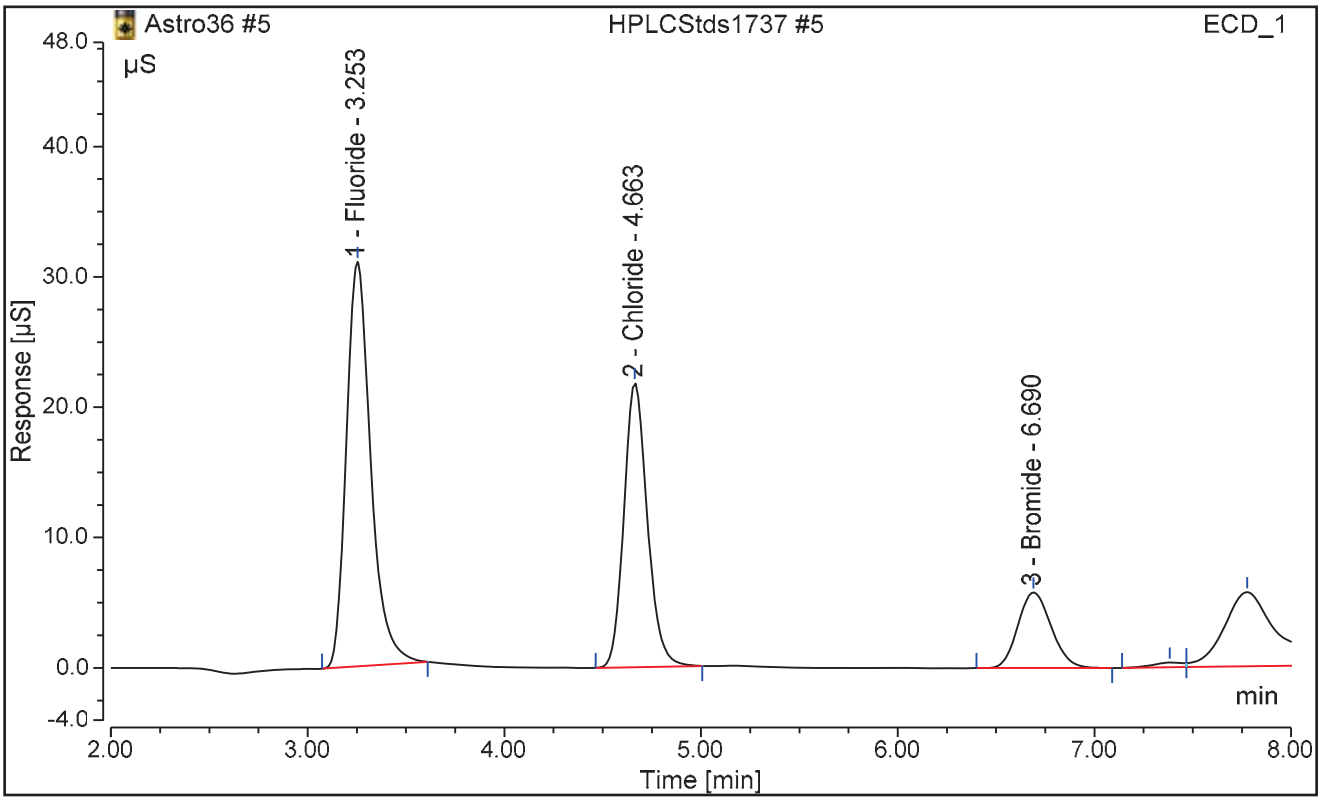


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.26	Fluoride	6.878	47.663	30.03617	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**17-Jun-2024 / 18:40**	Run Time:	**14.50**

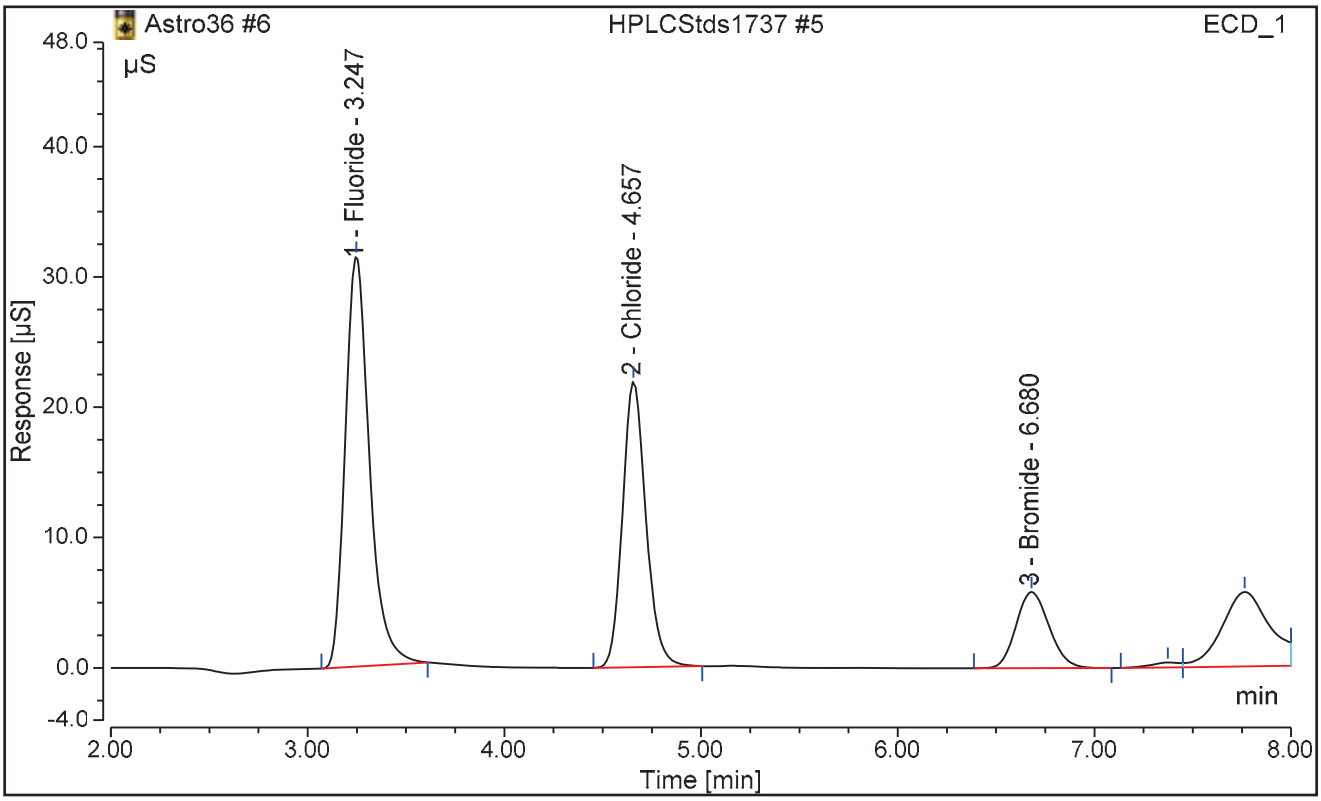


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.25	Fluoride	4.463	31.054	20.51385	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**17-Jun-2024 / 18:56**	Run Time:	**14.50**

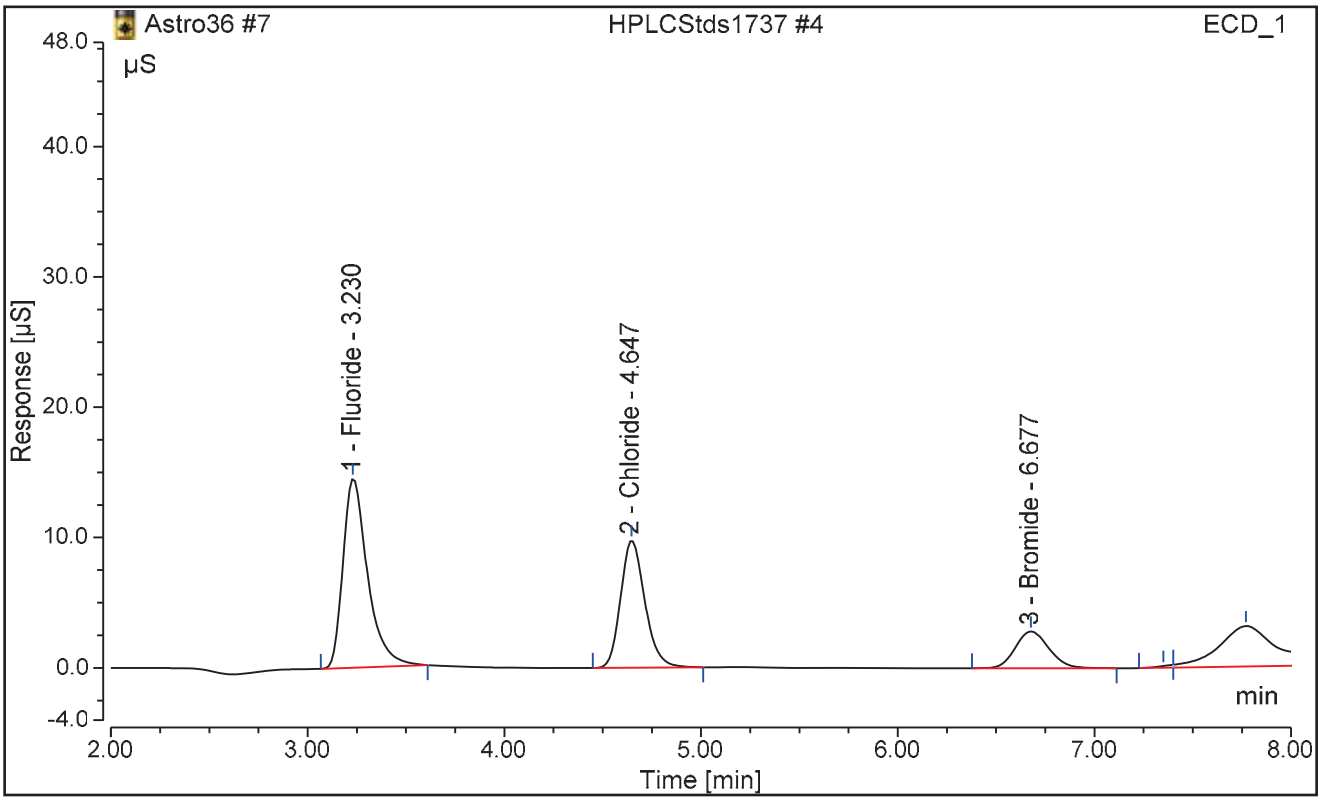


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.25	Fluoride	4.485	31.483	20.60431	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**17-Jun-2024 / 19:13**	Run Time:	**14.50**

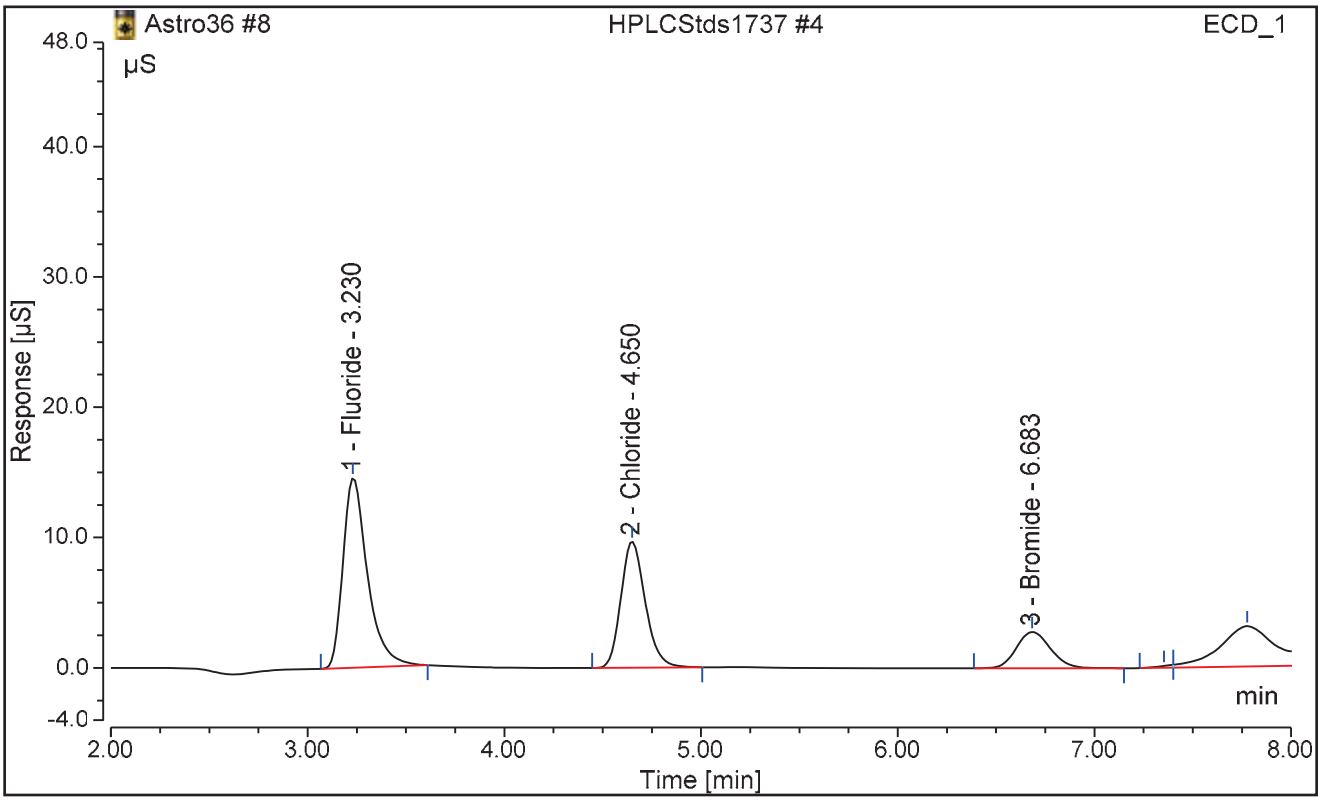


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.23	Fluoride	2.106	14.524	10.16549	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**17-Jun-2024 / 19:29**	Run Time:	**14.50**

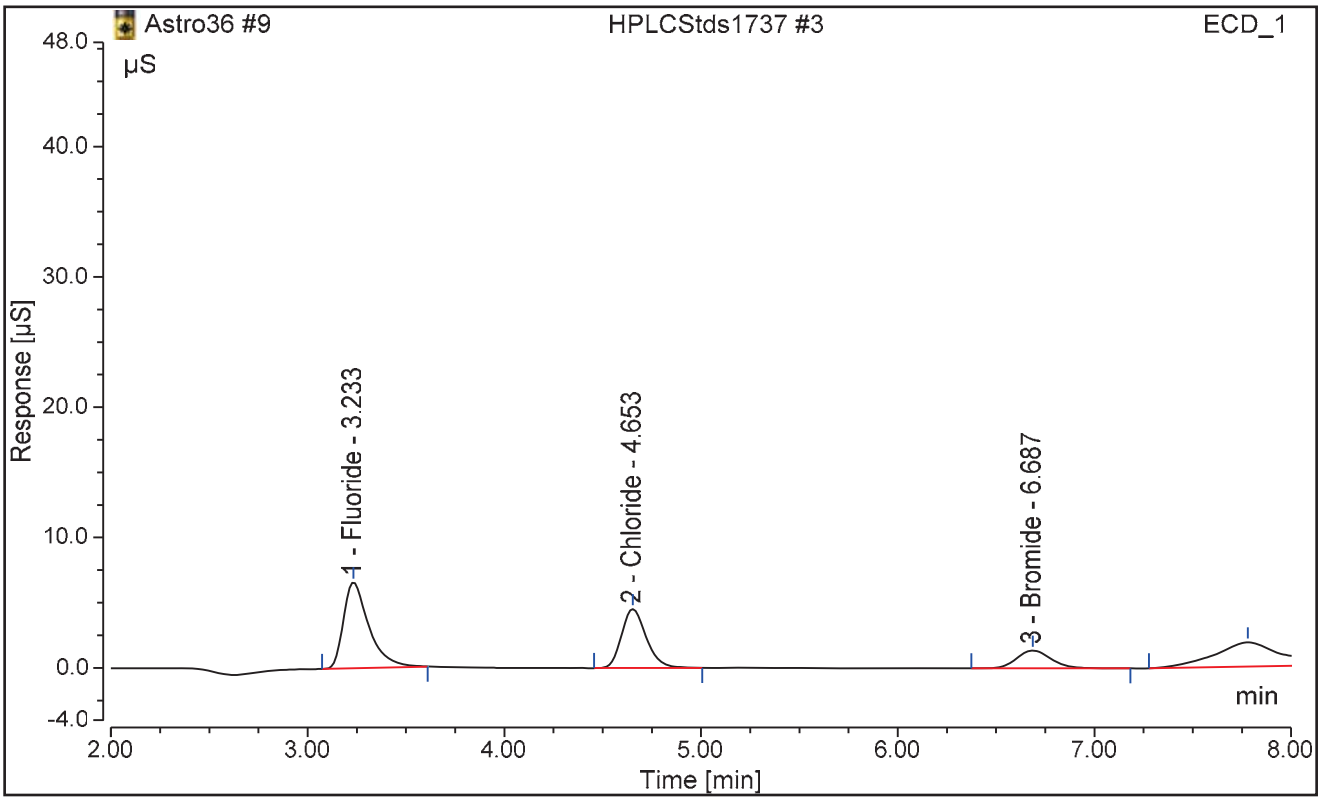


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.23	Fluoride	2.105	14.572	10.16023	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**17-Jun-2024 / 19:46**	Run Time:	**14.50**

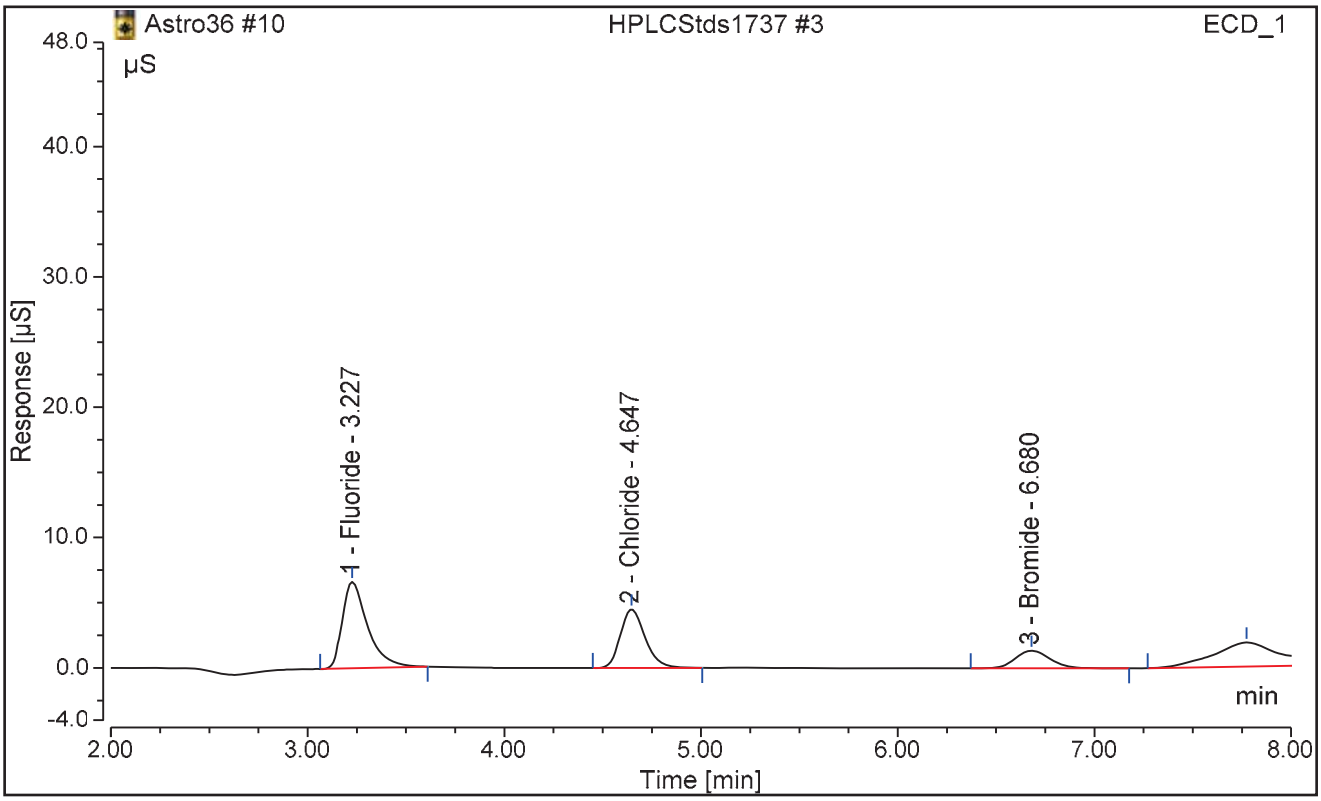


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.23	Fluoride	0.988	6.595	4.89400	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**17-Jun-2024 / 20:03**	Run Time:	**14.50**

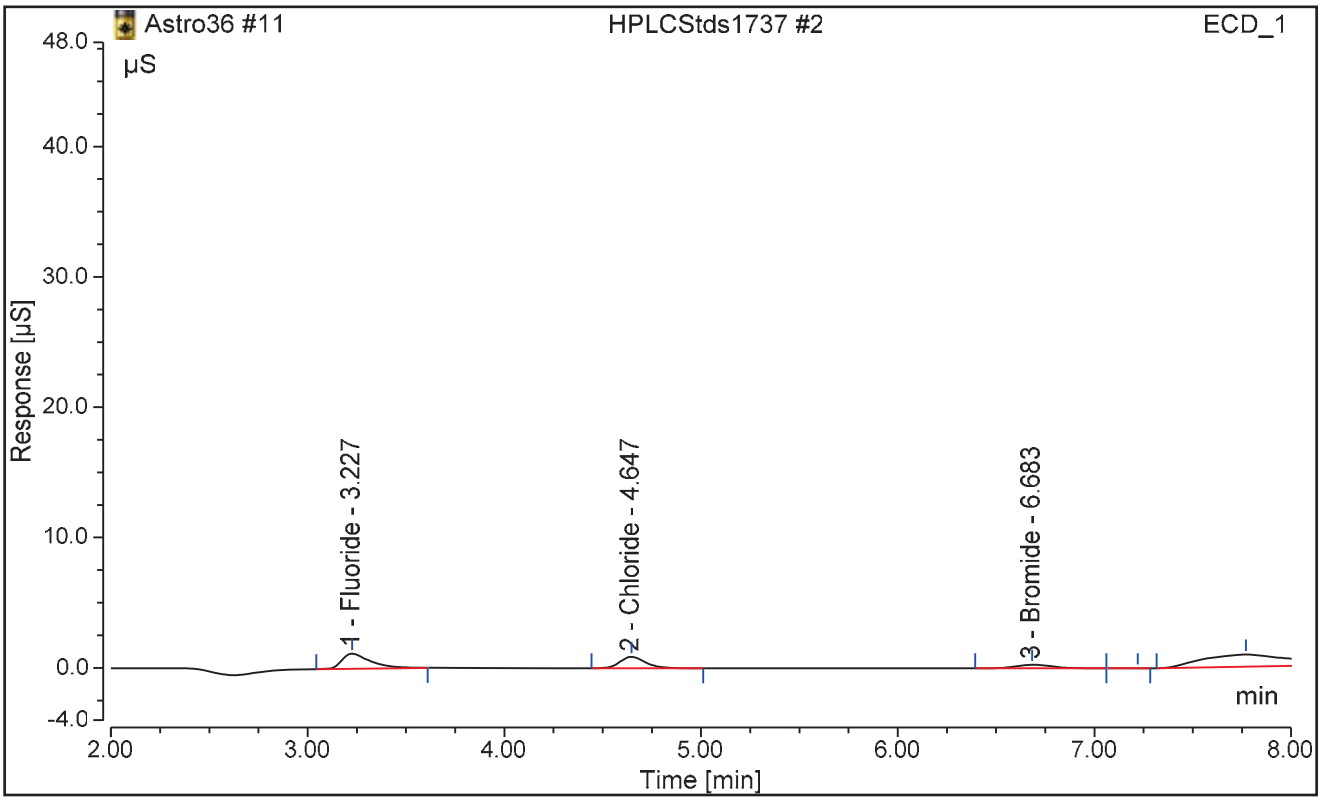


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.23	Fluoride	0.986	6.633	4.88302	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**17-Jun-2024 / 20:19**	Run Time:	**14.50**

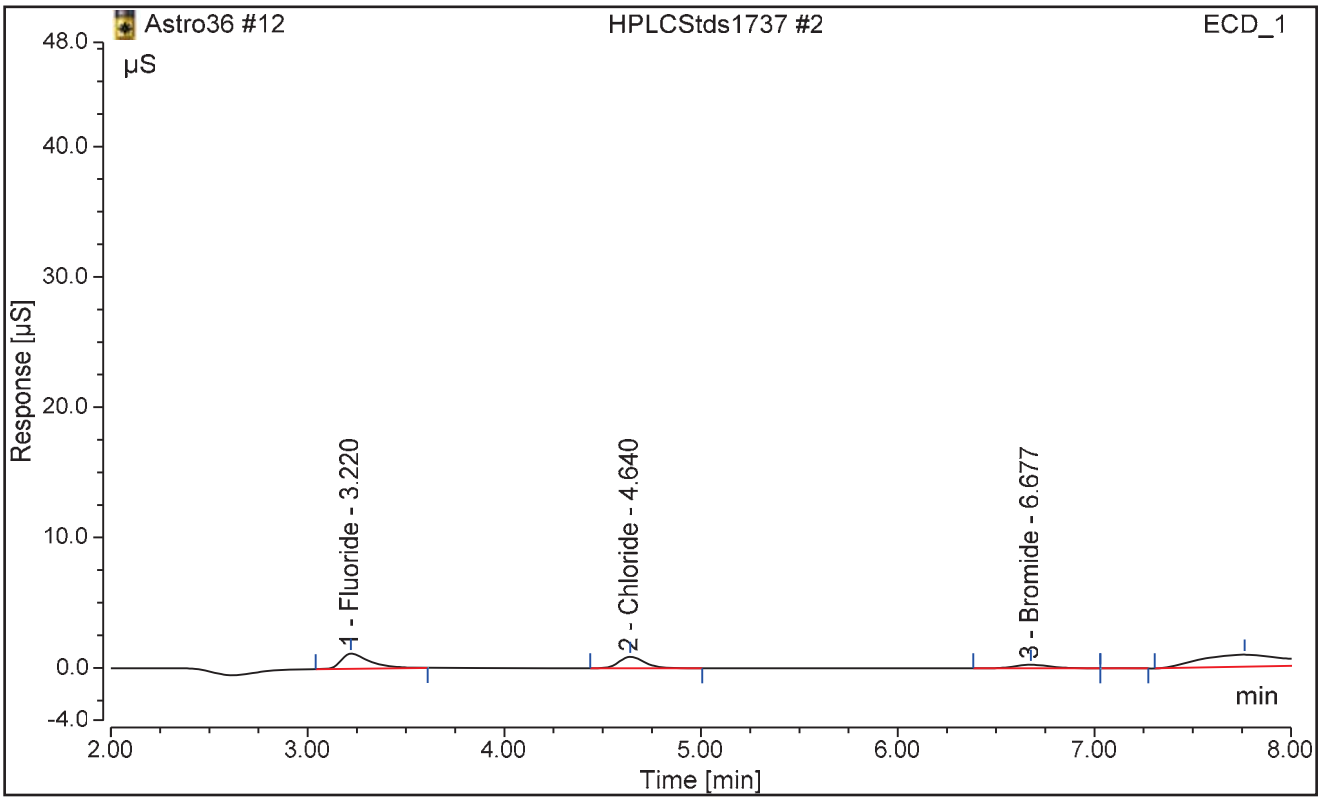


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.23	Fluoride	0.195	1.154	1.00906	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**17-Jun-2024 / 20:36**	Run Time:	**14.50**

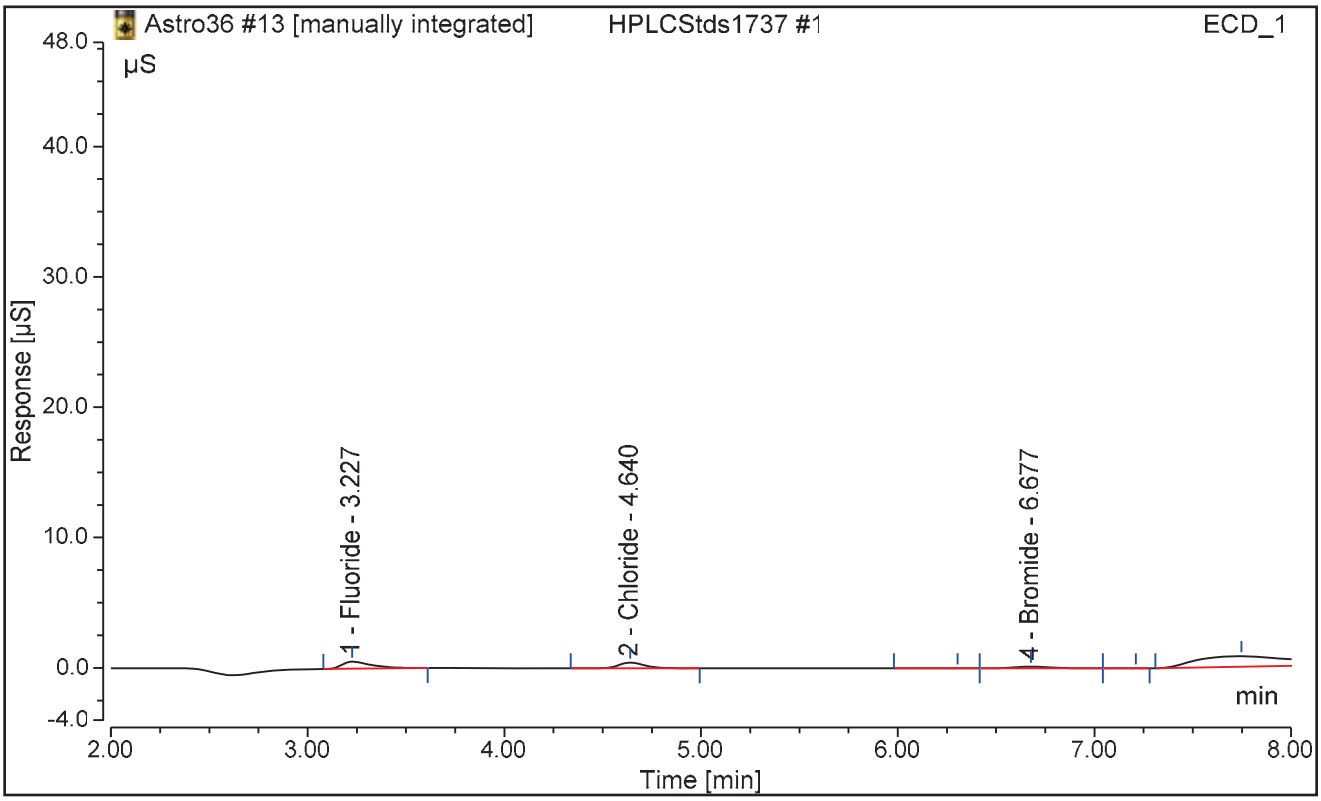


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.22	Fluoride	0.194	1.158	1.00420	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**17-Jun-2024 / 20:53**	Run Time:	**14.50**



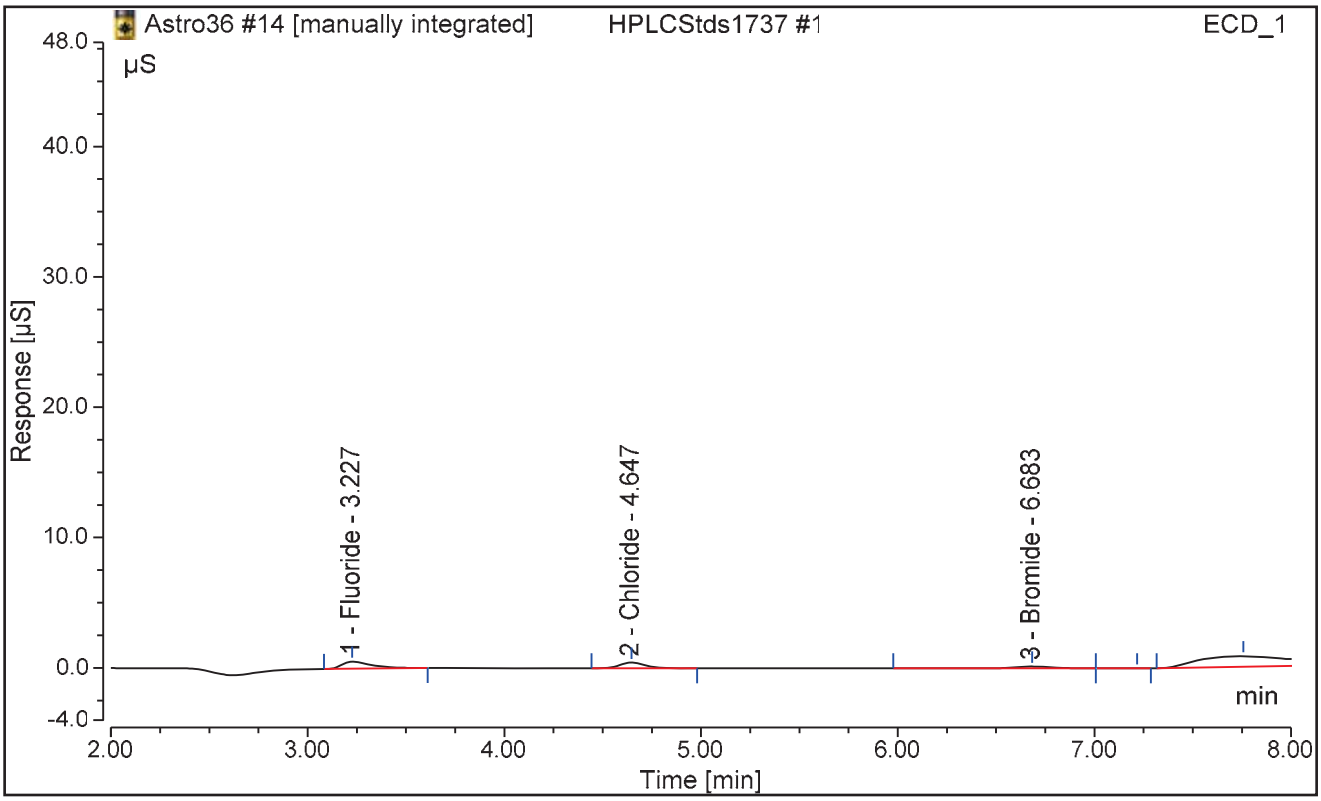
Analyst Comment: II KLB 6/19/24

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.23	Fluoride	0.097	0.550	0.52533	FALSE	TRUE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1737 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**17-Jun-2024 / 21:09**	Run Time:	**14.50**

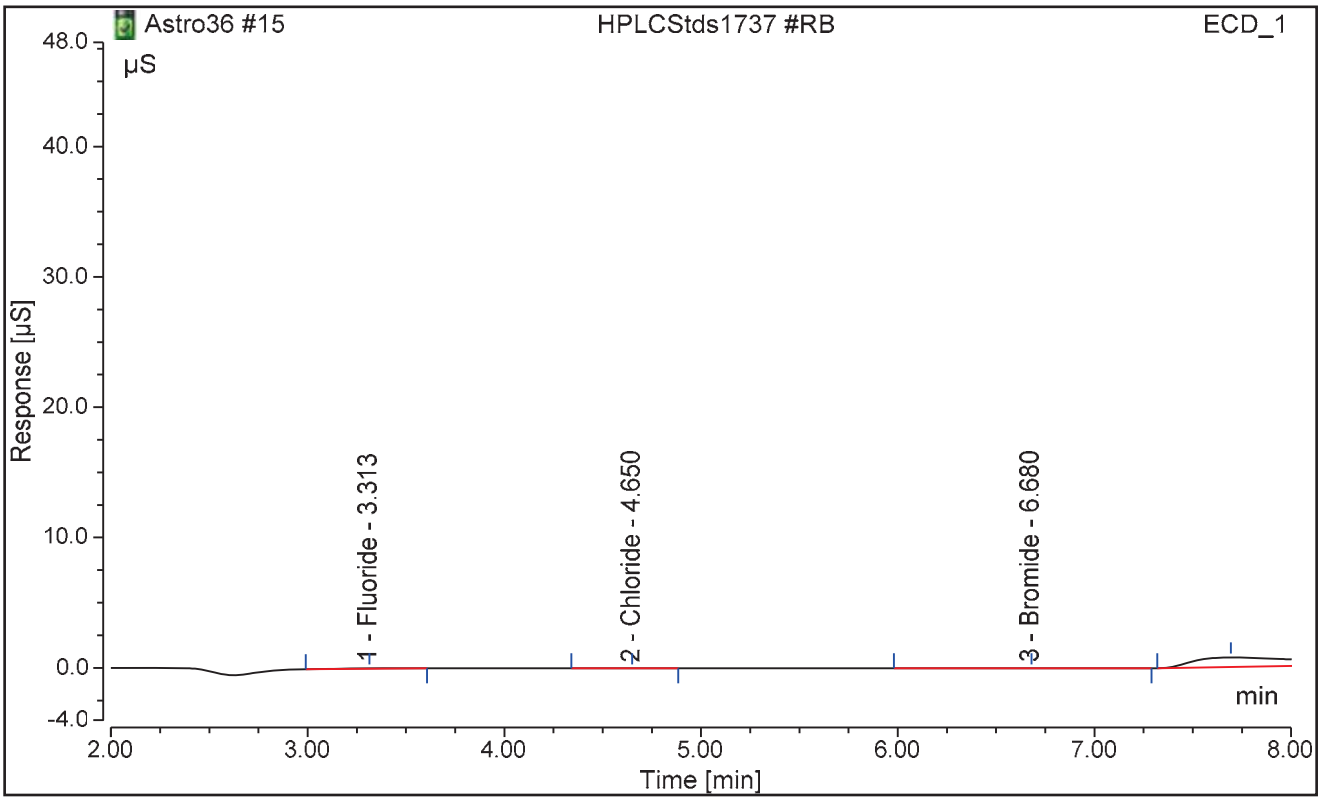


Analyst Comment: II KLB 6/19/24

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.23	Fluoride	0.097	0.550	0.52421	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**17-Jun-2024 / 21:26**	Run Time:	**14.50**



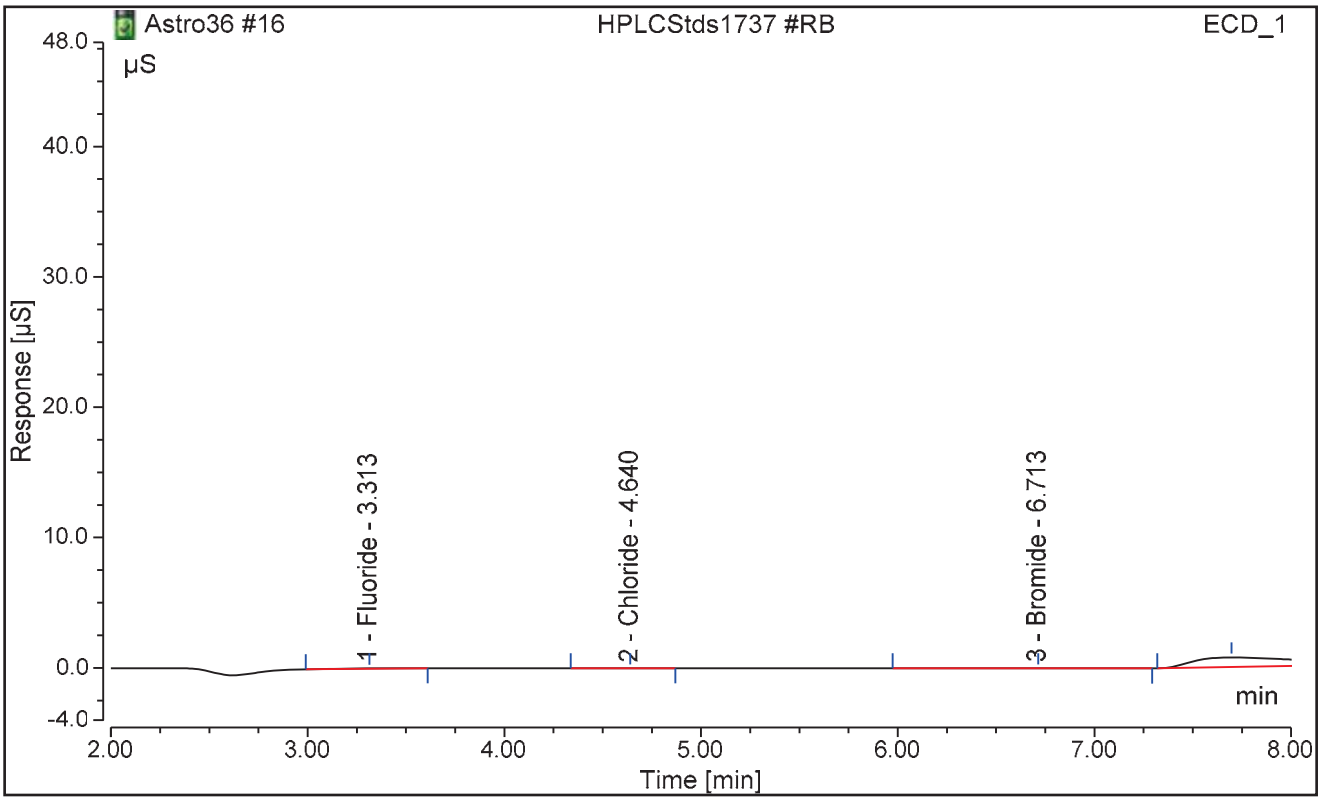
Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.31	Fluoride	0.009	0.028	0.08537	FALSE	FALSE

Chromeleon (c) Dionex 1996-2009
Version 7.2.10.26812

Peak Analysis Report

Sample Name:	**HPLCStds1737 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**17-Jun-2024 / 21:43**	Run Time:	**14.50**

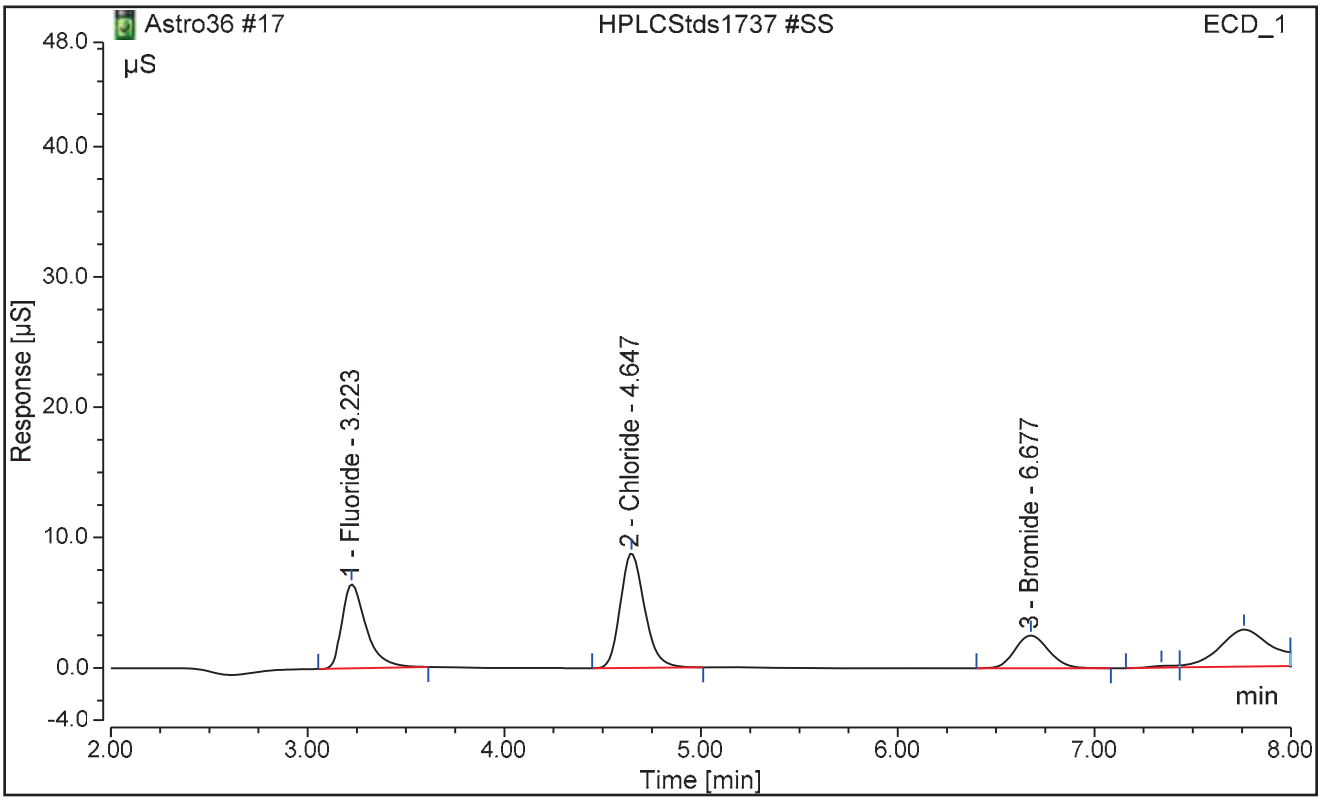


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.31	Fluoride	0.009	0.028	0.08496	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**17-Jun-2024 / 21:59**	Run Time:	**14.50**

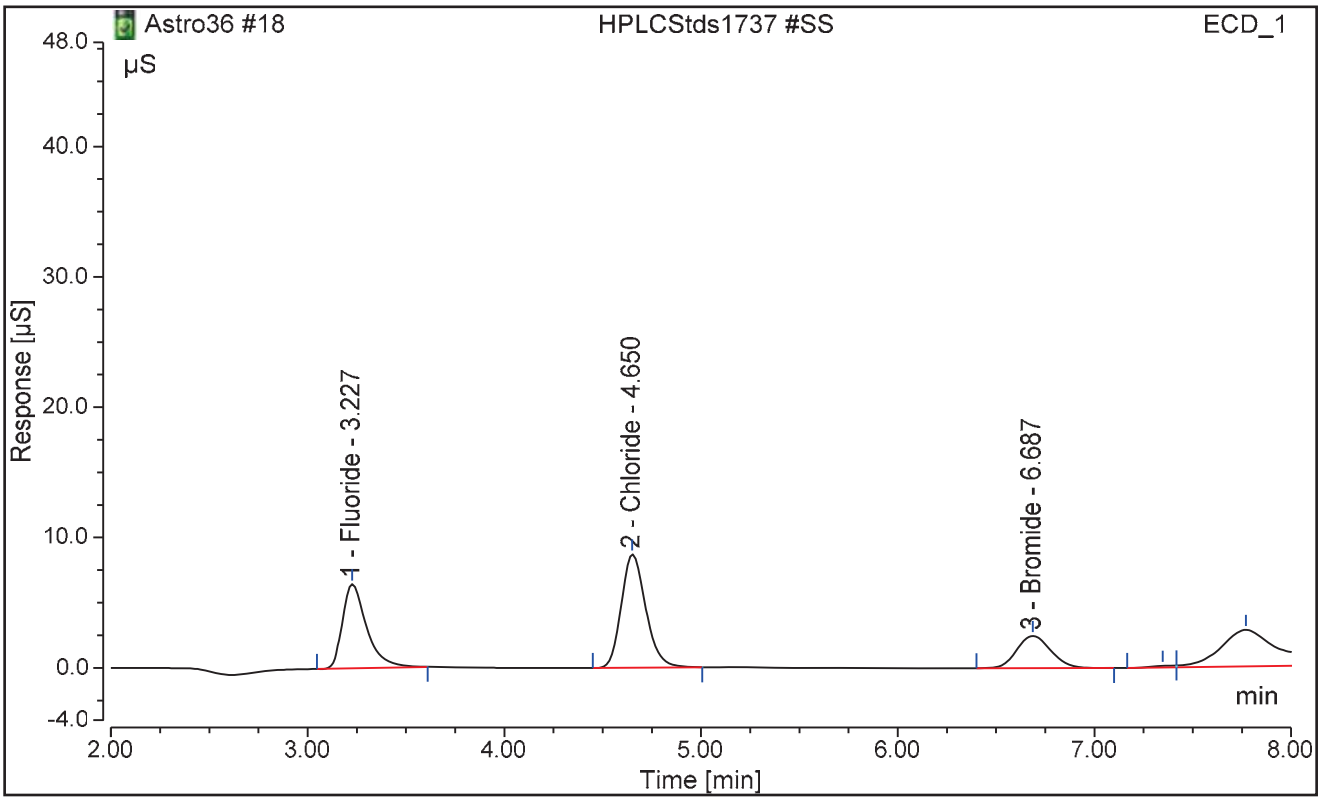


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.22	Fluoride	0.917	6.460	4.55065	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**17-Jun-2024 / 22:16**	Run Time:	**14.50**

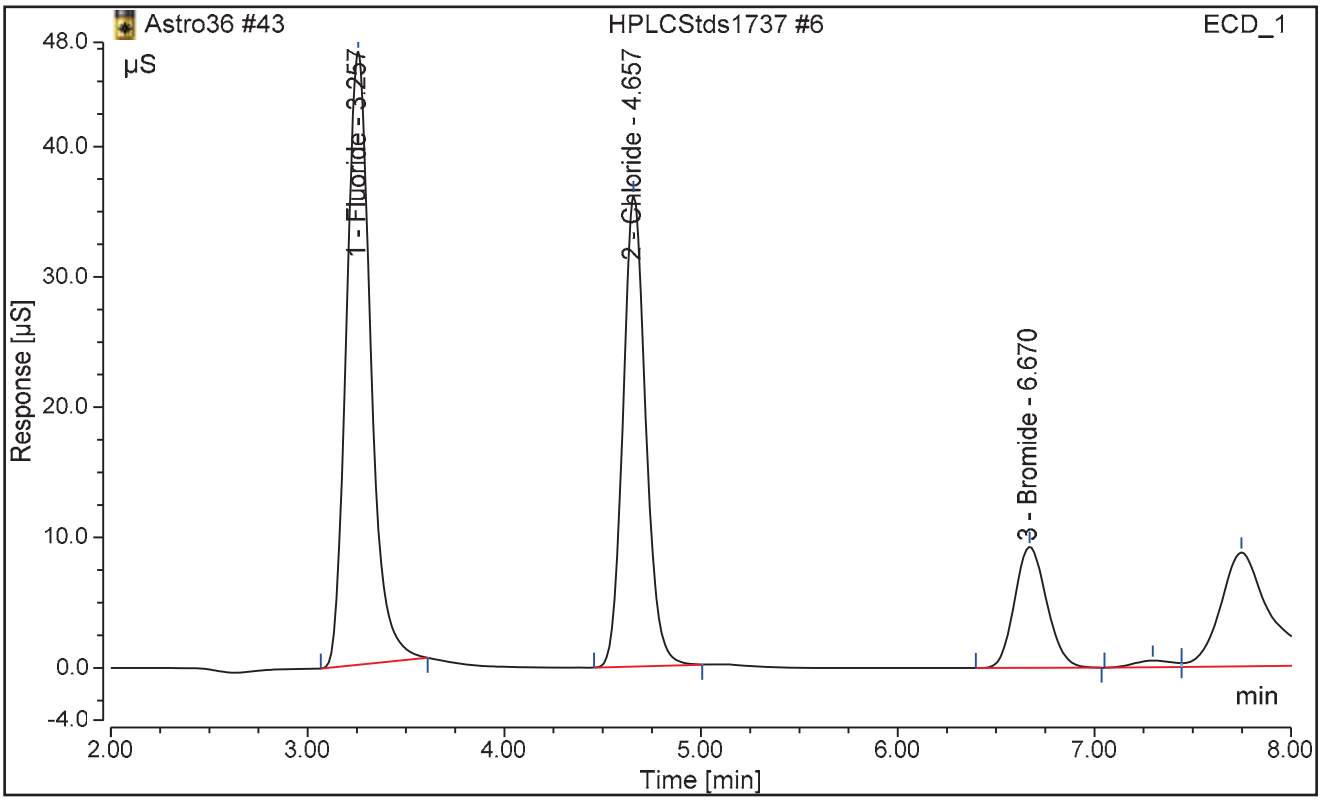


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.23	Fluoride	0.917	6.448	4.55189	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**18-Jun-2024 / 14:04**	Run Time:	**14.50**

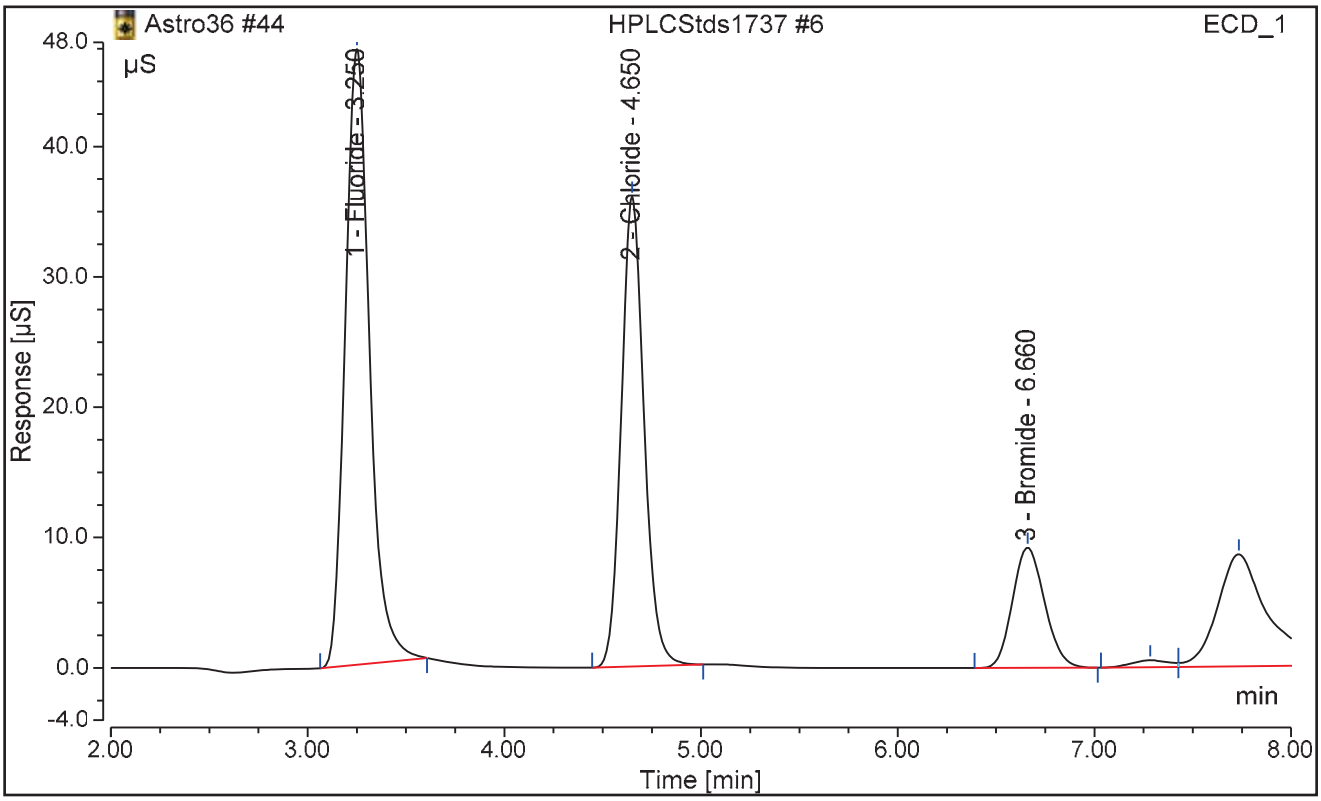


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.26	Fluoride	6.753	47.047	29.57184	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**18-Jun-2024 / 14:20**	Run Time:	**14.50**

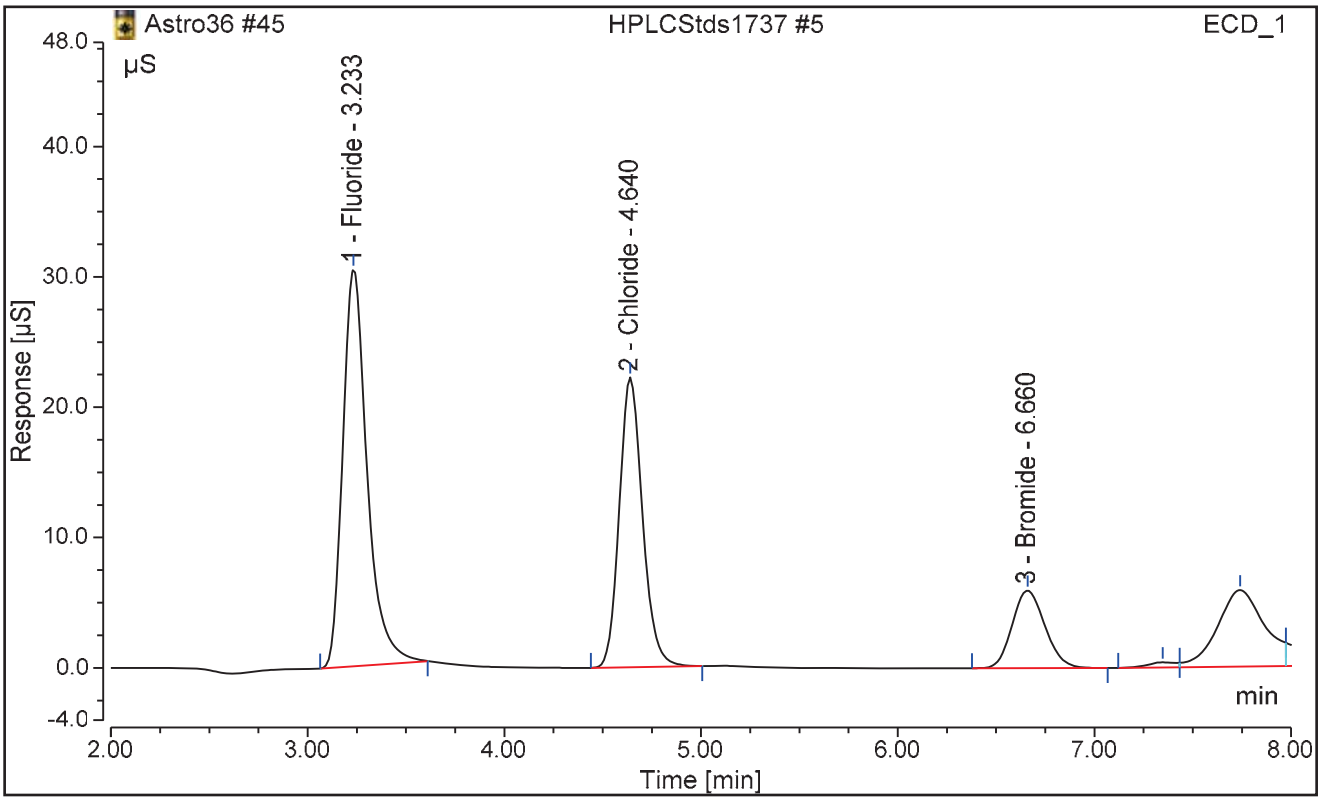


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.25	Fluoride	6.777	47.257	29.66185	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**18-Jun-2024 / 14:37**	Run Time:	**14.50**

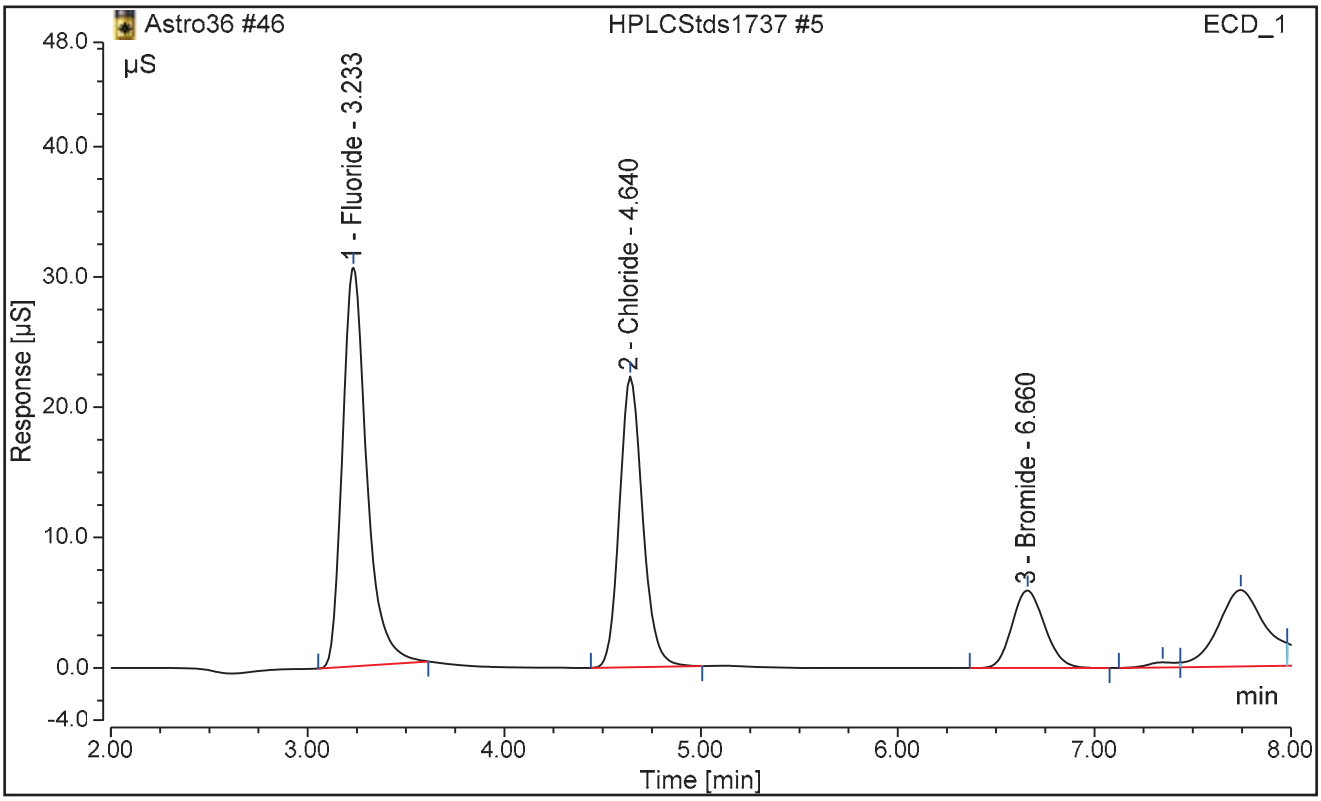


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.23	Fluoride	4.364	30.446	20.10115	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**18-Jun-2024 / 14:54**	Run Time:	**14.50**

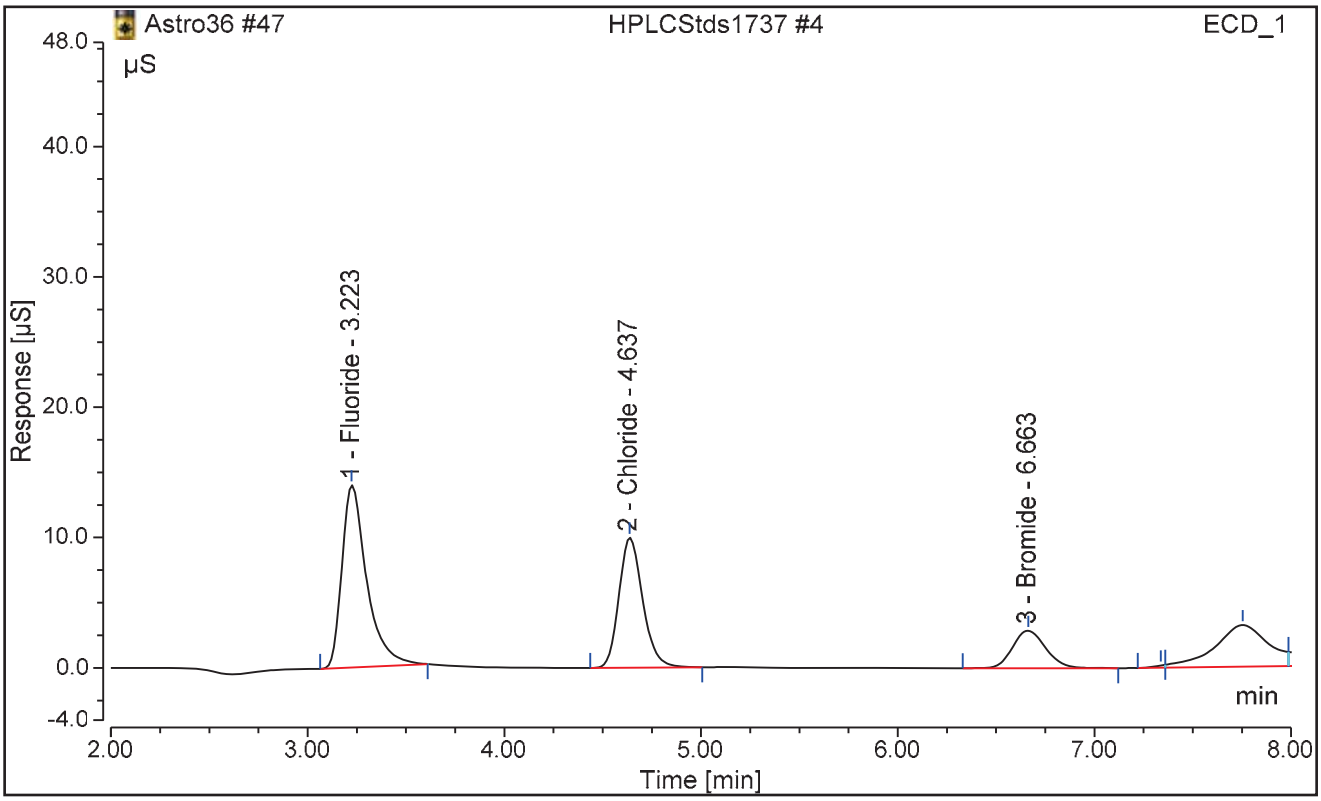


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.23	Fluoride	4.377	30.603	20.15524	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**18-Jun-2024 / 15:10**	Run Time:	**14.50**

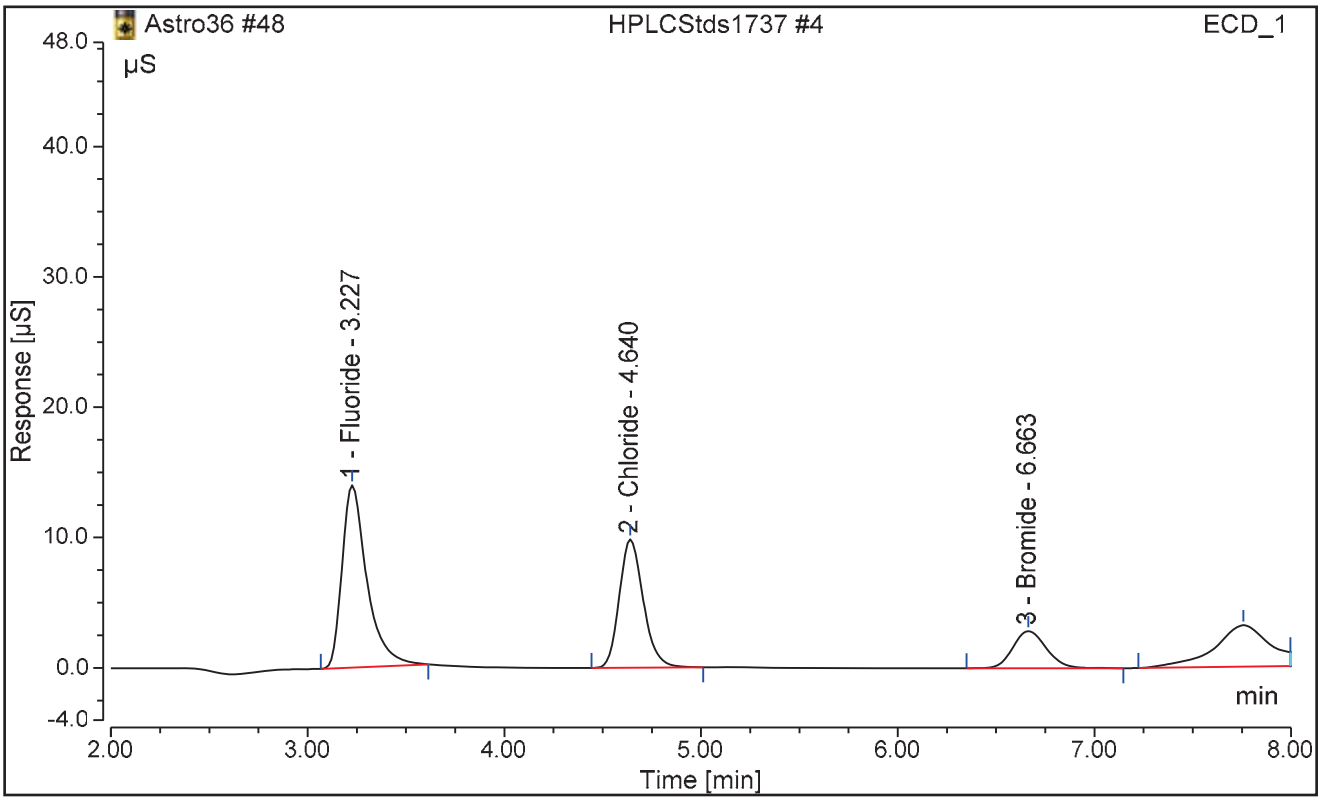


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.22	Fluoride	2.044	13.981	9.87637	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**18-Jun-2024 / 15:27**	Run Time:	**14.50**

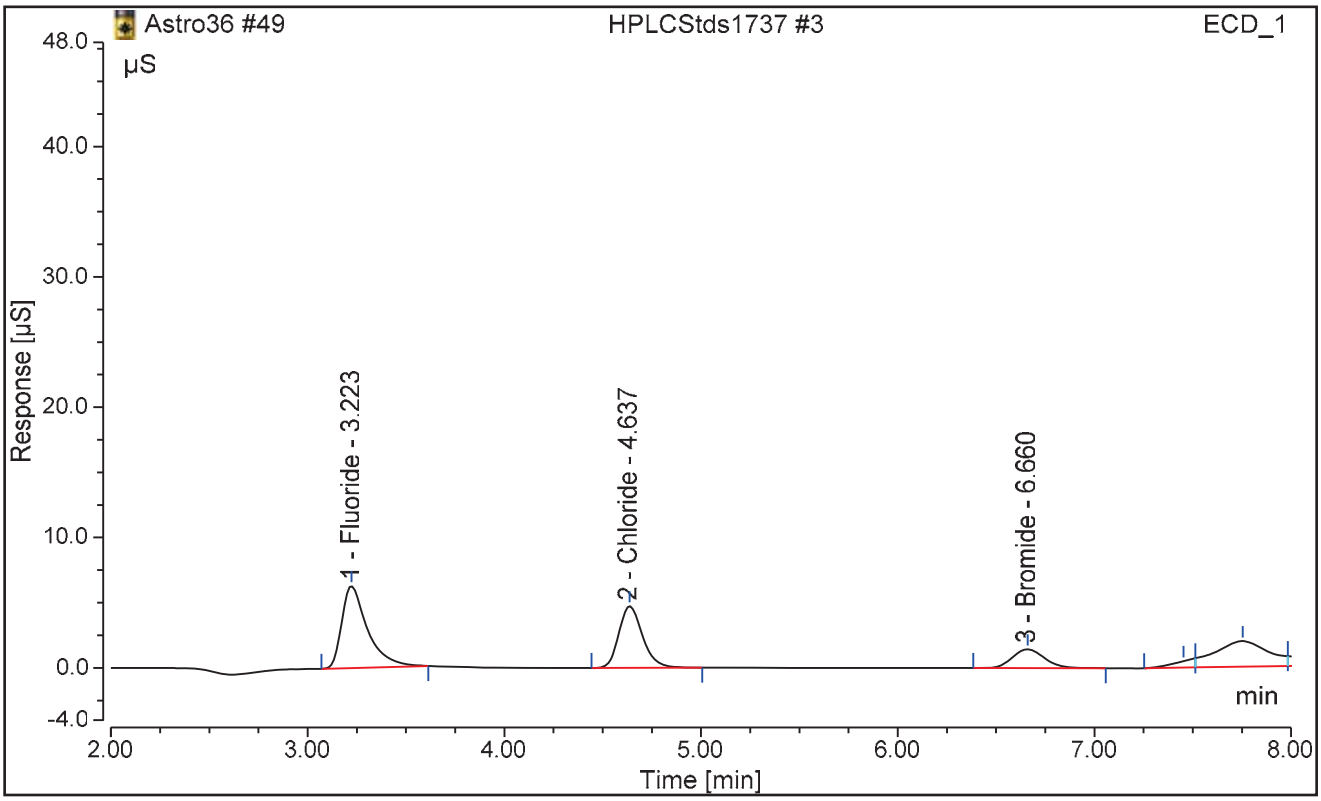


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.23	Fluoride	2.050	13.994	9.90565	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**18-Jun-2024 / 15:44**	Run Time:	**14.50**

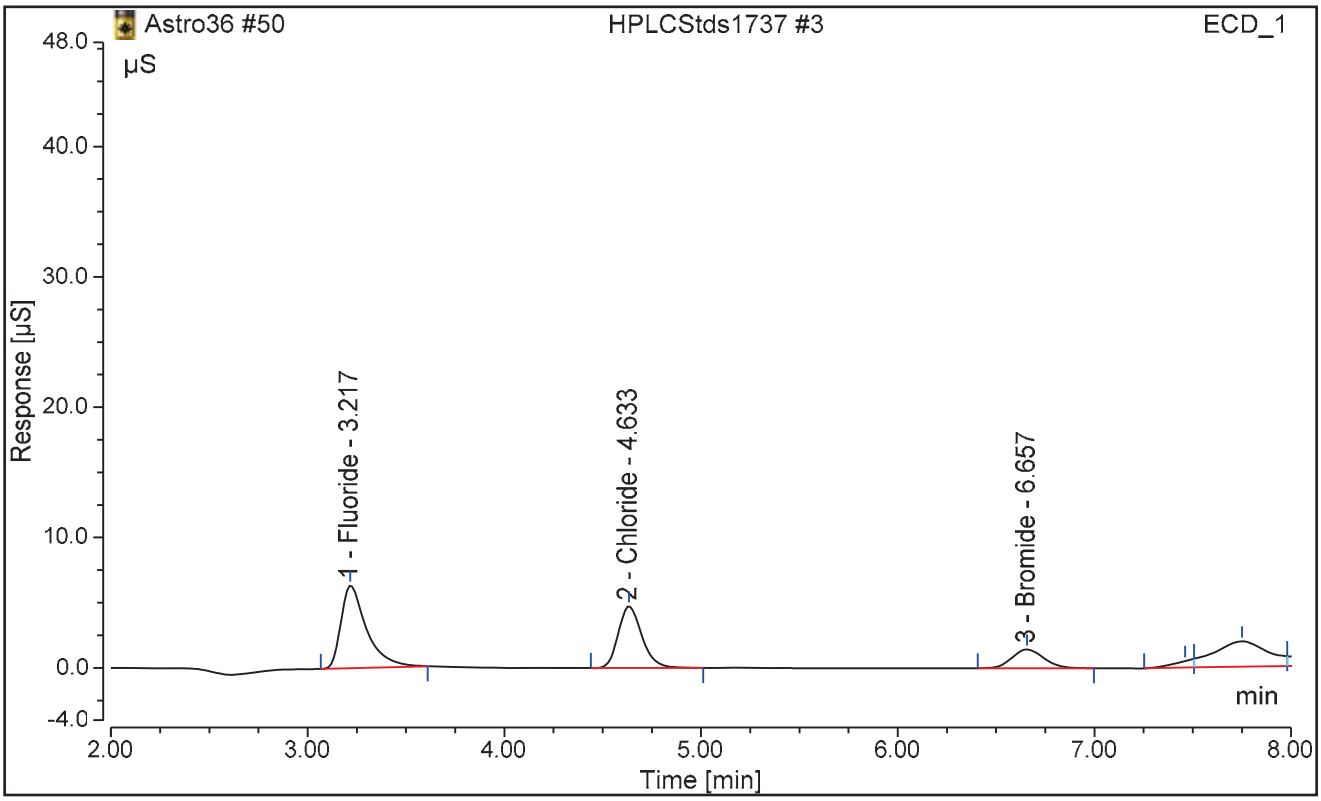


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.22	Fluoride	0.953	6.303	4.72546	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**18-Jun-2024 / 16:00**	Run Time:	**14.50**

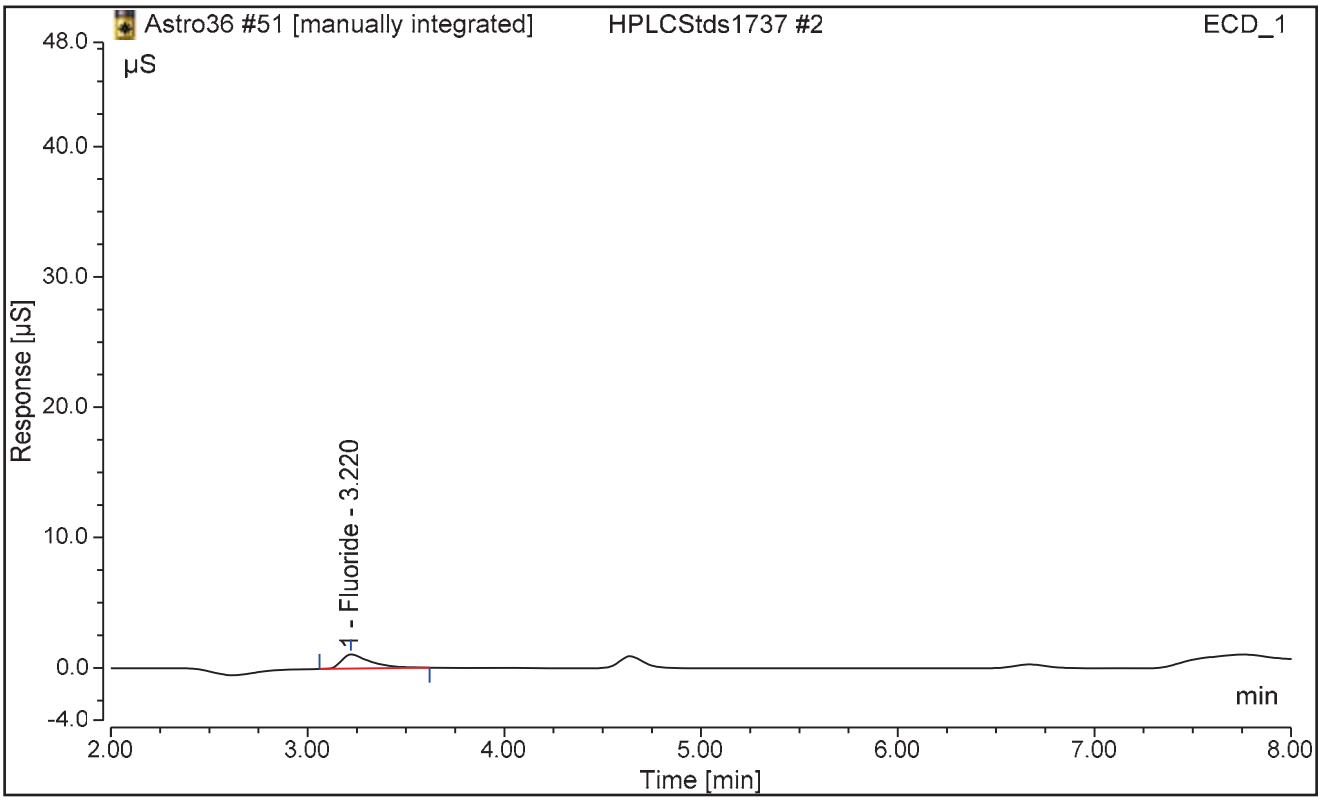


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.22	Fluoride	0.955	6.348	4.73395	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**18-Jun-2024 / 16:17**	Run Time:	**14.50**

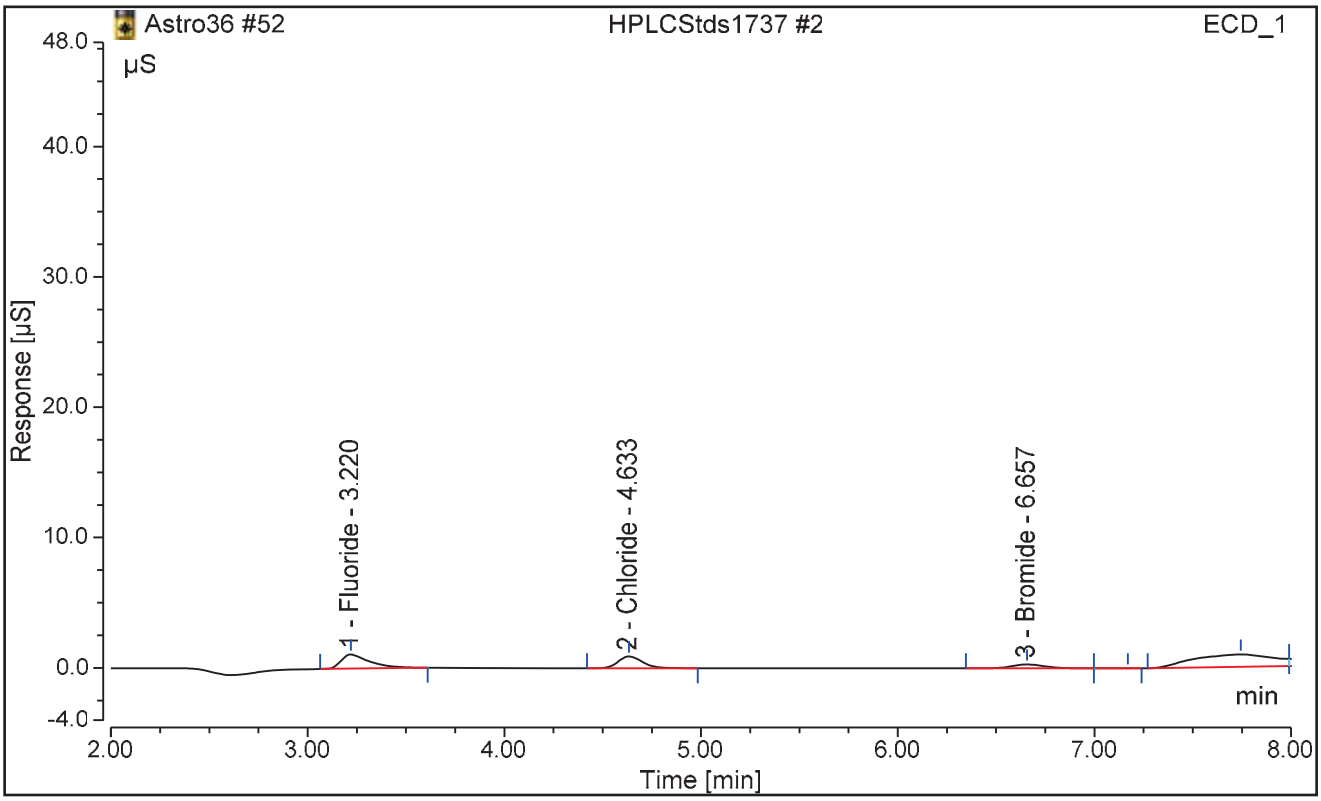


Analyst Comment: NI KLB 6/19/24

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.22	Fluoride	0.187	1.086	0.97198	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**18-Jun-2024 / 16:33**	Run Time:	**14.50**

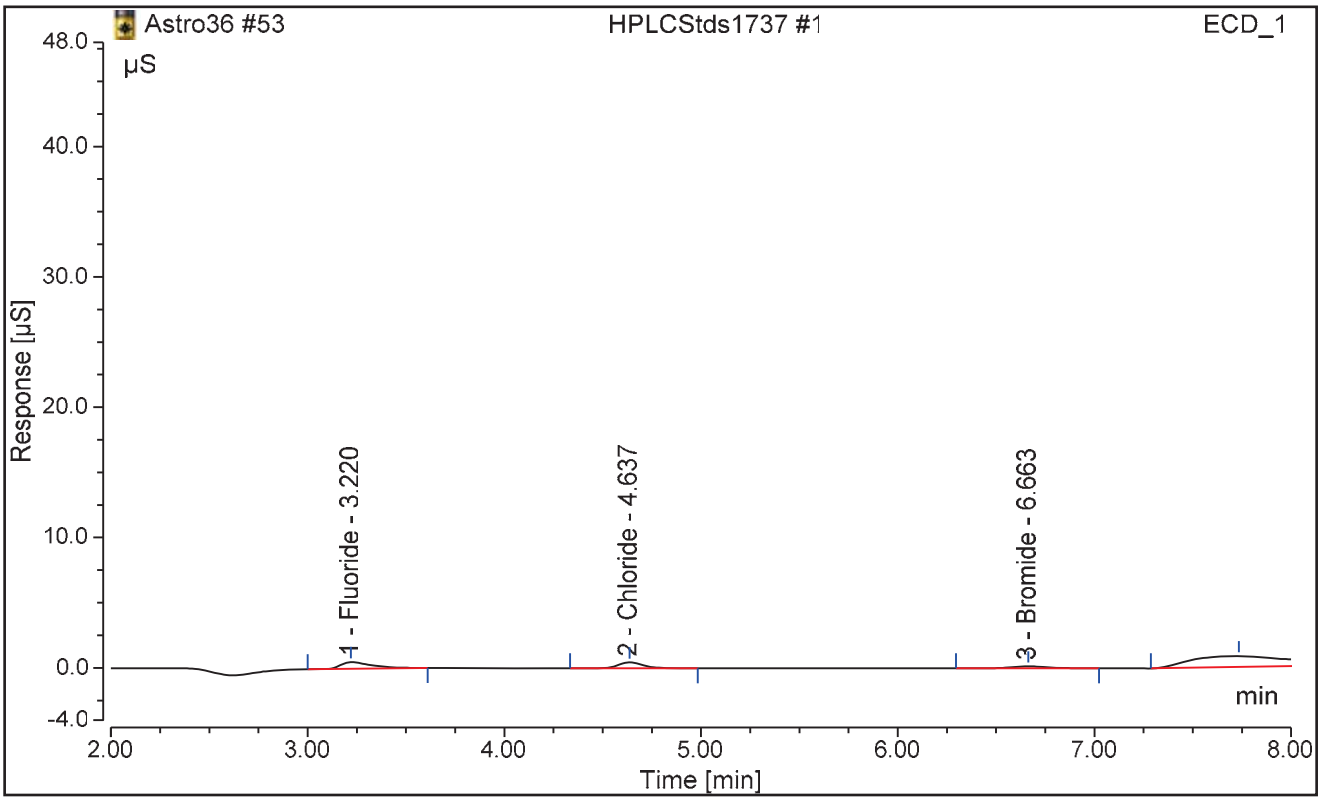


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.22	Fluoride	0.186	1.089	0.96541	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**18-Jun-2024 / 16:50**	Run Time:	**14.50**

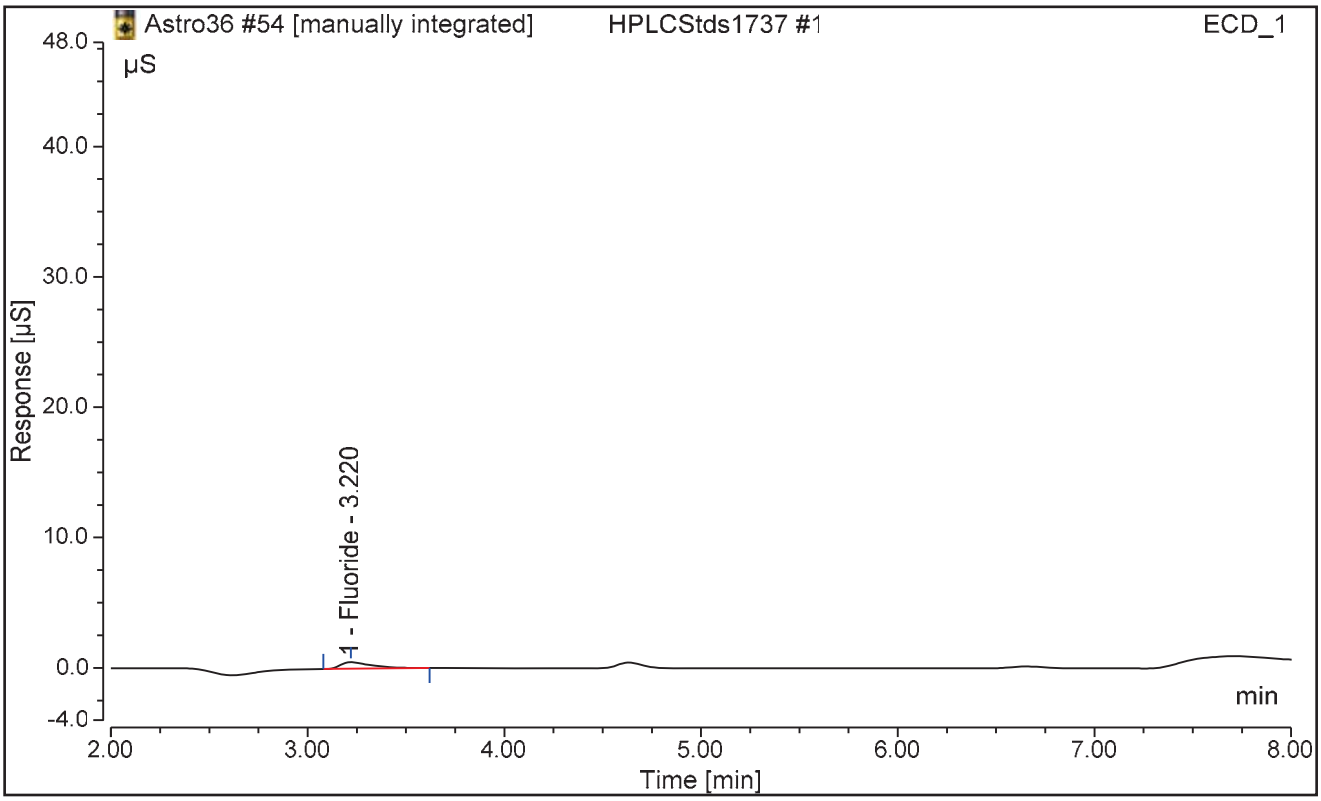


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.22	Fluoride	0.096	0.519	0.51665	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1737 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**kenbell**
Inj. Date / Time:	**18-Jun-2024 / 17:07**	Run Time:	**14.50**



Analyst Comment: NI KLB 6/19/24

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.22	Fluoride	0.094	0.515	0.50901	FALSE	TRUE

This Is The Last Page Of This Report.

Montrose Air Quality Services, LLC
Plant City, FL

2007 Wood Ct #5, Plant City, FL 33563

Cemex Miami

Client Project: 031494

Analytical Report
(1223-127)

EPA Method 26A

Hydrogen chloride, Hydrogen Fluoride, Chlorine

Enthalpy Analytical, LLC

Phone: (919) 850 - 4392 / Fax: (919) 850 - 9012 / www.enthalpy.com

800-1 Capitola Drive Durham, NC 27713-4385

I certify that to the best of my knowledge all analytical data presented in this report:

- Have been checked for completeness
- Are accurate, error-free, and legible
- Have been conducted in accordance with approved protocol, and that all deviations and analytical problems are summarized in the appropriate narrative(s)

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QA Review Performed by – Jennifer Bowker

Report Issued: 1/2/24

ENTHALPY ANALYTICAL

Summary of Results

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Plant City, FL

Job No.: 1223-127-1 EPA Method 26A (Acid) Analysis

Client No.: 031494 Site: Cemex Miami

Summary Table

Sample ID	Hydrogen Chloride Catch Weight (ug)	Hydrogen Fluoride Catch Weight (ug)
Kiln1 Mill Off R1A H2SO4	5,091	20.0 ND
Kiln1 Mill Off R1B H2SO4	5,673	20.3 ND
Kiln1 Mill Off R2A H2SO4	6,214	20.5 ND
Kiln1 Mill Off R2B H2SO4	6,066	20.7 ND
Kiln1 Mill Off R3A H2SO4	6,430	21.0 ND
Kiln1 Mill Off R3B H2SO4	6,507	22.0 ND
Kiln1 Mill Off FB H2SO4	15.4 ND	15.8 ND
Kiln1 Mill On R1A H2SO4	180 J	22.7 ND
Kiln1 Mill On R1B H2SO4	190 J	21.9 ND
Kiln1 Mill On R2A H2SO4	52.3 J	22.4 ND
Kiln1 Mill On R2B H2SO4	36.6 J	22.7 ND
Kiln1 Mill On R3A H2SO4	27.1 J	22.4 ND
Kiln1 Mill On R3B H2SO4	44.8 J	49.7 J
Kiln1 Mill On FB H2SO4	15.3 ND	15.7 ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Plant City,

Job No.: 1223-127-2 EPA Method 26A (Alkaline) Analysis

Client No.: 031494 Site: Cemex Miami

Summary Table

Sample ID	Chlorine Catch Weight (ug)	
Kiln1 Mill Off R1A NaOH	17.2	J
Kiln1 Mill Off R1B NaOH	16.5	J
Kiln1 Mill Off R2A NaOH	15.0	ND
Kiln1 Mill Off R2B NaOH	16.7	J
Kiln1 Mill Off R3A NaOH	15.3	ND
Kiln1 Mill Off R3B NaOH	15.8	ND
Kiln1 Mill Off FB NaOH	43.2	J
Kiln1 Mill On R1A NaOH	15.2	ND
Kiln1 Mill On R1B NaOH	58.9	J
Kiln1 Mill On R2A NaOH	17.5	J
Kiln1 Mill On R2B NaOH	15.2	J
Kiln1 Mill On R3A NaOH	15.5	ND
Kiln1 Mill On R3B NaOH	16.6	J

Results

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Plant City, FL

Job No.: 1223-127-1 EPA Method 26A (Acid) Analysis

Client No.: 031494 Site: Cemex Miami

Hydrogen Chloride as Chloride

Sample ID	Filename #1	Filename #2	MDL (ug/mL)	Curve Min. (ug/mL)	Curve Max. (ug/mL)	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc. # 1 (ug/mL)	Conc. # 2 (ug/mL)	%diff. conc.	Avg. Conc. (ug/mL)	DF	Liquid Vol. (mL)	Conv. Factor	Catch Weight (ug)	Flag	pH
Kiln1 Mill Off R1A H2SO4	080	081	0.0500	0.500	30.0	4.80	4.80	0.0	13.0	13.0	0.0	13.0	1.00	380	1.03	5,091		1
Kiln1 Mill Off R1B H2SO4	021	022	0.0500	0.500	30.0	4.81	4.81	0.0	14.3	14.3	0.0	14.3	1.00	385	1.03	5,673		1
Kiln1 Mill Off R2A H2SO4	090	091	0.0500	0.500	30.0	4.80	4.80	0.0	15.5	15.5	0.0	15.5	1.00	390	1.03	6,214		1
Kiln1 Mill Off R2B H2SO4	092	093	0.0500	0.500	30.0	4.80	4.80	0.0	15.0	15.0	0.1	15.0	1.00	394	1.03	6,066		1
Kiln1 Mill Off R3A H2SO4	094	095	0.0500	0.500	30.0	4.81	4.81	0.0	15.7	15.7	0.2	15.7	1.00	398	1.03	6,430		1
Kiln1 Mill Off R3B H2SO4	096	097	0.0500	0.500	30.0	4.81	4.81	0.0	15.2	15.1	0.2	15.1	1.00	418	1.03	6,507		1
Kiln1 Mill Off FB H2SO4	098	099	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	300	1.03	15.4	ND	14
Kiln1 Mill On R1A H2SO4	100	101	0.0500	0.500	30.0	4.80	4.80	0.0	0.404	0.410	0.7	0.407	1.00	431	1.03	180	J	1
Kiln1 Mill On R1B H2SO4	102	103	0.0500	0.500	30.0	4.80	4.80	0.0	0.447	0.444	0.4	0.446	1.00	415	1.03	190	J	1
Kiln1 Mill On R2A H2SO4	104	105	0.0500	0.500	30.0	4.80	4.80	0.0	0.119	0.120	0.4	0.119	1.00	426	1.03	52.3	J	1
Kiln1 Mill On R2B H2SO4	106	107	0.0500	0.500	30.0	4.80	4.80	0.0	0.0823	0.0828	0.3	0.0826	1.00	431	1.03	36.6	J	1
Kiln1 Mill On R3A H2SO4	112	113	0.0500	0.500	30.0	4.79	4.80	0.0	0.0624	0.0614	0.8	0.0619	1.00	425	1.03	27.1	J	1
Kiln1 Mill On R3B H2SO4	114	115	0.0500	0.500	30.0	4.80	4.80	0.0	0.101	0.0982	1.6	0.0997	1.00	437	1.03	44.8	J	1
Kiln1 Mill On FB H2SO4	116	117	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	298	1.03	15.3	ND	1

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Plant City, FL

Job No.: 1223-127-1 EPA Method 26A (Acid) Analysis

Client No.: 031494 Site: Cemex Miami

Hydrogen Fluoride as Fluoride

Sample ID	Filename #1	Filename #2	MDL (ug/mL)	Curve Min. (ug/mL)	Curve Max. (ug/mL)	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc. # 1 (ug/mL)	Conc. # 2 (ug/mL)	%diff. conc.	Avg. Conc. (ug/mL)	DF	Liquid Vol. (mL)	Conv. Factor	Catch Weight (ug)	Flag	pH
Kiln1 Mill Off R1A H2SO4	080	081	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	380	1.05	20.0	ND	1
Kiln1 Mill Off R1B H2SO4	021	022	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	385	1.05	20.3	ND	1
Kiln1 Mill Off R2A H2SO4	090	091	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	390	1.05	20.5	ND	1
Kiln1 Mill Off R2B H2SO4	092	093	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	394	1.05	20.7	ND	1
Kiln1 Mill Off R3A H2SO4	094	095	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	398	1.05	21.0	ND	1
Kiln1 Mill Off R3B H2SO4	096	097	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	418	1.05	22.0	ND	1
Kiln1 Mill Off FB H2SO4	098	099	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	300	1.05	15.8	ND	14
Kiln1 Mill On R1A H2SO4	100	101	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	431	1.05	22.7	ND	1
Kiln1 Mill On R1B H2SO4	102	103	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	415	1.05	21.9	ND	1
Kiln1 Mill On R2A H2SO4	104	105	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	426	1.05	22.4	ND	1
Kiln1 Mill On R2B H2SO4	106	107	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	431	1.05	22.7	ND	1
Kiln1 Mill On R3A H2SO4	112	113	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	425	1.05	22.4	ND	1
Kiln1 Mill On R3B H2SO4	114	115	0.0500	0.500	30.0	3.52	3.53	0.0	0.108	0.108	0.4	0.108	1.00	437	1.05	49.7	J	1
Kiln1 Mill On FB H2SO4	116	117	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	298	1.05	15.7	ND	1

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Plant City, FL

Job No.: 1223-127-1 EPA Method 26A (Acid) Analysis

Client No.: 031494 Site: Cemex Miami

Matrix Spike Recovery

Enthalpy Sample ID	Compound	Filename #1	Filename #2	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc. # 1 (ug/mL)	Conc. # 2 (ug/mL)	%diff. conc.	Avg. Conc. (ug/mL)	DF	Vol. (mL)	Catch Weight (ug)	Flag
1223-127.MS-Off R1A.H2SO4	Chloride	082	083	4.81	4.80	0.0	17.7	17.6	0.2	17.7	1	0.800	14.1	
												Native Amt (ug)	9.90	
												Spiked Amt (ug)	4.00	
												Recovery (%)	105.7	
1223-127.MS-Off R1A.H2SO4	Fluoride	082	083	3.29	3.29	0.0	4.85	4.86	0.1	4.86	1	0.800	3.89	
												Native Amt (ug)	0	
												Spiked Amt (ug)	4.00	
												Recovery (%)	97.2	
1223-127.MSD-Off R1A.H2SO4	Chloride	084	085	4.80	4.80	0.0	17.7	17.7	0.2	17.7	1	0.800	14.2	
												Native Amt (ug)	9.90	
												Spiked Amt (ug)	4.00	
												Recovery (%)	106.3	
1223-127.MSD-Off R1A.H2SO4	Fluoride	084	085	3.29	3.29	0.0	4.92	4.90	0.3	4.91	1	0.800	3.93	
												Native Amt (ug)	0	
												Spiked Amt (ug)	4.00	
												Recovery (%)	98.2	

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Plant City, FL

Job No.: 1223-127-2 EPA Method 26A (Alkaline) Analysis

Client No.: 031494 Site: Cemex Miami

Chlorine as Chloride

Sample ID	Filename #1	Filename #2	MDL (ug/mL)	Curve Min. (ug/mL)	Curve Max. (ug/mL)	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc. # 1 (ug/mL)	Conc. # 2 (ug/mL)	%diff. conc.	Avg. Conc. (ug/mL)	DF	Liquid Vol. (mL)	Conv. Factor	Catch Weight (ug)	Flag	pH
Kiln1 Mill Off R1A NaOH	022	023	0.0500	0.500	30.0	1.80	1.80	0.0	0.0568	0.0574	0.5	0.0571	1.00	302	1.00	17.2	J	8
Kiln1 Mill Off R1B NaOH	028	029	0.0500	0.500	30.0	1.81	1.81	0.0	0.0546	0.0553	0.7	0.0550	1.00	300	1.00	16.5	J	9
Kiln1 Mill Off R2A NaOH	030	031	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	299	1.00	15.0	ND	8
Kiln1 Mill Off R2B NaOH	032	033	0.0500	0.500	30.0	1.80	1.80	0.0	0.0537	0.0547	0.9	0.0542	1.00	308	1.00	16.7	J	8
Kiln1 Mill Off R3A NaOH	034	035	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	305	1.00	15.3	ND	8
Kiln1 Mill Off R3B NaOH	036	037	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	315	1.00	15.8	ND	8
Kiln1 Mill Off FB NaOH	038	039	0.0500	0.500	30.0	1.78	1.78	0.0	0.148	0.144	1.2	0.146	1.00	296	1.00	43.2	J	14
Kiln1 Mill On R1A NaOH	040	041	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	304	1.00	15.2	ND	8
Kiln1 Mill On R1B NaOH	044	045	0.0500	0.500	30.0	1.85	1.87	0.7	0.192	0.193	0.5	0.192	1.00	306	1.00	58.9	J	8
Kiln1 Mill On R2A NaOH	046	047	0.0500	0.500	30.0	1.81	1.81	0.0	0.0568	0.0548	1.8	0.0558	1.00	313	1.00	17.5	J	8
Kiln1 Mill On R2B NaOH	048	049	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0506	0	0.0503	1.00	303	1.00	15.2	J	8
Kiln1 Mill On R3A NaOH	050	051	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0	0.0500	1.00	310	1.00	15.5	ND	8
Kiln1 Mill On R3B NaOH	052	053	0.0500	0.500	30.0	1.81	1.82	0.3	0.0517	0.0548	2.9	0.0532	1.00	311	1.00	16.6	J	8
Kiln1 Mill On FB NaOH	054	055	0.0500	0.500	30.0	1.83	1.83	0.0	0.0891	0.0743	9.1	0.0817	1.00	298	1.00	24.4	J	1

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Plant City, FL

Job No.: 1223-127-2 EPA Method 26A (Alkaline) Analysis

Client No.: 031494 Site: Cemex Miami

Matrix Spike Recovery

Enthalpy Sample ID	Compound	Filename #1	Filename #2	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc. # 1 (ug/mL)	Conc. # 2 (ug/mL)	%diff. conc.	Avg. Conc. (ug/mL)	DF	Vol. (mL)	Catch Weight (ug)	Flag
1223-127.MS-Off R1A.NaOH	Chloride	024	025	1.86	1.86	0.0	4.39	4.51	1.4	4.45	1	0.800	3.56	
										Native Amt (ug)			0.0434	
										Spiked Amt (ug)			4.00	
										Recovery (%)			88.0	
1223-127.MSD-Off R1A.NaOH	Chloride	026	027	1.86	1.86	0.0	4.61	4.63	0.2	4.62	1	0.800	3.70	
										Native Amt (ug)			0.0434	
										Spiked Amt (ug)			4.00	
										Recovery (%)			91.3	

Narrative Summary

Enthalpy Analytical Narrative Summary

Company **Job No.** **Client ID.**	**Montrose Air Quality Services, LLC - Plant City, FL** **1223-127 EPA Method 26A (Acid) Analysis** **031494 Site: Cemex Miami**
Custody	**Alyssa Miller received the samples on December 15, 2023 at 17.3 °C after being relinquished by Montrose Air Quality Services, LLC - Plant City, FL. The samples were received in good condition.** **Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.**
Analysis	**The samples were analyzed for chloride and fluoride using the analytical procedures in Section 11.0 of EPA Method 26A, Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources Isokinetic Method.** **All sample aliquots and standards are prepared, stored and analyzed using high-density polyethylene containers. Client samples are retained in the container as received.** **Sample catch weight results were determined using the sample volumes measured by the laboratory.** **The Dionex Ion Chromatograph "Raphael" equipped with a Conductivity Detector was used for these analyses.**
Calibration	**The calibration curves are included in the Raw Data section of this report. A quadratic curve type was used instead of the method-specified linear curve.**
Chrom. Conditions	**The acquisition method AS22 ASAP new was used for the Chloride and Fluoride analyses and may be available upon request.**
QC Notes	**The samples were analyzed within the 28-day holding time specified by the method.** **The analyses of the laboratory reagent blanks did not contain chloride at concentrations greater than the LOQ.** **The analyses of the laboratory reagent blanks did not contain fluoride at concentrations greater than the LOQ.** **Duplicate matrix spikes were prepared using aliquots of Kiln1 Mill Off R1A H2SO4 and met method spike recovery criteria of 80-120%.** **The analysis of second source standards also served as laboratory control samples and met the laboratory acceptance criteria of ±5% of the tag value.**

Enthalpy Analytical Narrative Summary

Company **Job No.** **Client ID.**	**Montrose Air Quality Services, LLC - Plant City, FL** **1223-127 EPA Method 26A (Acid) Analysis** **031494 Site: Cemex Miami**

Reporting Notes	**The samples were analyzed for chloride and fluoride but the results have been reported as hydrogen chloride and hydrogen fluoride. The results were converted using factors of 1.028 and 1.053 respectively to account for the additional hydrogen mass.** **These analyses met the requirements of the TNI Standard. Any deviations from the requirements of the reference method or TNI Standard have been stated above.** **The results presented in this report are representative of the samples as provided to the laboratory.**

Enthalpy Analytical Narrative Summary

Company **Job No.** **Client ID.**	**Montrose Air Quality Services, LLC - Plant City, FL** **1223-127 EPA Method 26A (Alkaline) Analysis** **031494 Site: Cemex Miami**
Custody	**Alyssa Miller received the samples on December 15, 2023 at 17.3 °C after being relinquished by Montrose Air Quality Services, LLC - Plant City, FL. The samples were received in good condition.** **Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.**
Analysis	**The samples were analyzed for chloride using the analytical procedures in Section 11.0 of EPA Method 26A, Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources Isokinetic Method.** **All sample aliquots and standards are prepared, stored and analyzed using high-density polyethylene containers. Client samples are retained in the container as received.** **Sample catch weight results were determined using the sample volumes measured by the laboratory.** **The Dionex Ion Chromatograph "Raphael" equipped with a Conductivity Detector was used for these analyses.**
Calibration	**The calibration curves are included in the Raw Data section of this report. A quadratic curve type was used instead of the method-specified linear curve.**
Chrom. Conditions	**The acquisition method AS22 FAST ASAP Base2 was used for the Chloride analysis and may be available upon request.**
QC Notes	**The samples were analyzed within the 28-day holding time specified by the method.** **The analyses of the laboratory reagent blanks did not contain chlorine at concentrations greater than the LOQ.** **Duplicate matrix spikes were prepared using aliquots of Kiln1 Mill Off R1A NaOH and met method spike recovery criteria of 80-120%.** **The analysis of second source standards also served as laboratory control samples and met the laboratory acceptance criteria of ±5% of the tag value.**

Enthalpy Analytical Narrative Summary

Company **Job No.** **Client ID.**	**Montrose Air Quality Services, LLC - Plant City, FL** **1223-127 EPA Method 26A (Alkaline) Analysis** **031494 Site: Cemex Miami**

Reporting Notes	**The samples were analyzed for chloride but the results have been reported as chlorine. The results were converted using factors of 1 respectively to account for the additional hydrogen mass.** **These analyses met the requirements of the TNI Standard. Any deviations from the requirements of the reference method or TNI Standard have been stated above.** **The results presented in this report are representative of the samples as provided to the laboratory.**

General Reporting Notes

The following are general reporting notes that are applicable to all Enthalpy Analytical, LLC data reports, unless specifically noted otherwise.

- Any analysis which refers to the method as ***"Type"*** represents a planned deviation from the reference method. For instance a Hydrogen Sulfide assay from a Tedlar bag would be labeled as "EPA Method 16-Type" because Tedlar bags are not mentioned as one of the collection options in EPA Method 16.

- The acronym ***MDL*** represents the Minimum Detection Limit. Below this value the laboratory cannot determine the presence of the analyte of interest reliably.

- The acronym ***LOQ*** represents the Limit of Quantification. Below this value the laboratory cannot quantitate the analyte of interest within the criteria of the method.

- The acronym ***ND*** following a value indicates a non-detect or analytical result below the MDL.

- The letter ***J*** in the Qualifier or Flag column in the results indicates that the value is between the MDL and the LOQ. The laboratory can positively identify the analyte of interest as present, but the value should be considered an estimate.

- The letter ***E*** in the Qualifier or Flag column indicates an analytical result exceeding 100% of the highest calibration point. The associated value should be considered as an estimate.

- Sample results are presented 'as measured' for single injection methodologies, or an average value if multiple injections are made. If all injections are below the MDL, the sample is considered non-detect and the ND value is presented. If one, but not all, are below the MDL, the MDL value is used for any injections that are below the MDL. For example, if the MDL is 0.500 and LOQ is 1.00, and the instrument measures 0.355, 0.620, and 0.442 - the result reported is the average of 0.500, 0.620, and 0.500 - - - i.e. 0.540 with a J flag.

- When a spike recovery (Bag Spike, Collocated Spike Train, or liquid matrix spike) is being calculated, the native (unspiked) sample result is used in the calculations, as long as the value is above the MDL. If a sample is ND, then 0 is used as the native amount (not the MDL value).

- The acronym ***DF*** represents Dilution Factor. This number represents dilution of the sample during the preparation and/or analysis process. The analytical result taken from a laboratory instrument is multiplied by the DF to determine the final undiluted sample results.

- The addition of ***MS*** to the Sample ID represents a Matrix Spike. An aliquot of an actual sample is spiked with a known amount of analyte so that a percent recovery value can be determined. The MS analysis indicates what effect the sample matrix may have on the target analyte, i.e. whether or not anything in the sample matrix interferes with the analysis of the analyte(s).

General Reporting Notes
(continued)

- The addition of ***MSD*** to the Sample ID represents a Matrix Spike Duplicate. Prepared in the same manner as a MS, the use of duplicate matrix spikes allows further confirmation of laboratory quality by showing the consistency of results gained by performing the same steps multiple times.

- The addition of ***LD*** to the Sample ID represents a Laboratory Duplicate. The analyst prepares an additional aliquot of sample for testing and the results of the duplicate analysis are compared to the initial result. The result should have a difference value of within 10% of the initial result (if the results of the original analysis are greater than the LOQ).

- The addition of ***AD*** to the Sample ID represents an Alternate Dilution. The analyst prepares an additional aliquot at a different dilution factor (usually double the initial factor). This analysis helps confirm that no additional compound is present and coeluting or sharing absorbance with the analyte of interest, as they would have a different response/absorbance than the analyte of interest.

- The Sample ID ***LCS*** represents a Laboratory Control Sample. Clean matrix, similar to the client sample matrix, prepared and analyzed by the laboratory using the same reagents, spiking standards and procedures used for the client samples. The LCS is used to assess the control of the laboratory's analytical system. Whenever spikes are prepared for our client projects, two spikes are retained as LCSs. The LCSs are labeled with the associated project number and kept in-house at the appropriate temperature conditions. When the project samples are received for analysis, the LCSs are analyzed to confirm that the analyte could be recovered from the media, separate from the samples which were used on the project and which may have been affected by source matrix, sample collection, and/or sample transport.

- **Significant Figures**: Where the reported value is much greater than unity (1.00) in the units expressed, the number is rounded to a whole number of units, rather than to 3 significant figures. For example, a value of 10,456.45 ug catch is rounded to 10,456 ug. There are five significant digits displayed, but no confidence should be placed on more than two significant digits. In the case of small numbers, generally 3 significant figures are presented, but still only 2 should be used with confidence. Many neat materials are only certified to 3 digits, and as the mathematically correct final result is always 1 digit less than all its pre-cursors - 2 significant figures are what are most defensible.

- **Manual Integration**: The data systems used for processing will flag manually integrated peaks with an "M". There are several reasons a peak may be manually integrated. These reasons will be identified by the following two letter designations on sample chromatograms, if provided in the report. The peak was ***not integrated*** by the software **"NI"**, the peak was ***integrated incorrectly*** by the software **"II"** or the ***wrong peak*** was integrated by the software **"WP"**. These codes will accompany the analyst's manual integration stamp placed next to the compound name on the chromatogram.

Sample Custody

MONTROSE ENVIRONMENTAL

Chain of Custody

Page ____ of ____

Project Information

Date 12/5/23 Project # 031494
Customer/Facility Cemex Miami
Unit ID/Sample Location Kiln 1 / Mill ON
Sample Custodian Jose I. Medina

Montrose Contact Information

Project Manager Todd Gregg
Email togregg@montrose-env.com
Phone (865) 250-9067
Distict Office

Lab Information

Lab Enthalpy
Contact Ashley Miller
Phone
Turn Around Time

Analyses Requested

Sample ID	Sample Collection Date	Sample Collection Time	Sample Description / Comments	Sample Containers #	Sample Containers Type	EPA M26A
12501	12/5/23	0945	Run 1A - Mill ON - Imp Sample H_2SO_4	1	HDPE	X
12502	12/5/23	0945	Run 1A - Mill ON - Imp Sample NaOH	1	HDPE	X
12503	12/5/23	0945	Run 1B - Mill ON - Imp Sample H_2SO_4	1	HDPE	X
12504	12/5/23	0945	Run 1B - Mill ON - Imp Sample NaOH	1	HDPE	X
12505	12/5/23	1130	Run 2A Mill ON Imp Sample H_2SO_4	1	HDPE	X
12506	12/5/23	1130	Run 2BA Mill ON - Imp Sample NaOH	1	HDPE	X
12507	12/5/23	1130	Run 2B Mill ON - Imp Sample H_2SO_4	1	HDPE	X
12508	12/5/23	1130	Run 2B Mill ON - Imp Sample NaOH	1	HDPE	X
12509	12/5/23	1330	Run 3A Mill ON - Imp Sample H_2SO_4	1	HDPE	X
12510	12/5/23	1330	Run 3A Mill ON - Imp Sample NaOH	1	HDPE	X
12511	12/5/23	1330	Run 3B Mill ON - Imp Sample H_2SO_4	1	HDPE	X
12512	12/5/23	1330	Run 3B Mill ON - Imp Sample NaOH	1	HDPE	X
12513	12/5/23	1148	Field Blank Mill ON - Imp Sample H_2SO_4	1	HDPE	X
12514	12/5/23	1148	Field Blank Mill ON - Imp Sample NaOH	1	HDPE	X

Custody Record

Reliquished By		Received By	
Print Jose I. Medina	Date ~~12/14/23~~ 12/14/23	Print Alyssa Mmiller	Date 12.15.23
Sign	Time 1620	Sign	Time 1015
Print	Date	Print	Date
Sign	Time	Sign	Time
Print	Date	Pring	Date
Sign	Time	Sign	Time

Special Handling Instructions
17.3°C Reuter 2
good condition
AMM 3 12-15-23

Special Laboratory Instructions

MONTROSE ENVIRONMENTAL

Chain of Custody

Page ____ of ____

Project Information

Date 12/5/23 Project # 031494
Customer/Facility Cemex Miami
Unit ID/Sample Location Kiln 1 / Mill OFF
Sample Custodian Jose I. Medina

Montrose Contact Information

Project Manager Todd Gregg
Email togregg@montrose-env.com
Phone (865)250-9067
Distict Office

Lab Information

Lab Enthalpy
Contact Ashley Miller
Phone
Turn Around Time

Sample ID	Sample Collection Date	Sample Collection Time	Sample Description / Comments	Sample Containers #	Sample Containers Type	Analyses Requested: EPA M26A
~~12601~~ 12601	12/5/23	1600	Run 1A ☆ Mill OFF - Imp Sample H_2SO_4	1	HDPE	X
~~12602~~ 12602	12/5/23	1600	Run 1A Mill OFF - Imp Sample NaOH	1	HDPE	X
12603	12/5/23	1600	Run 1B Mill OFF - Imp Sample H_2SO_4	1	HDPE	X
12604	12/5/23	1600	Run 1B Mill OFF - Imp Sample NaOH	1	HDPE	X
12605	12/6/23	0945	Run 2A Mill OFF - Imp Sample H_2SO_4	1	HDPE	X
12606	12/6/23	0945	Run 2A Mill OFF - Imp Sample NaOH	1	HDPE	X
12607	12/6/23	0945	Run 2B Mill OFF - Imp Sample H_2SO_4	1	HDPE	X
12608	12/6/23	0945	Run 2B Mill OFF - Imp Sample NaOH	1	HDPE	X
12609	12/6/23	1130	Run 3B Mill OFF - Imp Sample H_2SO_4	1	HDPE	X
12610	12/6/23	1130	Run 3B Mill OFF - Imp Sample NaOH	1	HDPE	X
12611	12/6/23	1130	Run 3B Mill OFF - Imp Sample H_2SO_4	1	HDPE	X
12612	12/6/23	1130	Run 3B Mill OFF - Imp Sample NaOH	1	HDPE	X
12613	12/6/23	1200	Field Blank Mill OFF - Imp Sample H_2SO_4	1	HDPE	X
12614	12/6/23	1200	Field Blank Mill OFF - Imp Sample NaOH	1	HDPE	X

Custody Record

Relinquished By	Date / Time	Received By	Date / Time
Print Jose I. Medina	Date 12/14/23	Print Alyssa M Miller	Date 12.15.23
Sign	Time 1620	Sign	Time 1015
Print	Date	Print	Date
Sign	Time	Sign	Time
Print	Date	Pring	Date
Sign	Time	Sign	Time

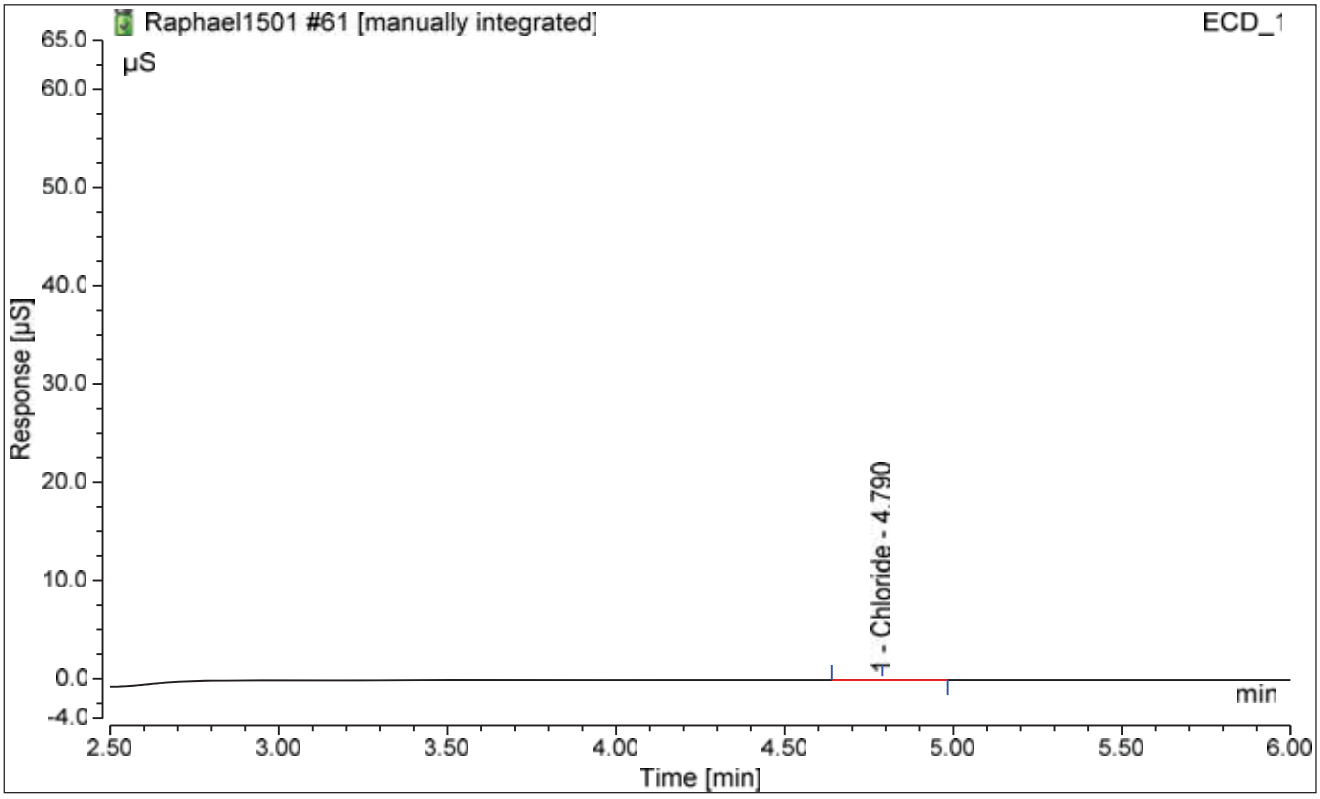
Special Handling Instructions
17.3°C Bottles good condition
AMM3 12-15-23

Special Laboratory Instructions

Raw Data

Peak Analysis Report

Sample Name:	**HPLCStds1652 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 06:51**	Run Time:	**14.50**

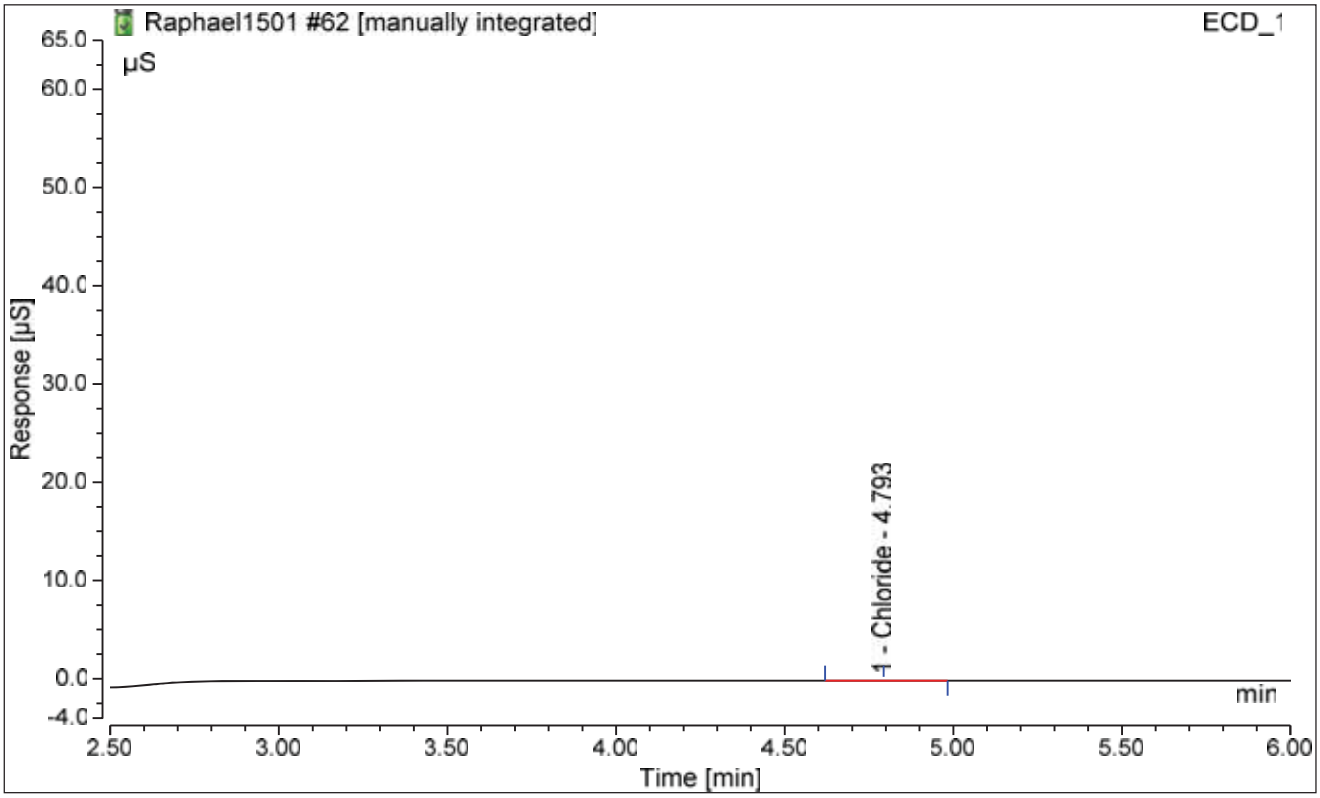


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	4.79	Chloride	0.002	0.014	n.a.	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 07:07**	Run Time:	**14.50**

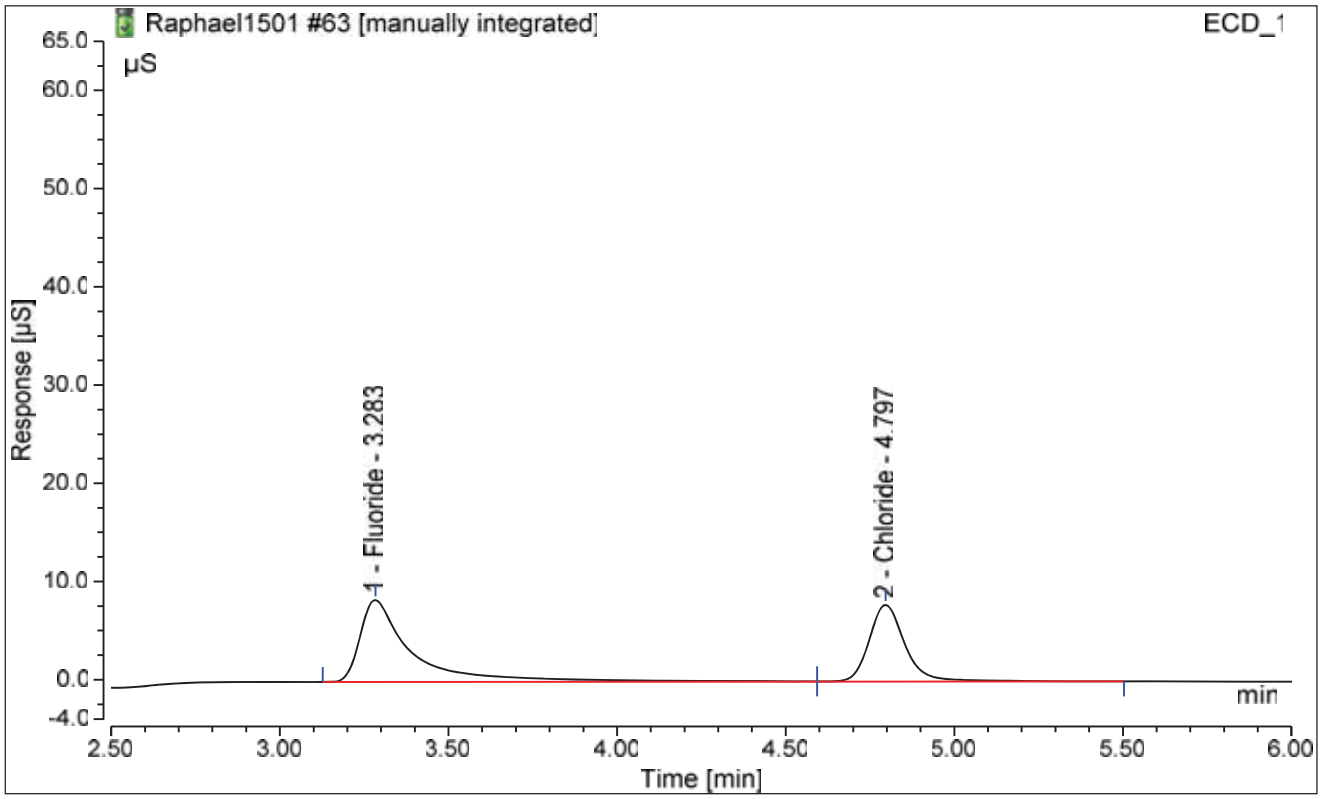


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	4.79	Chloride	0.002	0.015	n.a.	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 07:23**	Run Time:	**14.50**

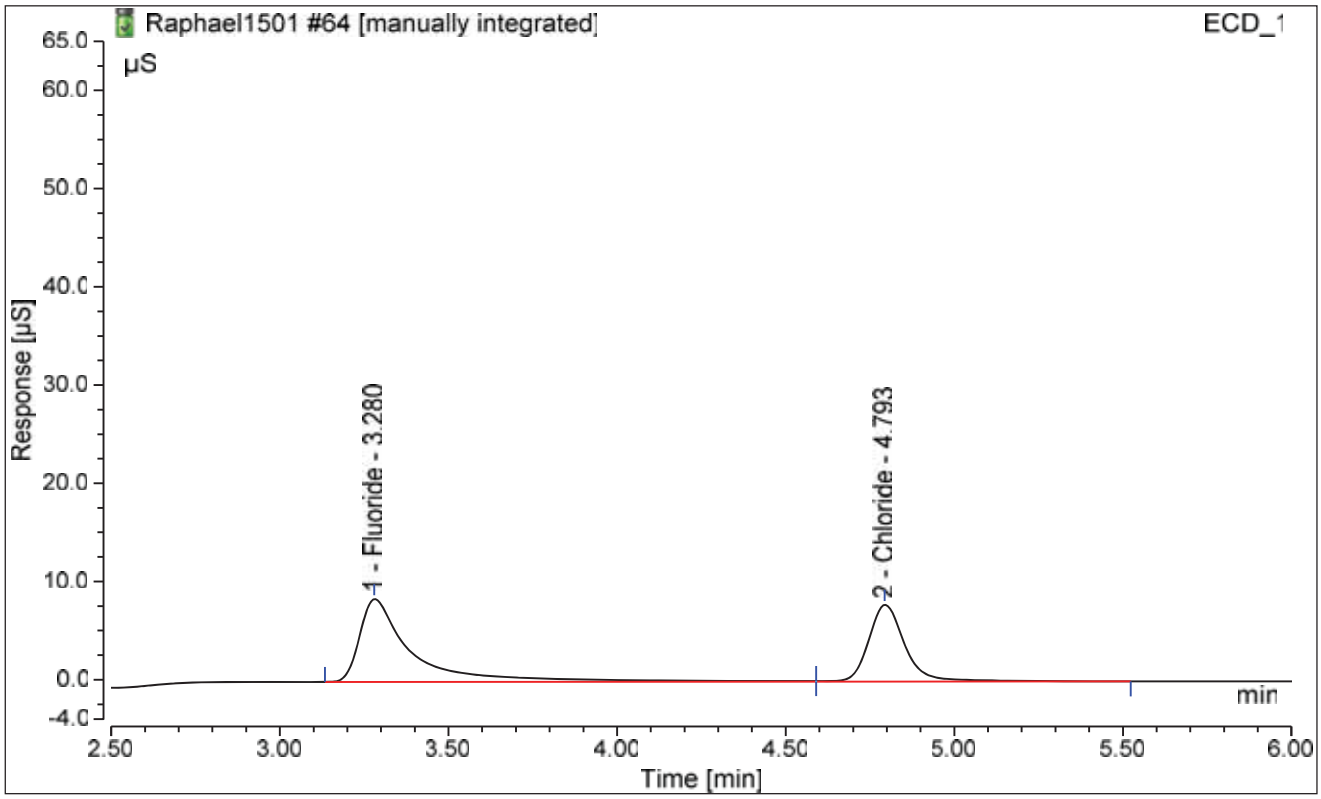


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	1.509	8.328	5.43224	FALSE	TRUE
2	4.80	Chloride	0.964	7.826	5.36649	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 07:40**	Run Time:	**14.50**

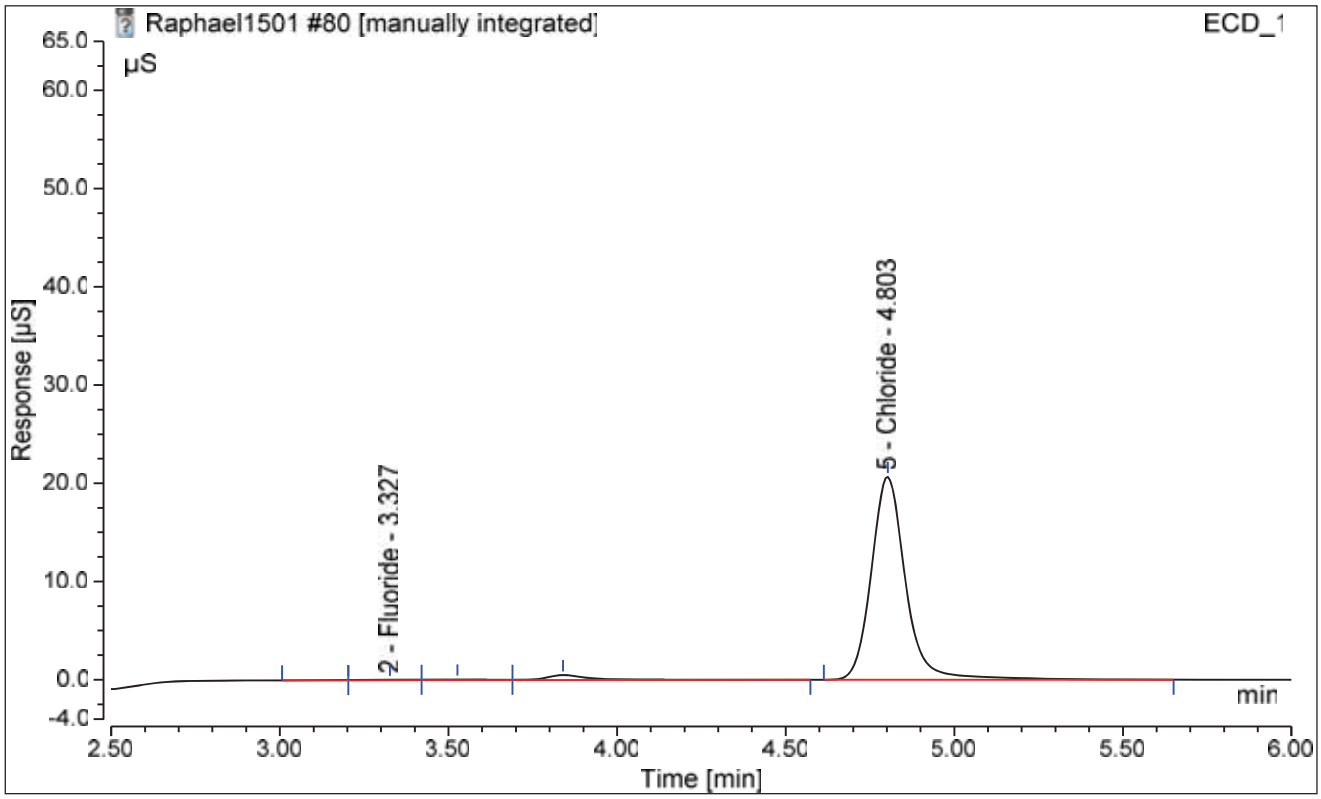


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	1.522	8.427	5.47812	FALSE	TRUE
2	4.79	Chloride	0.964	7.812	5.36560	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R1A.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 13:44**	Run Time:	**14.50**

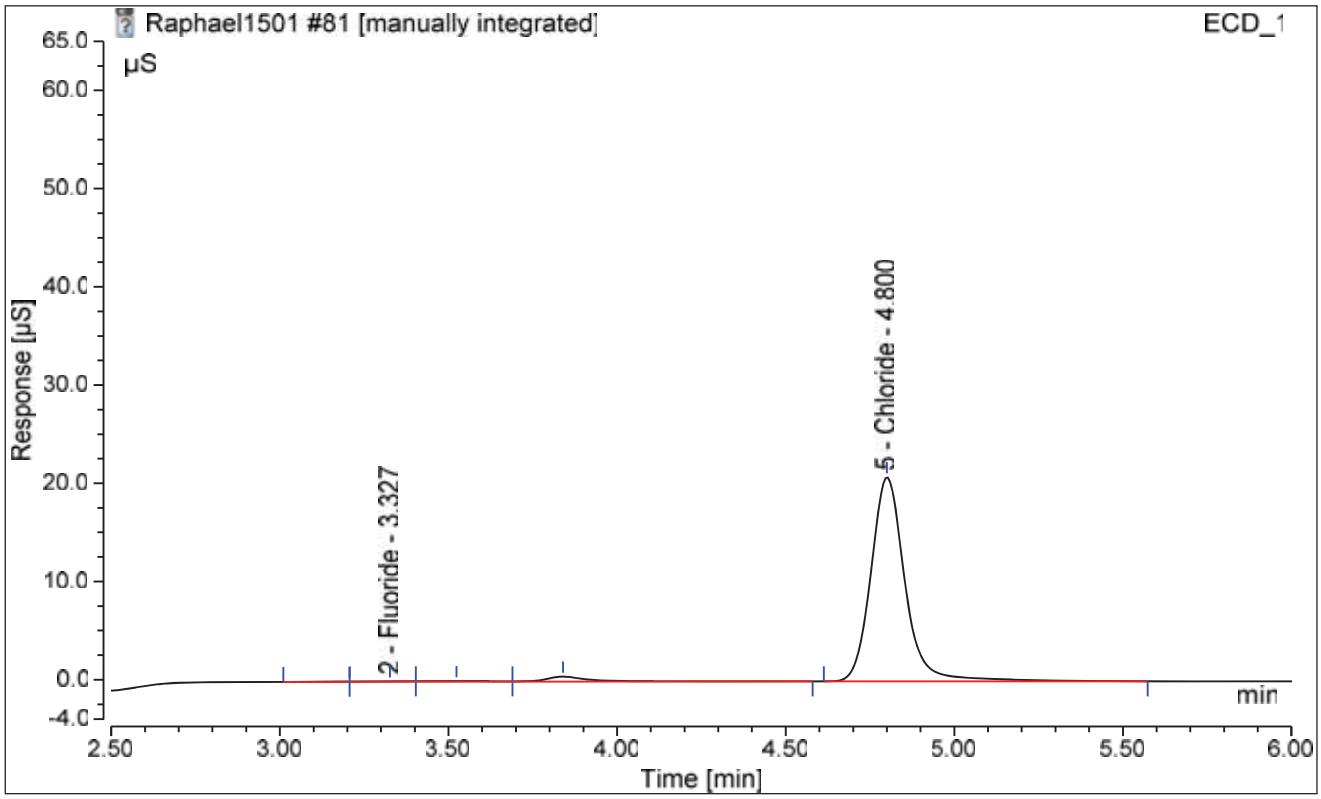


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.33	Fluoride	0.011	0.066	0.04359	FALSE	TRUE
5	4.80	Chloride	2.431	20.667	13.02721	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R1A.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 14:00**	Run Time:	**14.50**

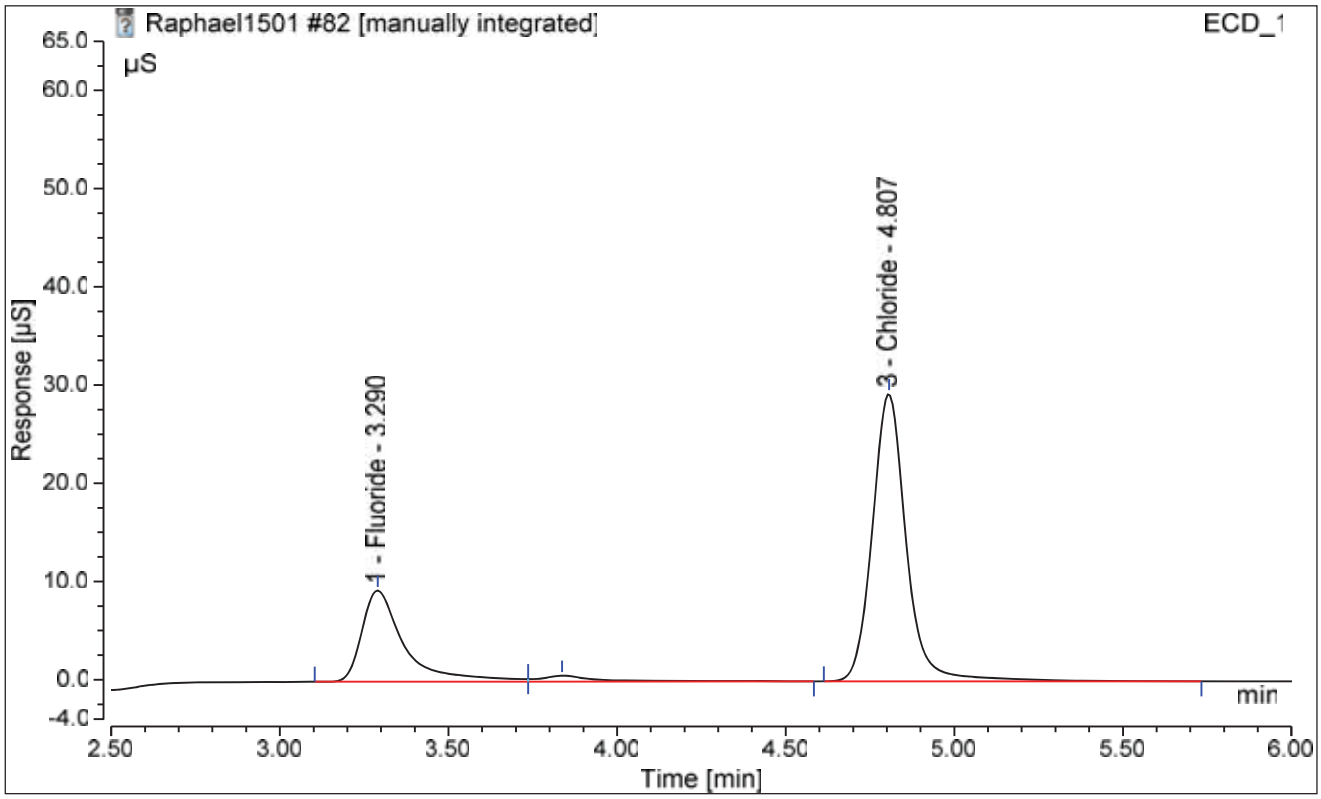


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.33	Fluoride	0.011	0.066	0.04071	FALSE	TRUE
5	4.80	Chloride	2.430	20.789	13.02615	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.MS-Off R1A.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 14:16**	Run Time:	**14.50**

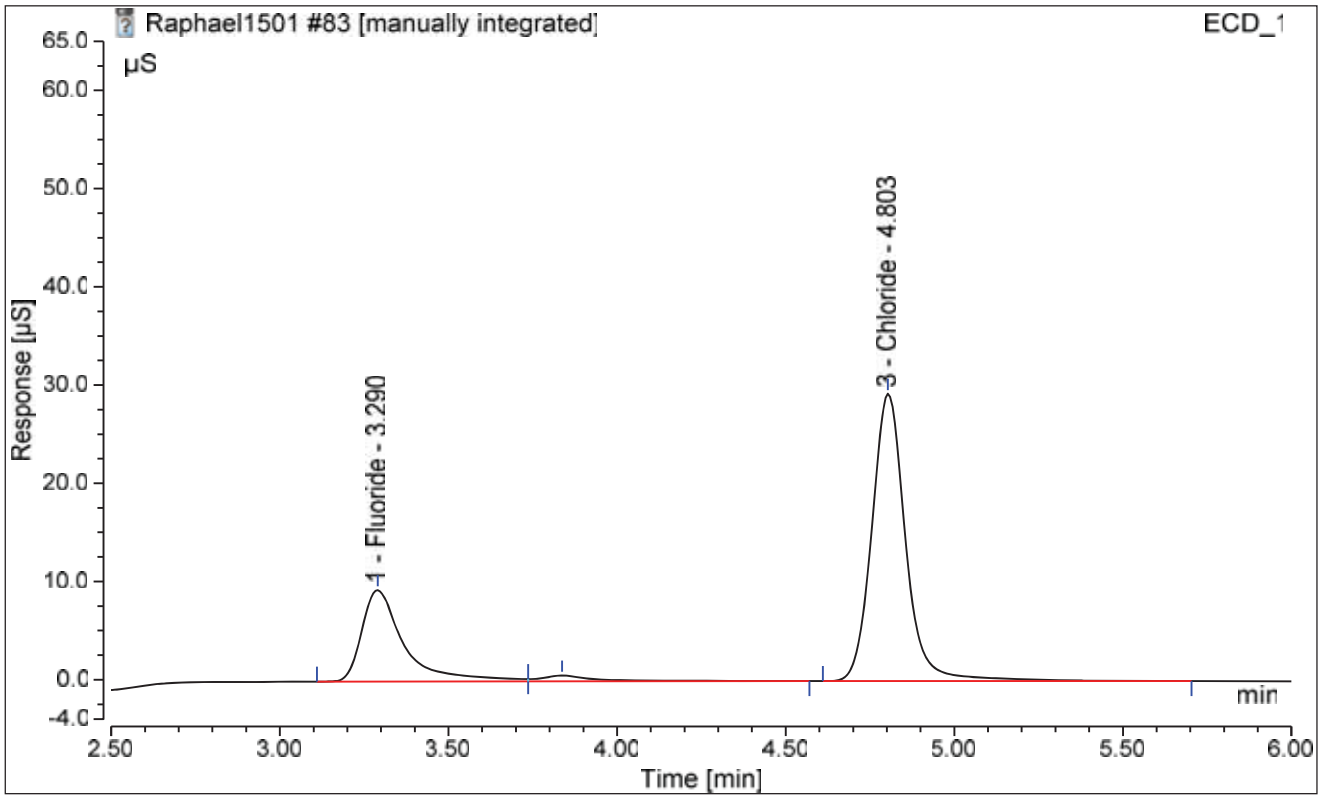


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	1.347	9.278	4.85476	FALSE	TRUE
3	4.81	Chloride	3.401	29.243	17.68740	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.MS-Off R1A.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 14:32**	Run Time:	**14.50**

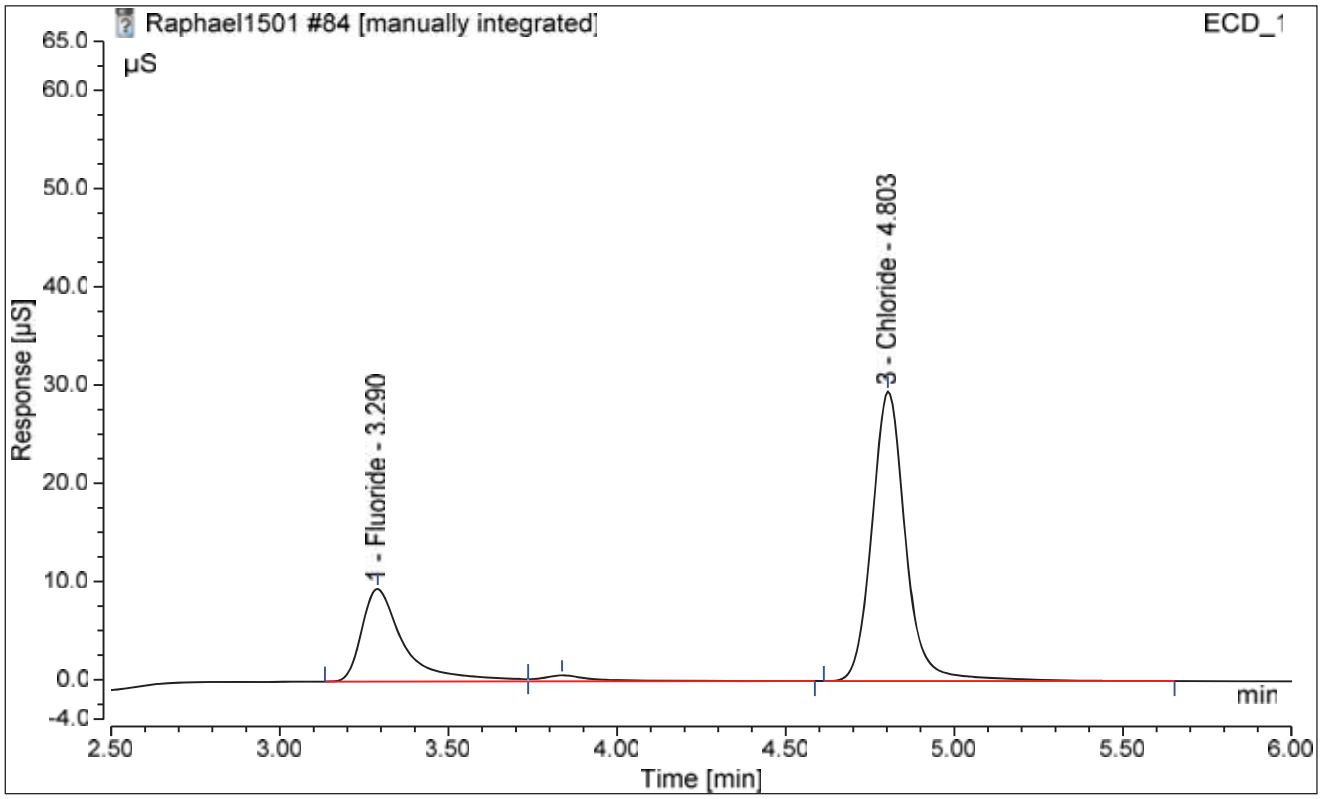


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	1.350	9.298	4.86478	FALSE	TRUE
3	4.80	Chloride	3.389	29.253	17.63088	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.MSD-Off R1A.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 14:49**	Run Time:	**14.50**

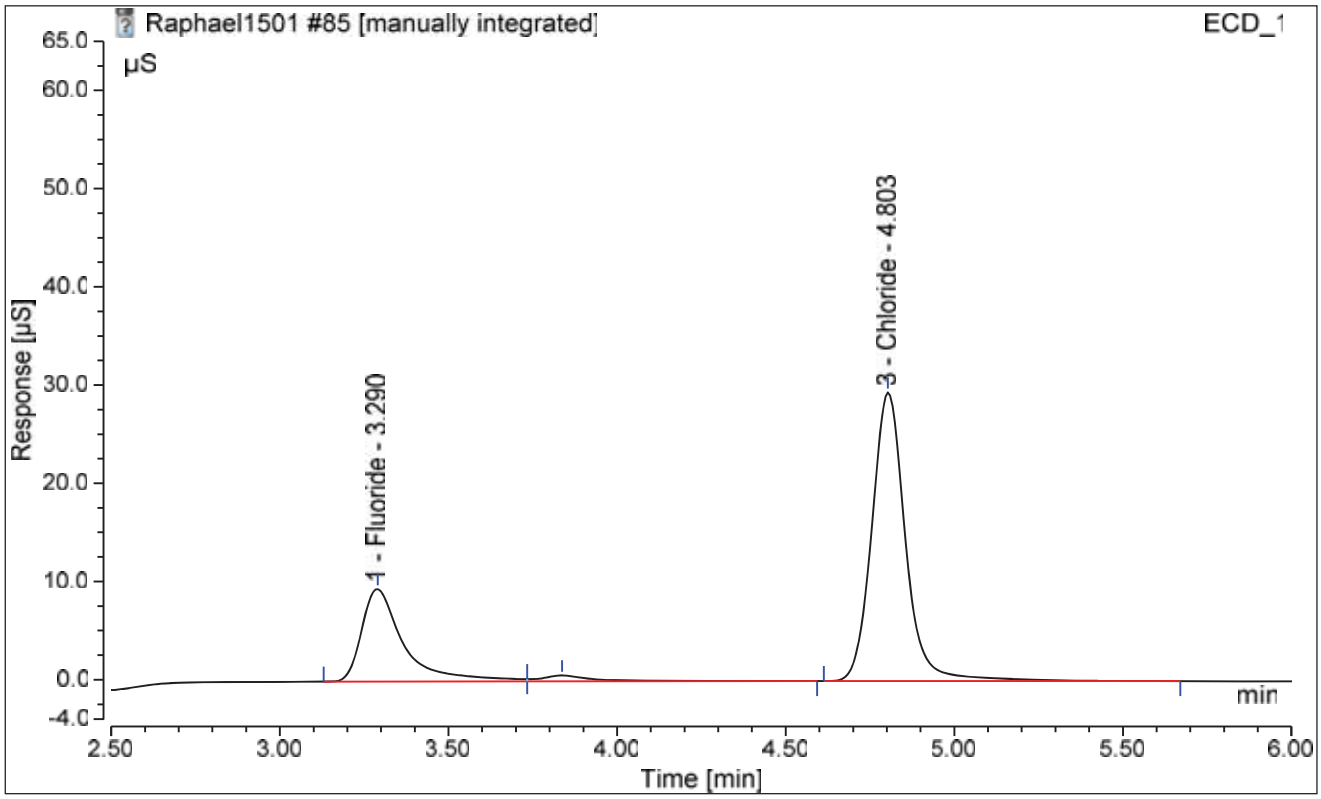


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	1.366	9.421	4.92208	FALSE	TRUE
3	4.80	Chloride	3.409	29.477	17.72455	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.MSD-Off R1A.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 15:05**	Run Time:	**14.50**

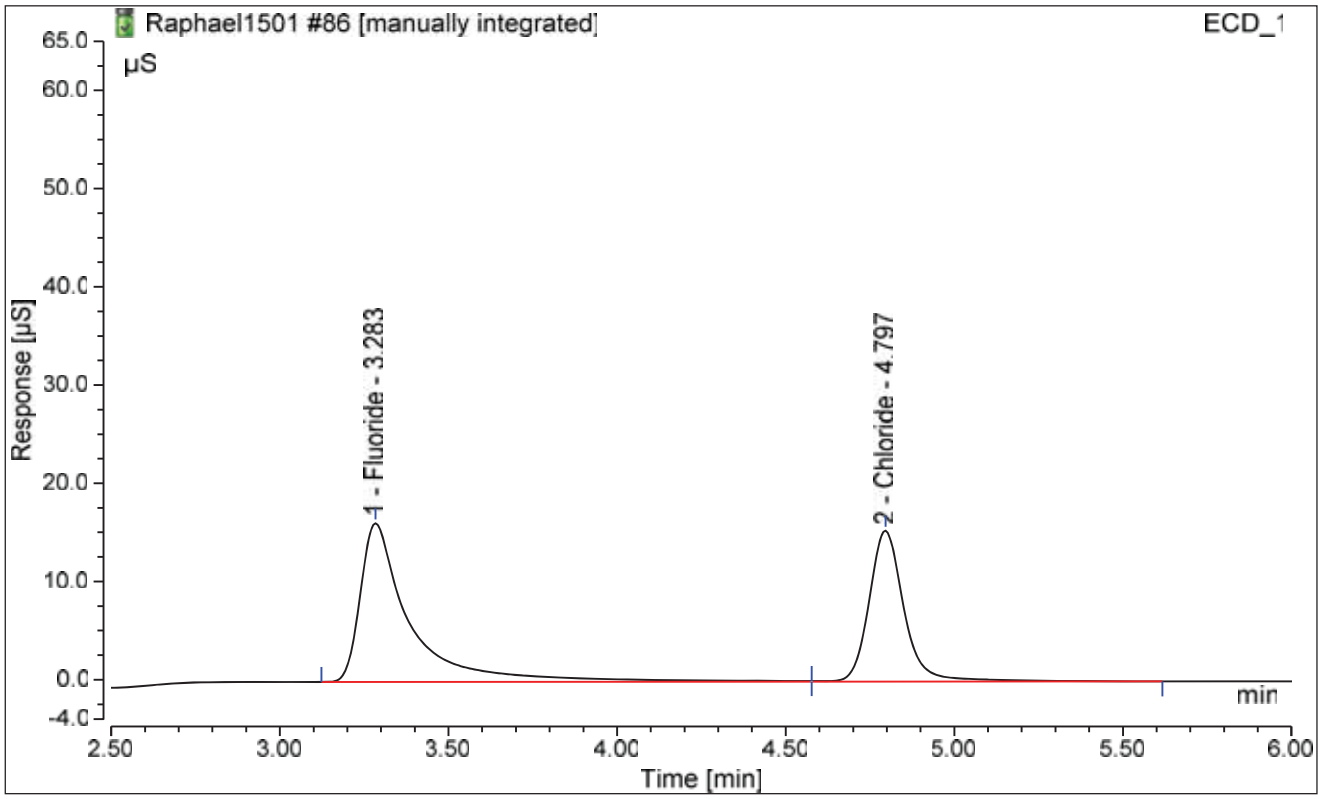


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	1.359	9.414	4.89695	FALSE	TRUE
3	4.80	Chloride	3.395	29.401	17.66026	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 15:21**	Run Time:	**14.50**

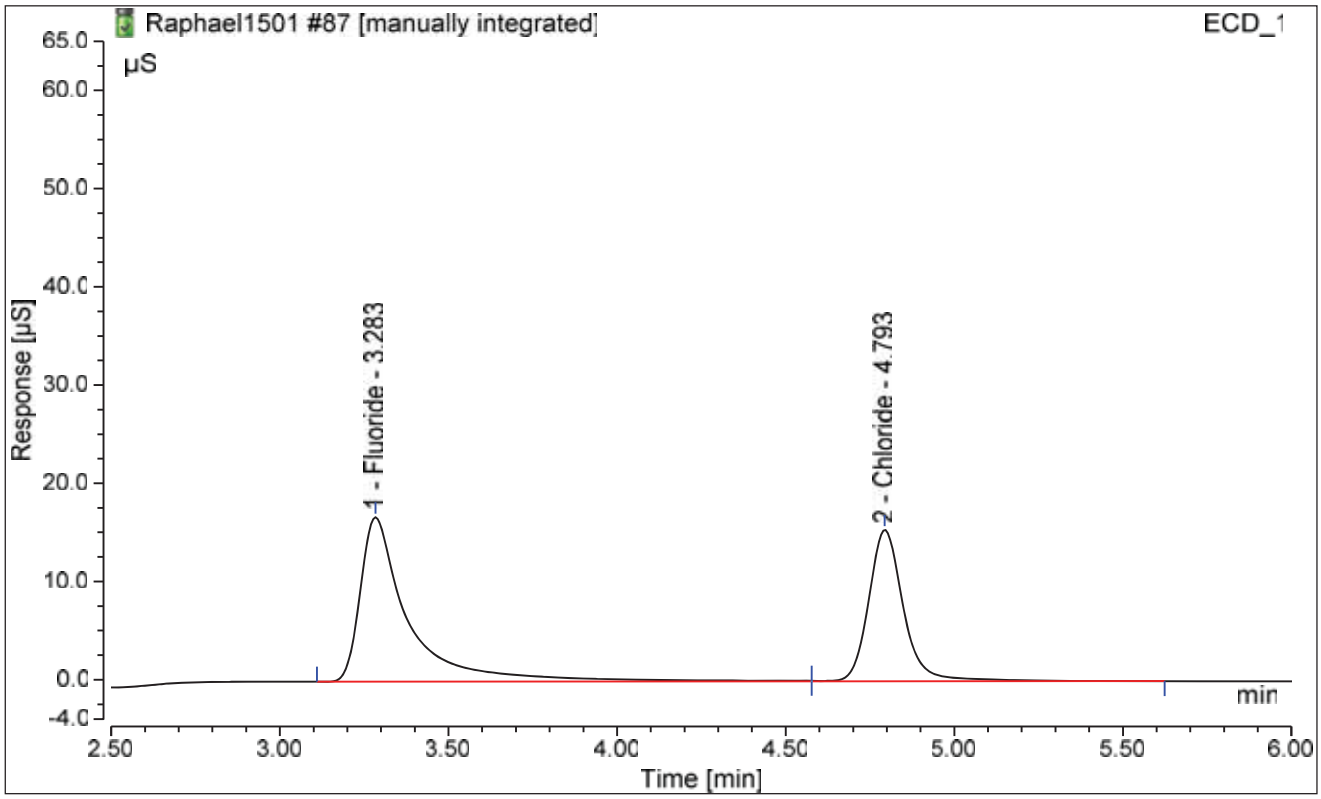


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	2.784	16.162	9.93614	FALSE	TRUE
2	4.80	Chloride	1.835	15.365	10.00512	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 15:37**	Run Time:	**14.50**

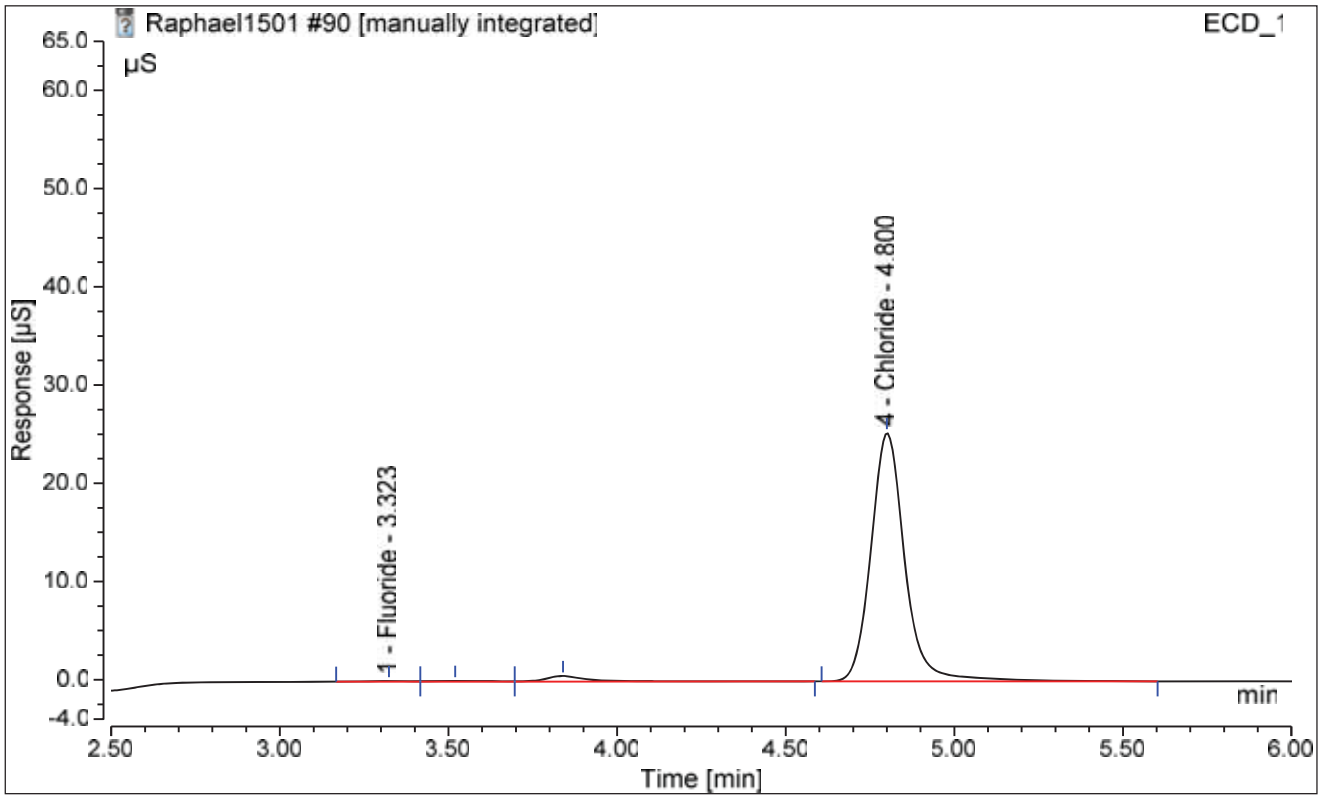


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	2.799	16.734	9.98941	FALSE	TRUE
2	4.79	Chloride	1.845	15.422	10.05668	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R2A.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 16:25**	Run Time:	**14.50**

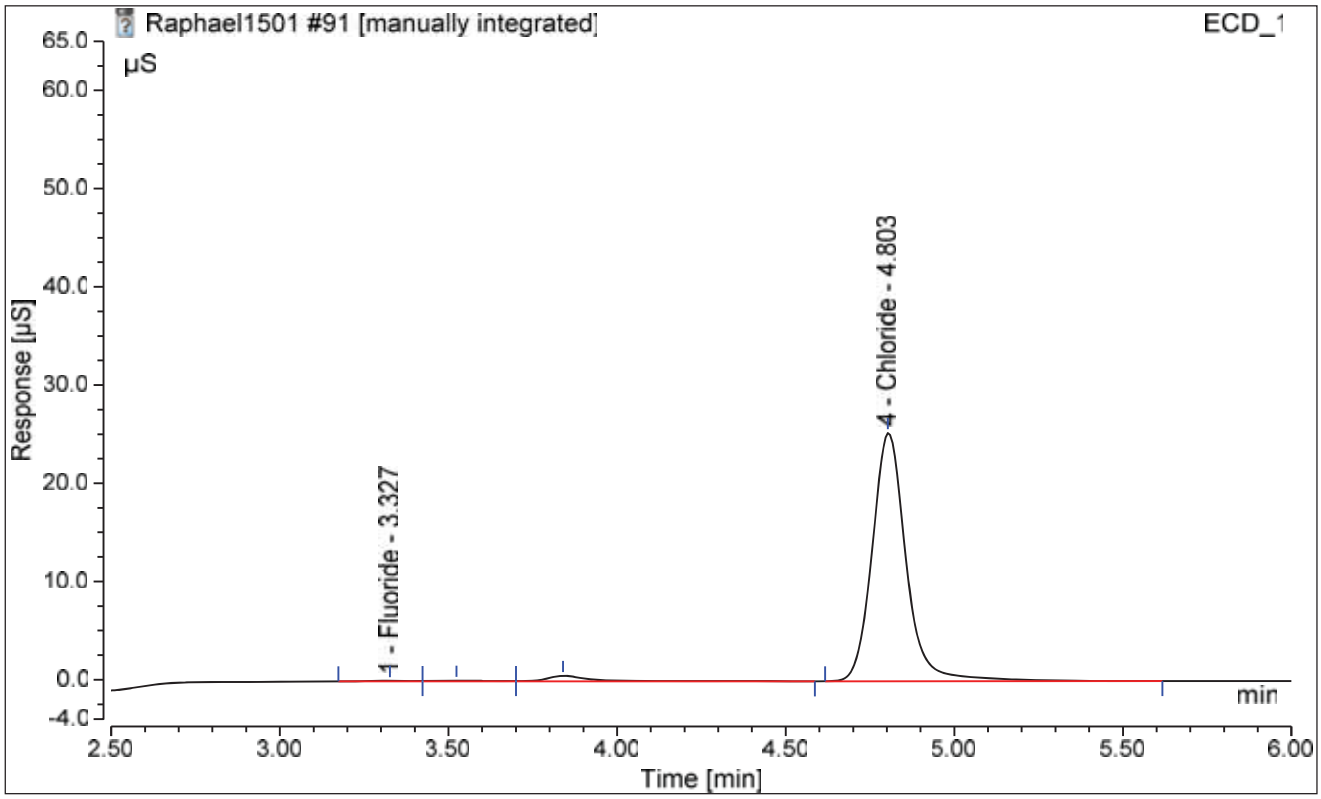


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.010	0.063	0.03657	FALSE	TRUE
4	4.80	Chloride	2.935	25.283	15.49261	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R2A.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 16:41**	Run Time:	**14.50**

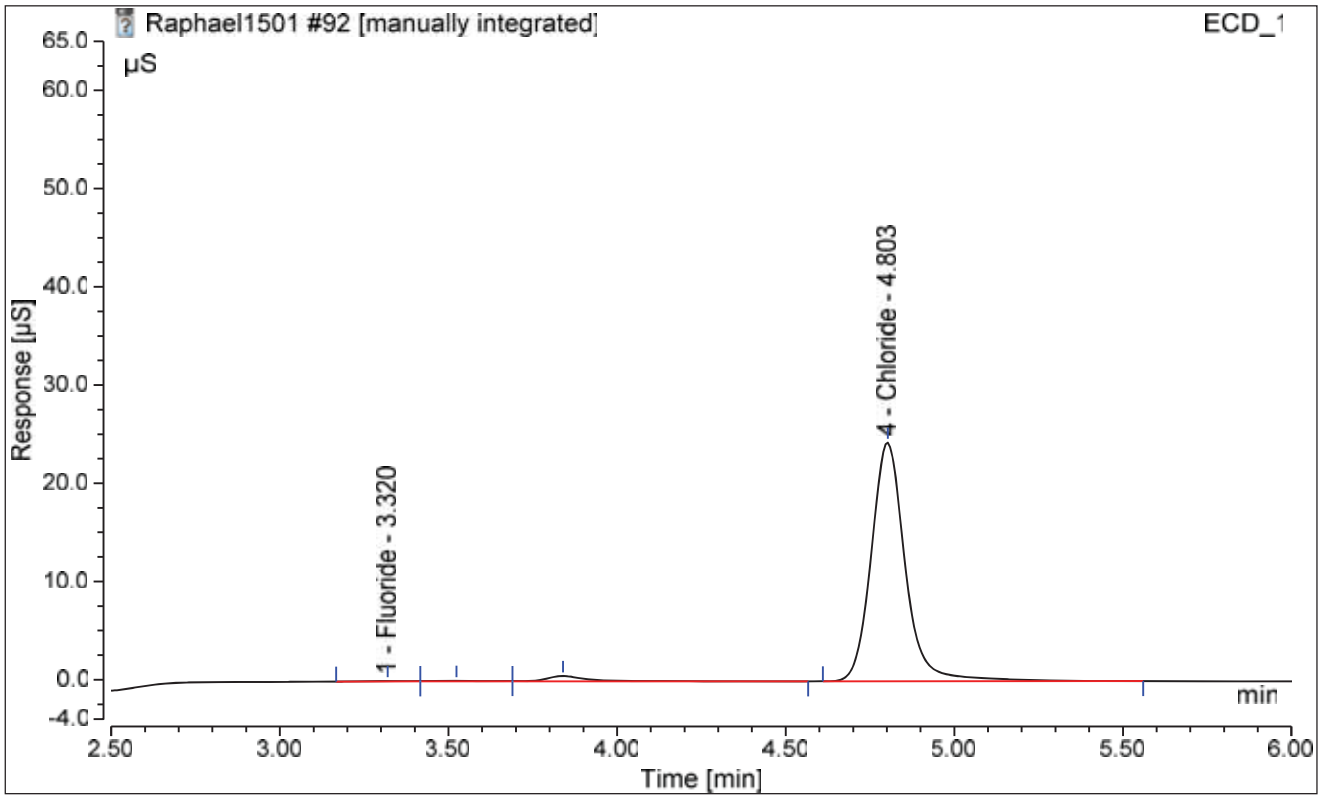


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.009	0.061	0.03578	FALSE	TRUE
4	4.80	Chloride	2.935	25.262	15.49177	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R2B.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 16:57**	Run Time:	**14.50**

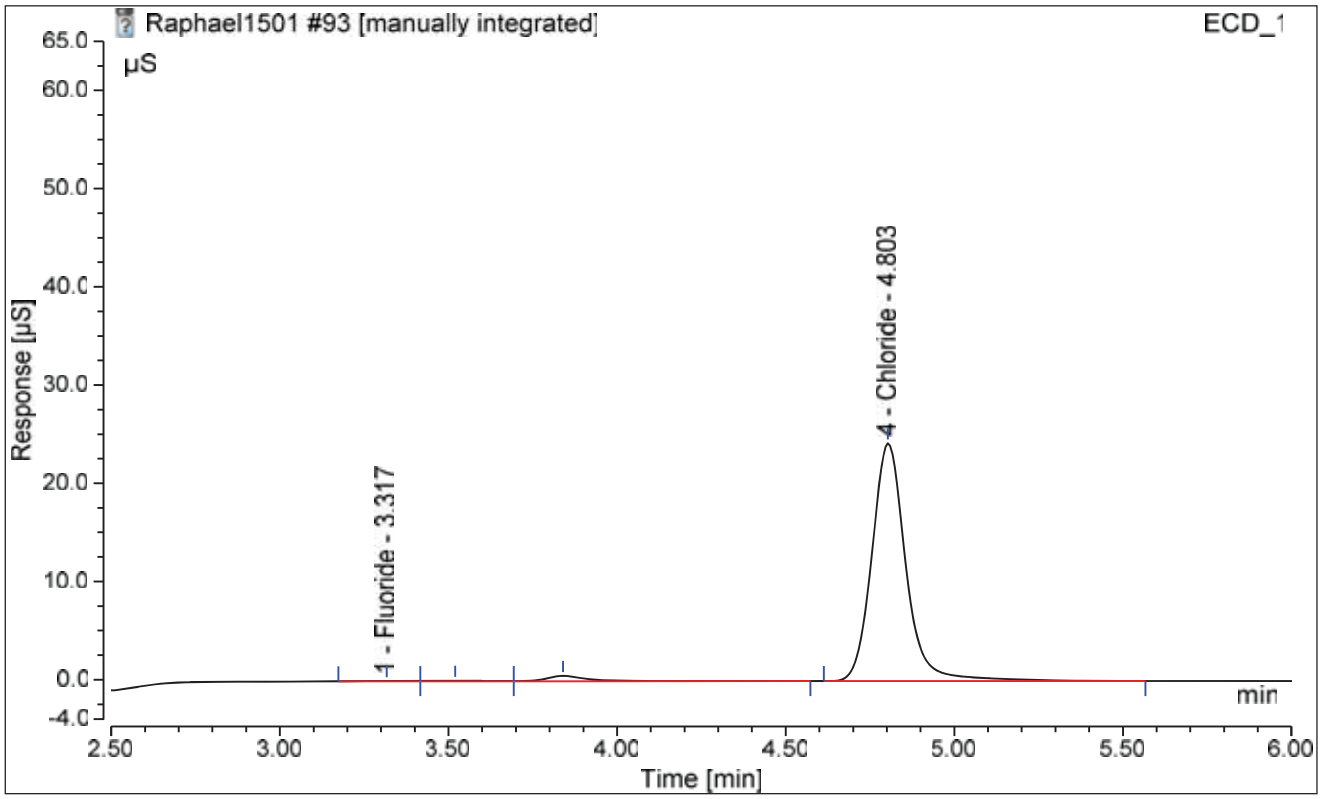


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.008	0.054	0.03144	FALSE	TRUE
4	4.80	Chloride	2.829	24.291	14.98202	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R2B.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 17:13**	Run Time:	**14.50**

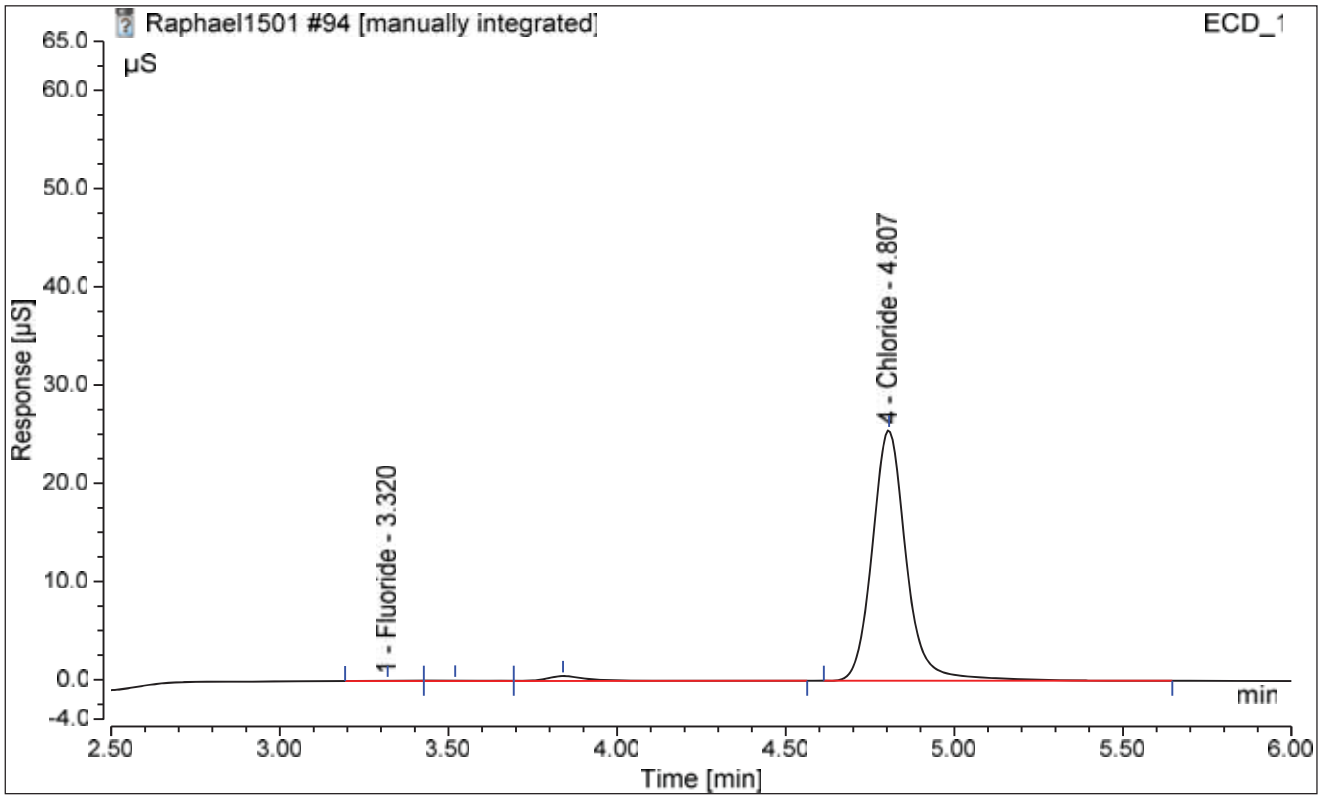


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.007	0.051	0.02913	FALSE	TRUE
4	4.80	Chloride	2.824	24.206	14.95681	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R3A.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 17:30**	Run Time:	**14.50**

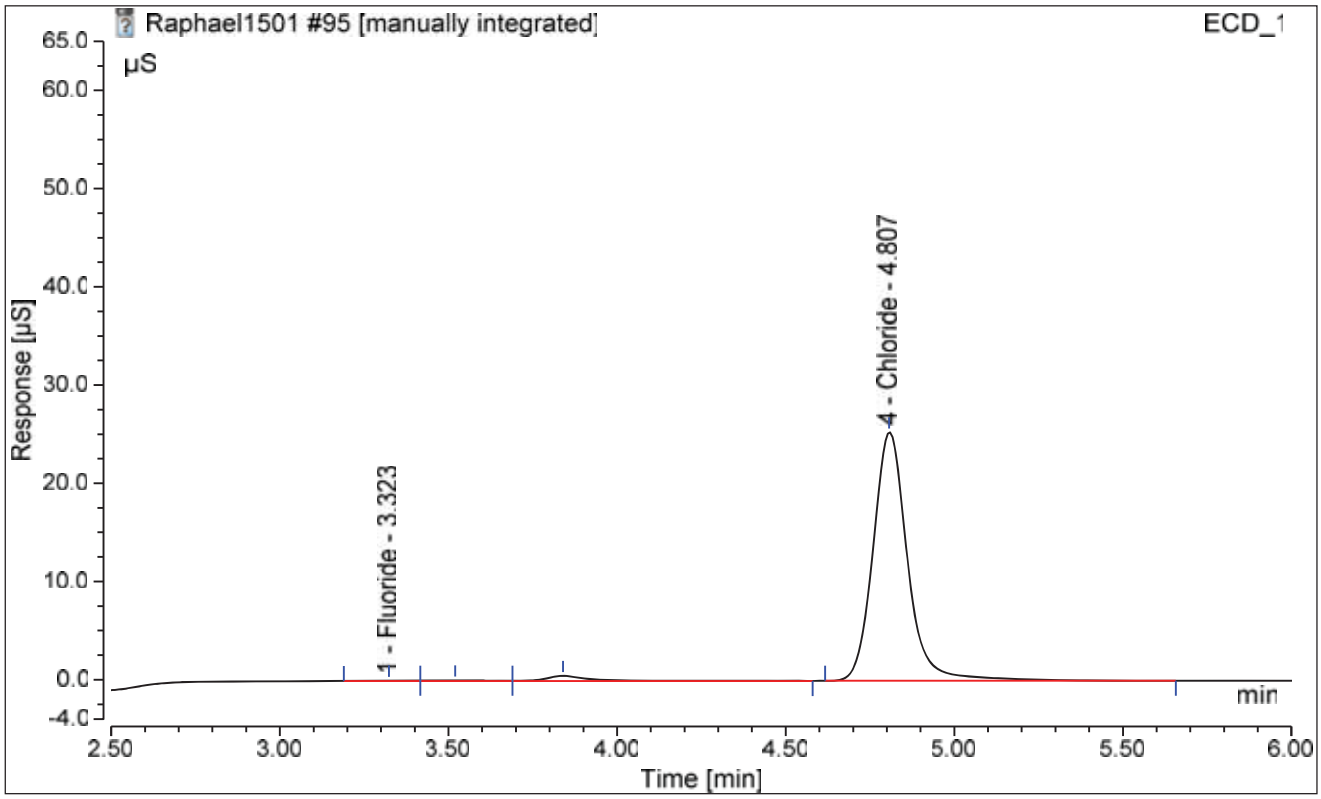


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.007	0.048	0.02717	FALSE	TRUE
4	4.81	Chloride	2.975	25.481	15.68282	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R3A.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 17:46**	Run Time:	**14.50**

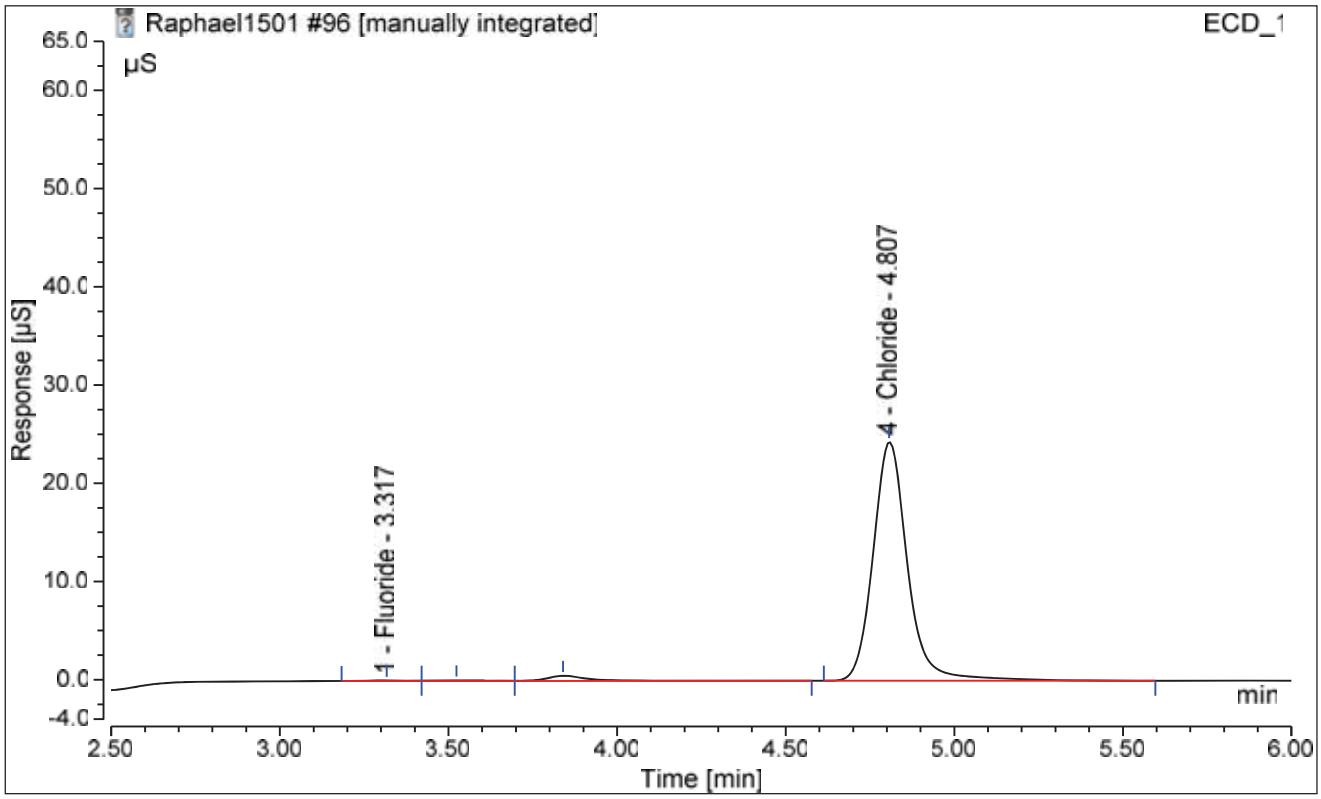


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.008	0.051	0.02943	FALSE	TRUE
4	4.81	Chloride	2.986	25.305	15.73656	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R3B.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 18:02**	Run Time:	**14.50**

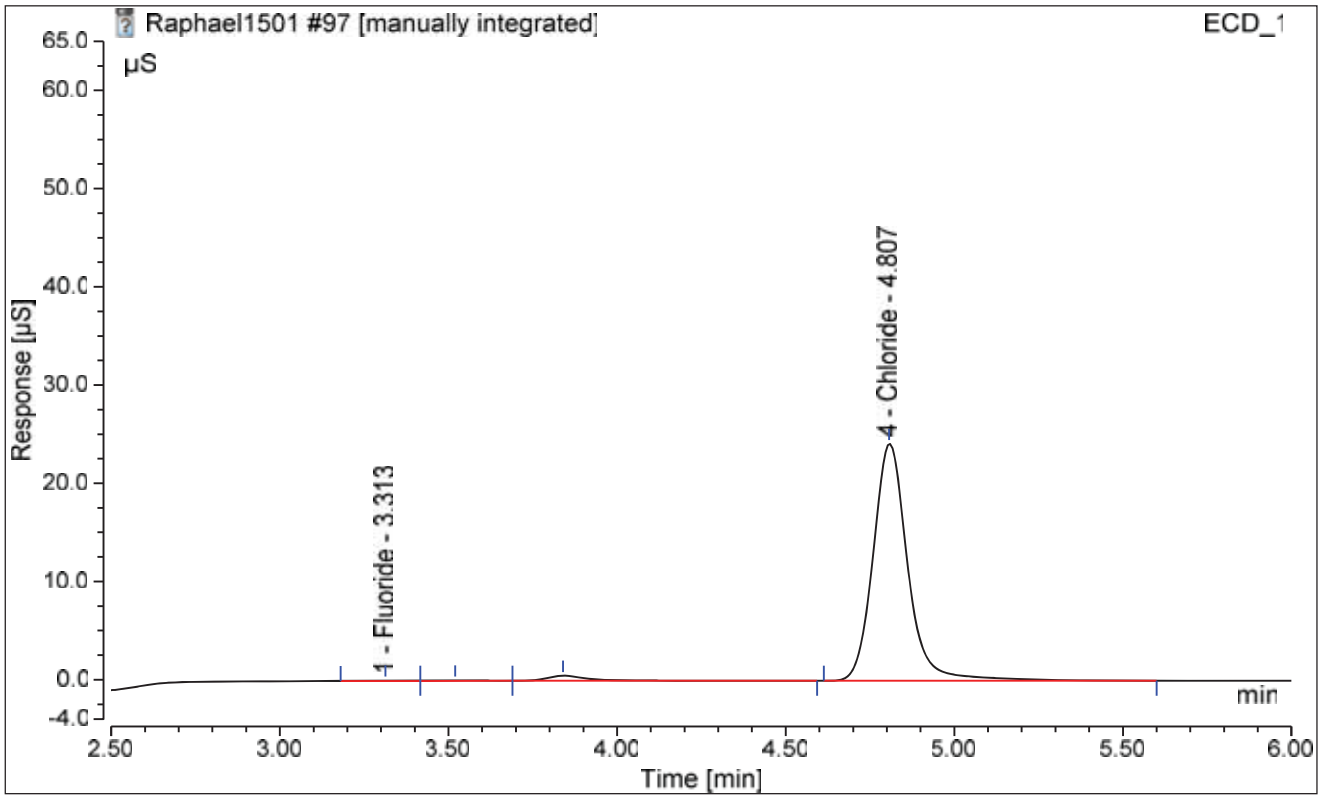


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.007	0.051	0.02891	FALSE	TRUE
4	4.81	Chloride	2.866	24.304	15.15896	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R3B.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 18:18**	Run Time:	**14.50**

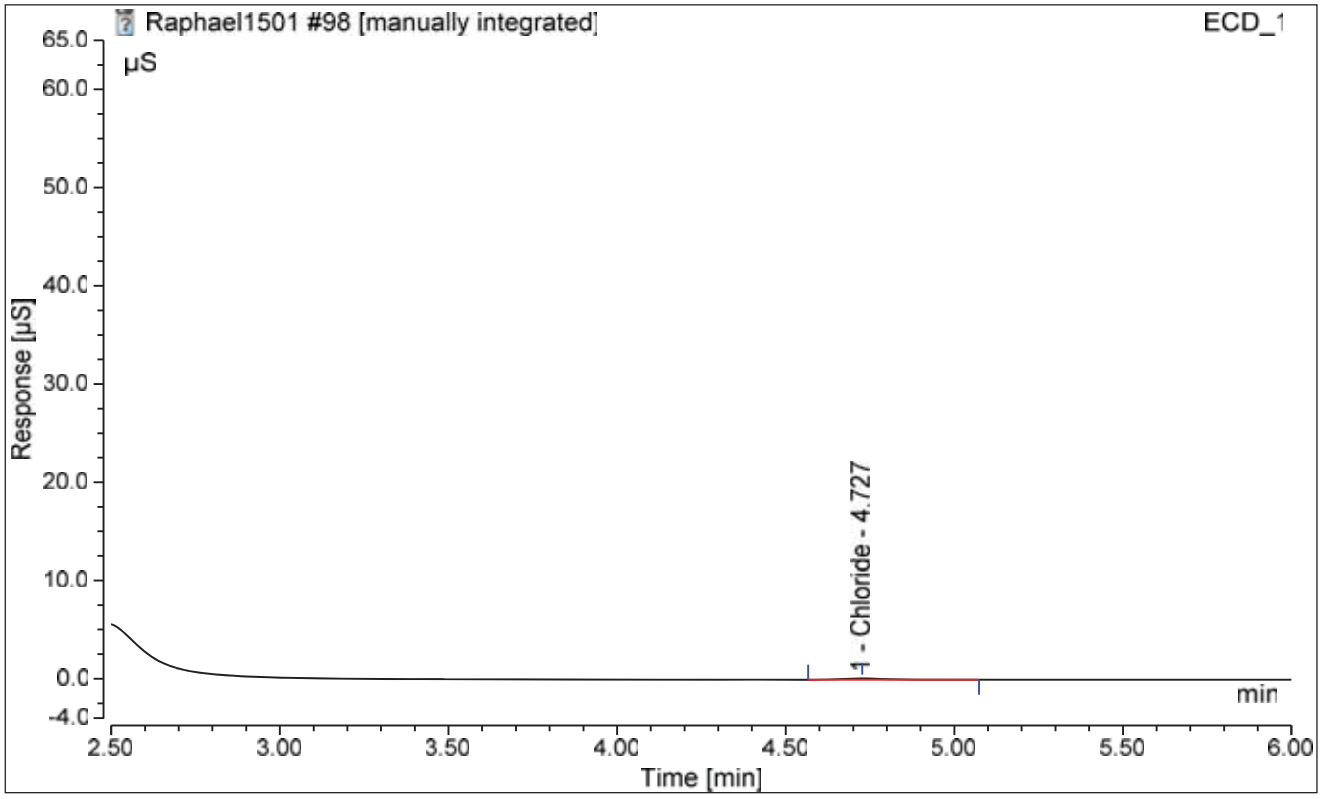


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.31	Fluoride	0.007	0.051	0.02882	FALSE	TRUE
4	4.81	Chloride	2.857	24.119	15.11353	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off FB.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 18:34**	Run Time:	**14.50**

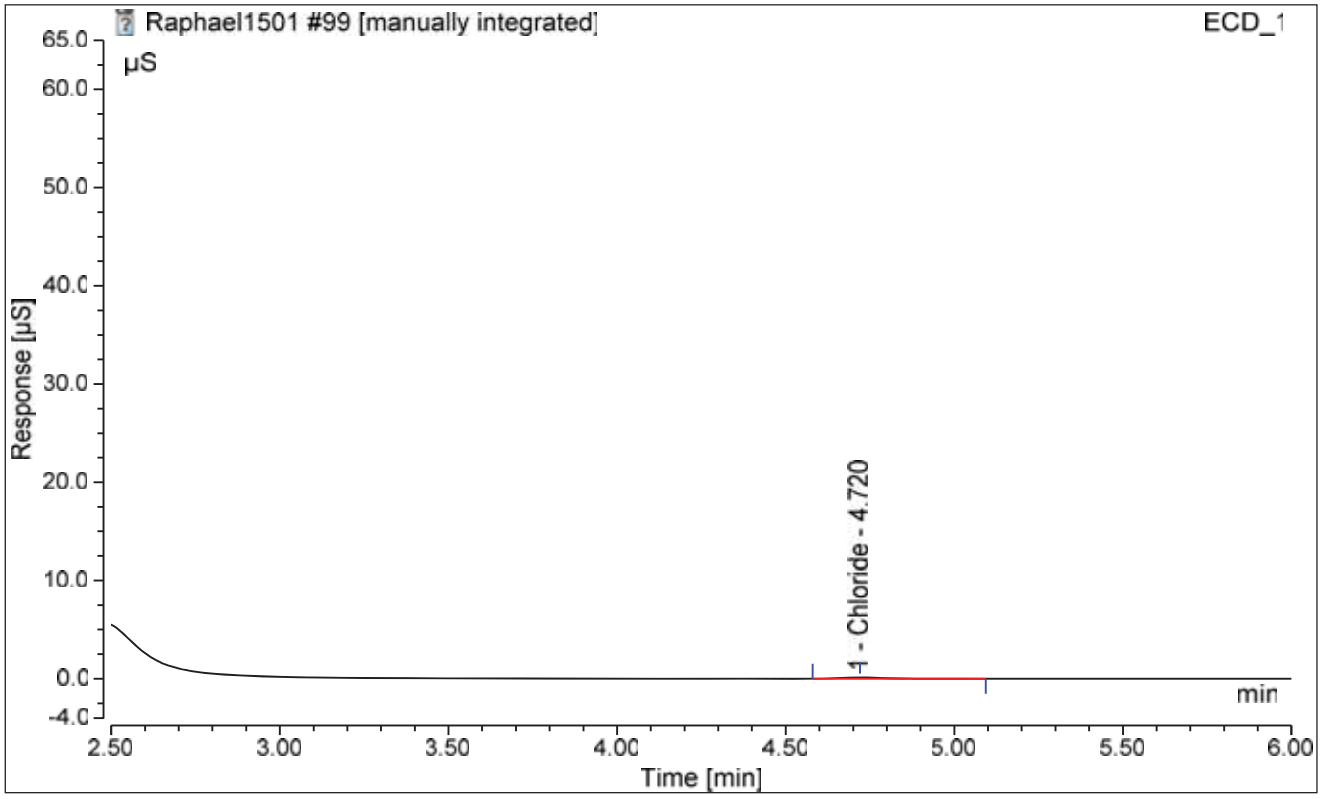


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	4.73	Chloride	0.018	0.129	0.02691	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.Off FB.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 18:50**	Run Time:	**14.50**

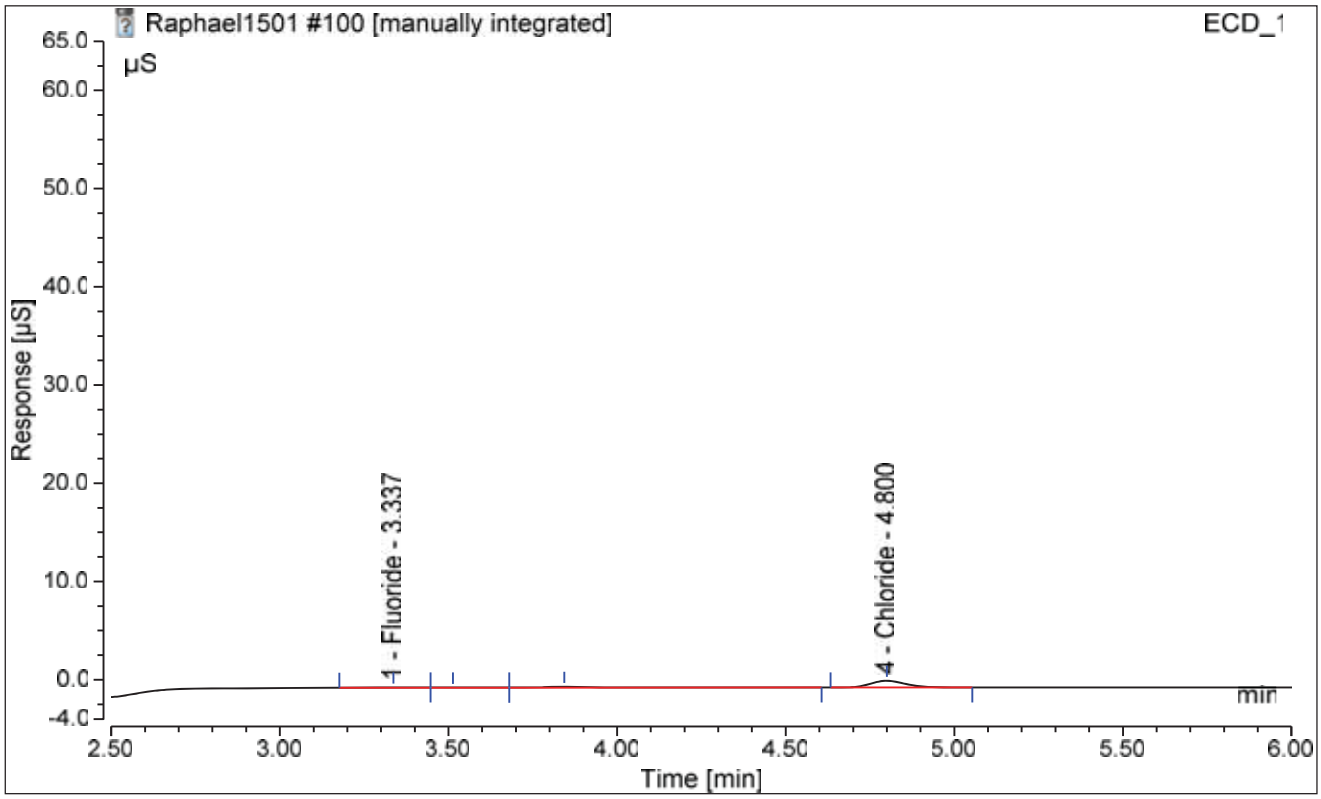


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	4.72	Chloride	0.017	0.122	0.02099	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.On R1A.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 19:06**	Run Time:	**14.50**

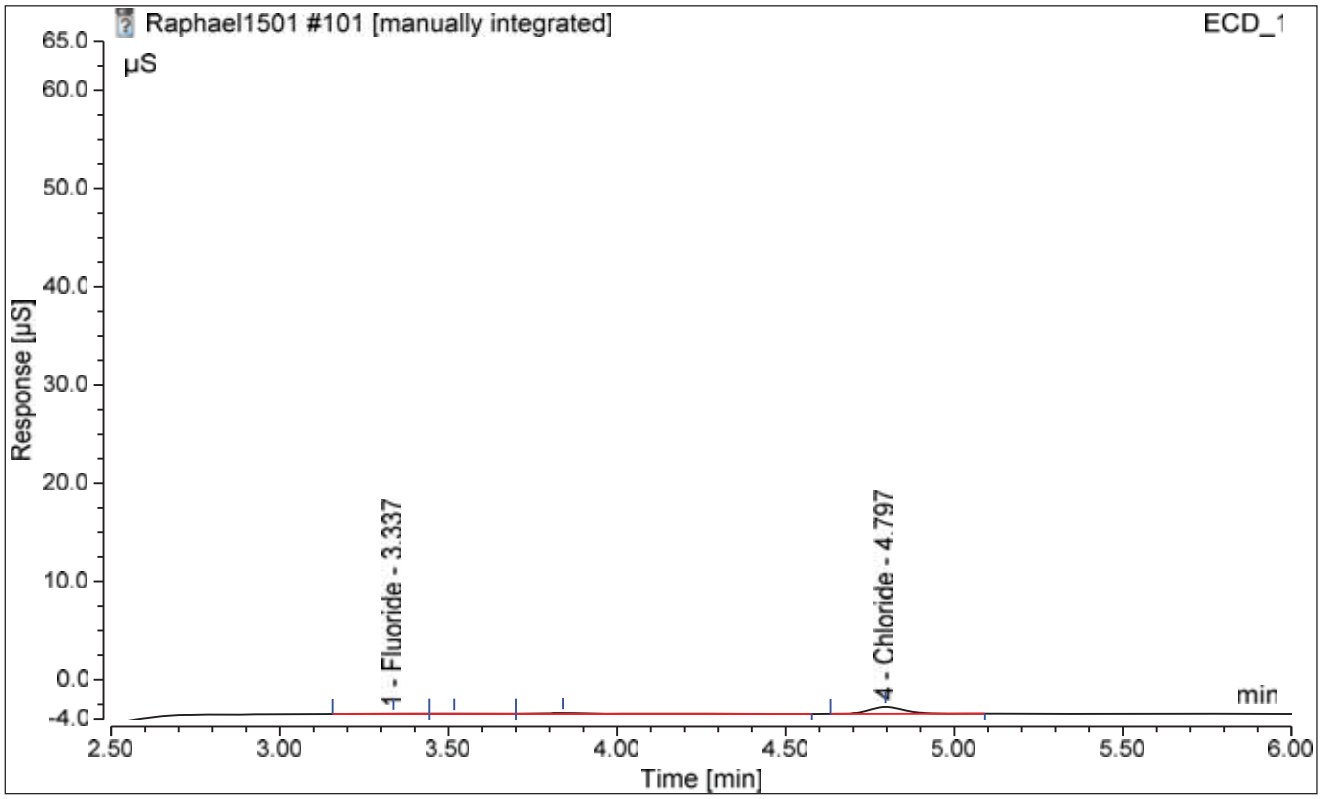


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.34	Fluoride	0.005	0.034	0.02117	FALSE	TRUE
4	4.80	Chloride	0.083	0.689	0.40429	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.On R1A.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 19:22**	Run Time:	**14.50**

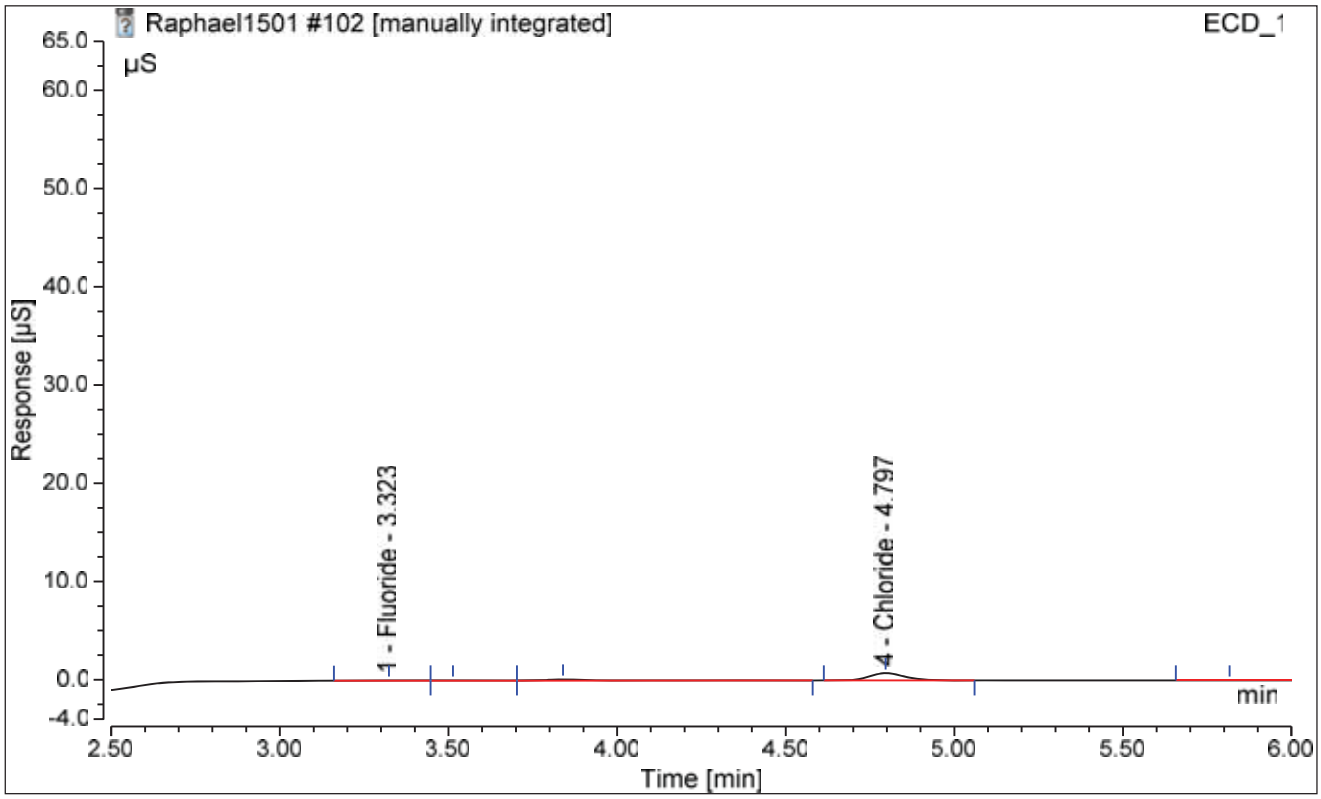


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.34	Fluoride	0.006	0.034	0.02197	FALSE	TRUE
4	4.80	Chloride	0.084	0.694	0.40991	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.On R1B.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 19:38**	Run Time:	**14.50**

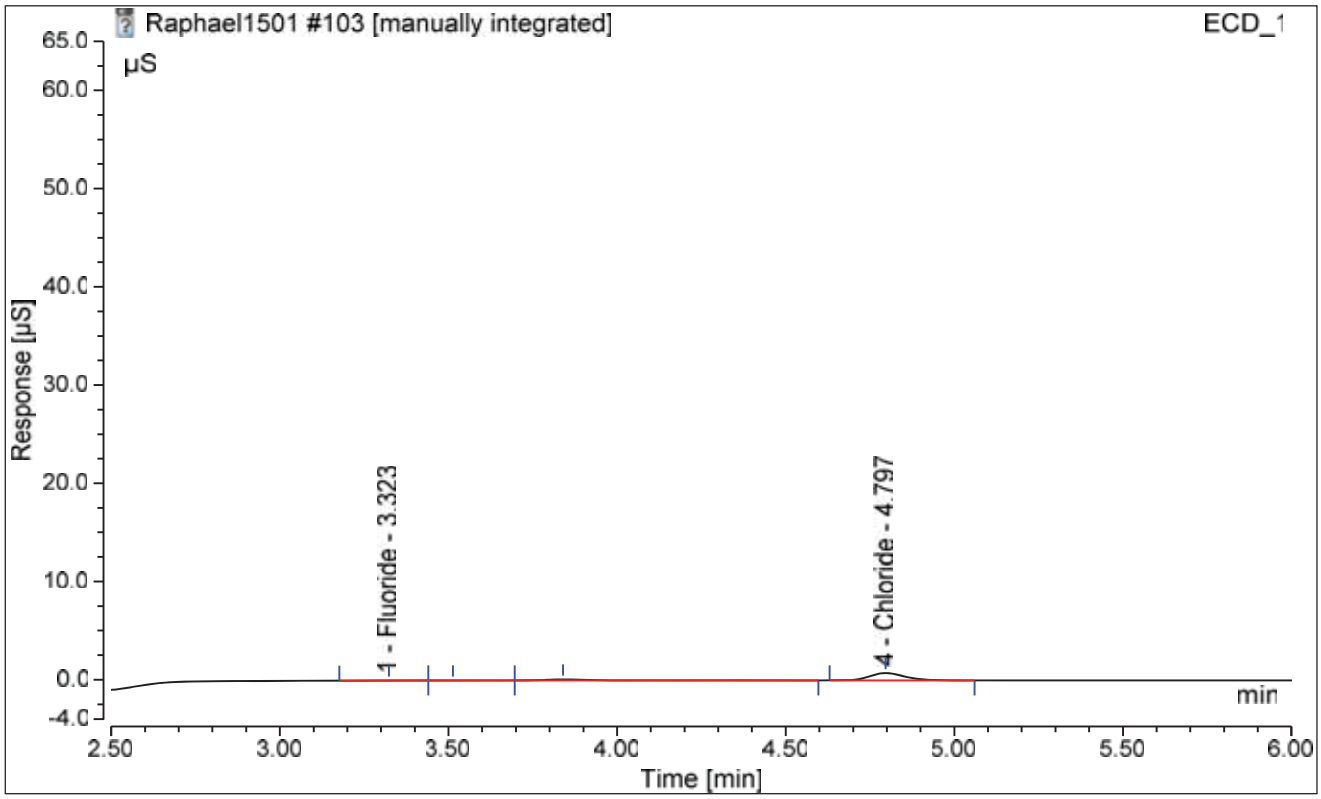


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.006	0.037	0.02477	FALSE	TRUE
4	4.80	Chloride	0.090	0.748	0.44727	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.On R1B.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 19:55**	Run Time:	**14.50**

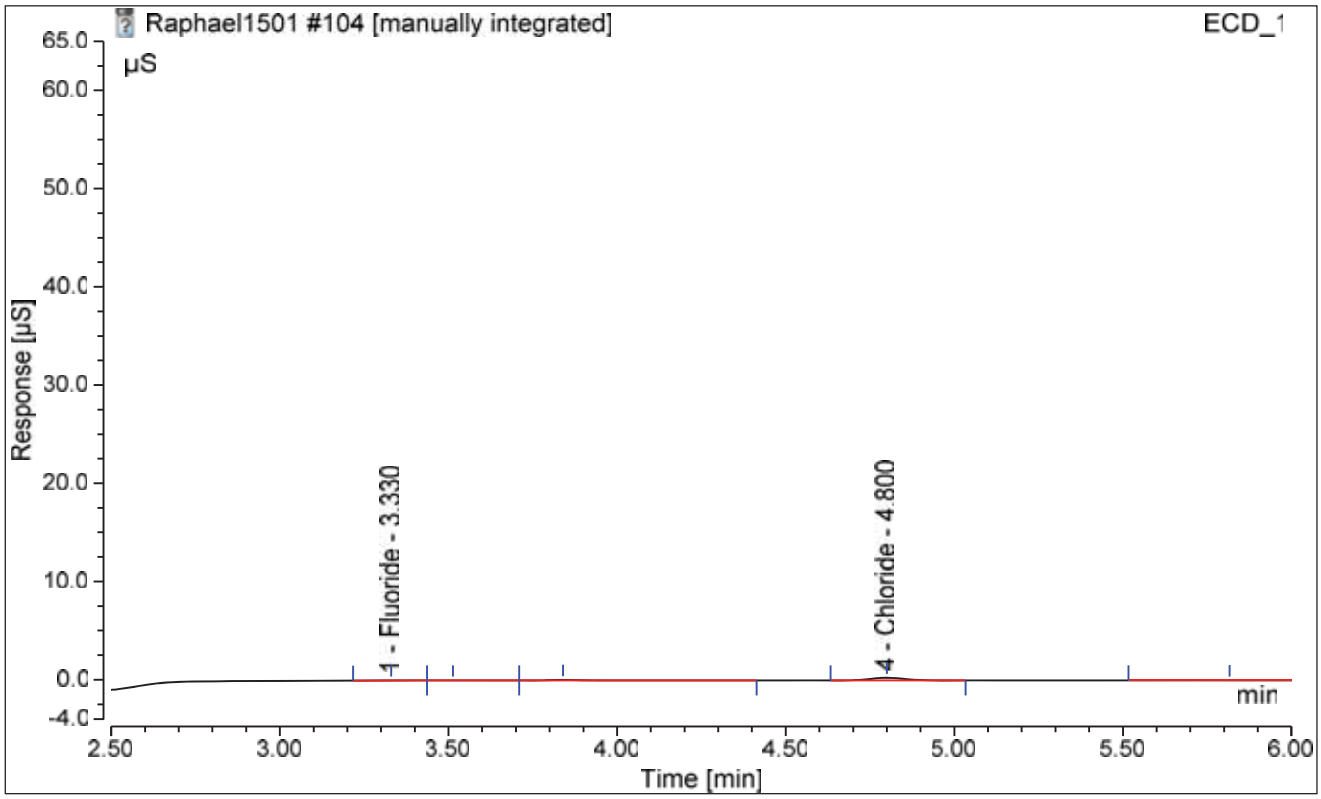


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.005	0.034	0.02172	FALSE	TRUE
4	4.80	Chloride	0.090	0.743	0.44390	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.On R2A.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 20:11**	Run Time:	**14.50**

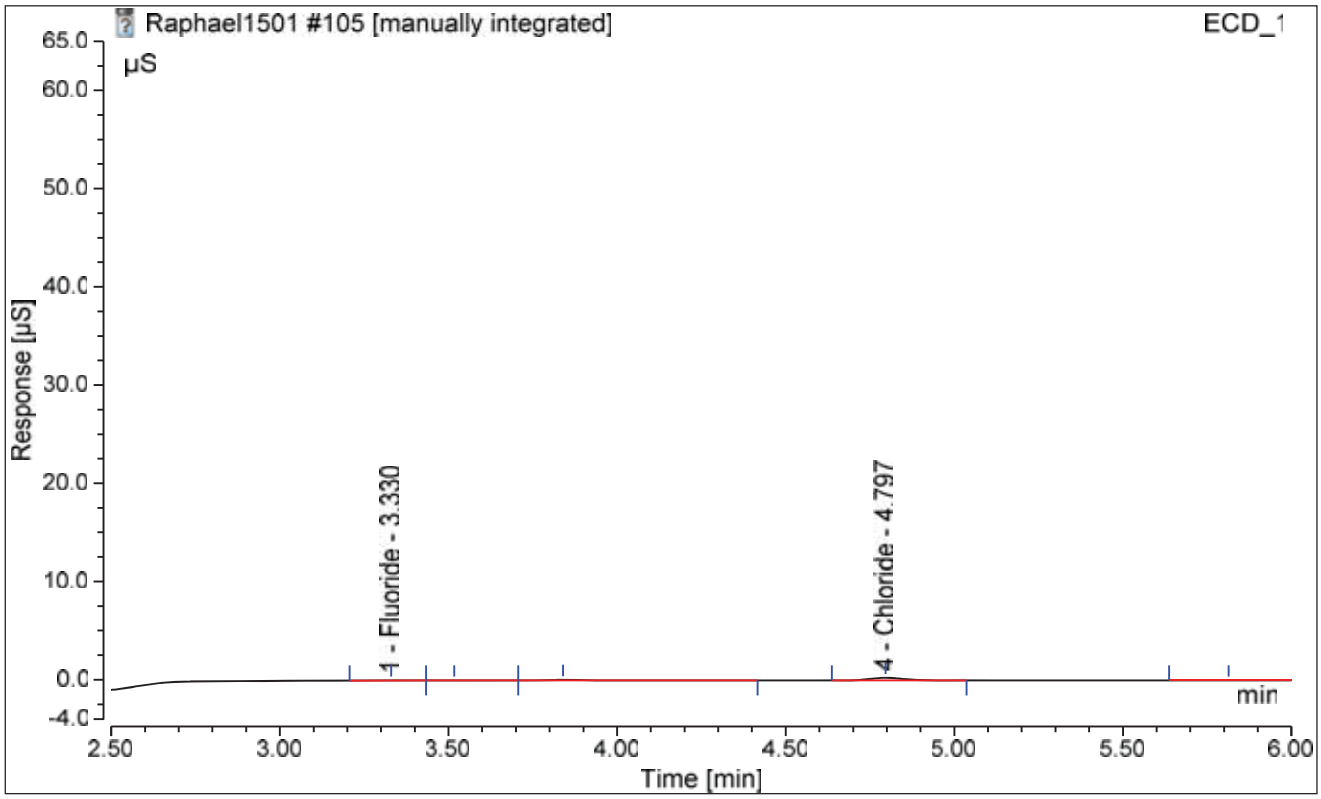


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.003	0.018	0.01141	FALSE	TRUE
4	4.80	Chloride	0.034	0.280	0.11895	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.On R2A.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 20:27**	Run Time:	**14.50**

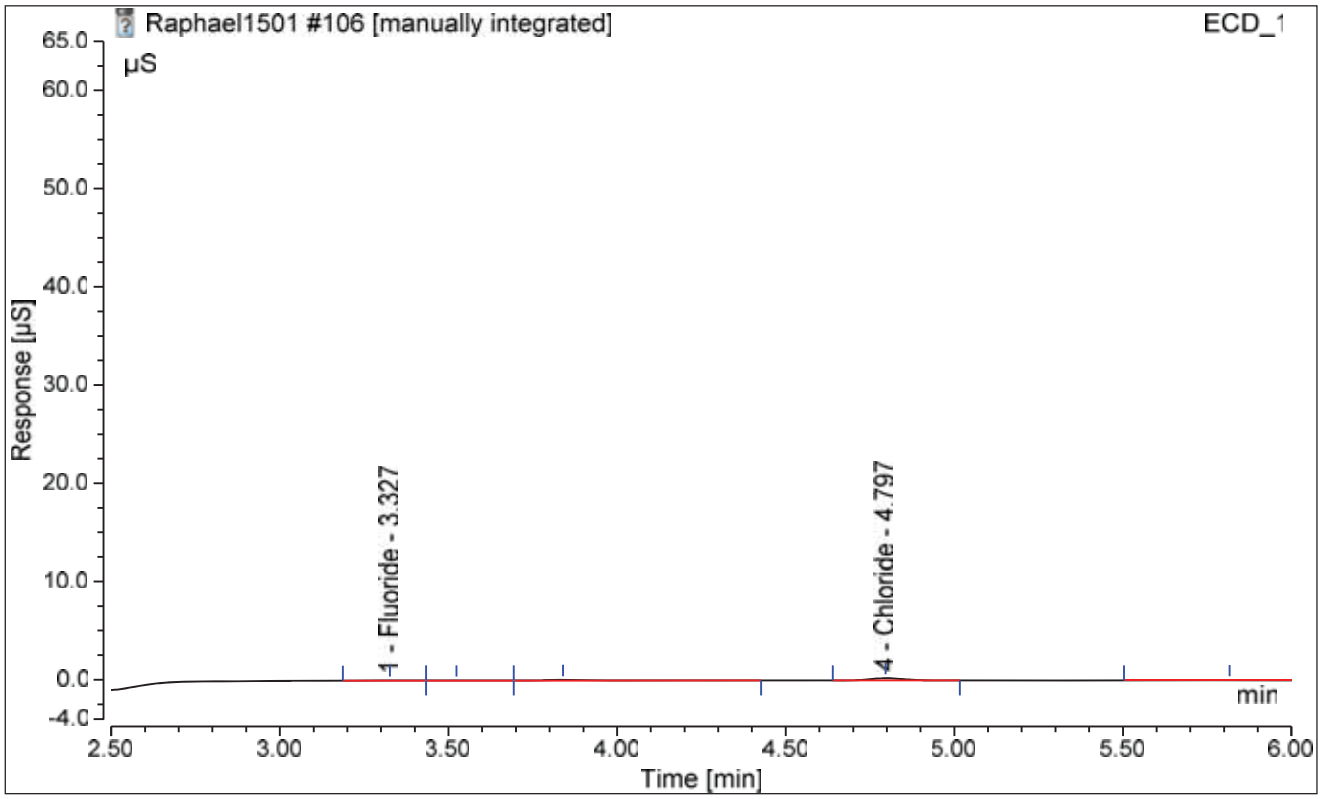


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.003	0.021	0.01378	FALSE	TRUE
4	4.80	Chloride	0.034	0.282	0.11984	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.On R2B.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 20:43**	Run Time:	**14.50**

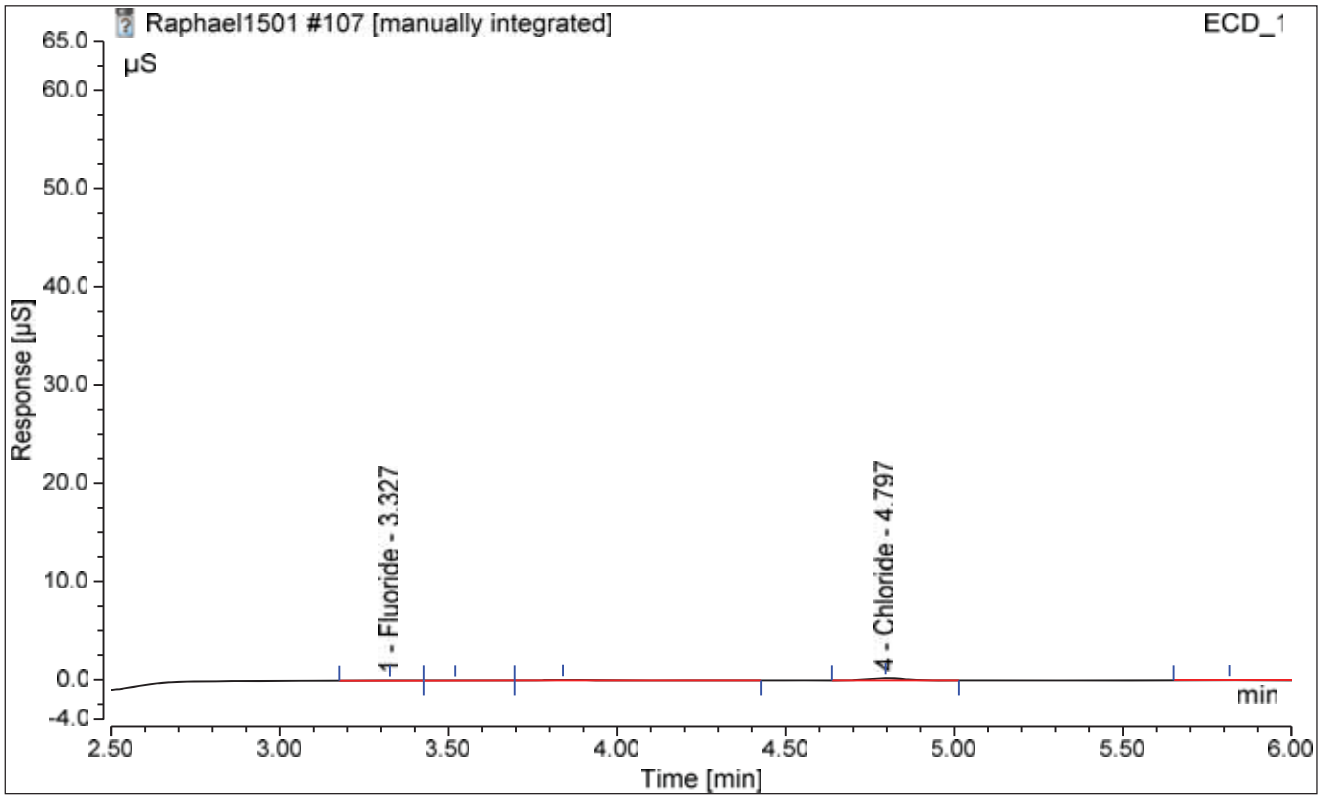


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.004	0.024	0.01562	FALSE	TRUE
4	4.80	Chloride	0.027	0.230	0.08230	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.On R2B.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 20:59**	Run Time:	**14.50**

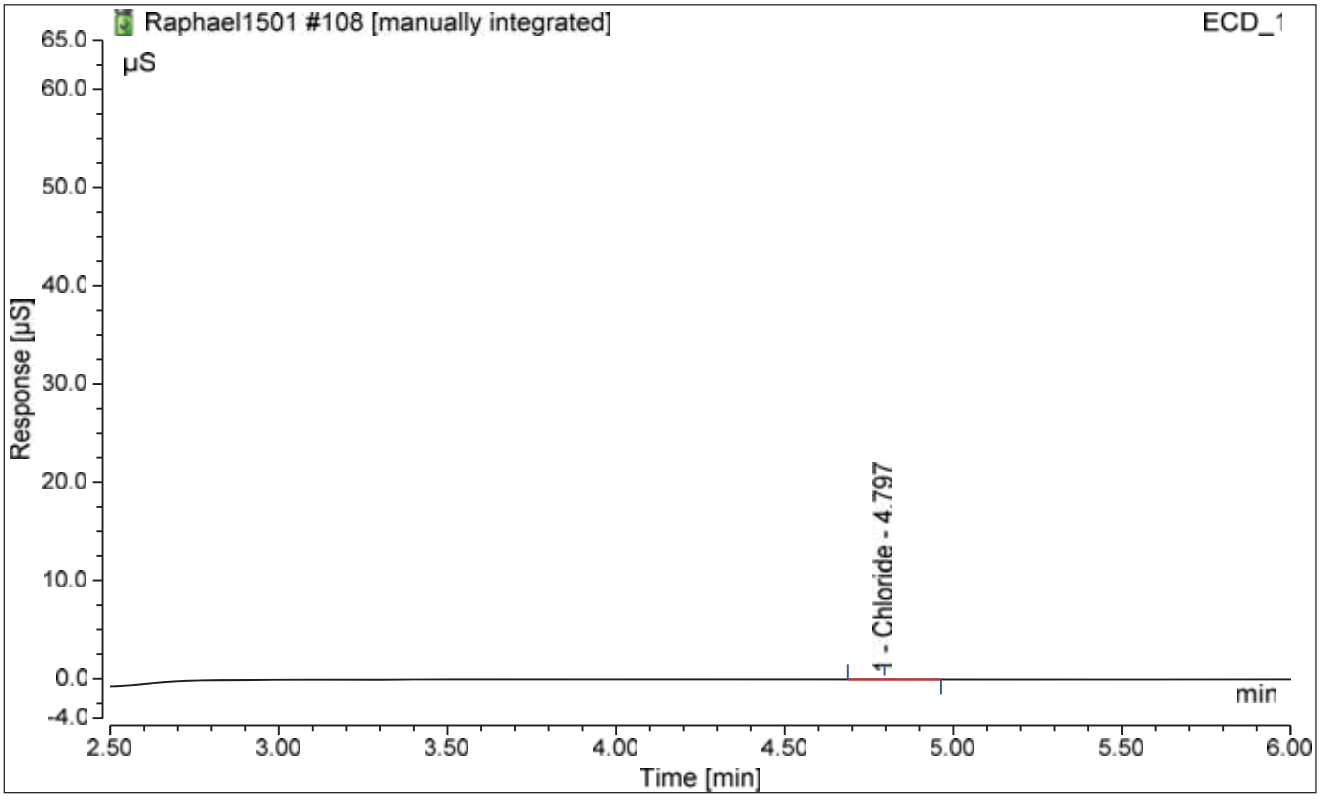


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.33	Fluoride	0.004	0.024	0.01596	FALSE	TRUE
4	4.80	Chloride	0.028	0.230	0.08281	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 21:15**	Run Time:	**14.50**

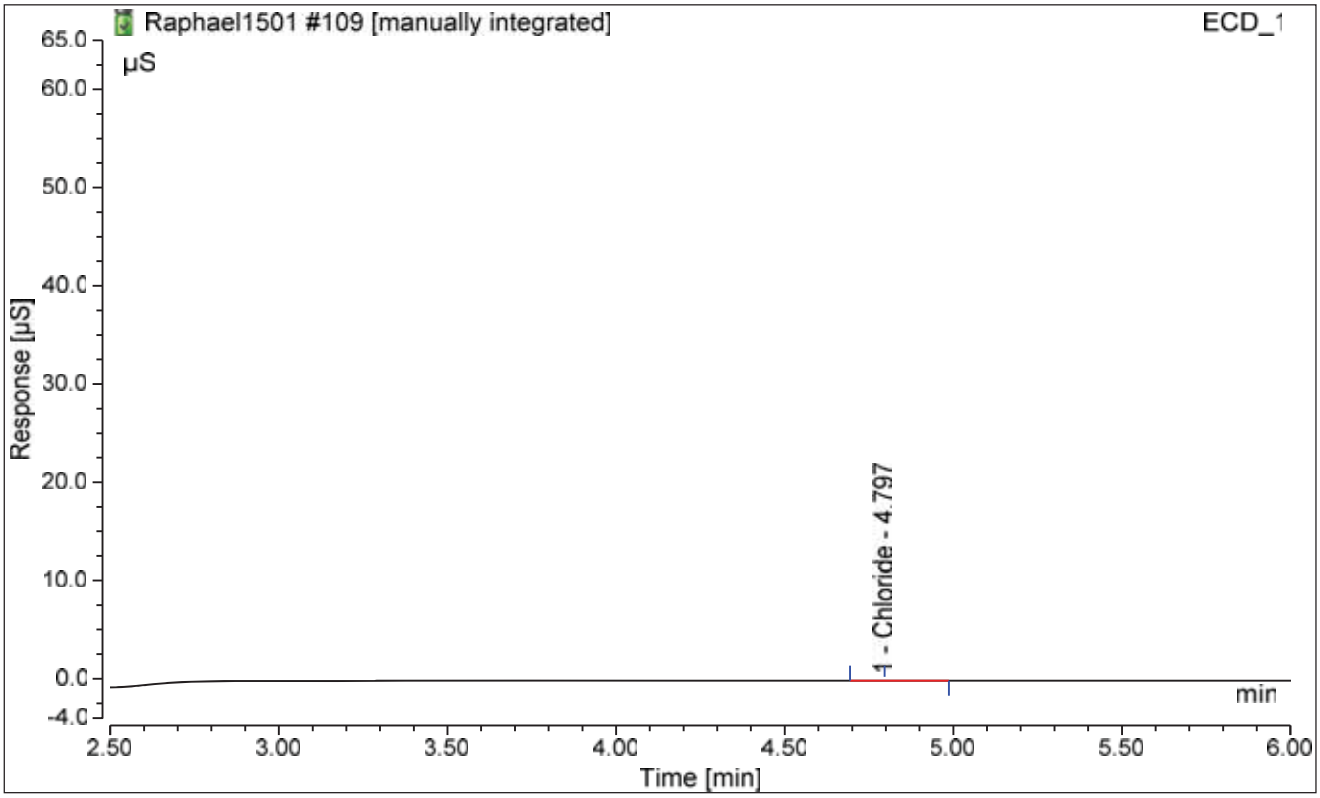


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	4.80	Chloride	0.001	0.008	n.a.	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 21:31**	Run Time:	**14.50**

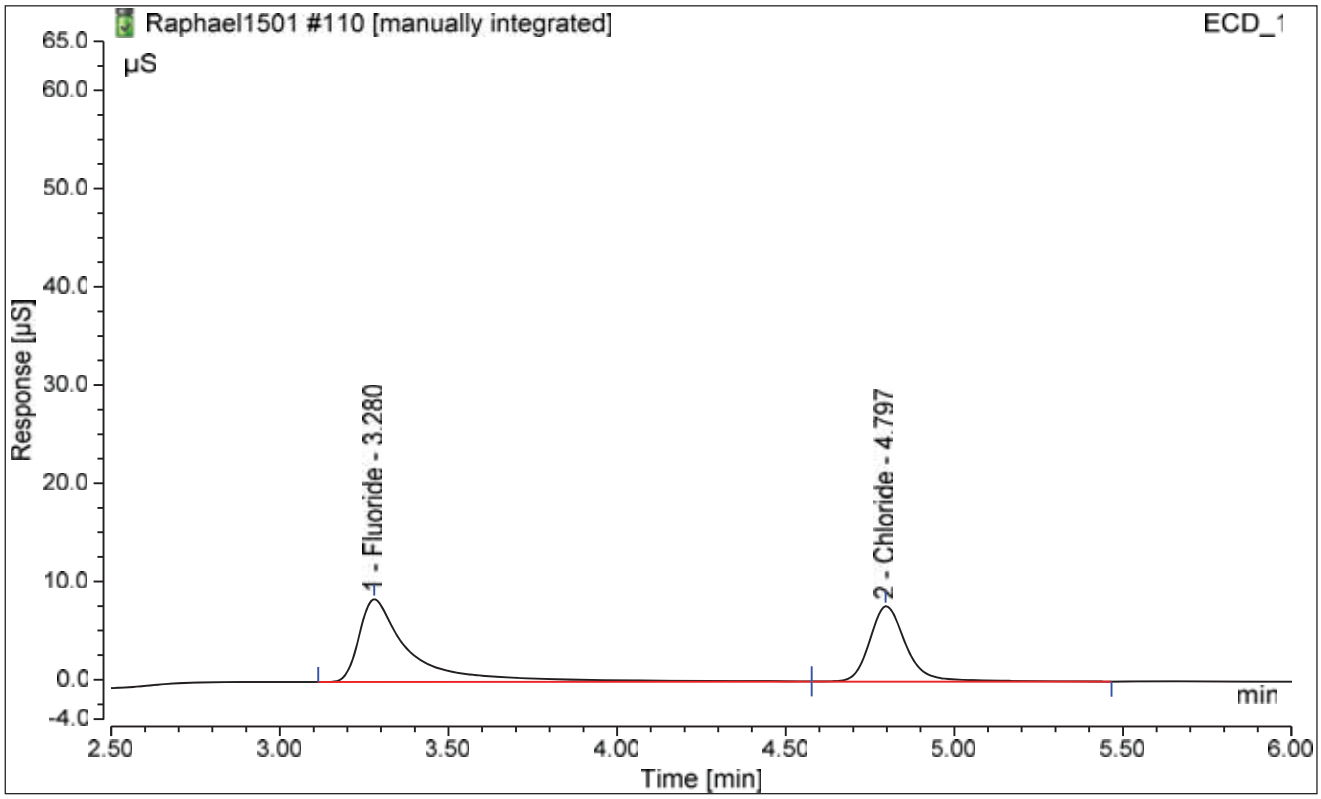


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	4.80	Chloride	0.001	0.007	n.a.	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 21:47**	Run Time:	**14.50**

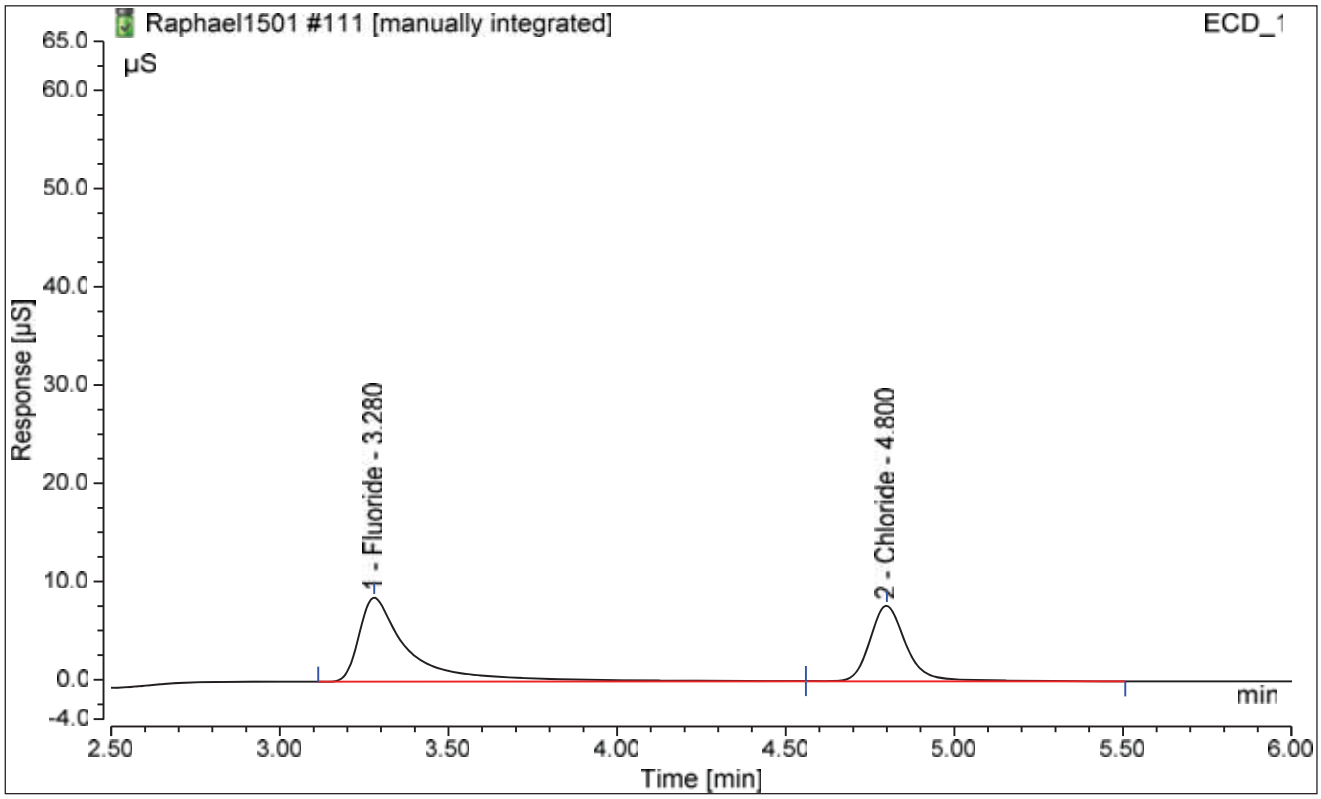


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	1.506	8.417	5.42393	FALSE	TRUE
2	4.80	Chloride	0.965	7.672	5.36918	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 22:03**	Run Time:	**14.50**

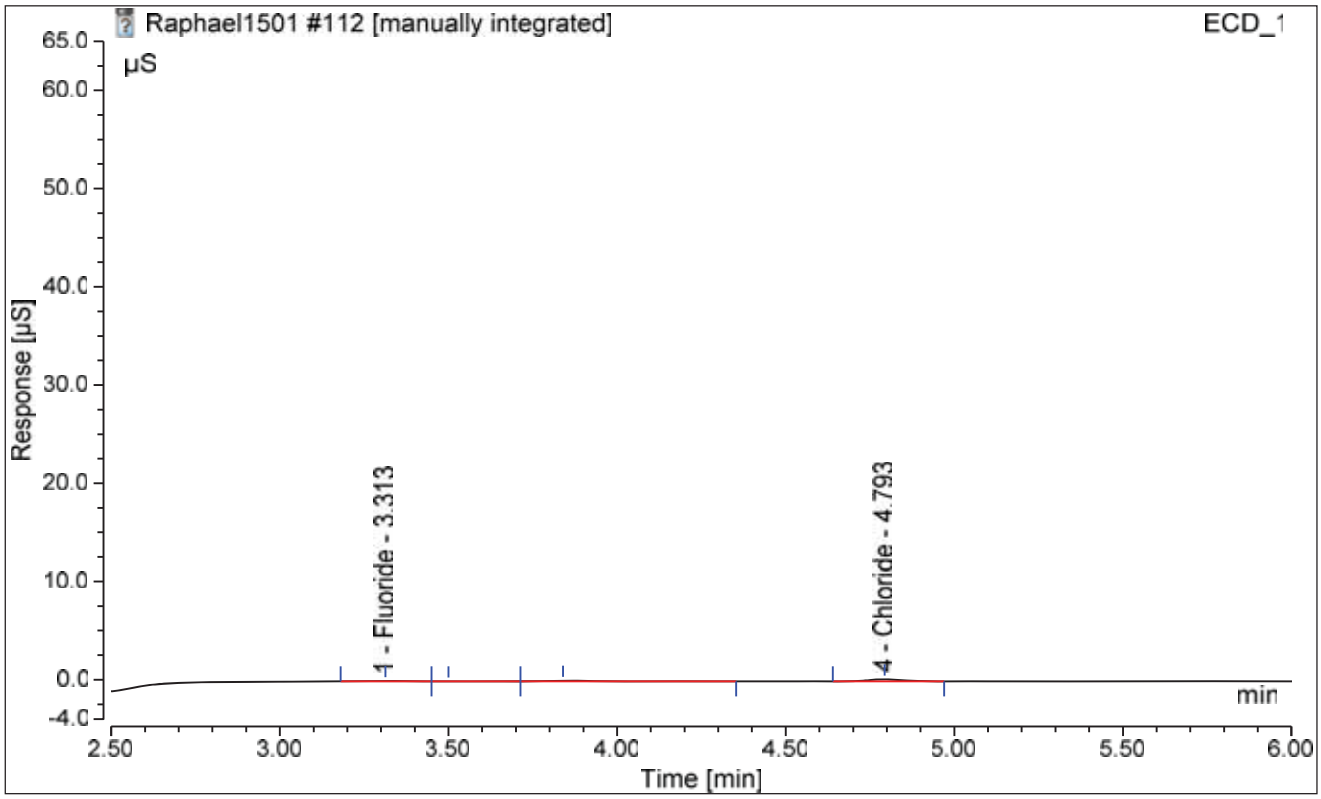


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	1.507	8.558	5.42673	FALSE	TRUE
2	4.80	Chloride	0.964	7.692	5.36359	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.On R3A.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 22:20**	Run Time:	**14.50**

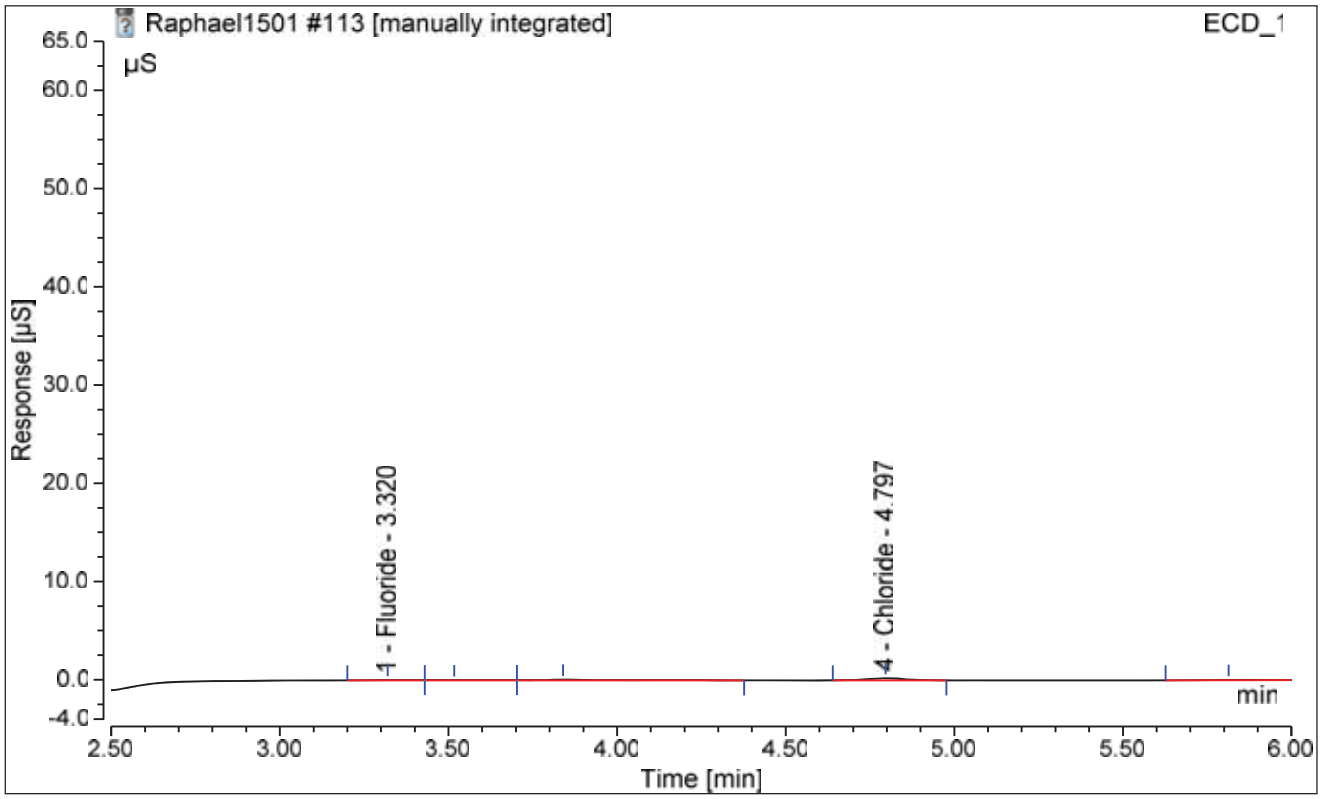


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.31	Fluoride	0.007	0.042	0.02581	FALSE	TRUE
4	4.79	Chloride	0.024	0.210	0.06240	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.On R3A.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 22:36**	Run Time:	**14.50**

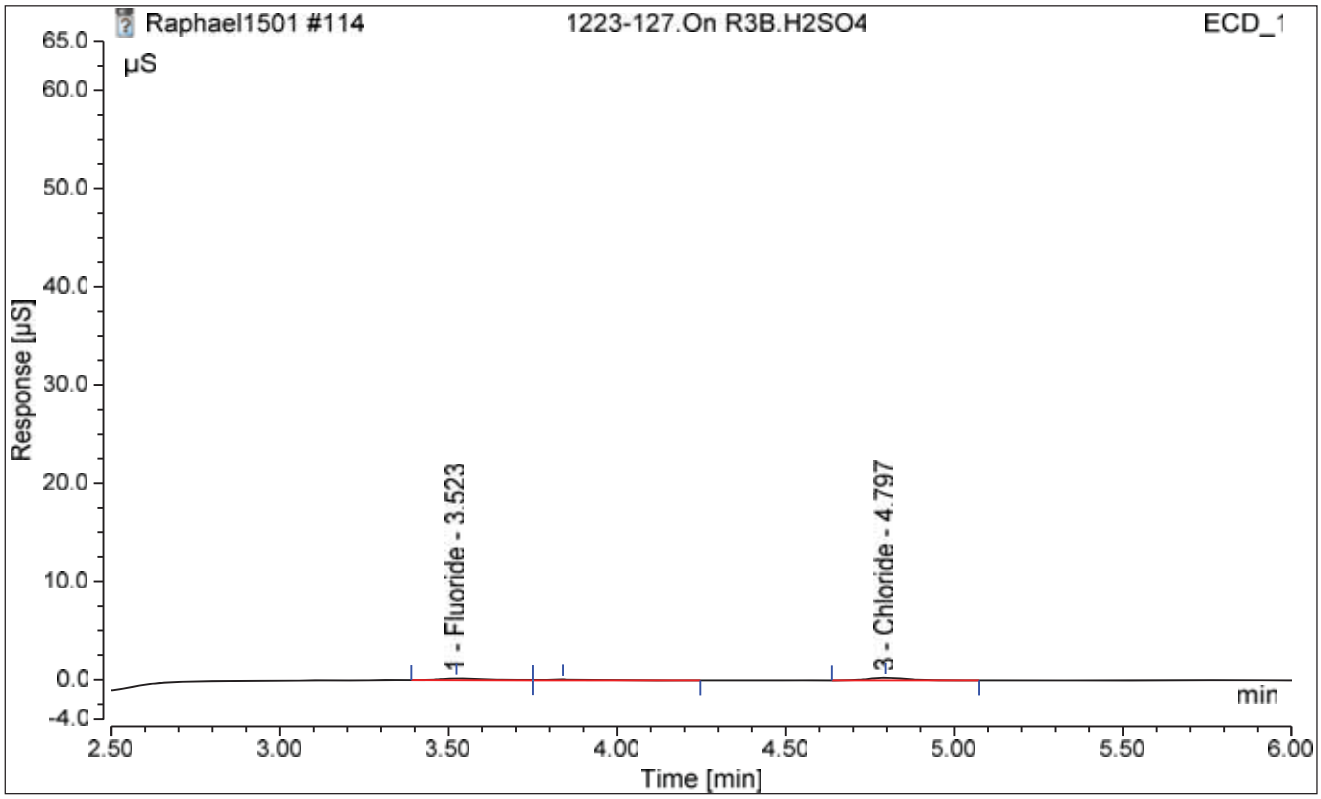


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.32	Fluoride	0.004	0.027	0.01617	FALSE	TRUE
4	4.80	Chloride	0.024	0.207	0.06141	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.On R3B.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 22:52**	Run Time:	**14.50**

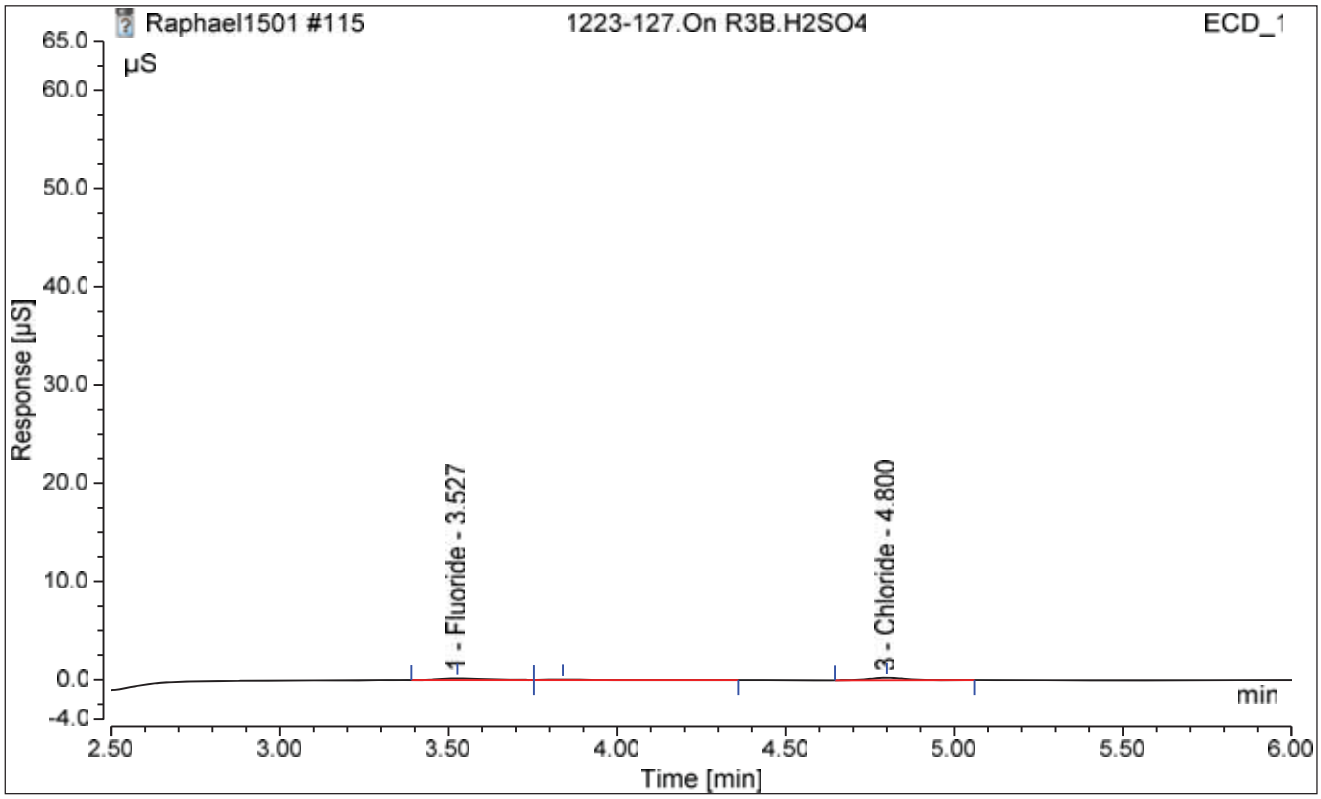


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.52	Fluoride	0.029	0.175	0.10754	FALSE	FALSE
3	4.80	Chloride	0.031	0.261	0.10127	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.On R3B.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 23:08**	Run Time:	**14.50**

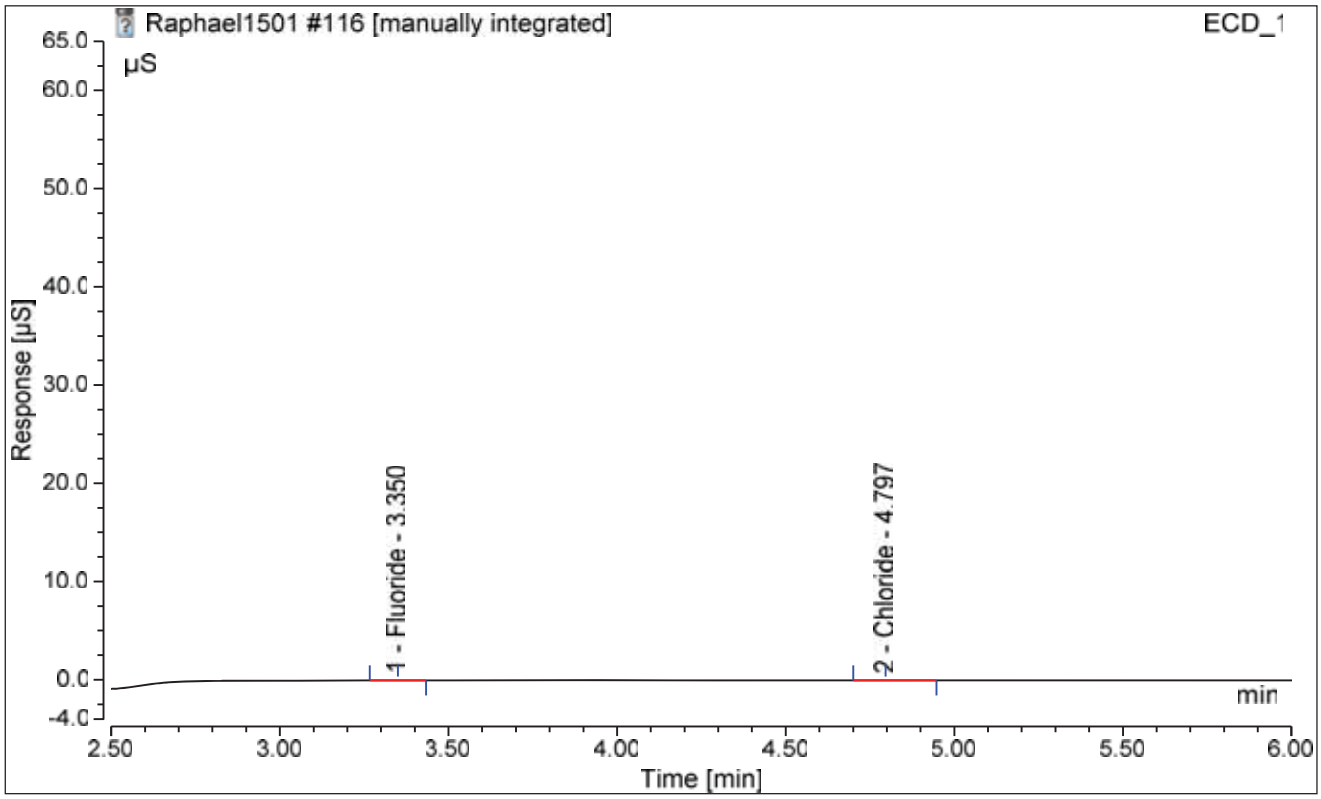


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.53	Fluoride	0.029	0.176	0.10846	FALSE	FALSE
3	4.80	Chloride	0.030	0.258	0.09816	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.On FB.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 23:24**	Run Time:	**14.50**

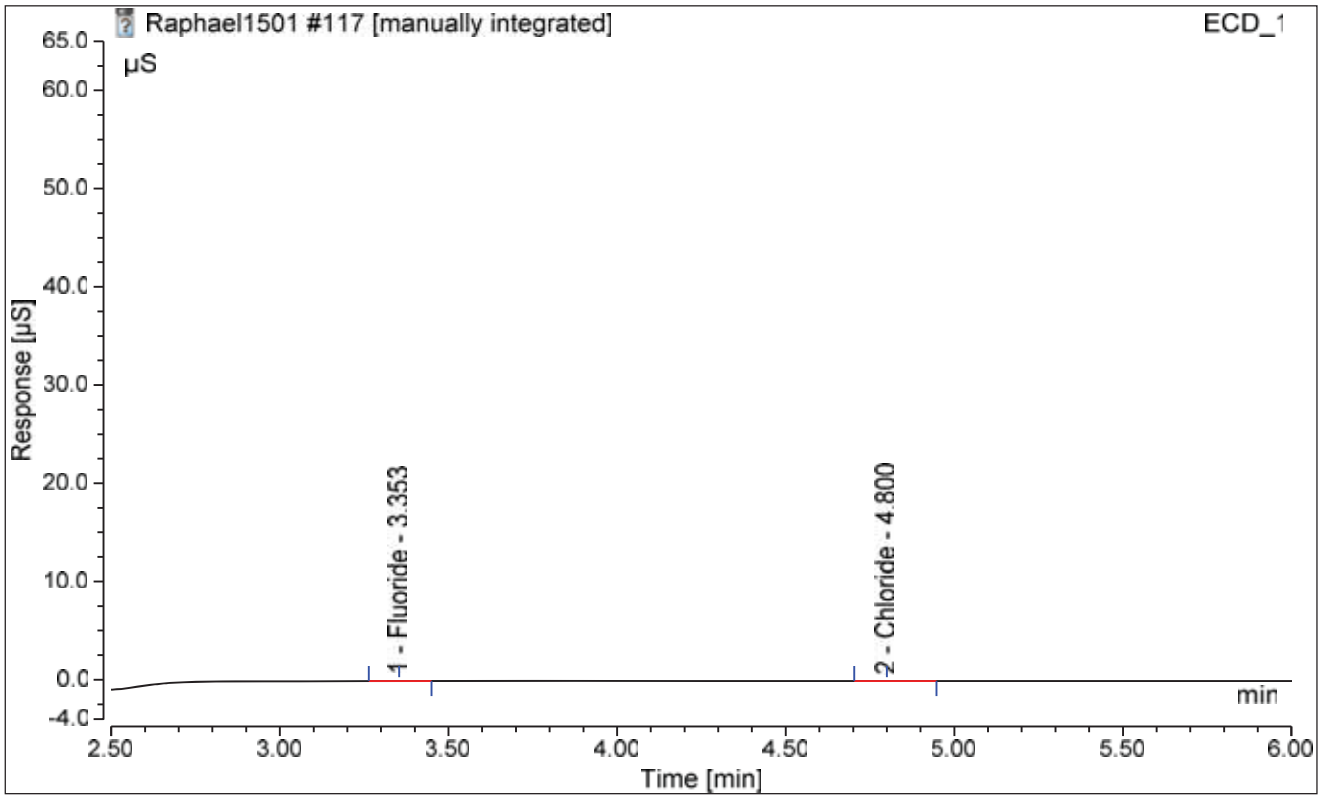


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.35	Fluoride	0.001	0.007	0.00453	FALSE	TRUE
2	4.80	Chloride	0.002	0.016	n.a.	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.On FB.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 23:40**	Run Time:	**14.50**



Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.35	Fluoride	0.001	0.008	0.00506	FALSE	TRUE
2	4.80	Chloride	0.002	0.015	n.a.	FALSE	TRUE

Calibration Table

No.	Injection Name	Inject Time	Pos.	Level	Ref.Amount	Calibration Point Status	Dil.Factor	Volume	Ref.Amount	Calibration Point Status
					µg/mL ECD_1 Chloride	ECD_1 Chloride		µL	µg/mL ECD_1 Fluoride	ECD_1 Fluoride
3	HPLCStds1652 #6	27/Dec/2023 15:17	GA6	06	30.0000	Ok	1.0000	25.00	30.0000	Ok
4	HPLCStds1652 #6	27/Dec/2023 15:33	GA6	06	30.0000	Ok	1.0000	25.00	30.0000	Ok
5	HPLCStds1652 #5	27/Dec/2023 15:49	GA5	05	15.0000	Ok	1.0000	25.00	15.0000	Ok
6	HPLCStds1652 #5	27/Dec/2023 16:05	GA5	05	15.0000	Ok	1.0000	25.00	15.0000	Ok
7	HPLCStds1652 #4	27/Dec/2023 16:22	GA4	04	10.0000	Ok	1.0000	25.00	10.0000	Ok
8	HPLCStds1652 #4	27/Dec/2023 16:38	GA4	04	10.0000	Ok	1.0000	25.00	10.0000	Ok
9	HPLCStds1652 #3	27/Dec/2023 16:54	GA3	03	5.0000	Ok	1.0000	25.00	5.0000	Ok
10	HPLCStds1652 #3	27/Dec/2023 17:10	GA3	03	5.0000	Ok	1.0000	25.00	5.0000	Ok
11	HPLCStds1652 #2	27/Dec/2023 17:26	GA2	02	1.0000	Ok	1.0000	25.00	1.0000	Ok
12	HPLCStds1652 #2	27/Dec/2023 17:42	GA2	02	1.0000	Ok	1.0000	25.00	1.0000	Ok
13	HPLCStds1652 #1	27/Dec/2023 17:58	GA1	01	0.5000	Ok	1.0000	25.00	0.5000	Ok
14	HPLCStds1652 #1	27/Dec/2023 18:14	GA1	01	0.5000	Ok	1.0000	25.00	0.5000	Ok
118	HPLCStds1652 #6	28/Dec/2023 23:56	GA6	06	30.0000	Ok	1.0000	25.00	30.0000	Ok
119	HPLCStds1652 #6	29/Dec/2023 00:12	GA6	06	30.0000	Ok	1.0000	25.00	30.0000	Ok
120	HPLCStds1652 #5	29/Dec/2023 00:28	GA5	05	15.0000	Ok	1.0000	25.00	15.0000	Ok
121	HPLCStds1652 #5	29/Dec/2023 00:45	GA5	05	15.0000	Ok	1.0000	25.00	15.0000	Ok
122	HPLCStds1652 #4	29/Dec/2023 01:01	GA4	04	10.0000	Ok	1.0000	25.00	10.0000	Ok
123	HPLCStds1652 #4	29/Dec/2023 01:17	GA4	04	10.0000	Ok	1.0000	25.00	10.0000	Ok
124	HPLCStds1652 #3	29/Dec/2023 01:33	GA3	03	5.0000	Ok	1.0000	25.00	5.0000	Ok
125	HPLCStds1652 #3	29/Dec/2023 01:49	GA3	03	5.0000	Ok	1.0000	25.00	5.0000	Ok
126	HPLCStds1652 #2	29/Dec/2023 02:05	GA2	02	1.0000	Ok	1.0000	25.00	1.0000	Ok
127	HPLCStds1652 #2	29/Dec/2023 02:21	GA2	02	1.0000	Ok	1.0000	25.00	1.0000	Ok
128	HPLCStds1652 #1	29/Dec/2023 02:37	GA1	01	0.5000	Ok	1.0000	25.00	0.5000	Ok
129	HPLCStds1652 #1	29/Dec/2023 02:53	GA1	01	0.5000	Ok	1.0000	25.00	0.5000	Ok

Detection Parameters

Ret. Time min	Param. Name	Param. Value	Inj. Type	Channel
Always	Baseline Noise Auto Range	On	Any	All Channels
Always	Cobra Smoothing Width	Auto	Any	All Channels
Always	Consider Void Peak	Off	Any	All Channels
0.000	Maximum Rider Ratio	10 [%]	Any	All Channels
0.000	Tailing Sensitivity Factor	0.100 [%]	Any	All Channels
0.000	Inhibit Integration	On	Any	All Channels
0.000	Minimum Area	Auto	Any	All Channels
3.004	Inhibit Integration	Off	Any	All Channels
6.333	Inhibit Integration	On	Any	All Channels

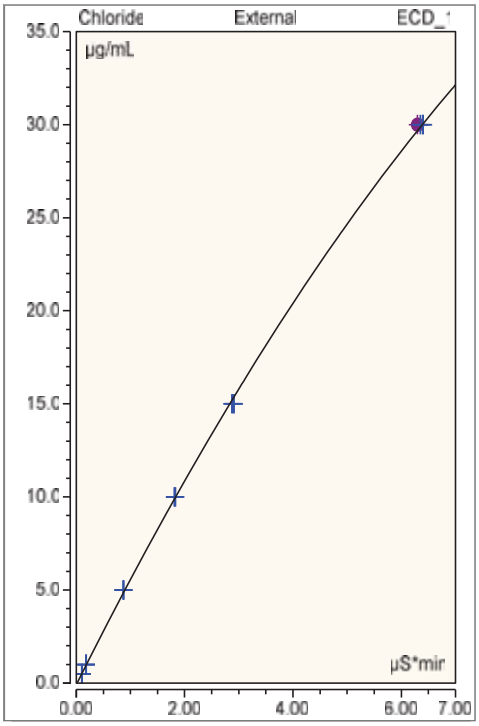
Calibration Batch Report

Sequence:	Raphael1501	*Injection Volume:*	25.00
Instrument Method:	AS22 ASAP new	*Operator:*	searundhati
Inj. Date / Time:	27-Dec-2023 / 15:17	*Run Time:*	14.5

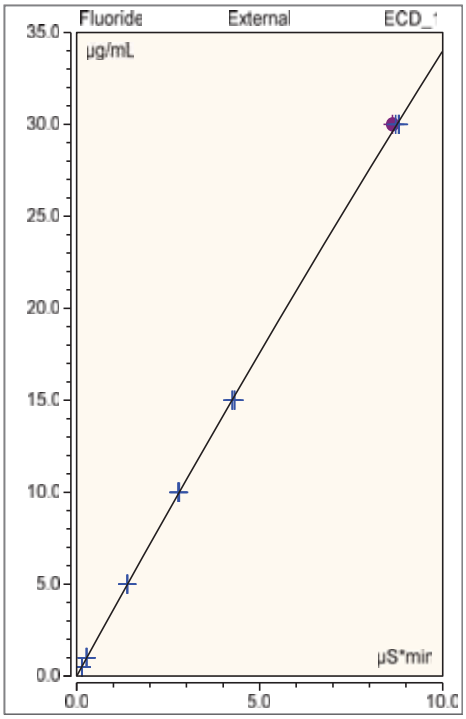
Calibration Summary

Peak Name	Eval.Type	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
Fluoride	Area	Quad, WithOffset, 1/A	24.000	0.002	3.635	-0.024	99.988
Chloride	Area	Quad, WithOffset, 1/A	24.000	-0.077	5.811	-0.173	99.971
		AVERAGE:		-0.0376	4.7229	-0.0982	99.9799

Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount µg/mL ECD_1
	Chloride	Chloride	Chloride	Chloride
HPLCStds1652 #6	4.820	6.301	54.813	29.682
HPLCStds1652 #6	4.820	6.352	55.559	29.869
HPLCStds1652 #5	4.803	2.885	24.612	15.251
HPLCStds1652 #5	4.803	2.874	24.511	15.198
HPLCStds1652 #4	4.797	1.816	15.160	9.905
HPLCStds1652 #4	4.797	1.816	15.169	9.908
HPLCStds1652 #3	4.793	0.870	7.034	4.847
HPLCStds1652 #3	4.793	0.869	6.972	4.843
HPLCStds1652 #2	4.790	0.181	1.361	0.969
HPLCStds1652 #2	4.790	0.181	1.357	0.967
HPLCStds1652 #1	4.790	0.104	0.781	0.526
HPLCStds1652 #1	4.787	0.104	0.775	0.525
HPLCStds1652 #6	4.820	6.394	55.348	30.018
HPLCStds1652 #6	4.820	6.406	55.348	30.061
HPLCStds1652 #5	4.807	2.908	24.333	15.360
HPLCStds1652 #5	4.810	2.913	24.425	15.386
HPLCStds1652 #4	4.803	1.833	15.031	9.996
HPLCStds1652 #4	4.803	1.816	15.027	9.908
HPLCStds1652 #3	4.797	0.875	6.932	4.875
HPLCStds1652 #3	4.800	0.872	6.932	4.859
HPLCStds1652 #2	4.793	0.180	1.347	0.962
HPLCStds1652 #2	4.793	0.182	1.349	0.973
HPLCStds1652 #1	4.793	0.105	0.764	0.530
HPLCStds1652 #1	4.793	0.103	0.762	0.522

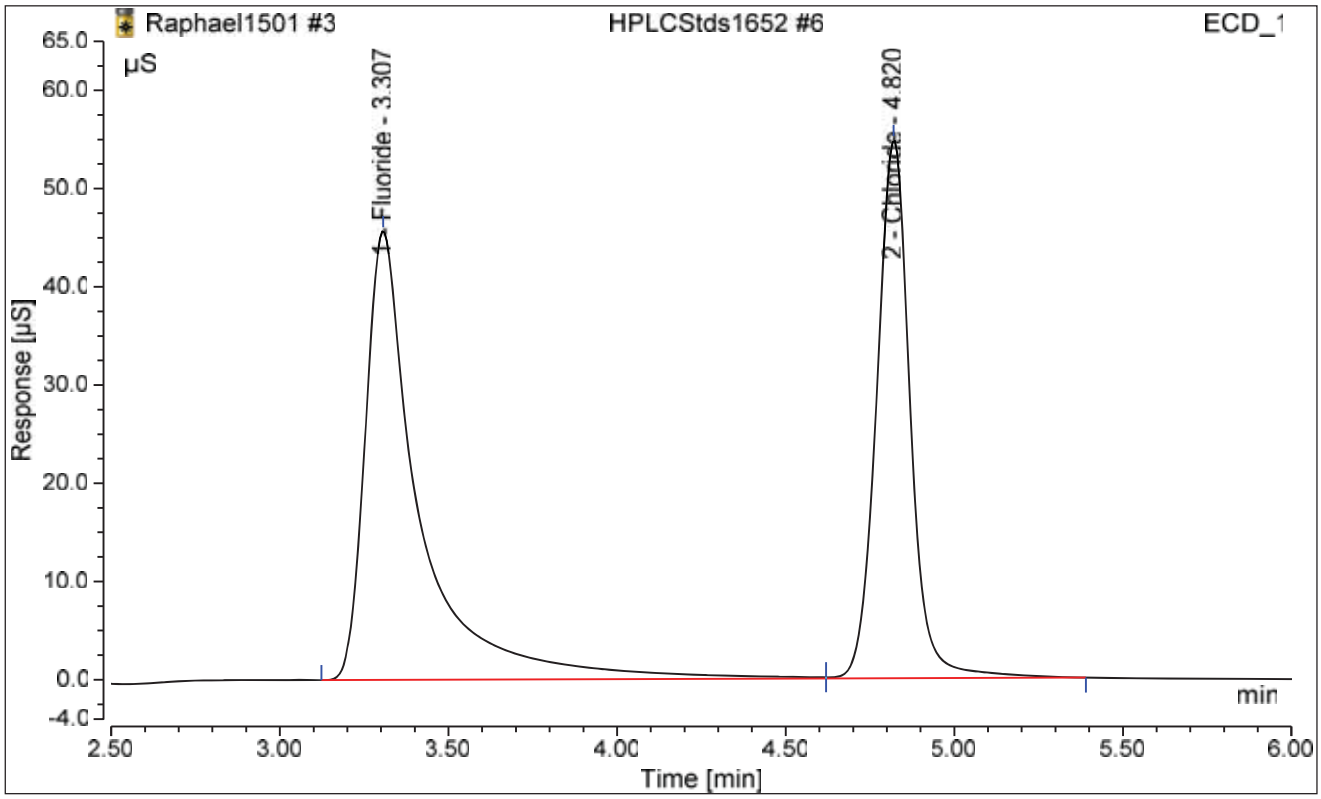


Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount µg/mL ECD_1
	Fluoride	Fluoride	Fluoride	Fluoride
HPLCStds1652 #6	3.307	8.632	45.699	29.610
HPLCStds1652 #6	3.307	8.714	48.446	29.874
HPLCStds1652 #5	3.293	4.248	22.654	15.016
HPLCStds1652 #5	3.293	4.254	23.399	15.037
HPLCStds1652 #4	3.287	2.769	14.746	9.886
HPLCStds1652 #4	3.287	2.778	15.155	9.918
HPLCStds1652 #3	3.283	1.388	6.859	5.002
HPLCStds1652 #3	3.287	1.384	6.961	4.986
HPLCStds1652 #2	3.290	0.270	1.201	0.984
HPLCStds1652 #2	3.290	0.269	1.210	0.977
HPLCStds1652 #1	3.293	0.142	0.614	0.519
HPLCStds1652 #1	3.293	0.142	0.612	0.518
HPLCStds1652 #6	3.303	8.793	59.108	30.127
HPLCStds1652 #6	3.303	8.815	59.660	30.198
HPLCStds1652 #5	3.290	4.308	28.368	15.222
HPLCStds1652 #5	3.290	4.319	28.617	15.260
HPLCStds1652 #4	3.283	2.803	17.772	10.004
HPLCStds1652 #4	3.283	2.791	17.886	9.961
HPLCStds1652 #3	3.280	1.377	7.936	4.964
HPLCStds1652 #3	3.283	1.377	7.972	4.963
HPLCStds1652 #2	3.283	0.264	1.337	0.959
HPLCStds1652 #2	3.283	0.266	1.335	0.965
HPLCStds1652 #1	3.290	0.141	0.662	0.512
HPLCStds1652 #1	3.290	0.141	0.664	0.513



Peak Analysis Report

Sample Name:	**HPLCStds1652 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 15:17**	Run Time:	**14.50**

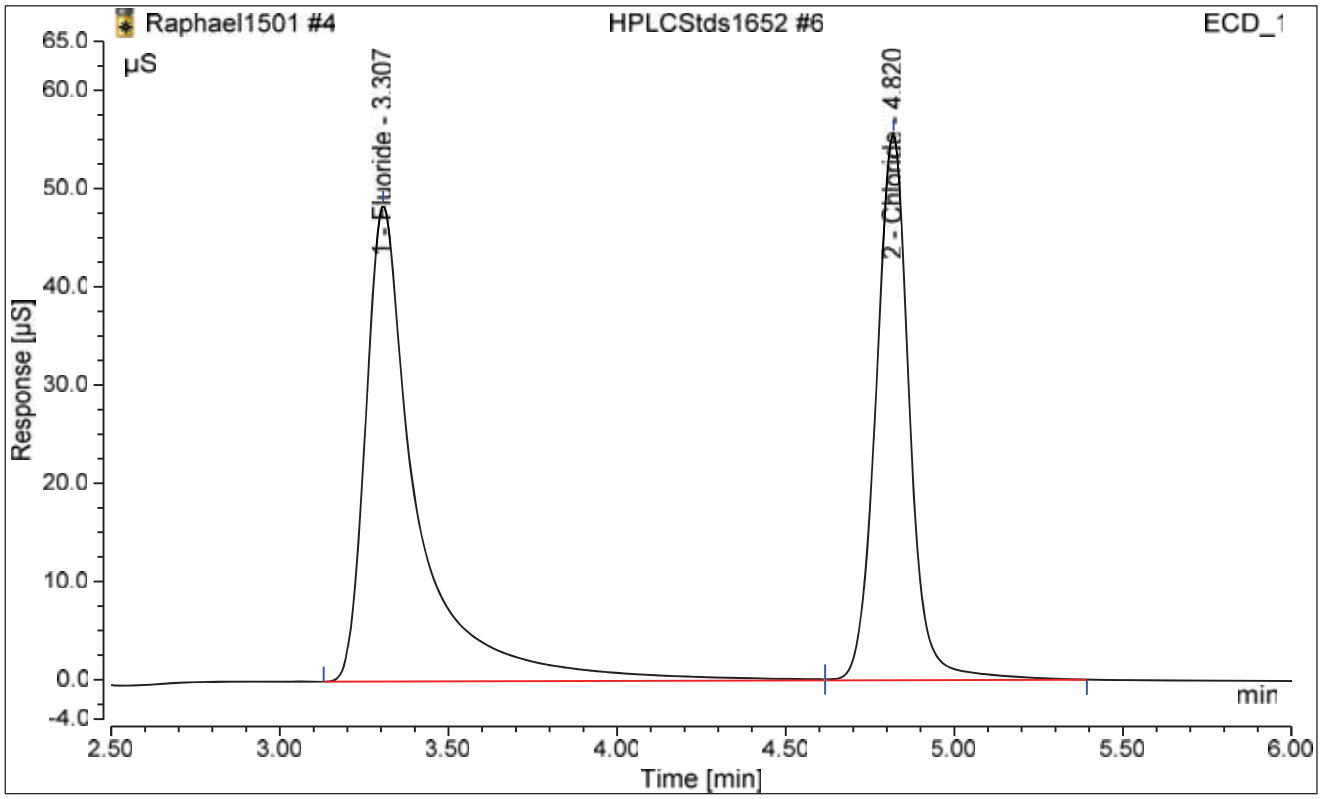


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.31	Fluoride	8.632	45.699	29.61046	FALSE	FALSE
2	4.82	Chloride	6.301	54.813	29.68243	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 15:33**	Run Time:	**14.50**

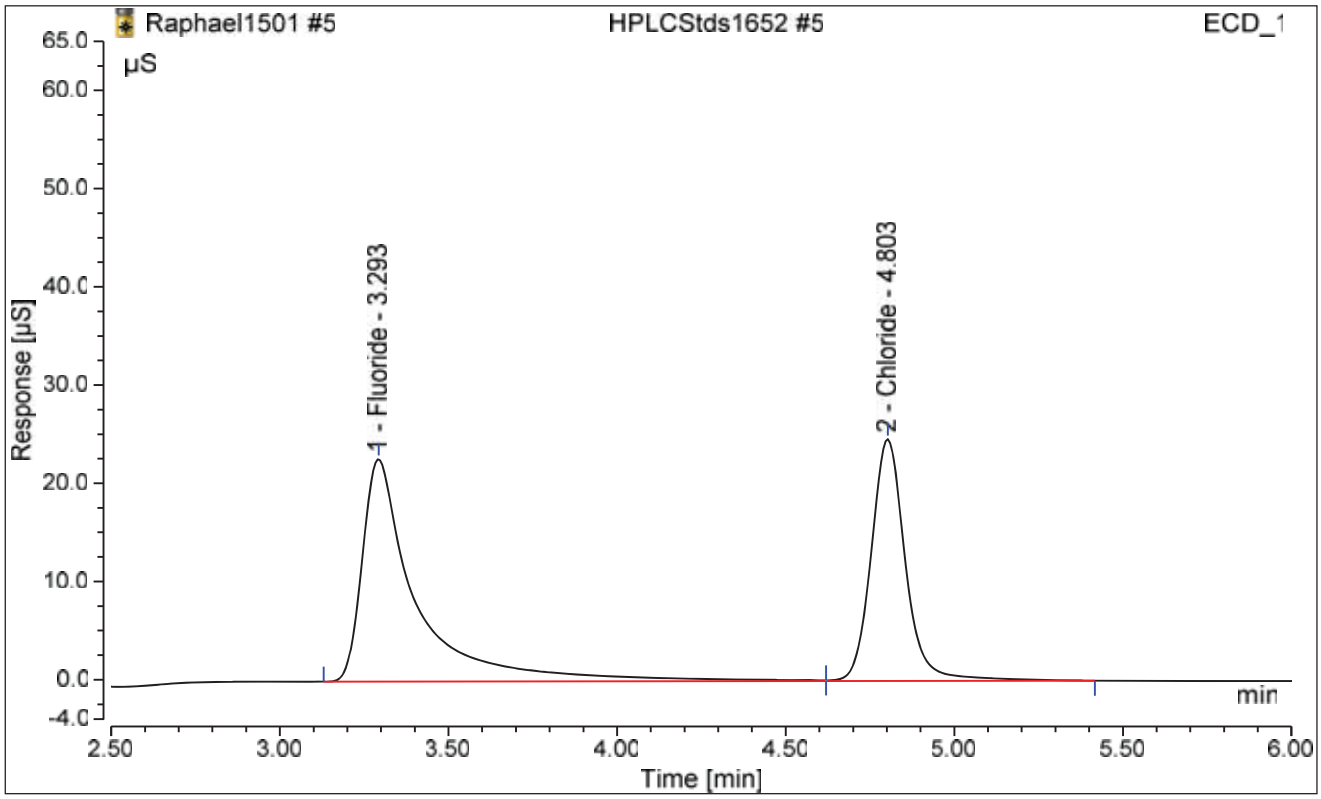


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.31	Fluoride	8.714	48.446	29.87426	FALSE	FALSE
2	4.82	Chloride	6.352	55.559	29.86919	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 15:49**	Run Time:	**14.50**

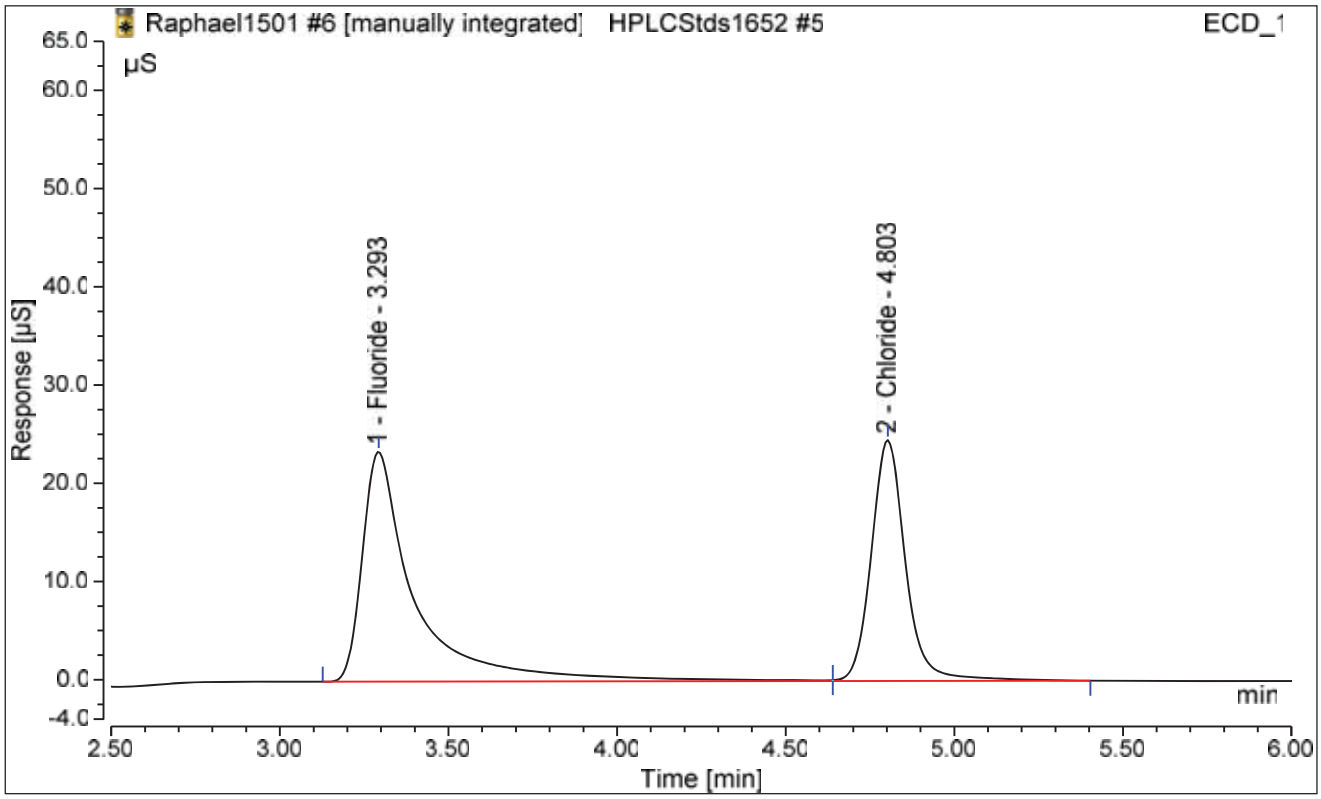


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	4.248	22.654	15.01633	FALSE	FALSE
2	4.80	Chloride	2.885	24.612	15.25084	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 16:05**	Run Time:	**14.50**

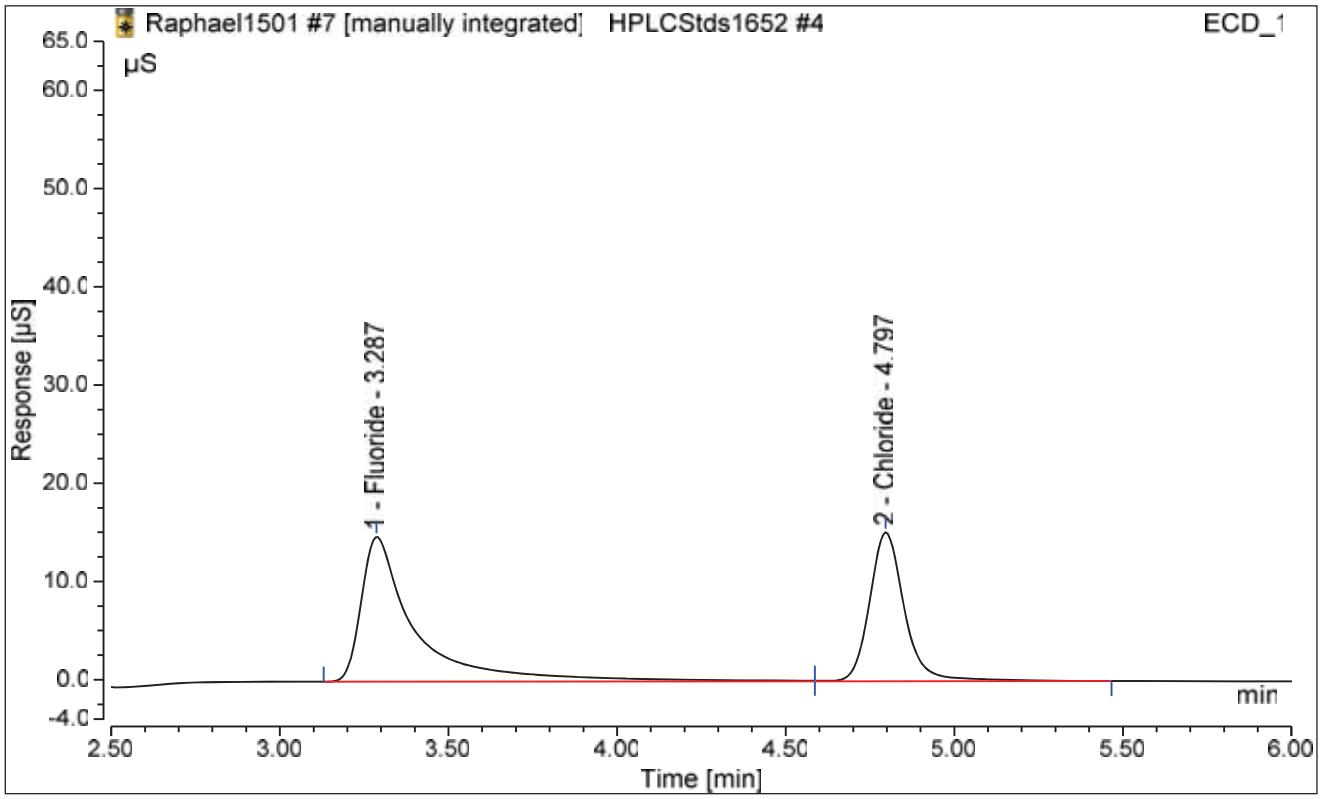


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	4.254	23.399	15.03719	FALSE	TRUE
2	4.80	Chloride	2.874	24.511	15.19777	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 16:22**	Run Time:	**14.50**

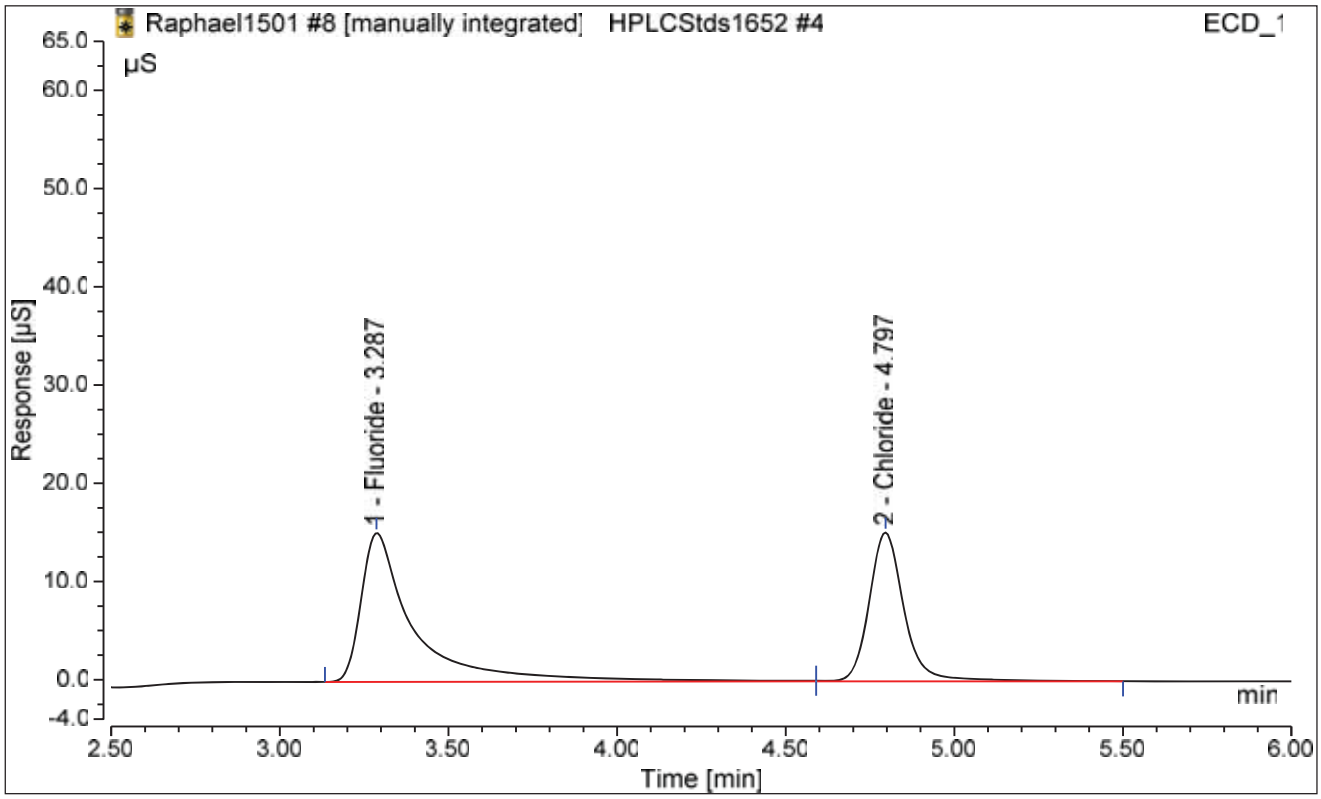


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	2.769	14.746	9.88593	FALSE	TRUE
2	4.80	Chloride	1.816	15.160	9.90519	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 16:38**	Run Time:	**14.50**

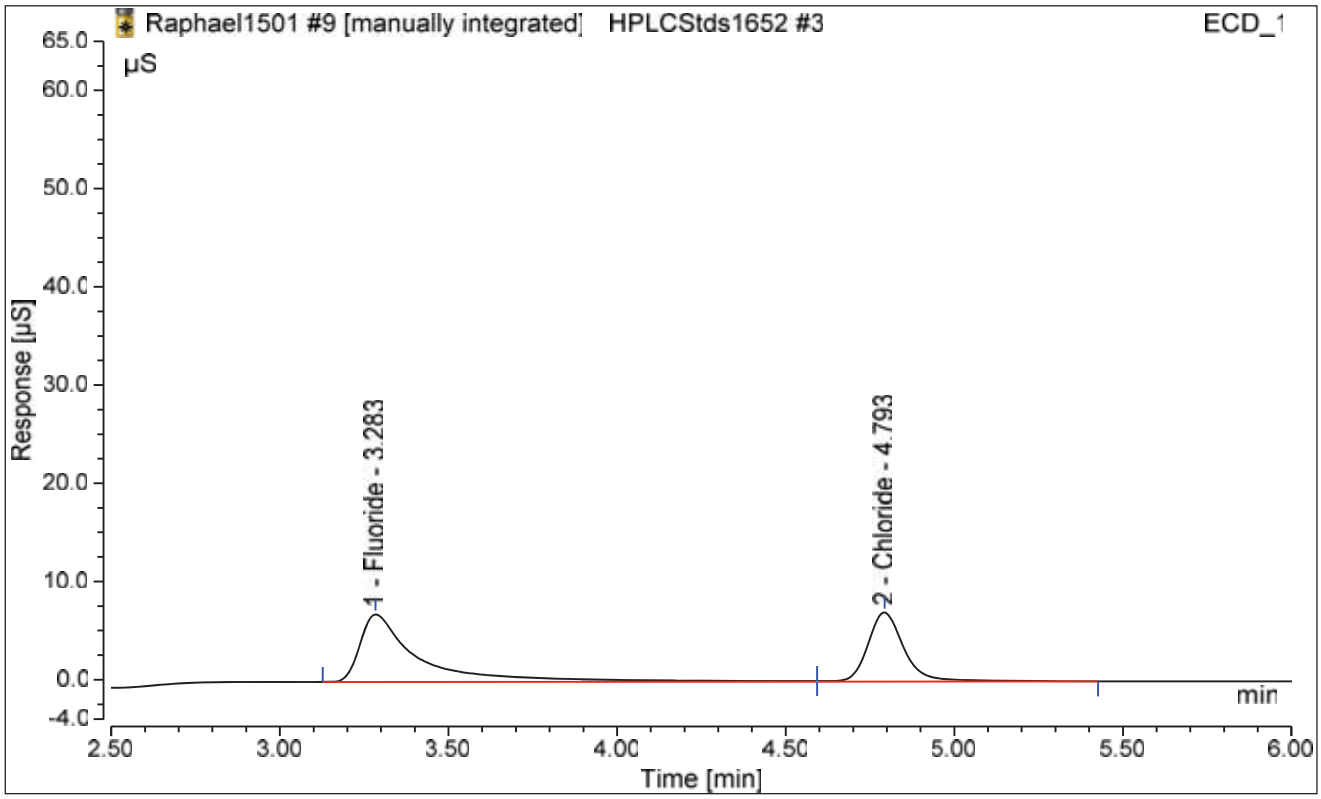


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	2.778	15.155	9.91767	FALSE	TRUE
2	4.80	Chloride	1.816	15.169	9.90806	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 16:54**	Run Time:	**14.50**

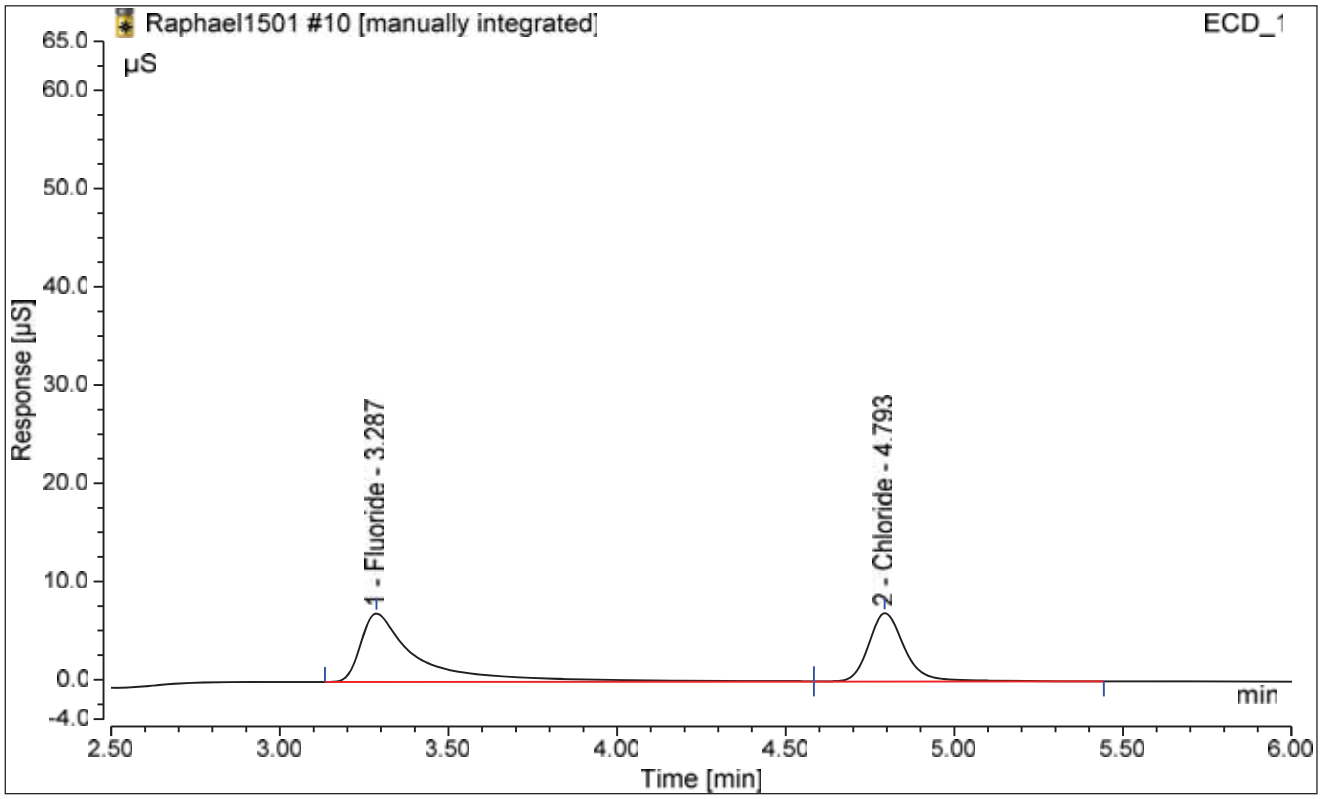


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	1.388	6.859	5.00192	FALSE	TRUE
2	4.79	Chloride	0.870	7.034	4.84676	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 17:10**	Run Time:	**14.50**

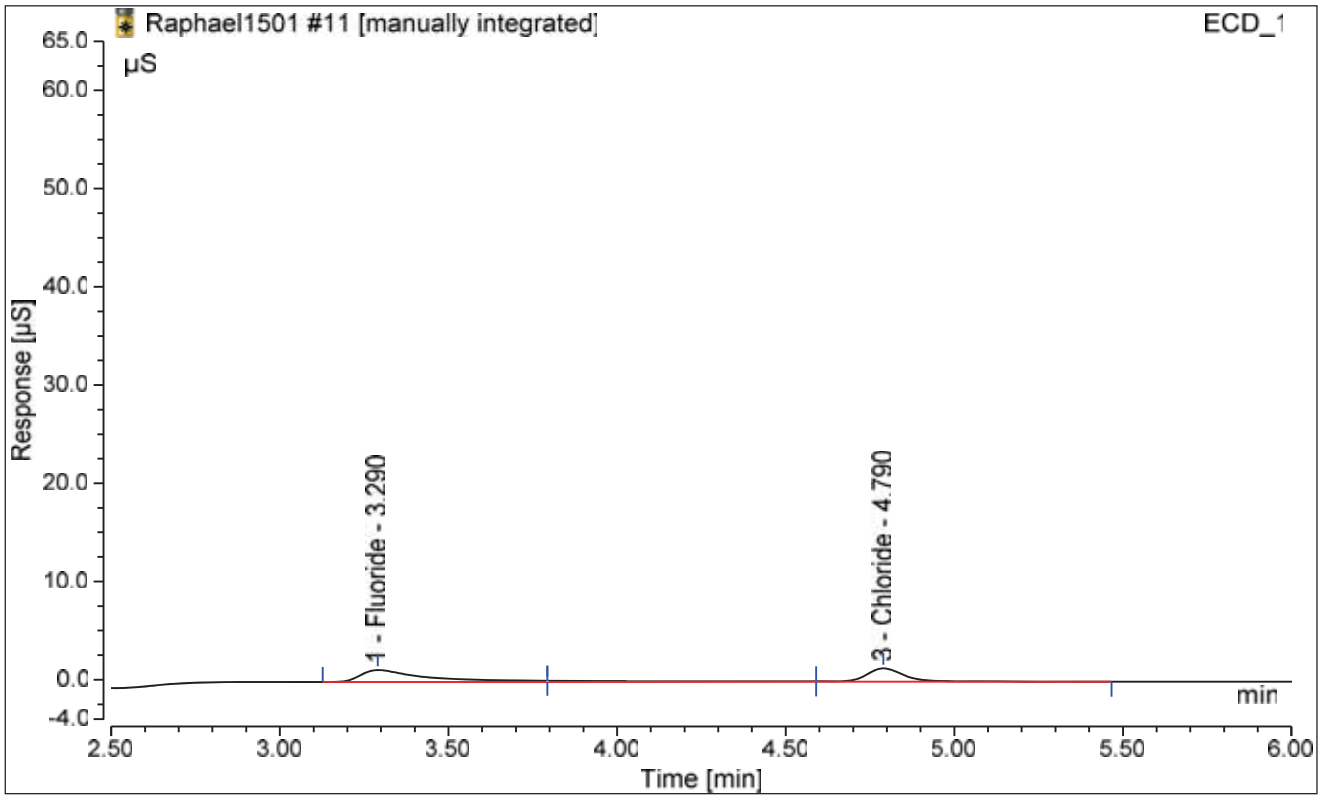


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	1.384	6.961	4.98582	FALSE	TRUE
2	4.79	Chloride	0.869	6.972	4.84325	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 17:26**	Run Time:	**14.50**

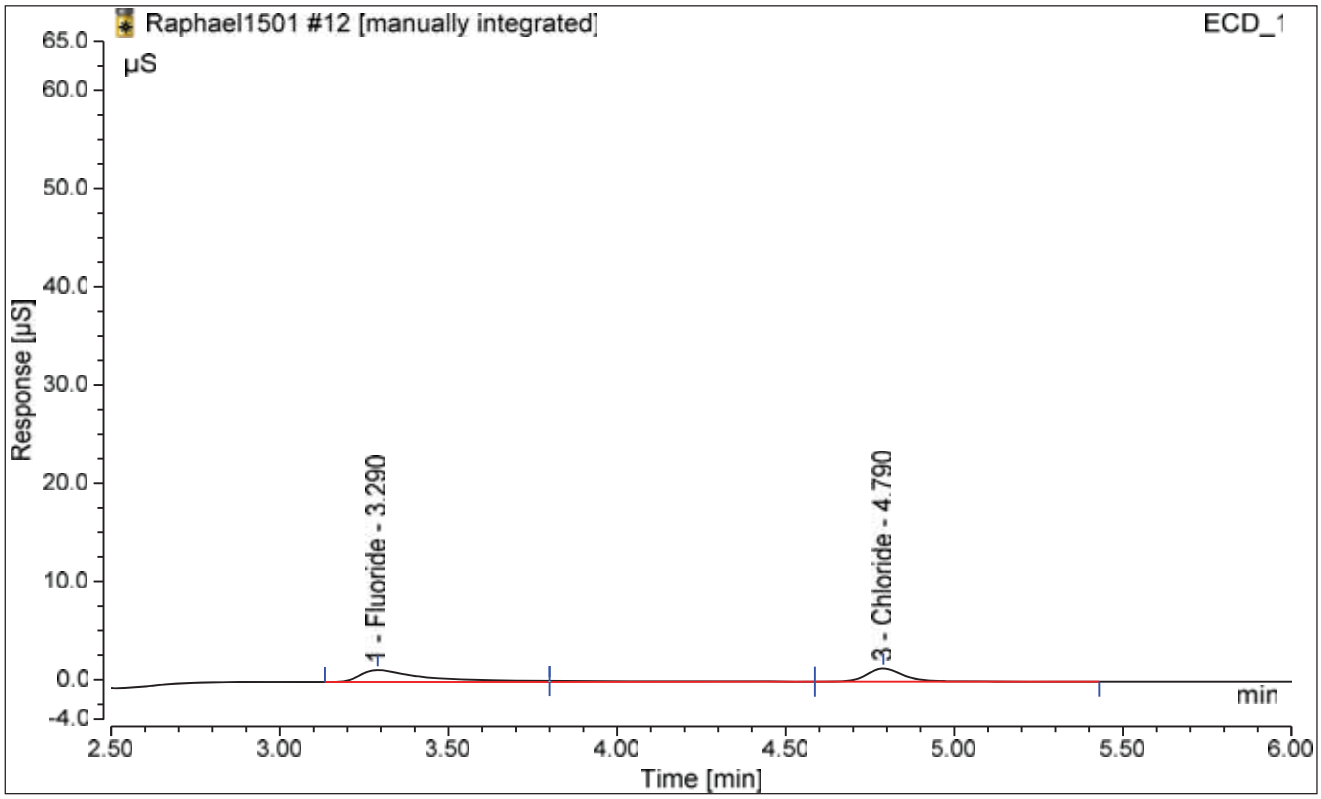


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	0.270	1.201	0.98352	FALSE	TRUE
3	4.79	Chloride	0.181	1.361	0.96924	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 17:42**	Run Time:	**14.50**

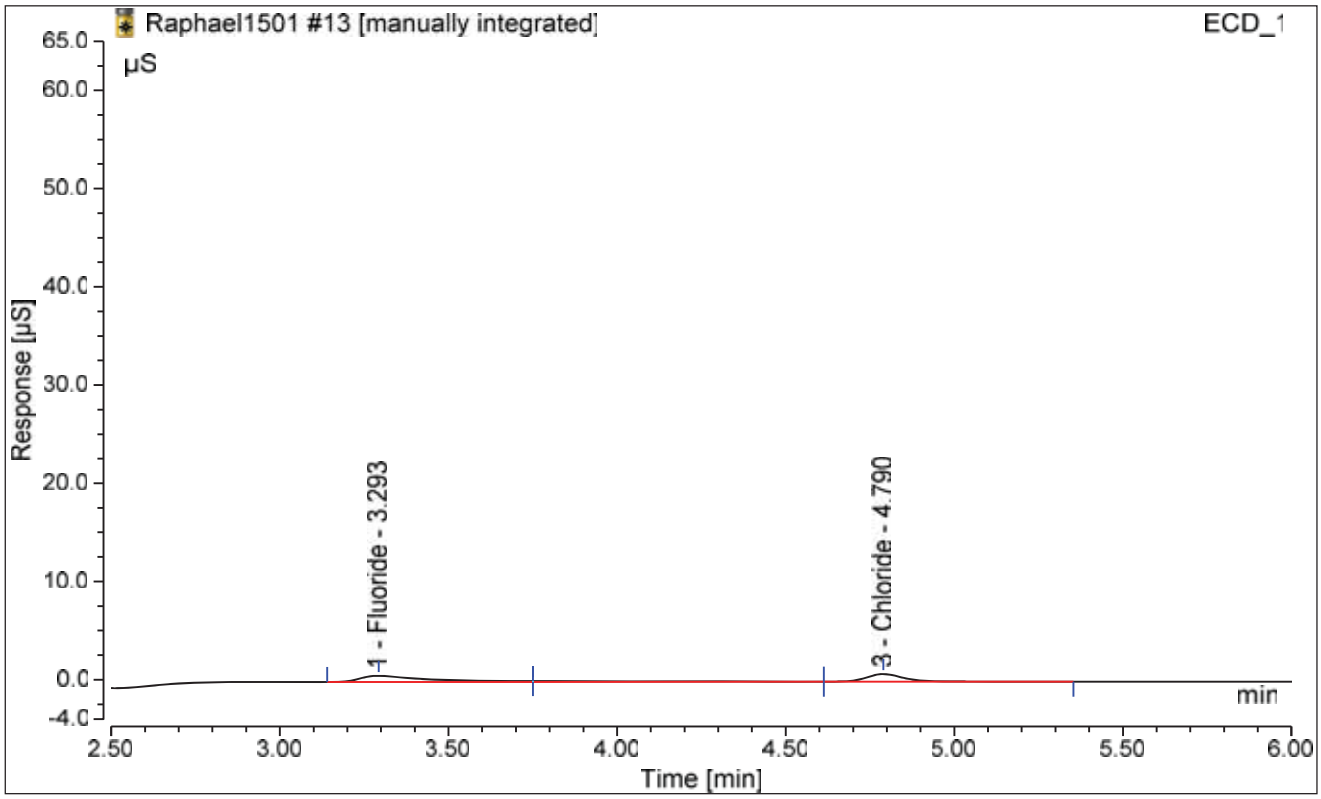


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	0.269	1.210	0.97700	FALSE	TRUE
3	4.79	Chloride	0.181	1.357	0.96692	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 17:58**	Run Time:	**14.50**

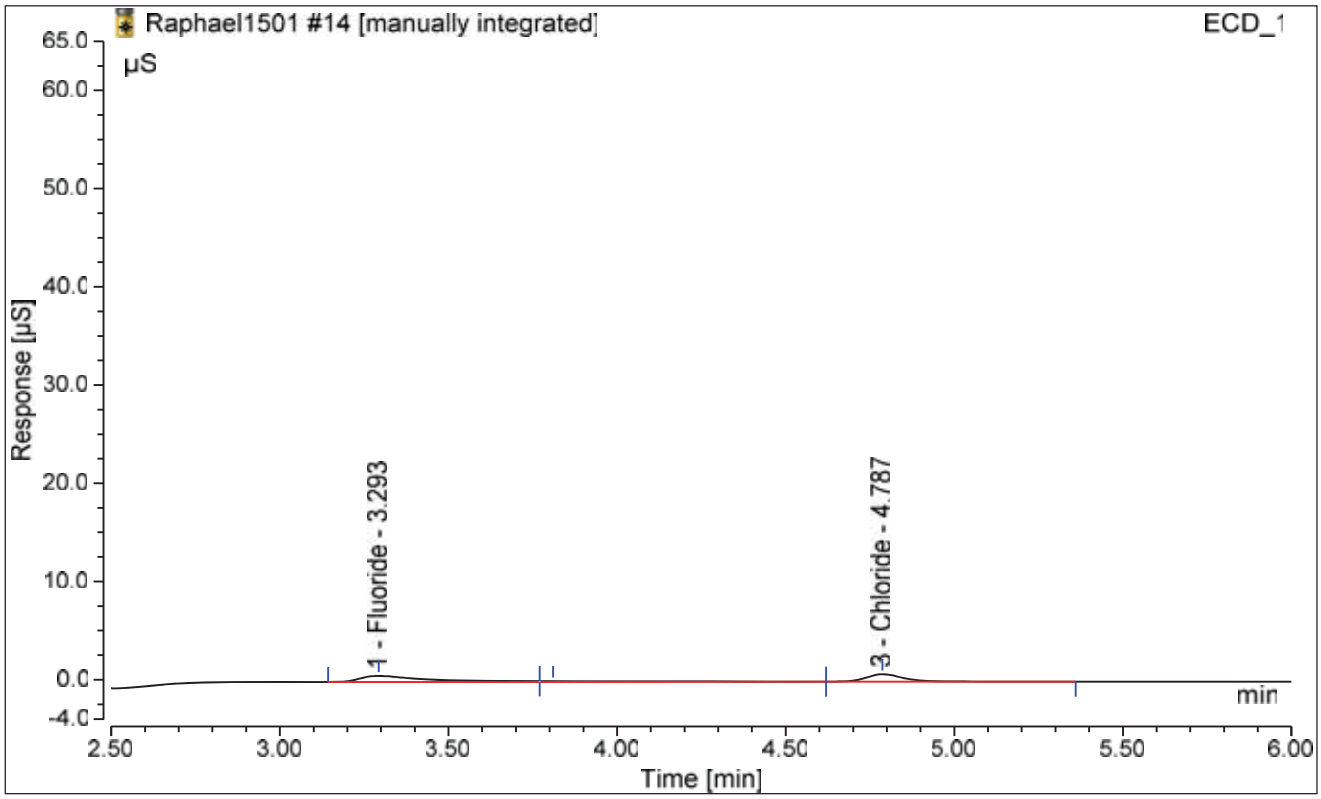


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	0.142	0.614	0.51917	FALSE	TRUE
3	4.79	Chloride	0.104	0.781	0.52576	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 18:14**	Run Time:	**14.50**

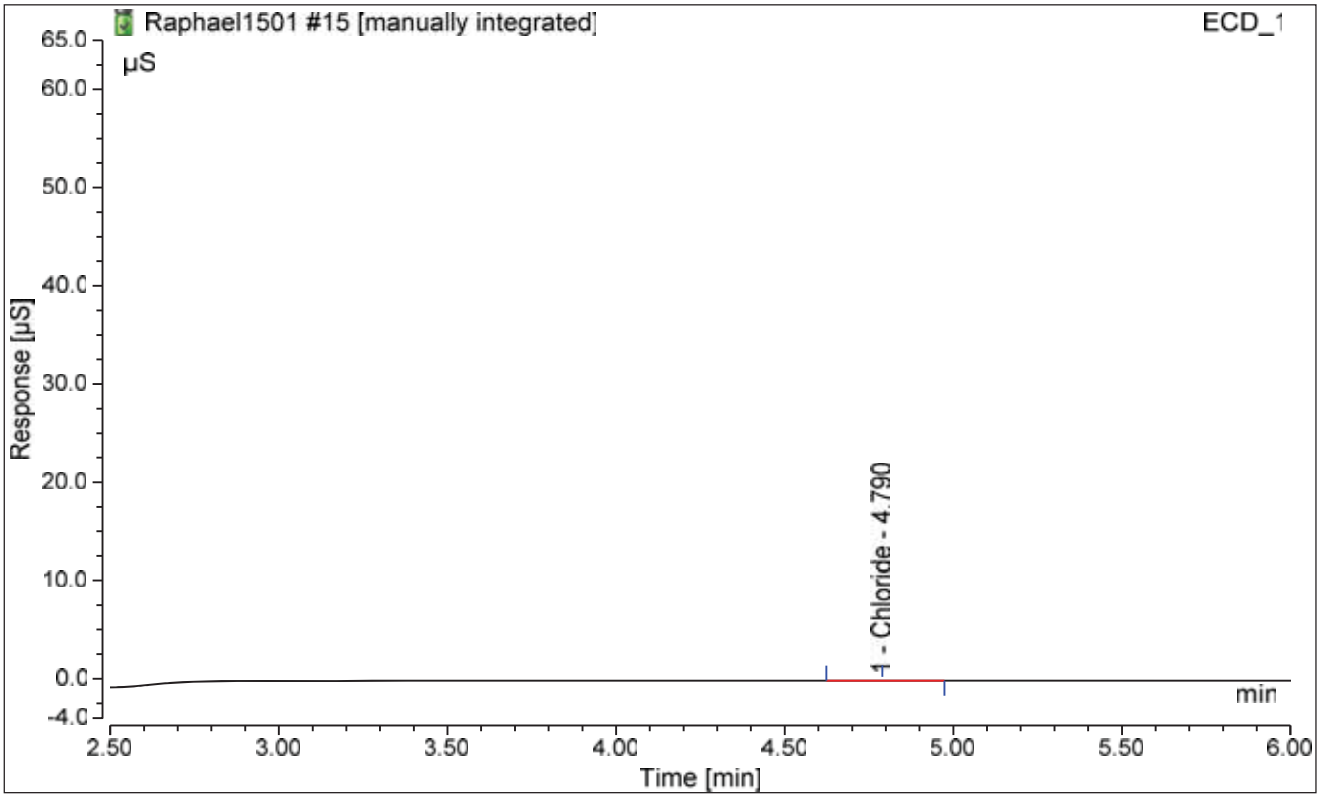


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	0.142	0.612	0.51778	FALSE	TRUE
3	4.79	Chloride	0.104	0.775	0.52478	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 18:30**	Run Time:	**14.50**

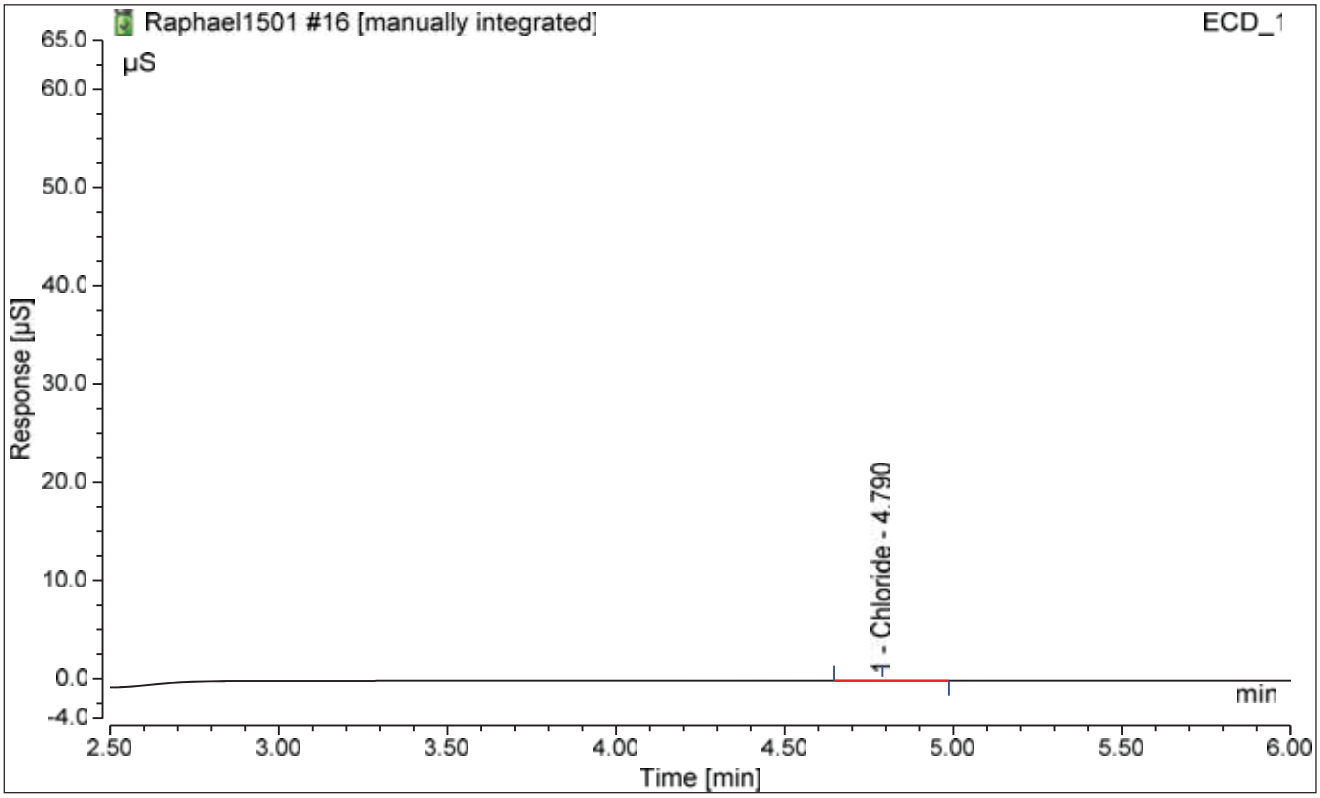


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	4.79	Chloride	0.002	0.015	n.a.	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 18:47**	Run Time:	**14.50**

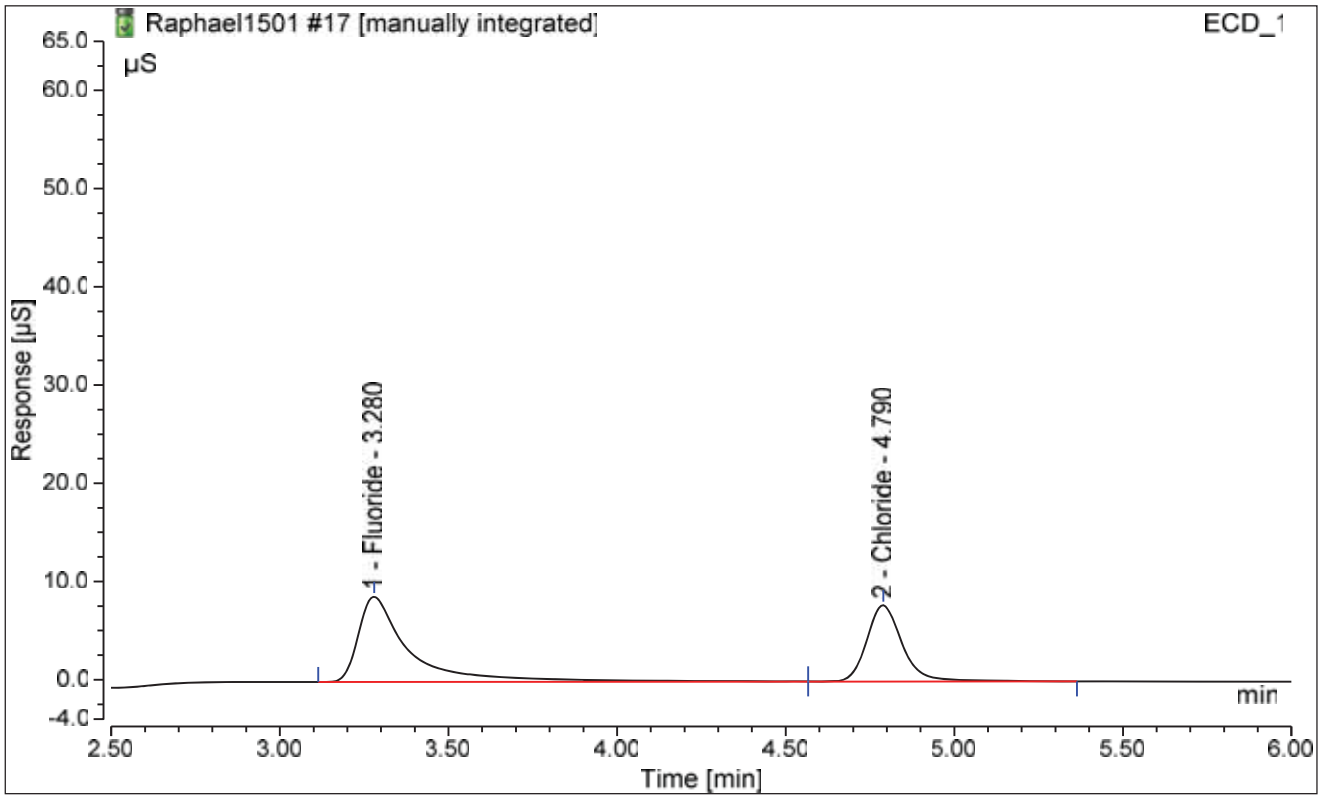


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	4.79	Chloride	0.002	0.014	n.a.	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 19:03**	Run Time:	**14.50**

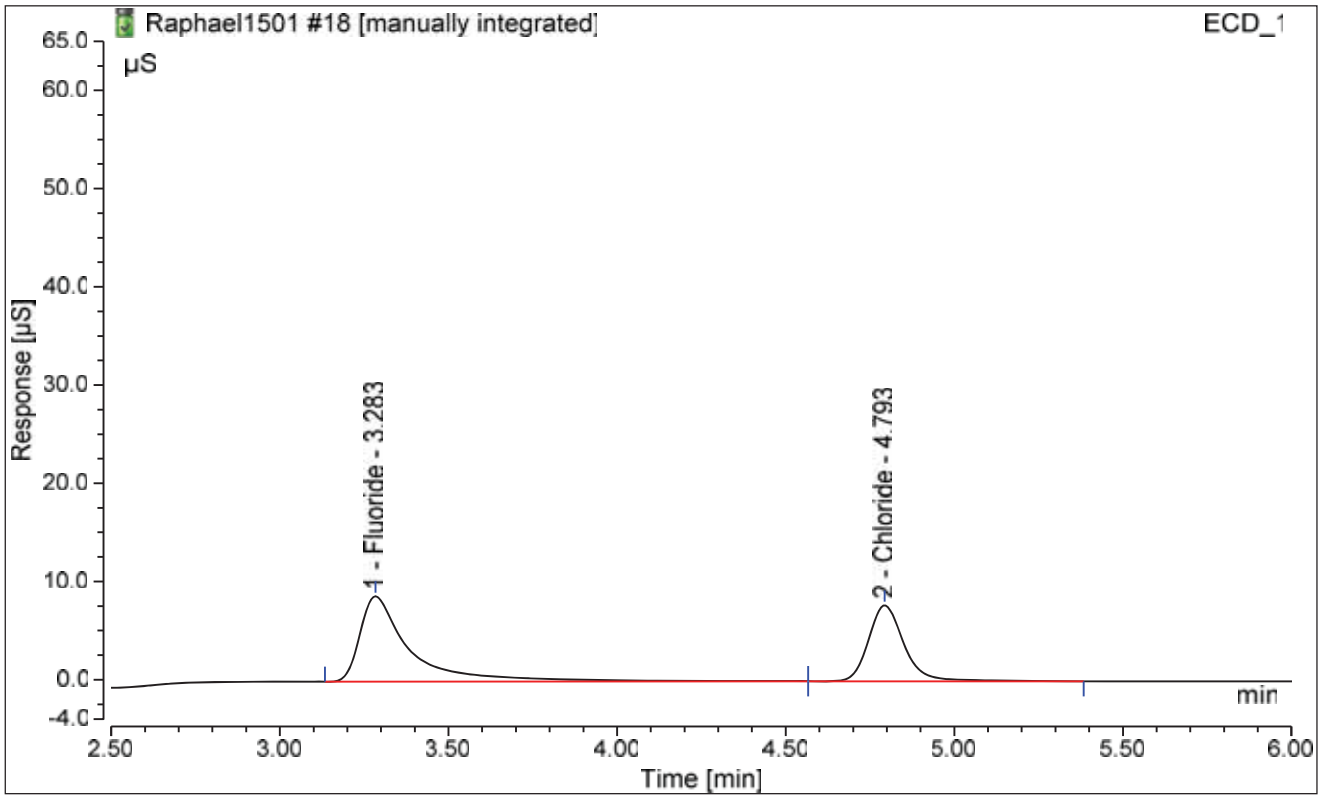


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	1.533	8.673	5.52019	FALSE	TRUE
2	4.79	Chloride	0.954	7.766	5.30901	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**27-Dec-2023 / 19:19**	Run Time:	**14.50**

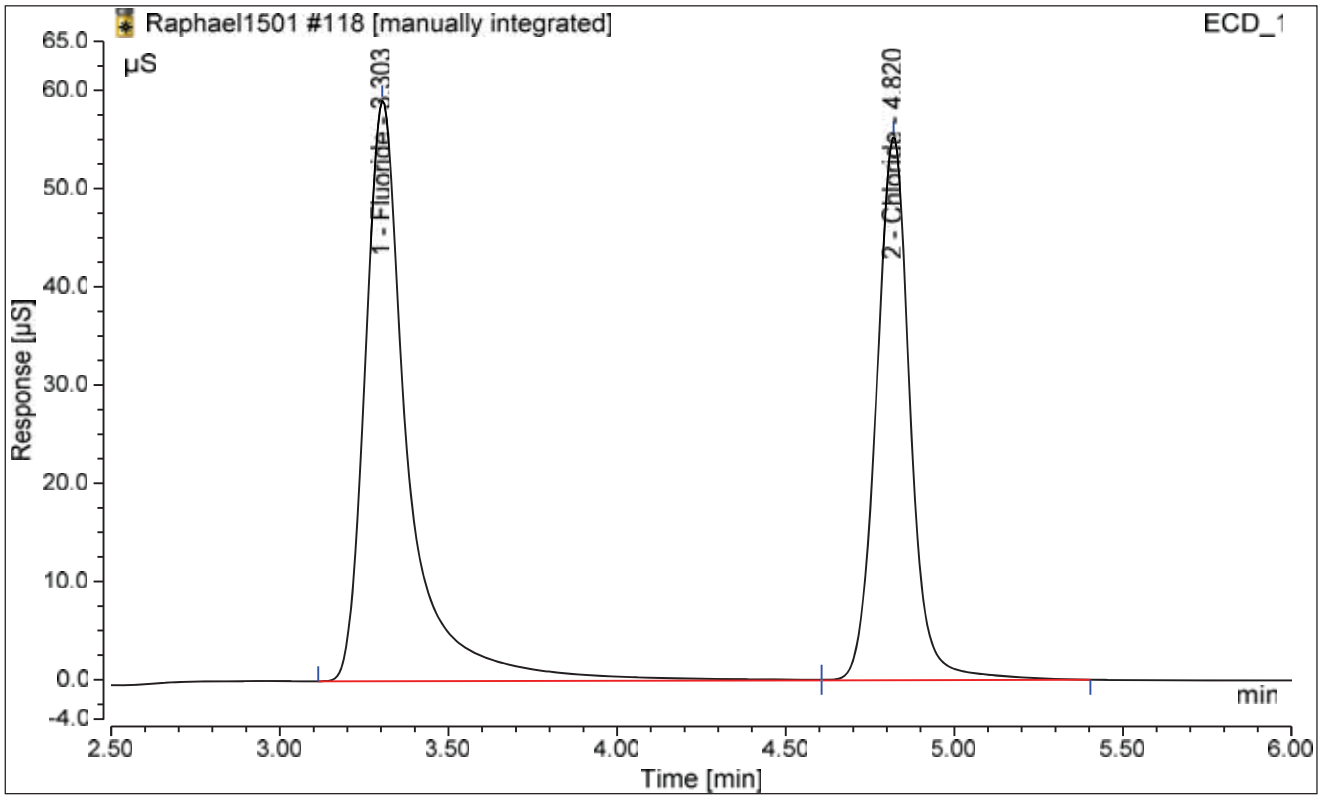


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	1.526	8.693	5.49362	FALSE	TRUE
2	4.79	Chloride	0.951	7.744	5.29222	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**28-Dec-2023 / 23:56**	Run Time:	**14.50**

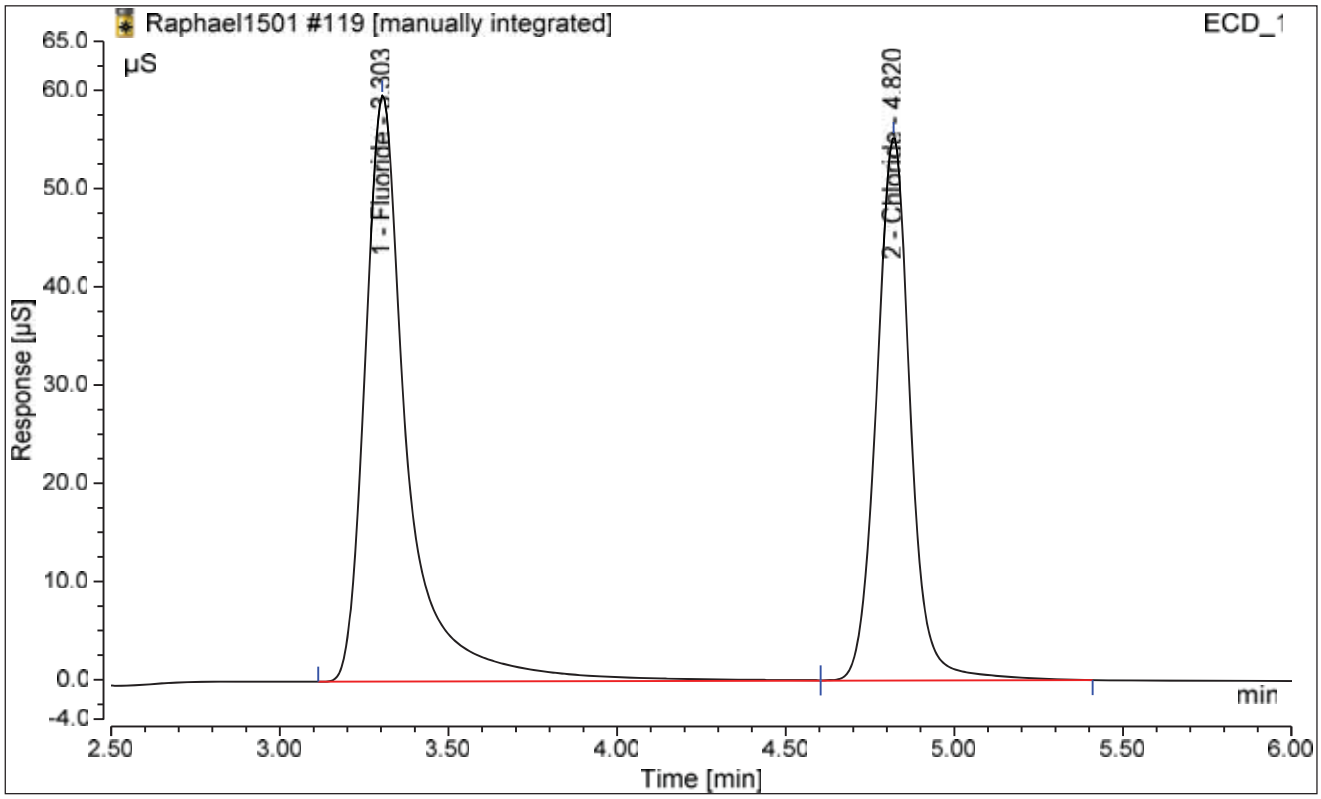


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.30	Fluoride	8.793	59.108	30.12721	FALSE	TRUE
2	4.82	Chloride	6.394	55.348	30.01845	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 00:12**	Run Time:	**14.50**

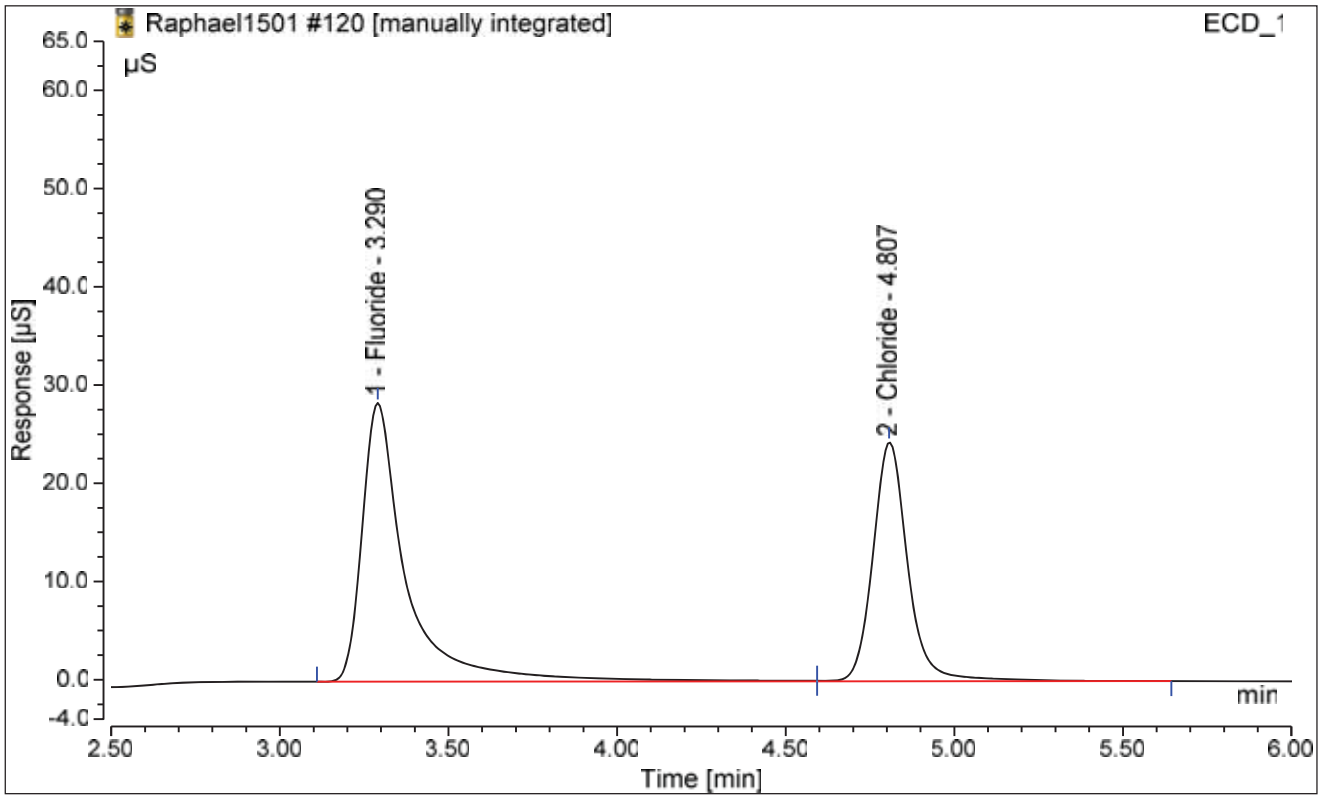


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.30	Fluoride	8.815	59.660	30.19756	FALSE	TRUE
2	4.82	Chloride	6.406	55.348	30.06136	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 00:28**	Run Time:	**14.50**

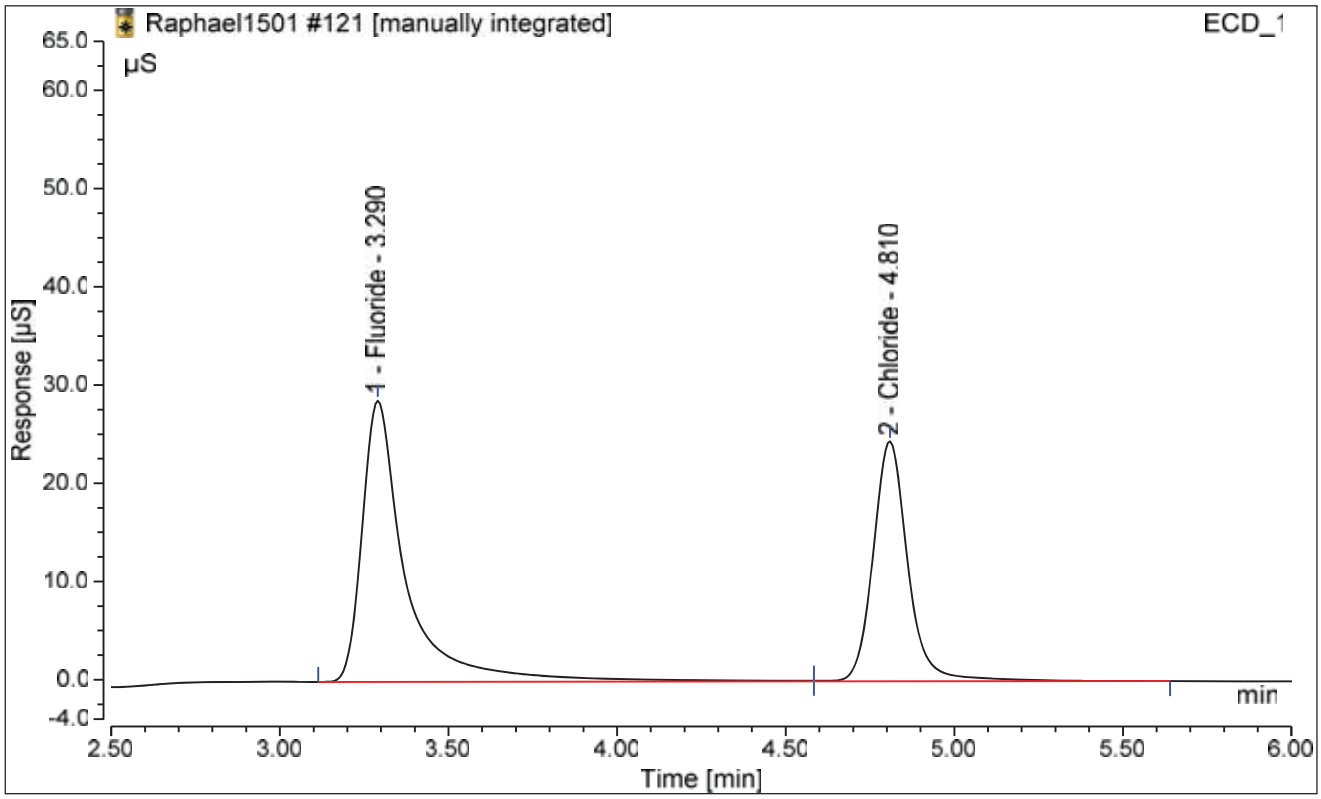


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	4.308	28.368	15.22158	FALSE	TRUE
2	4.81	Chloride	2.908	24.333	15.36033	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 00:45**	Run Time:	**14.50**

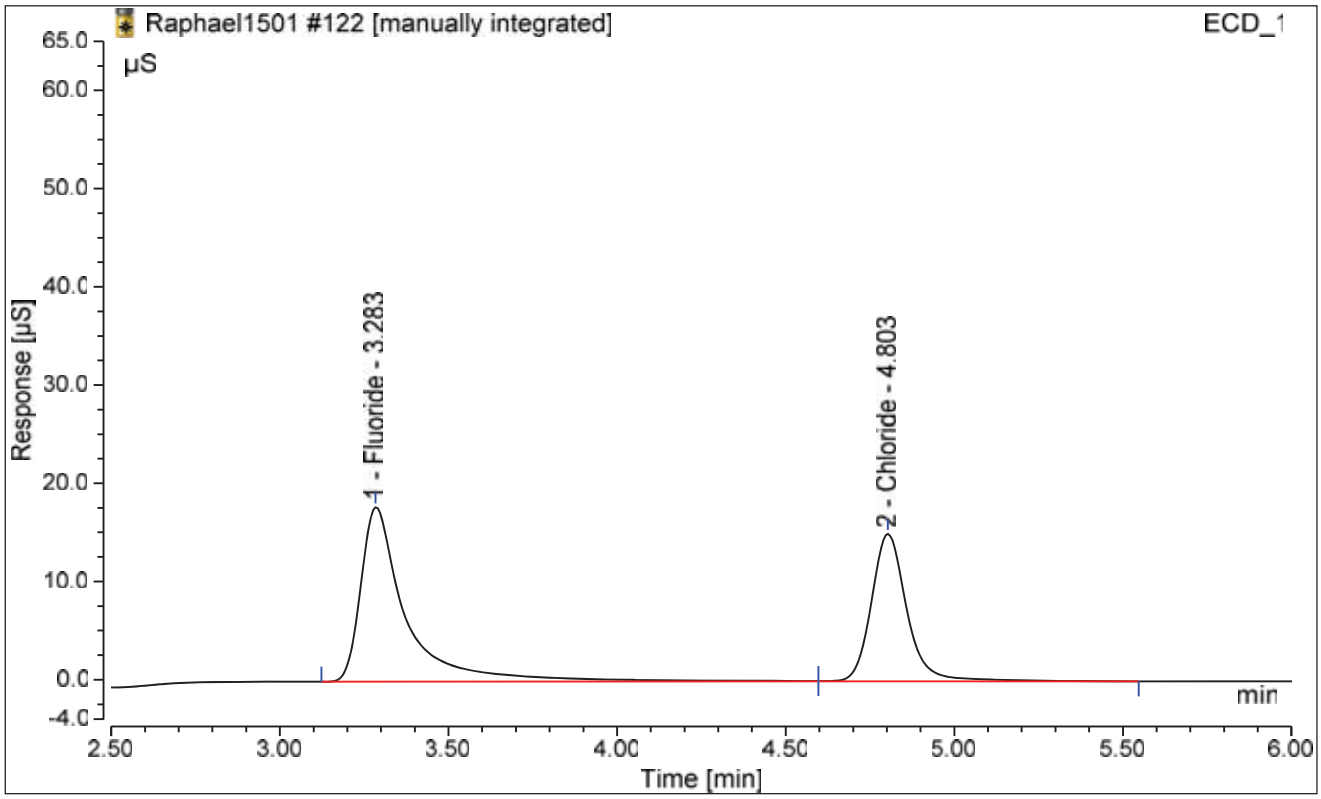


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	4.319	28.617	15.26029	FALSE	TRUE
2	4.81	Chloride	2.913	24.425	15.38628	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 01:01**	Run Time:	**14.50**

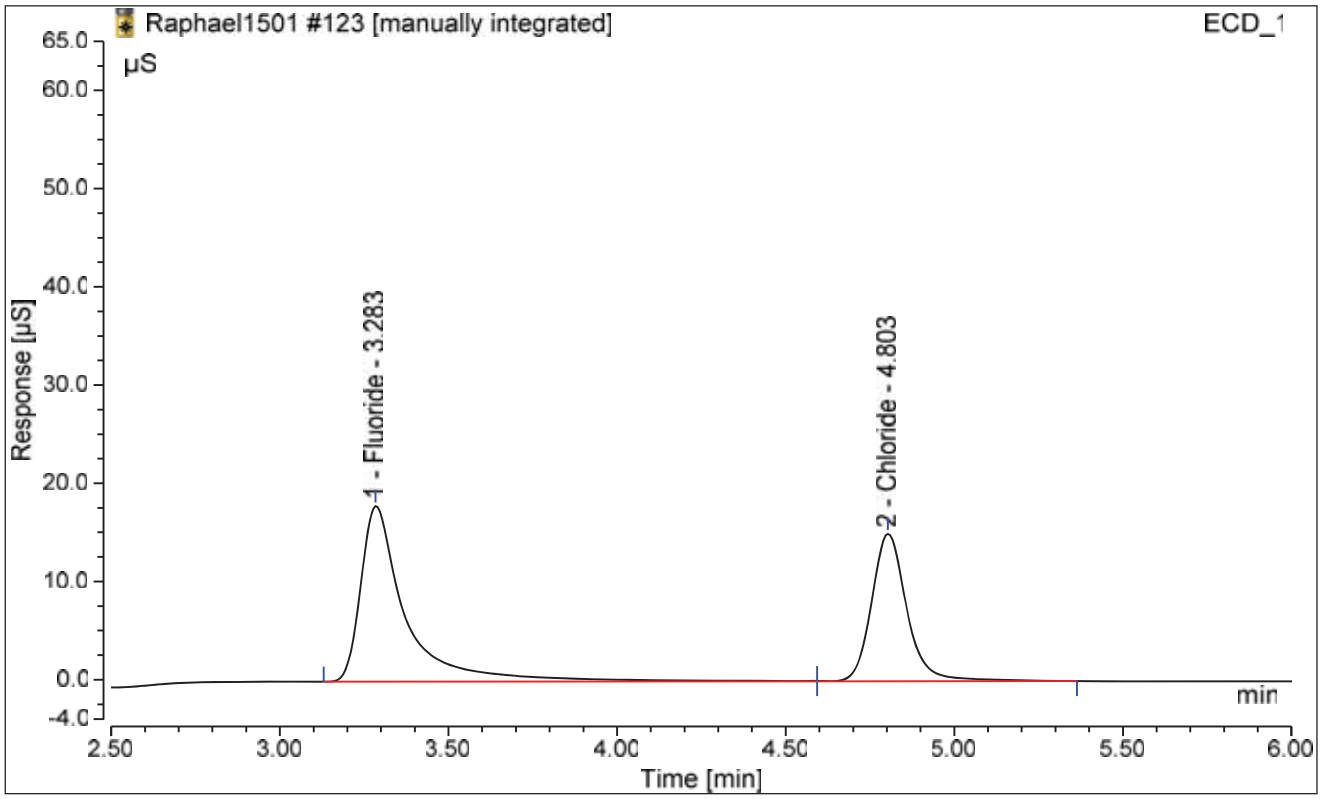


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	2.803	17.772	10.00440	FALSE	TRUE
2	4.80	Chloride	1.833	15.031	9.99632	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 01:17**	Run Time:	**14.50**

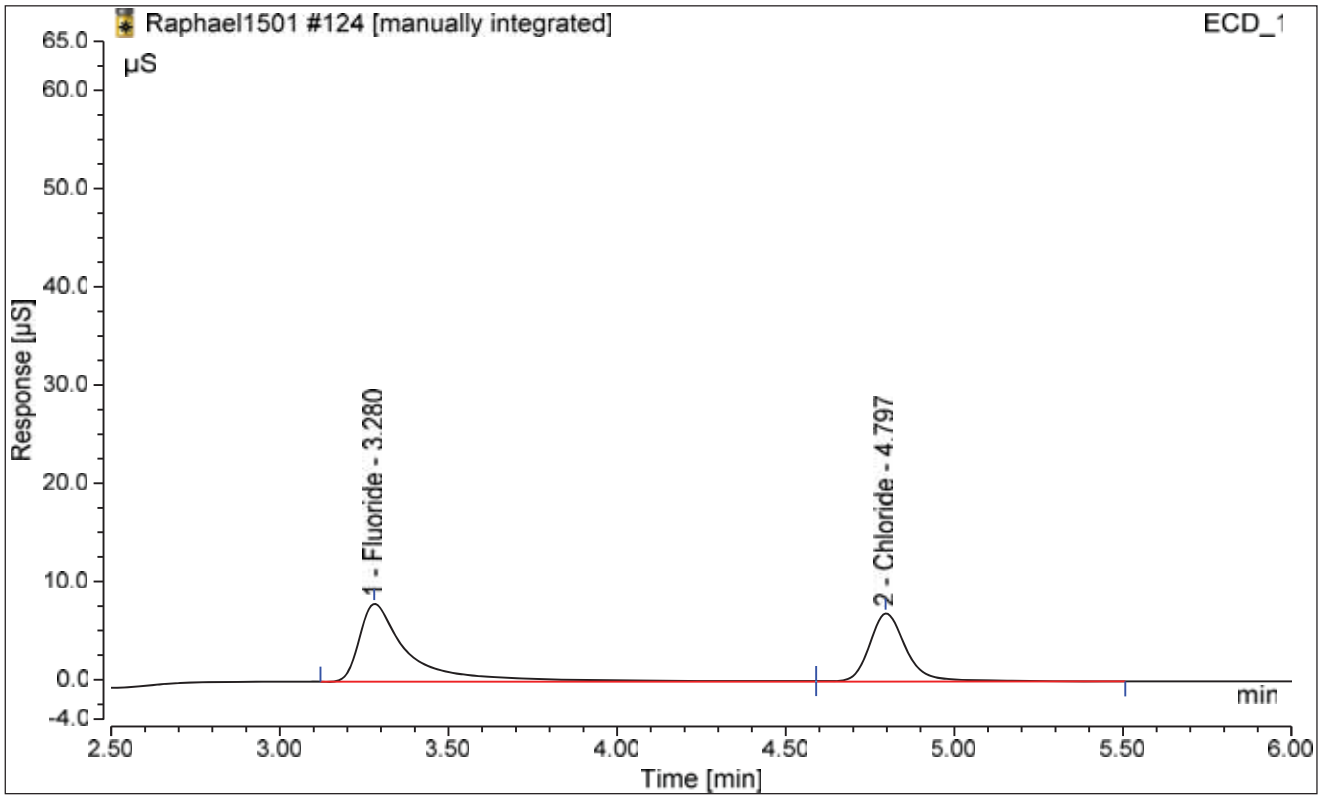


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	2.791	17.886	9.96095	FALSE	TRUE
2	4.80	Chloride	1.816	15.027	9.90814	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 01:33**	Run Time:	**14.50**

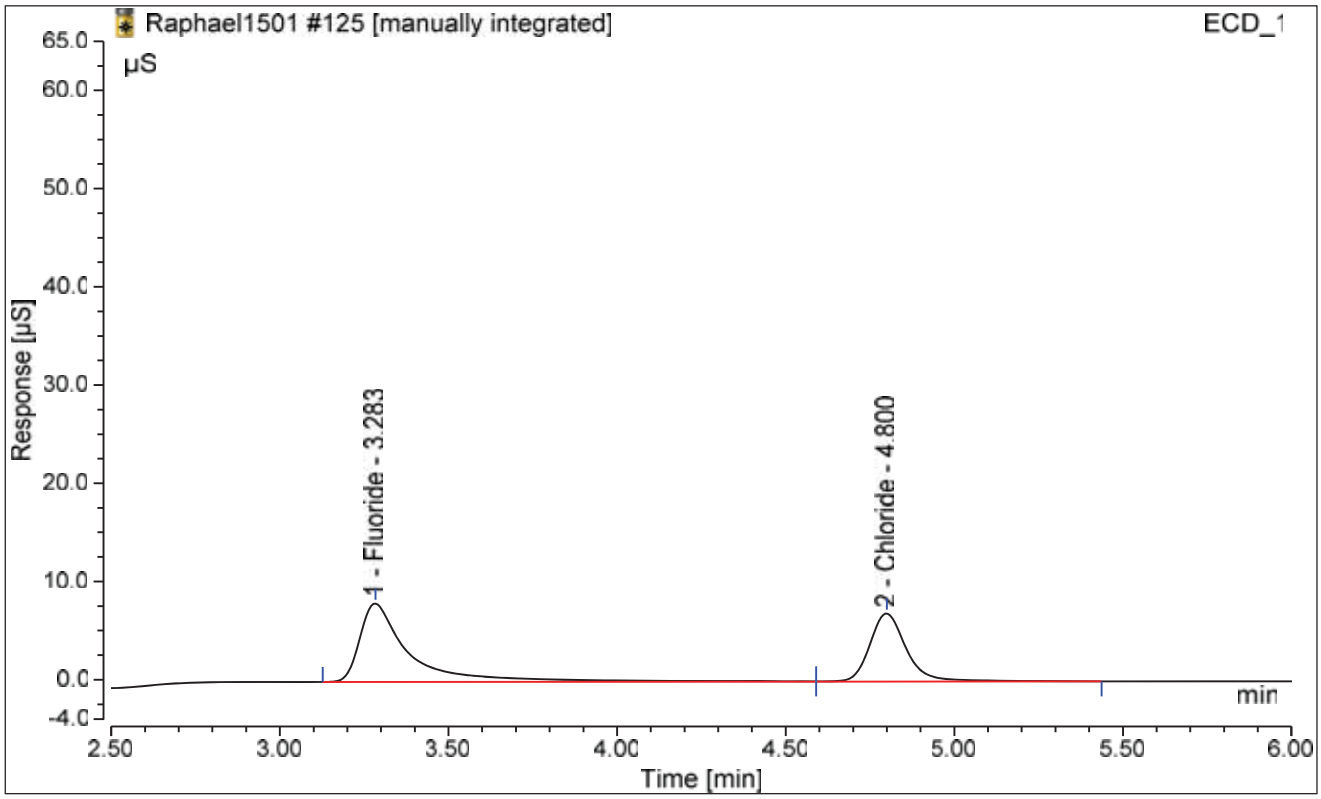


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	1.377	7.936	4.96383	FALSE	TRUE
2	4.80	Chloride	0.875	6.932	4.87453	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 01:49**	Run Time:	**14.50**

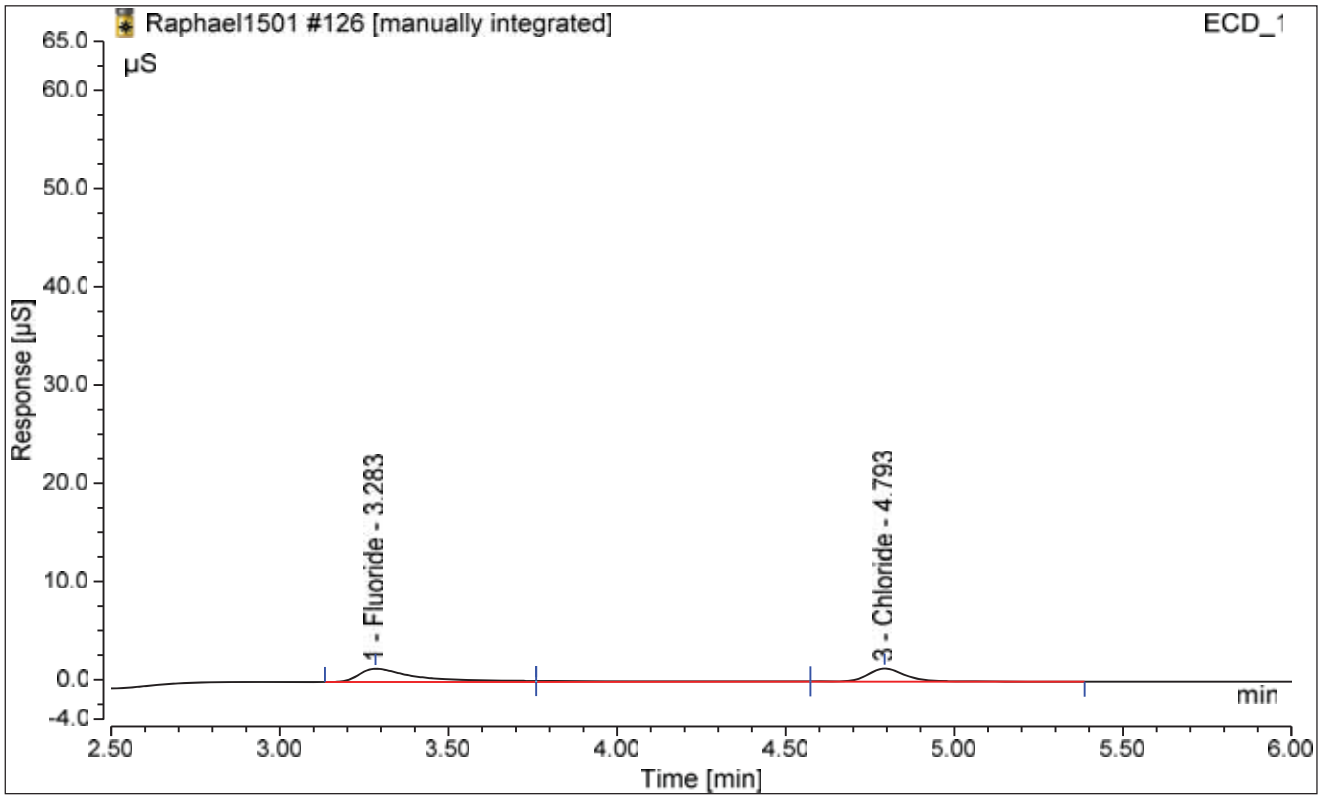


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	1.377	7.972	4.96278	FALSE	TRUE
2	4.80	Chloride	0.872	6.932	4.85908	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 02:05**	Run Time:	**14.50**

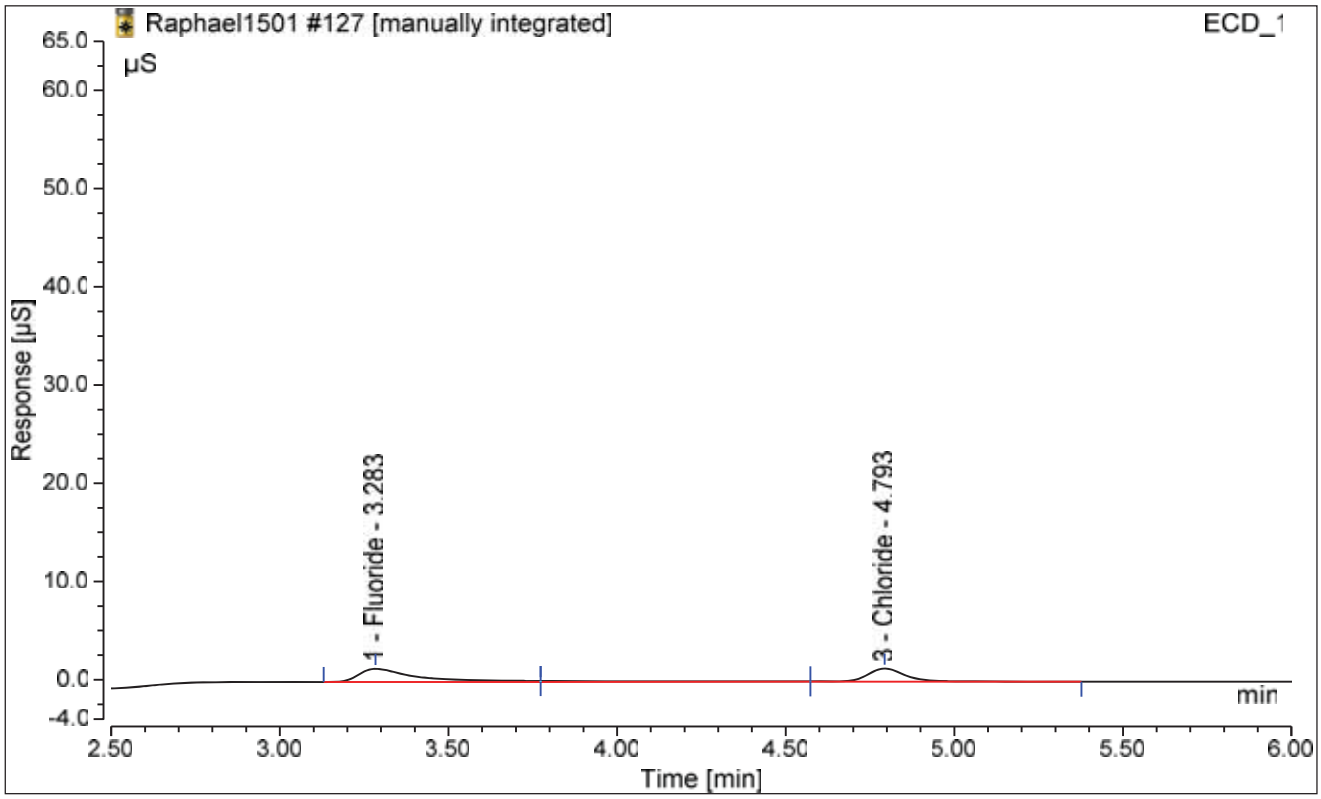


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	0.264	1.337	0.95933	FALSE	TRUE
3	4.79	Chloride	0.180	1.347	0.96245	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 02:21**	Run Time:	**14.50**

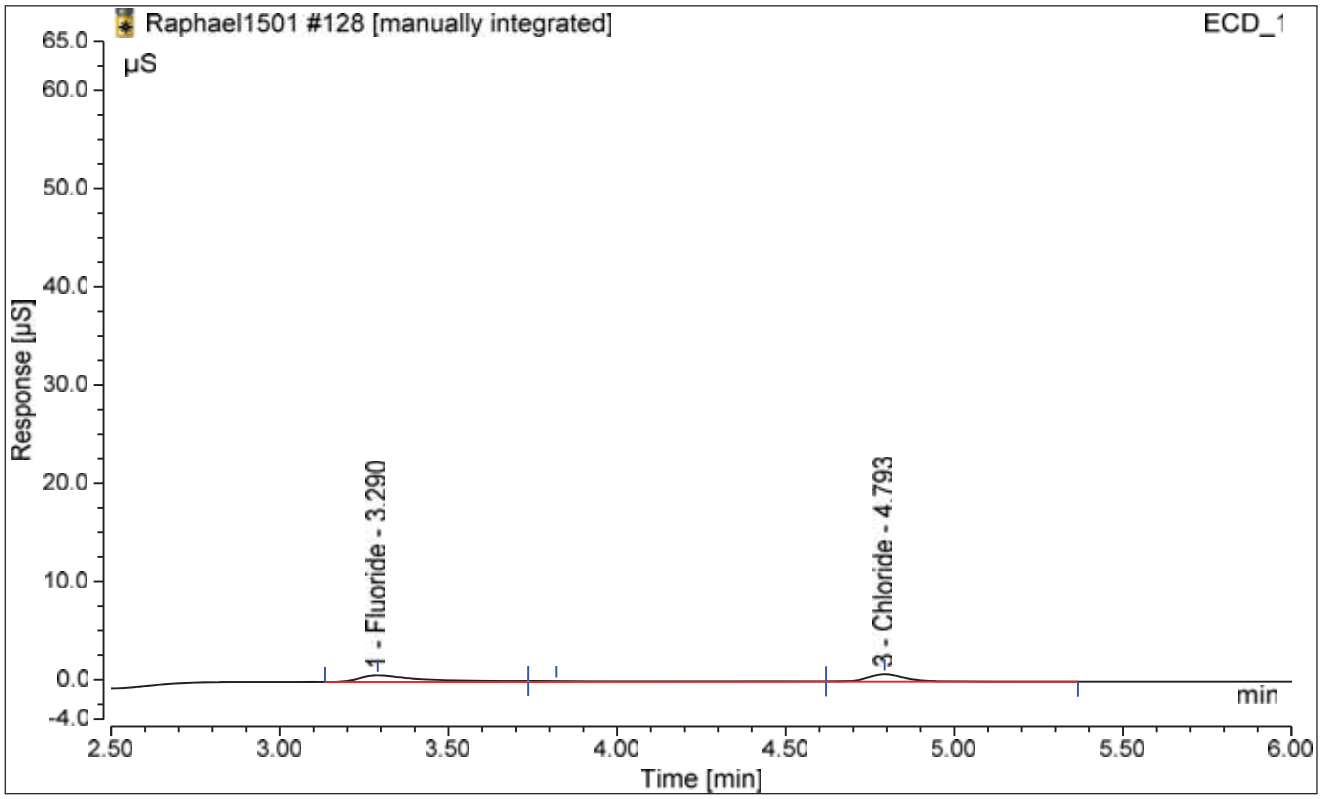


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	0.266	1.335	0.96542	FALSE	TRUE
3	4.79	Chloride	0.182	1.349	0.97279	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 02:37**	Run Time:	**14.50**

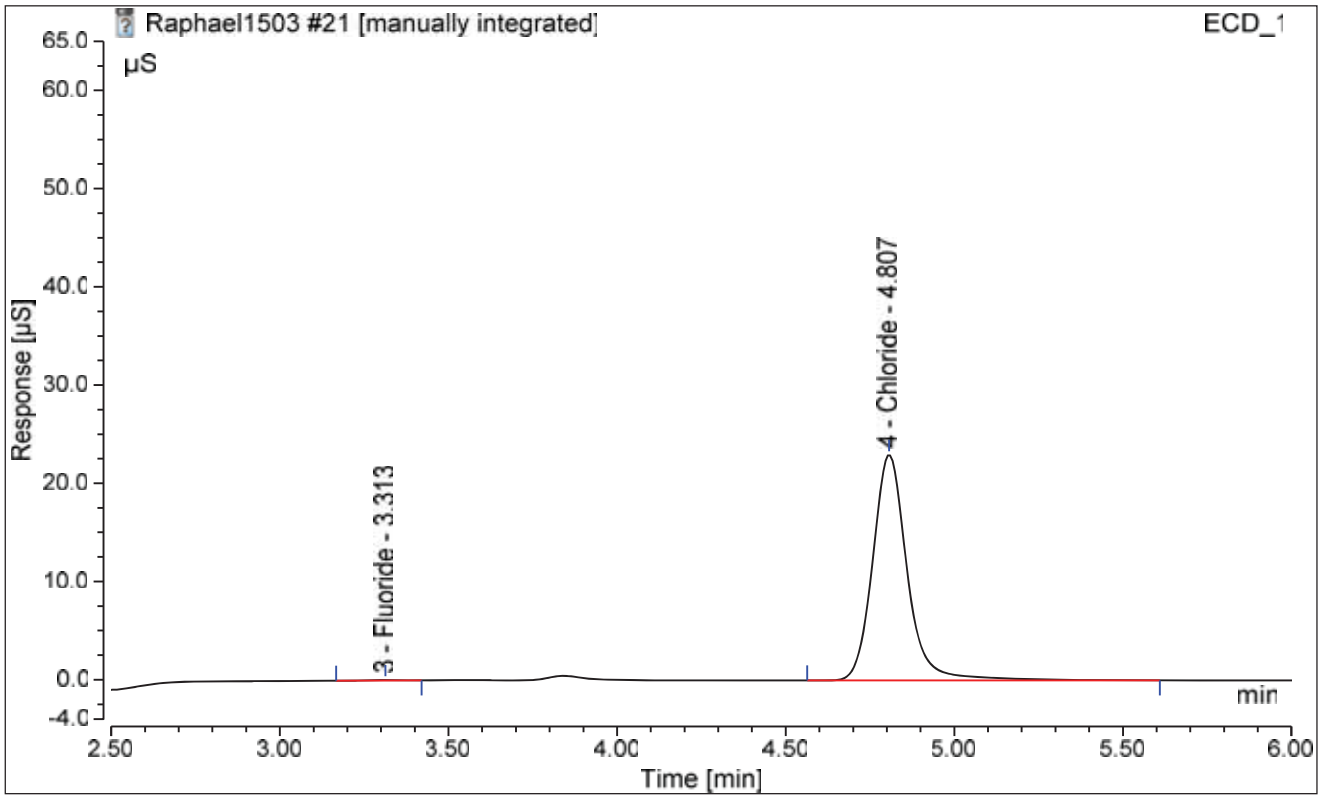


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	0.141	0.662	0.51245	FALSE	TRUE
3	4.79	Chloride	0.105	0.764	0.52959	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R1B.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 21:38**	Run Time:	**14.50**

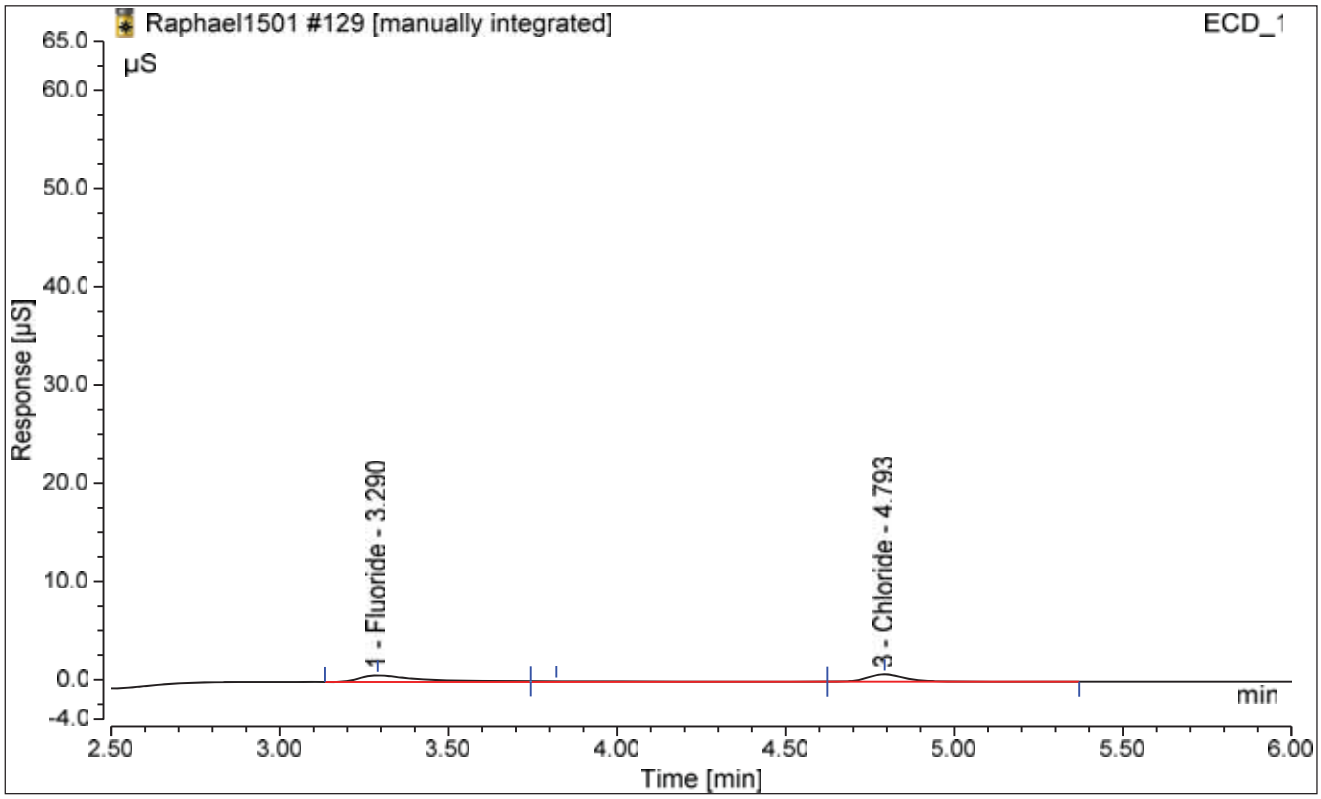


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
3	3.31	Fluoride	0.005	0.040	n.a.	FALSE	TRUE
4	4.81	Chloride	2.713	22.959	14.33207	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 02:53**	Run Time:	**14.50**

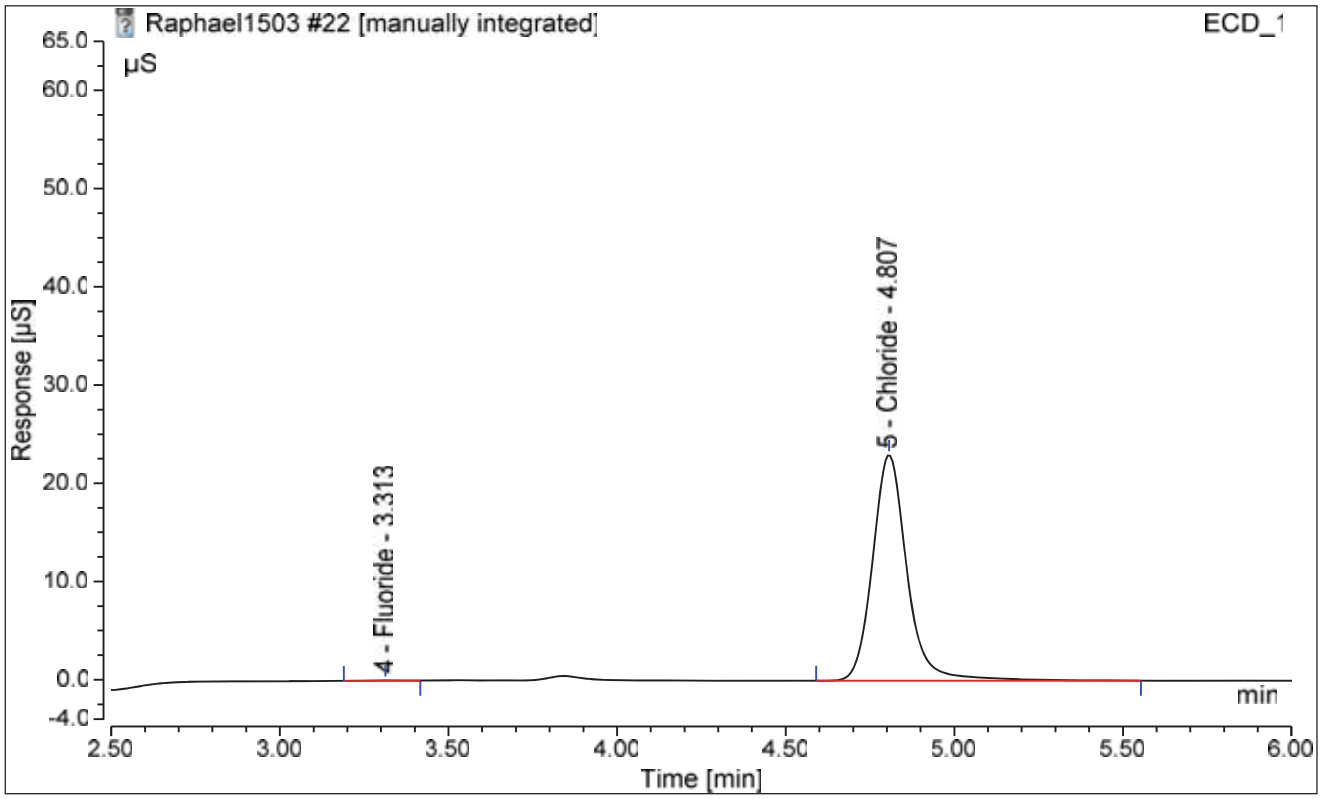


Analyst Comment: II SEA 12/29/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.29	Fluoride	0.141	0.664	0.51340	FALSE	TRUE
3	4.79	Chloride	0.103	0.762	0.52222	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R1B.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 21:54**	Run Time:	**14.50**

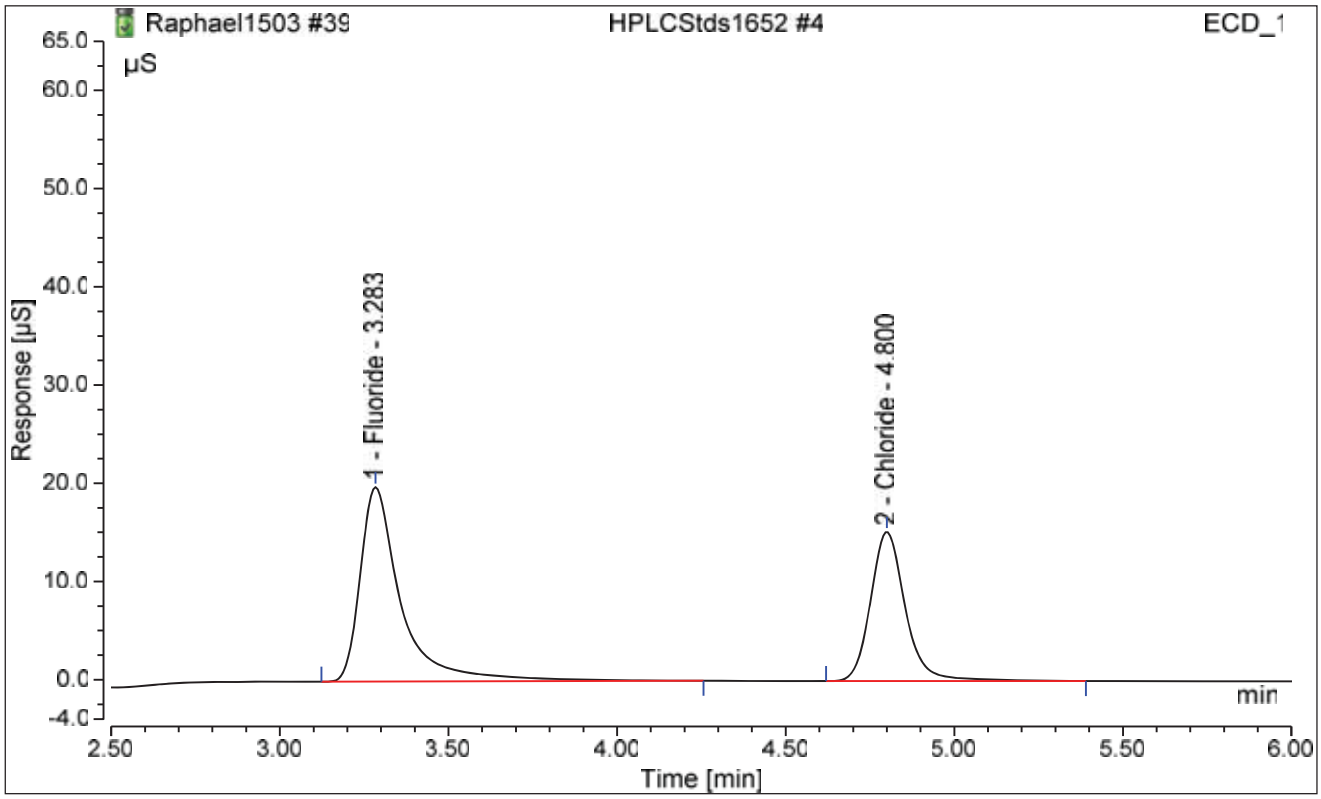


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
4	3.31	Fluoride	0.004	0.038	n.a.	FALSE	TRUE
5	4.81	Chloride	2.710	22.984	14.32167	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 02:28**	Run Time:	**14.50**

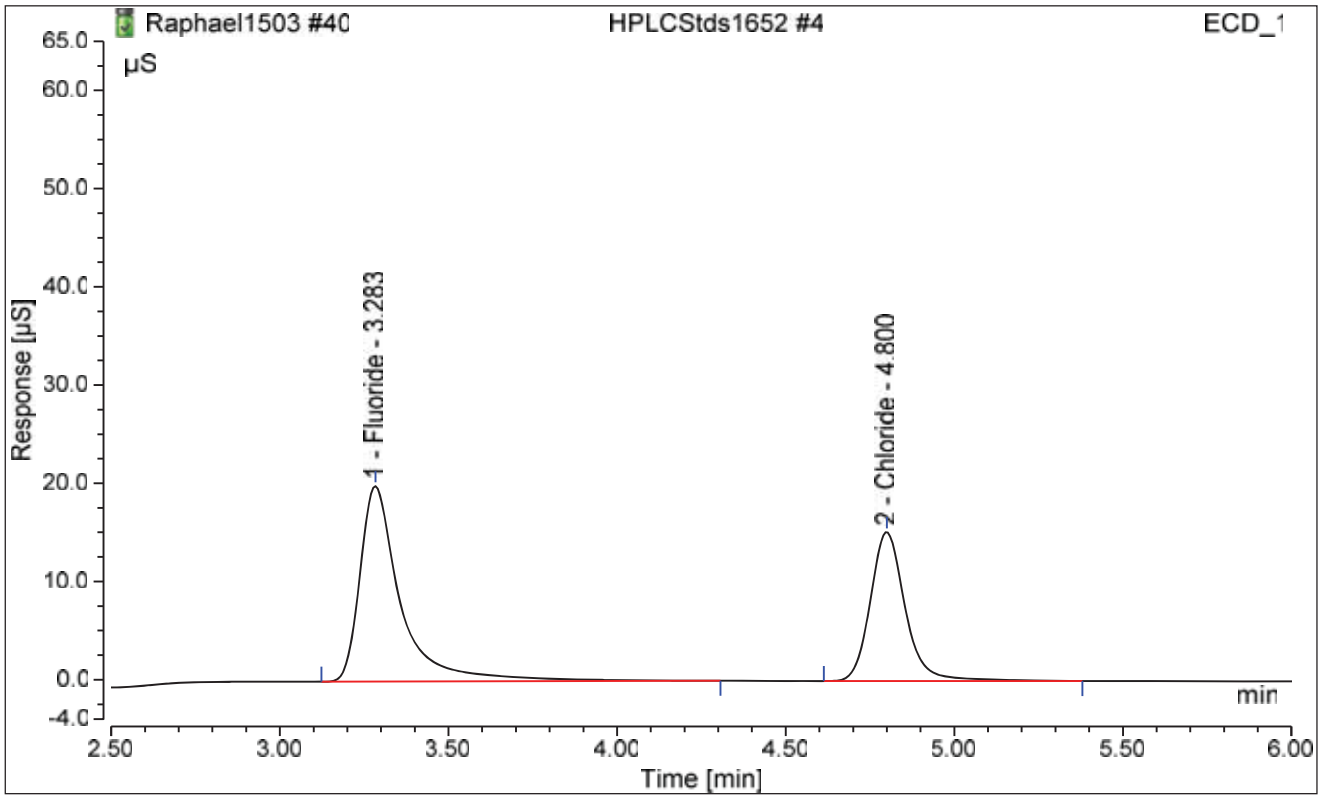


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	2.790	19.793	9.81918	FALSE	FALSE
2	4.80	Chloride	1.810	15.193	9.82649	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 02:44**	Run Time:	**14.50**



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	3.28	Fluoride	2.801	19.899	9.85616	FALSE	FALSE
2	4.80	Chloride	1.812	15.171	9.83664	FALSE	FALSE

Calibration Table

No.	Injection Name	Inject Time	Pos.	Level	Ref.Amount	Calibration Point Status	Dil.Factor	Volume	Ref.Amount	Calibration Point Status
					µg/mL ECD_1 Chloride	ECD_1 Chloride		µL	µg/mL ECD_1 Fluoride	ECD_1 Fluoride
3	HPLCStds1652 #6	29/Dec/2023 16:48	GA6	06	30.0000	Ok	1.0000	25.00	30.0000	Ok
4	HPLCStds1652 #6	29/Dec/2023 17:04	GA6	06	30.0000	Ok	1.0000	25.00	30.0000	Ok
5	HPLCStds1652 #5	29/Dec/2023 17:21	GA5	05	15.0000	Ok	1.0000	25.00	15.0000	Ok
6	HPLCStds1652 #5	29/Dec/2023 17:37	GA5	05	15.0000	Ok	1.0000	25.00	15.0000	Ok
7	HPLCStds1652 #4	29/Dec/2023 17:53	GA4	04	10.0000	Ok	1.0000	25.00	10.0000	Ok
8	HPLCStds1652 #4	29/Dec/2023 18:09	GA4	04	10.0000	Ok	1.0000	25.00	10.0000	Ok
9	HPLCStds1652 #3	29/Dec/2023 18:25	GA3	03	5.0000	Ok	1.0000	25.00	5.0000	Ok
10	HPLCStds1652 #3	29/Dec/2023 18:41	GA3	03	5.0000	Ok	1.0000	25.00	5.0000	Ok
11	HPLCStds1652 #2	29/Dec/2023 18:57	GA2	02	1.0000	Ok	1.0000	25.00	1.0000	Ok
12	HPLCStds1652 #2	29/Dec/2023 19:13	GA2	02	1.0000	Ok	1.0000	25.00	1.0000	Ok
13	HPLCStds1652 #1	29/Dec/2023 19:29	GA1	01	0.5000	Ok	1.0000	25.00	0.5000	Ok
14	HPLCStds1652 #1	29/Dec/2023 19:46	GA1	01	0.5000	Ok	1.0000	25.00	0.5000	Ok
55	HPLCStds1652 #6	30/Dec/2023 06:46	GA6	06	30.0000	Ok	1.0000	25.00	30.0000	Ok
56	HPLCStds1652 #6	30/Dec/2023 07:02	GA6	06	30.0000	Ok	1.0000	25.00	30.0000	Ok
57	HPLCStds1652 #5	30/Dec/2023 07:18	GA5	05	15.0000	Ok	1.0000	25.00	15.0000	Ok
58	HPLCStds1652 #5	30/Dec/2023 07:34	GA5	05	15.0000	Ok	1.0000	25.00	15.0000	Ok
59	HPLCStds1652 #4	30/Dec/2023 07:50	GA4	04	10.0000	Ok	1.0000	25.00	10.0000	Ok
60	HPLCStds1652 #4	30/Dec/2023 08:06	GA4	04	10.0000	Ok	1.0000	25.00	10.0000	Ok
61	HPLCStds1652 #3	30/Dec/2023 08:22	GA3	03	5.0000	Ok	1.0000	25.00	5.0000	Ok
62	HPLCStds1652 #3	30/Dec/2023 08:39	GA3	03	5.0000	Ok	1.0000	25.00	5.0000	Ok
63	HPLCStds1652 #2	30/Dec/2023 08:55	GA2	02	1.0000	Ok	1.0000	25.00	1.0000	Ok
64	HPLCStds1652 #2	30/Dec/2023 09:11	GA2	02	1.0000	Ok	1.0000	25.00	1.0000	Ok
65	HPLCStds1652 #1	30/Dec/2023 09:27	GA1	01	0.5000	Ok	1.0000	25.00	0.5000	Ok
66	HPLCStds1652 #1	30/Dec/2023 09:43	GA1	01	0.5000	Ok	1.0000	25.00	0.5000	Ok

Detection Parameters

Ret. Time min	Param. Name	Param. Value	Inj. Type	Channel
Always	Baseline Noise Auto Range	On	Any	All Channels
Always	Cobra Smoothing Width	Auto	Any	All Channels
Always	Consider Void Peak	Off	Any	All Channels
0.000	Maximum Rider Ratio	10 [%]	Any	All Channels
0.000	Tailing Sensitivity Factor	0.100 [%]	Any	All Channels
0.000	Inhibit Integration	On	Any	All Channels
0.000	Minimum Area	Auto	Any	All Channels
3.030	Inhibit Integration	Off	Any	All Channels
7.174	Inhibit Integration	On	Any	All Channels

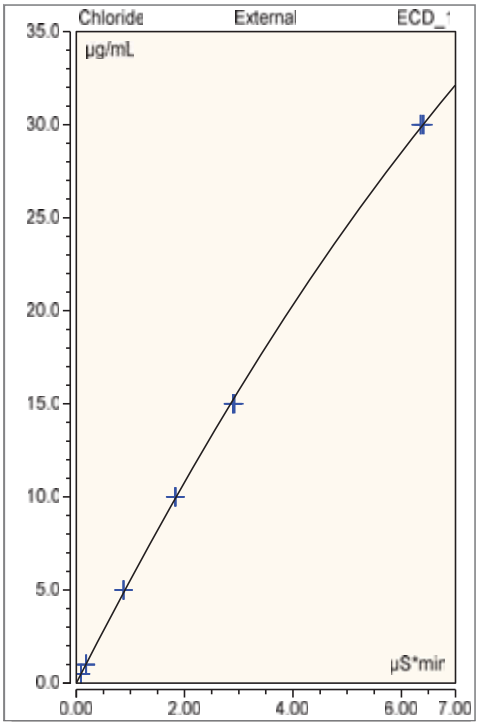
Calibration Batch Report

Sequence:	Raphael1503	*Injection Volume:*	25.00
Instrument Method:	AS22 ASAP new	*Operator:*	searundhati
Inj. Date / Time:	29-Dec-2023 / 21:06	*Run Time:*	14.5

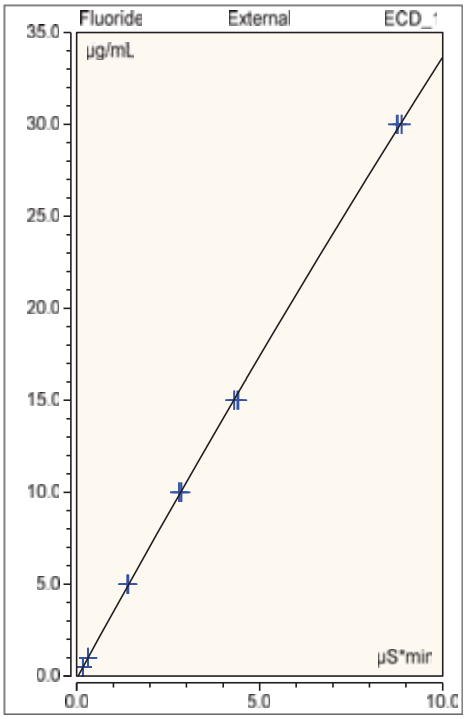
Calibration Summary

Peak Name	Eval.Type	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
Fluoride	Area	Quad, WithOffset, 1/A	24.000	-0.115	3.632	-0.026	99.979
Chloride	Area	Quad, WithOffset, 1/A	24.000	-0.013	5.729	-0.162	99.981
		AVERAGE:		-0.0639	4.6804	-0.0940	99.9799

Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount µg/mL ECD_1
	Chloride	Chloride	Chloride	Chloride
HPLCStds1652 #6	4.813	6.351	55.521	29.820
HPLCStds1652 #6	4.817	6.361	55.466	29.857
HPLCStds1652 #5	4.807	2.905	24.602	15.259
HPLCStds1652 #5	4.807	2.891	24.603	15.191
HPLCStds1652 #4	4.803	1.835	15.223	9.952
HPLCStds1652 #4	4.800	1.819	15.174	9.869
HPLCStds1652 #3	4.797	0.872	6.985	4.856
HPLCStds1652 #3	4.797	0.870	6.995	4.849
HPLCStds1652 #2	4.793	0.182	1.369	1.026
HPLCStds1652 #2	4.793	0.180	1.365	1.012
HPLCStds1652 #1	4.793	0.088	0.685	0.491
HPLCStds1652 #1	4.790	0.089	0.687	0.496
HPLCStds1652 #6	4.820	6.418	55.664	30.065
HPLCStds1652 #6	4.820	6.393	55.290	29.974
HPLCStds1652 #5	4.803	2.888	24.538	15.179
HPLCStds1652 #5	4.807	2.926	24.810	15.360
HPLCStds1652 #4	4.803	1.838	15.313	9.968
HPLCStds1652 #4	4.803	1.828	15.169	9.918
HPLCStds1652 #3	4.797	0.878	7.061	4.890
HPLCStds1652 #3	4.797	0.874	6.940	4.869
HPLCStds1652 #2	4.793	0.182	1.374	1.024
HPLCStds1652 #2	4.793	0.183	1.381	1.027
HPLCStds1652 #1	4.790	0.090	0.690	0.501
HPLCStds1652 #1	4.797	0.091	0.696	0.507

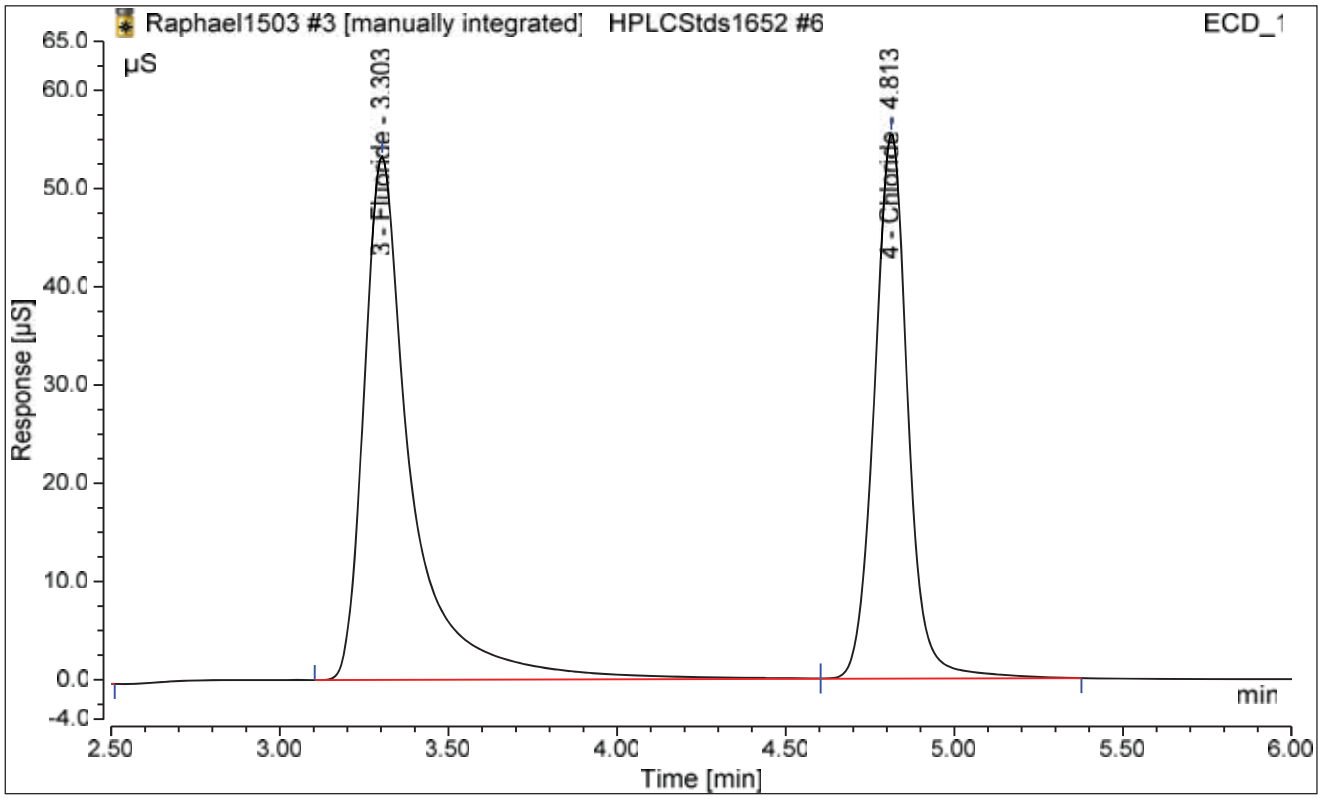


Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount µg/mL ECD_1
	Fluoride	Fluoride	Fluoride	Fluoride
HPLCStds1652 #6	3.303	8.748	53.302	29.692
HPLCStds1652 #6	3.307	8.777	55.122	29.786
HPLCStds1652 #5	3.293	4.304	26.170	15.041
HPLCStds1652 #5	3.293	4.305	26.767	15.045
HPLCStds1652 #4	3.287	2.797	16.808	9.842
HPLCStds1652 #4	3.287	2.792	17.083	9.825
HPLCStds1652 #3	3.283	1.384	7.656	4.861
HPLCStds1652 #3	3.283	1.381	7.755	4.851
HPLCStds1652 #2	3.290	0.307	1.313	0.998
HPLCStds1652 #2	3.287	0.310	1.324	1.009
HPLCStds1652 #1	3.293	0.167	0.649	0.489
HPLCStds1652 #1	3.290	0.170	0.654	0.504
HPLCStds1652 #6	3.307	8.882	65.057	30.118
HPLCStds1652 #6	3.307	8.878	64.962	30.105
HPLCStds1652 #5	3.290	4.386	32.090	15.322
HPLCStds1652 #5	3.290	4.419	32.182	15.434
HPLCStds1652 #4	3.287	2.866	20.296	10.084
HPLCStds1652 #4	3.287	2.844	20.128	10.006
HPLCStds1652 #3	3.283	1.416	9.152	4.977
HPLCStds1652 #3	3.280	1.400	9.060	4.920
HPLCStds1652 #2	3.283	0.313	1.555	1.020
HPLCStds1652 #2	3.287	0.313	1.556	1.019
HPLCStds1652 #1	3.287	0.171	0.757	0.504
HPLCStds1652 #1	3.290	0.172	0.757	0.509



Peak Analysis Report

Sample Name:	**HPLCStds1652 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 16:48**	Run Time:	**14.50**

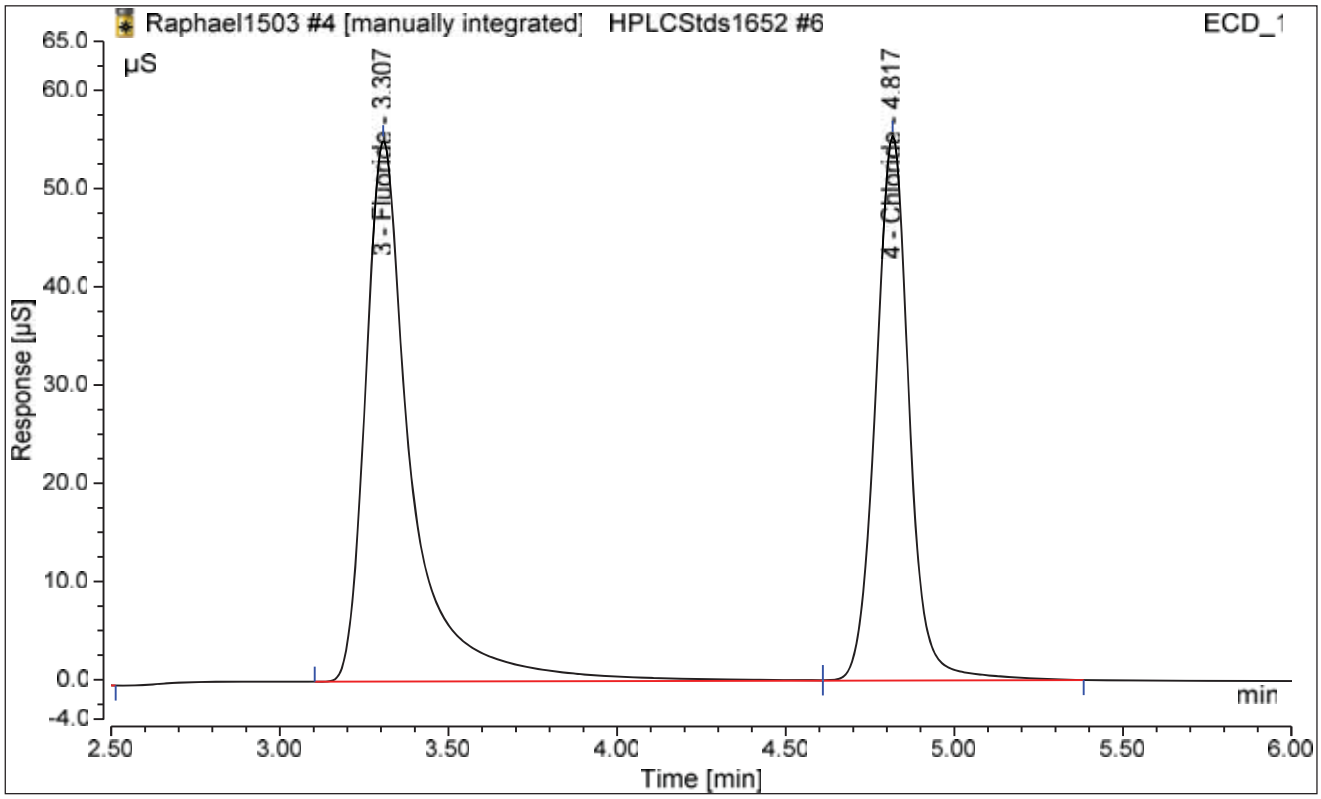


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
3	3.30	Fluoride	8.748	53.302	29.69209	FALSE	TRUE
4	4.81	Chloride	6.351	55.521	29.82050	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 17:04**	Run Time:	**14.50**

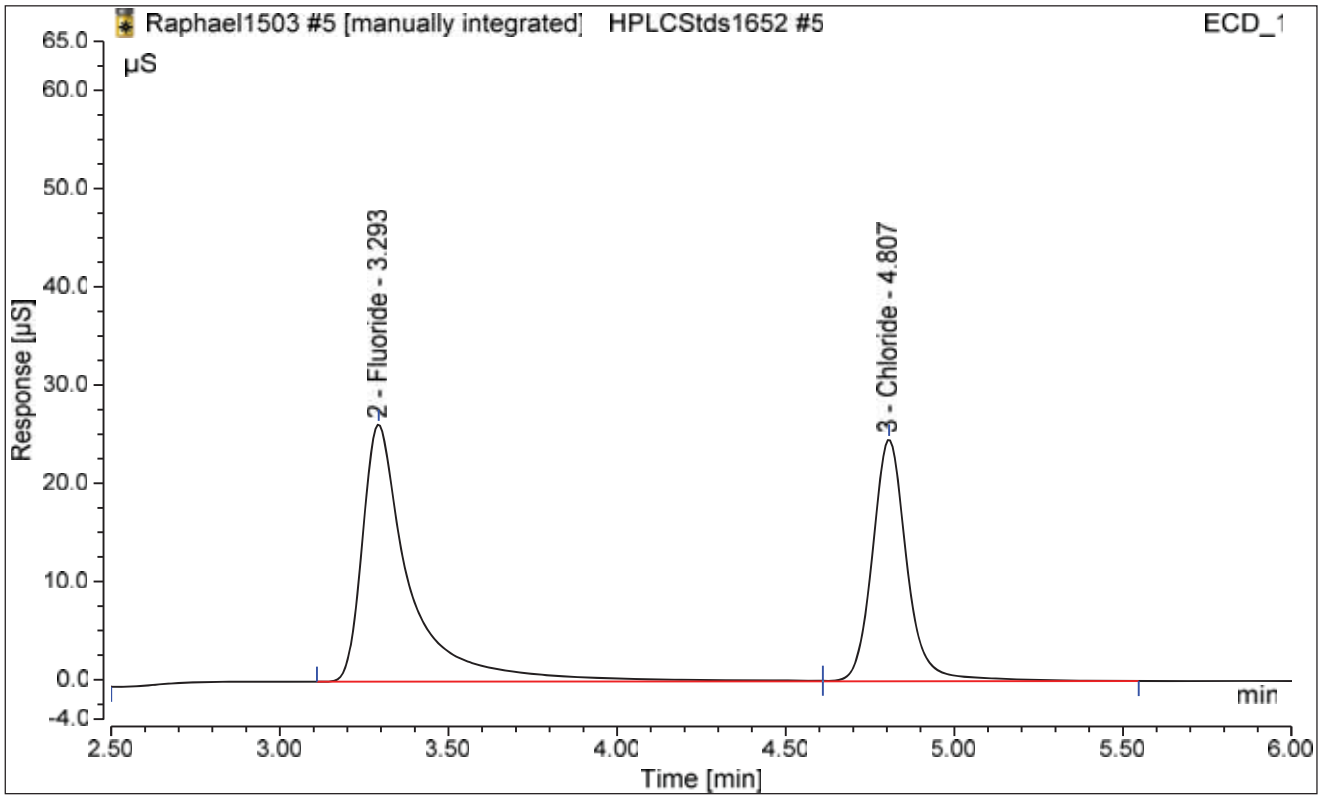


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
3	3.31	Fluoride	8.777	55.122	29.78597	FALSE	TRUE
4	4.82	Chloride	6.361	55.466	29.85667	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 17:21**	Run Time:	**14.50**

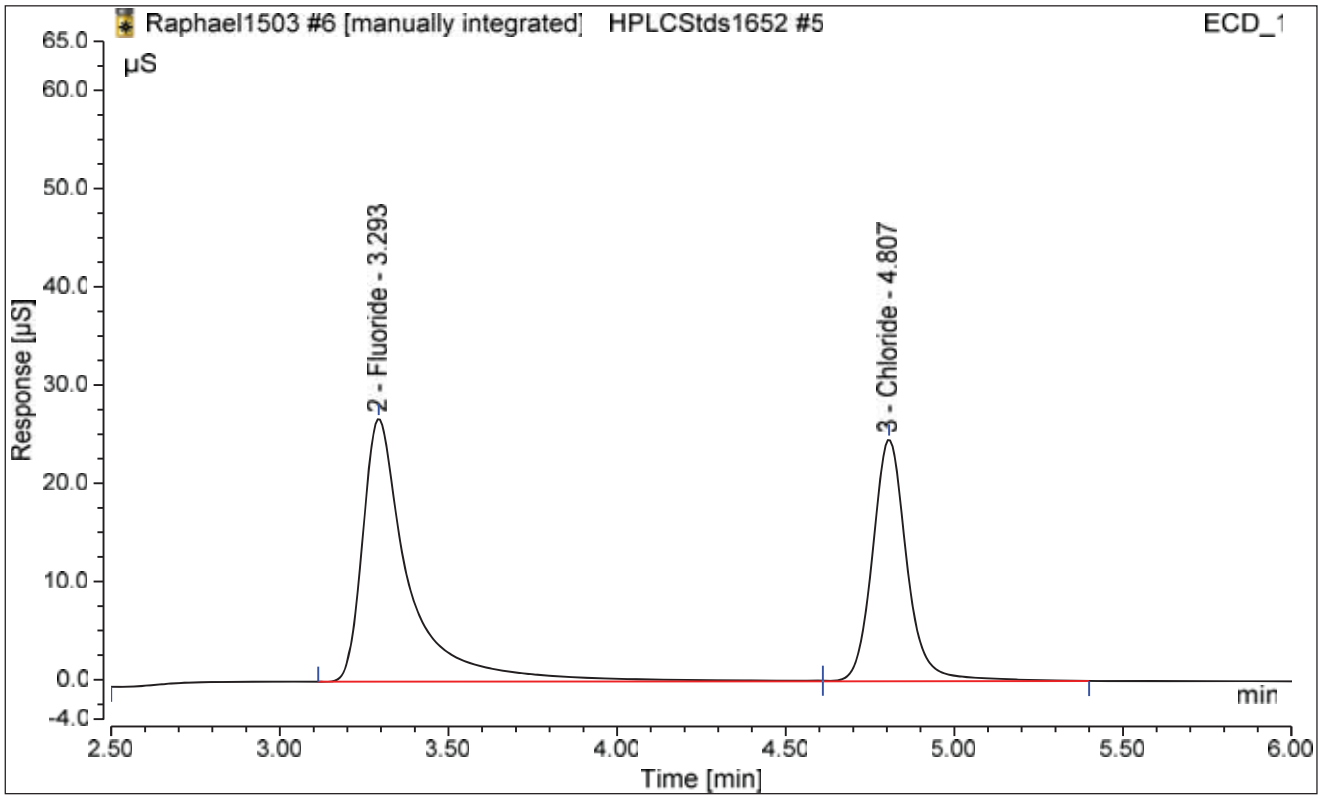


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	4.304	26.170	15.04086	FALSE	TRUE
3	4.81	Chloride	2.905	24.602	15.25860	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 17:37**	Run Time:	**14.50**

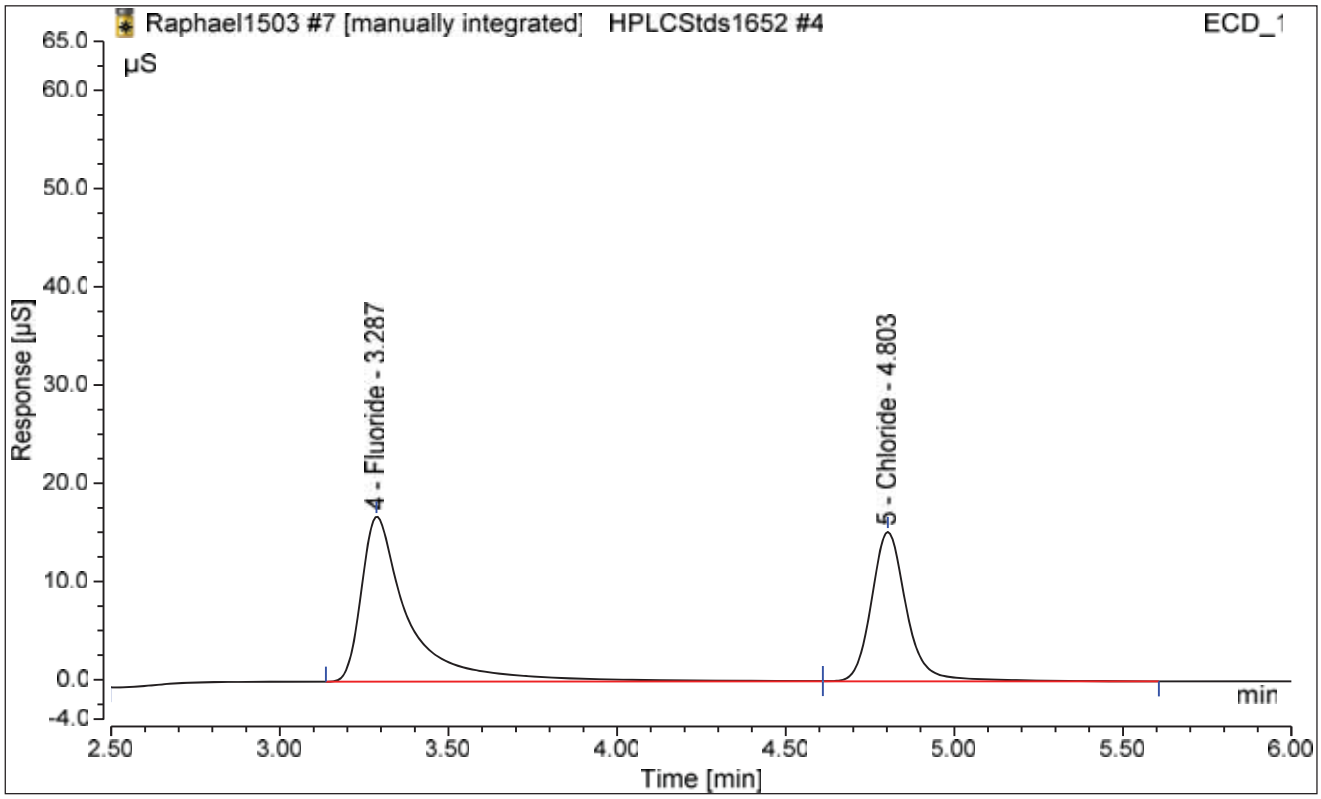


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	4.305	26.767	15.04488	FALSE	TRUE
3	4.81	Chloride	2.891	24.603	15.19133	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 17:53**	Run Time:	**14.50**

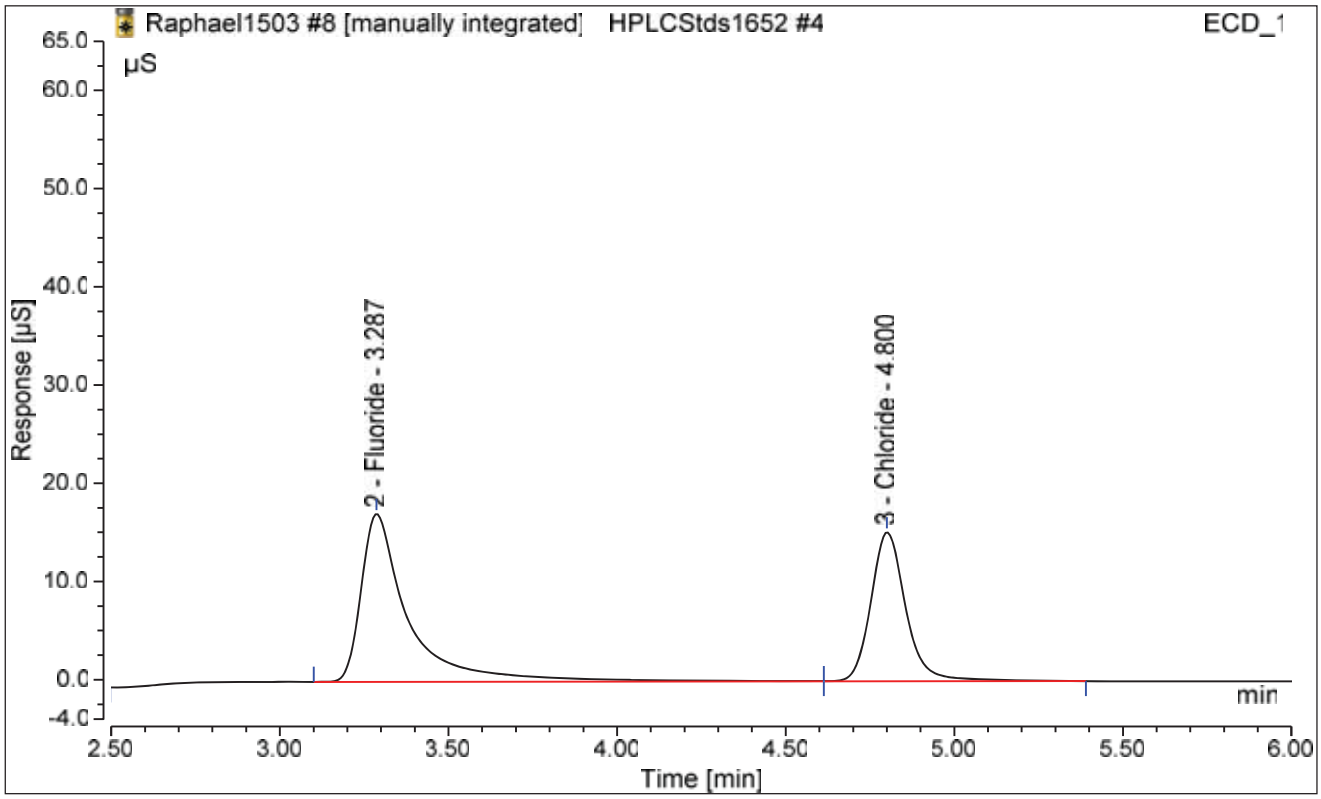


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
4	3.29	Fluoride	2.797	16.808	9.84208	FALSE	TRUE
5	4.80	Chloride	1.835	15.223	9.95225	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 18:09**	Run Time:	**14.50**

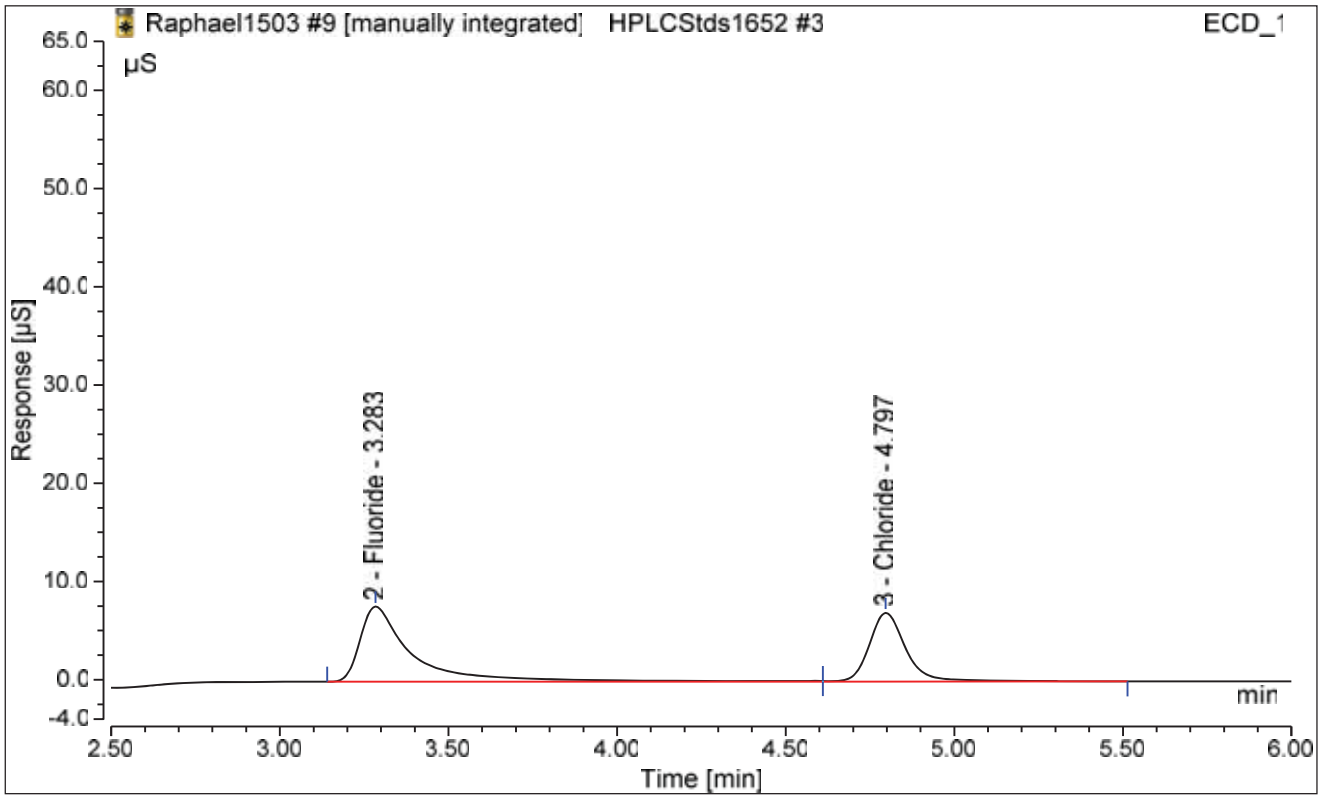


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	2.792	17.083	9.82497	FALSE	TRUE
3	4.80	Chloride	1.819	15.174	9.86868	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 18:25**	Run Time:	**14.50**

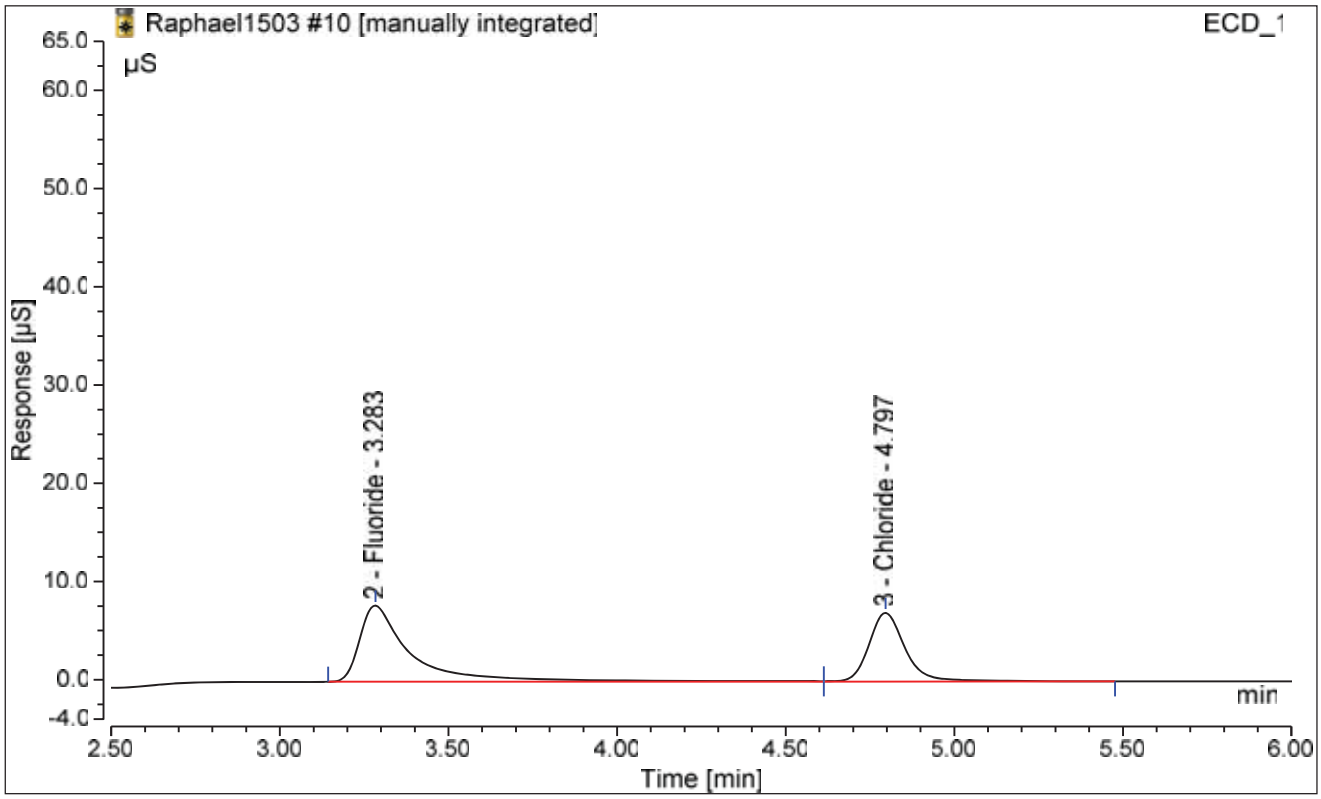


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.28	Fluoride	1.384	7.656	4.86095	FALSE	TRUE
3	4.80	Chloride	0.872	6.985	4.85640	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 18:41**	Run Time:	**14.50**

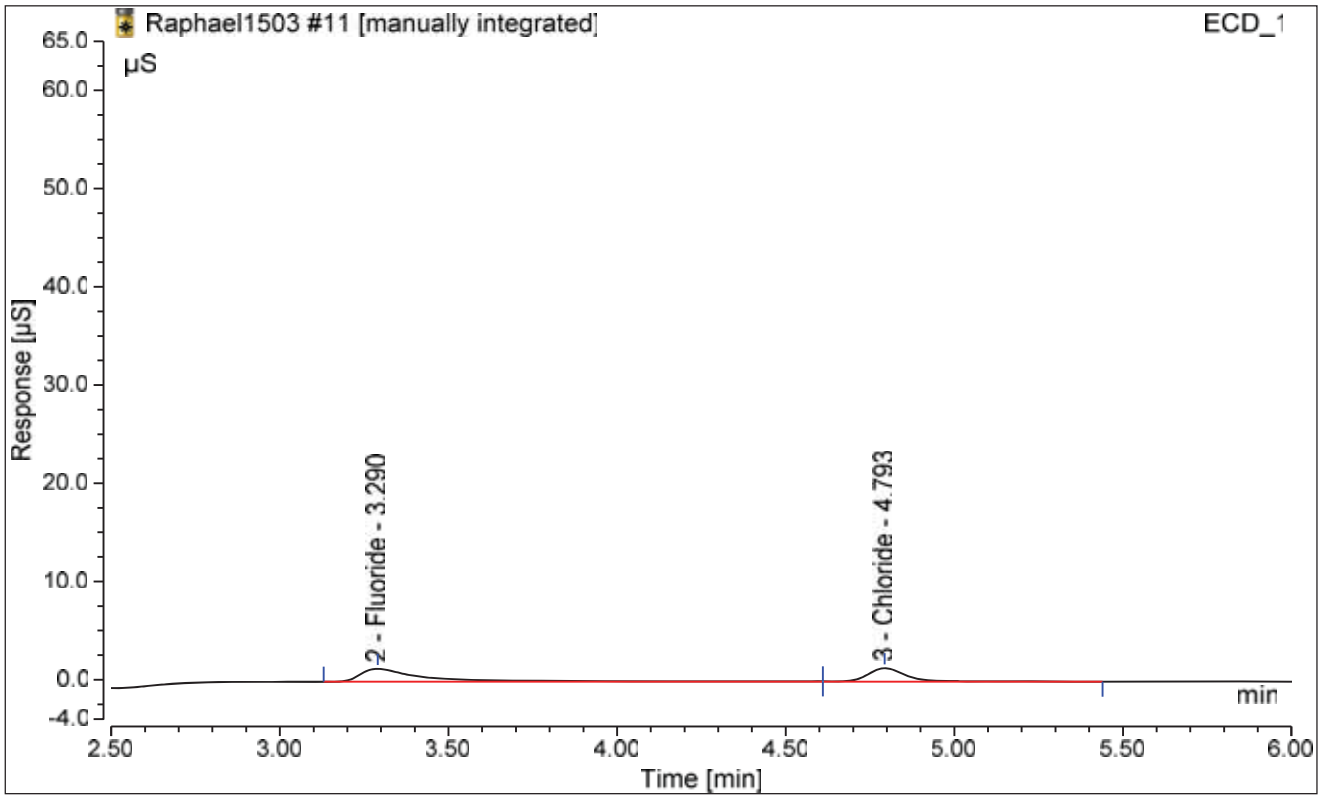


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.28	Fluoride	1.381	7.755	4.85085	FALSE	TRUE
3	4.80	Chloride	0.870	6.995	4.84867	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 18:57**	Run Time:	**14.50**

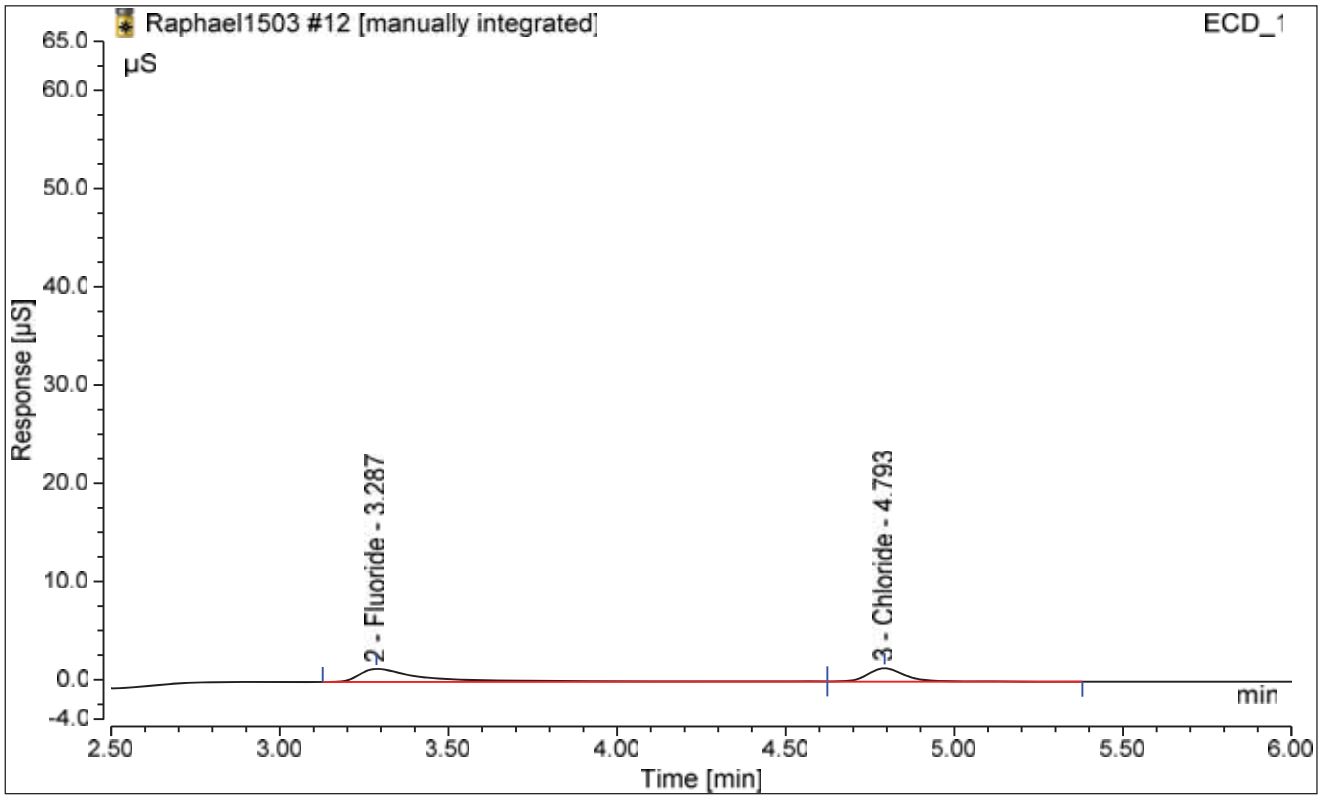


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	0.307	1.313	0.99773	FALSE	TRUE
3	4.79	Chloride	0.182	1.369	1.02595	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 19:13**	Run Time:	**14.50**

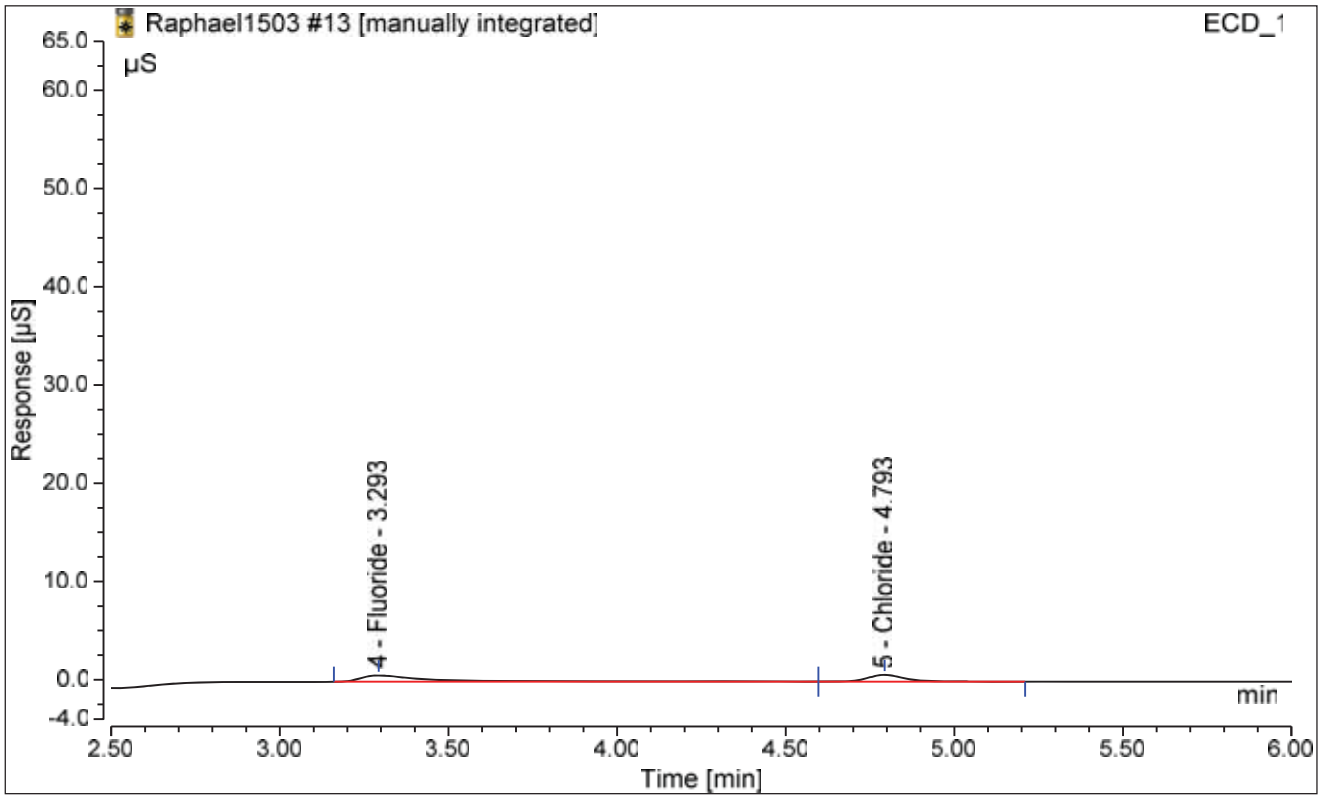


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	0.310	1.324	1.00870	FALSE	TRUE
3	4.79	Chloride	0.180	1.365	1.01155	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 19:29**	Run Time:	**14.50**

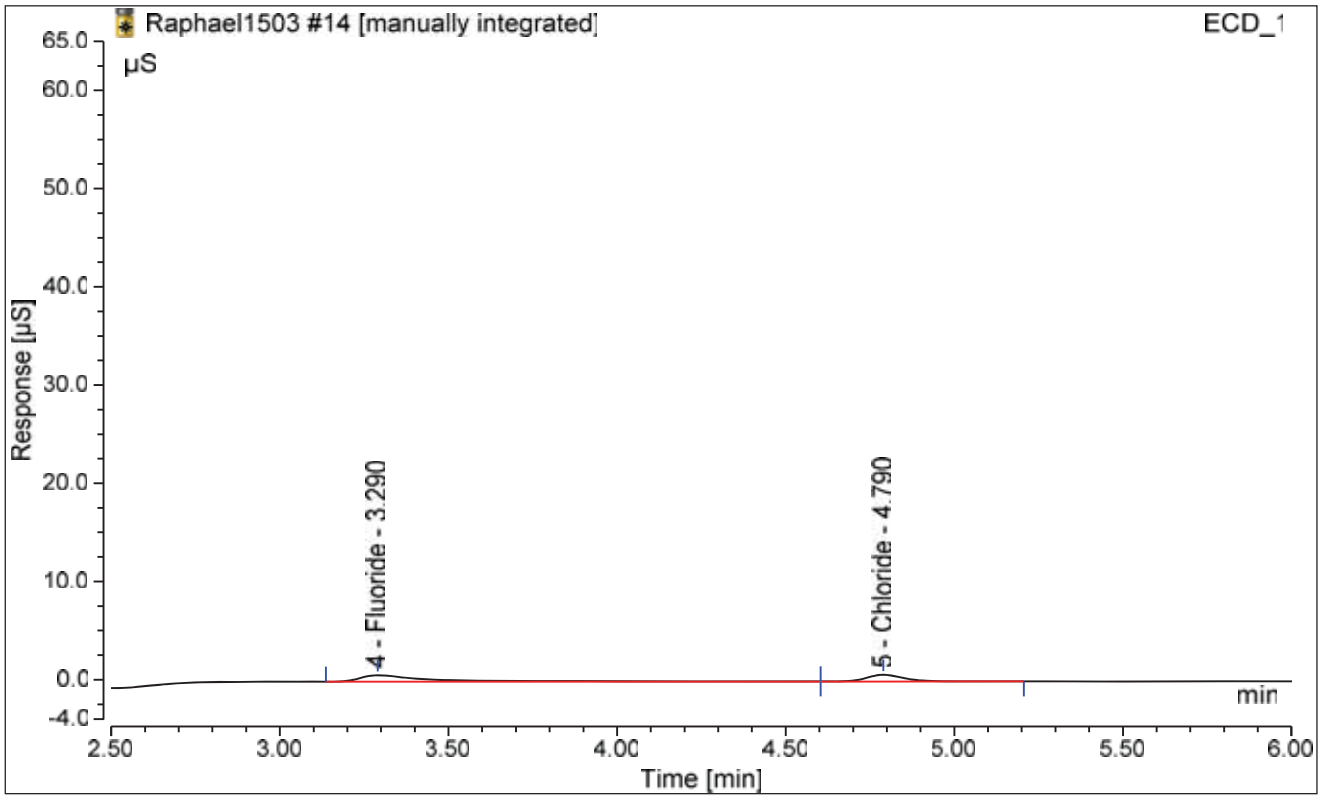


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
4	3.29	Fluoride	0.167	0.649	0.48944	FALSE	TRUE
5	4.79	Chloride	0.088	0.685	0.49146	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 19:46**	Run Time:	**14.50**

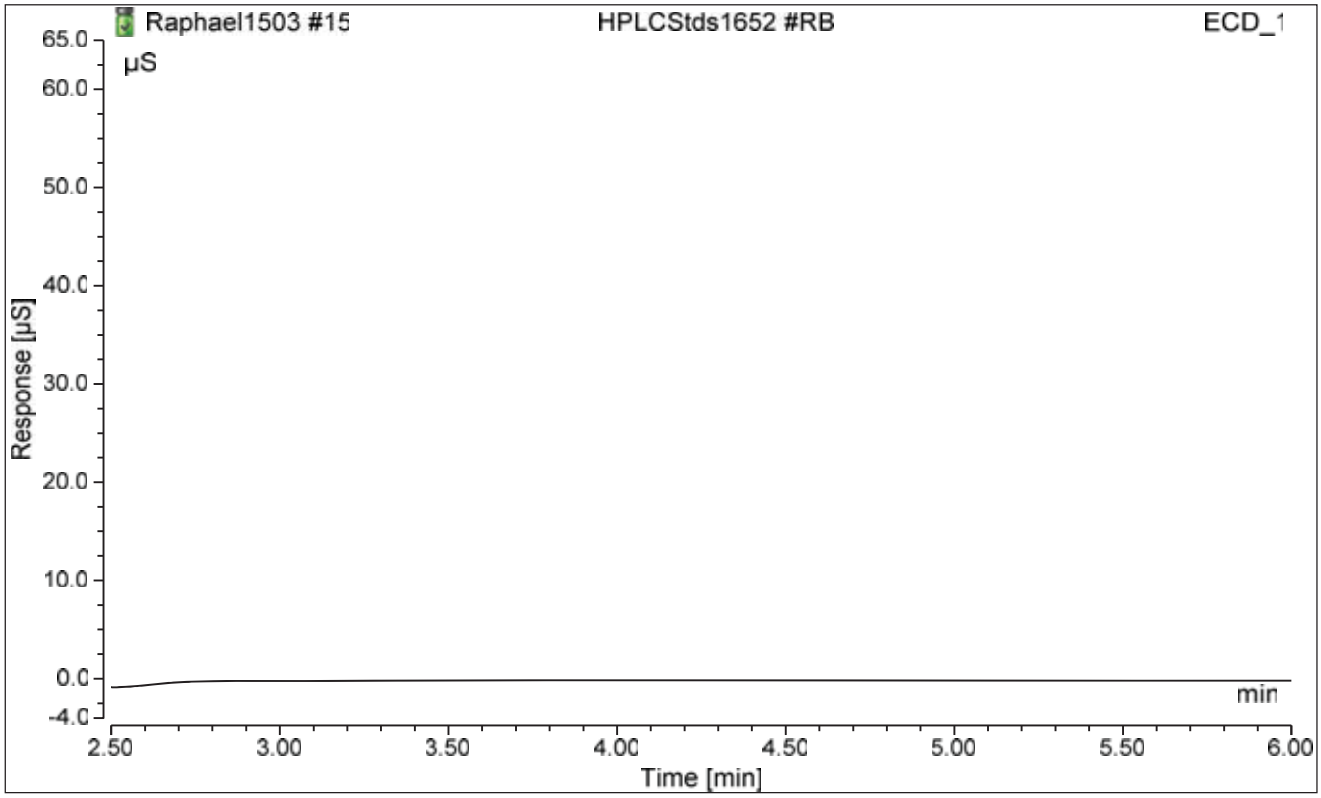


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
4	3.29	Fluoride	0.170	0.654	0.50355	FALSE	TRUE
5	4.79	Chloride	0.089	0.687	0.49581	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 20:02**	Run Time:	**14.50**

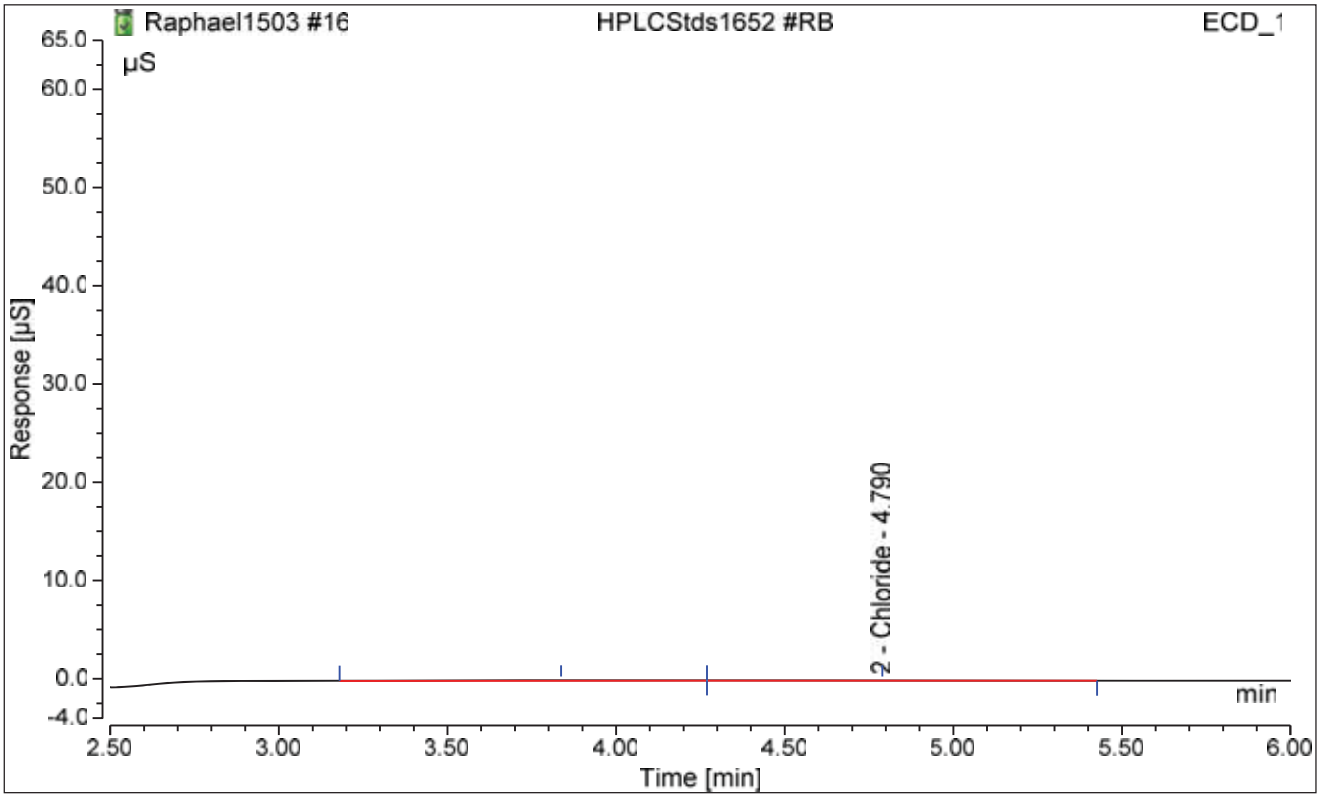


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?

Peak Analysis Report

Sample Name:	**HPLCStds1652 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 20:18**	Run Time:	**14.50**

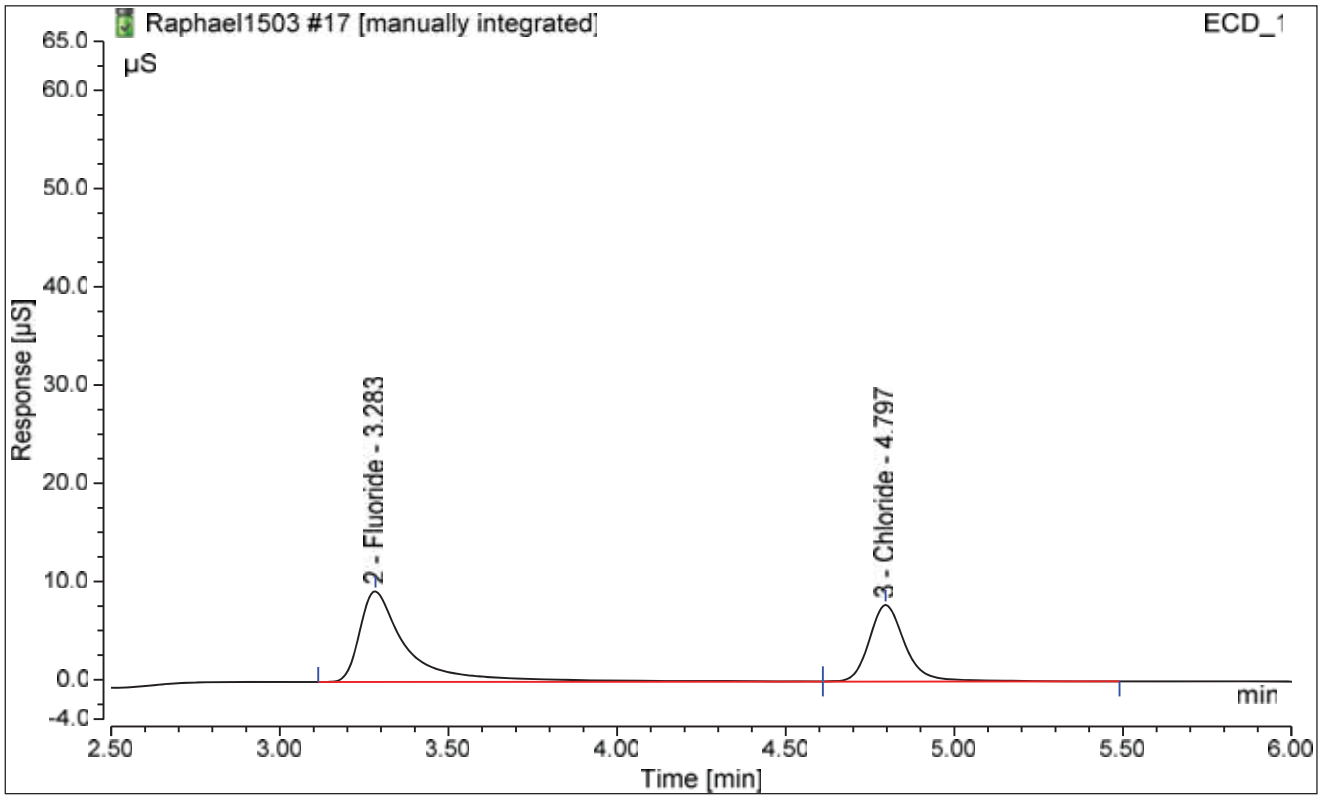


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	4.79	Chloride	0.021	0.032	0.10718	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 20:34**	Run Time:	**14.50**

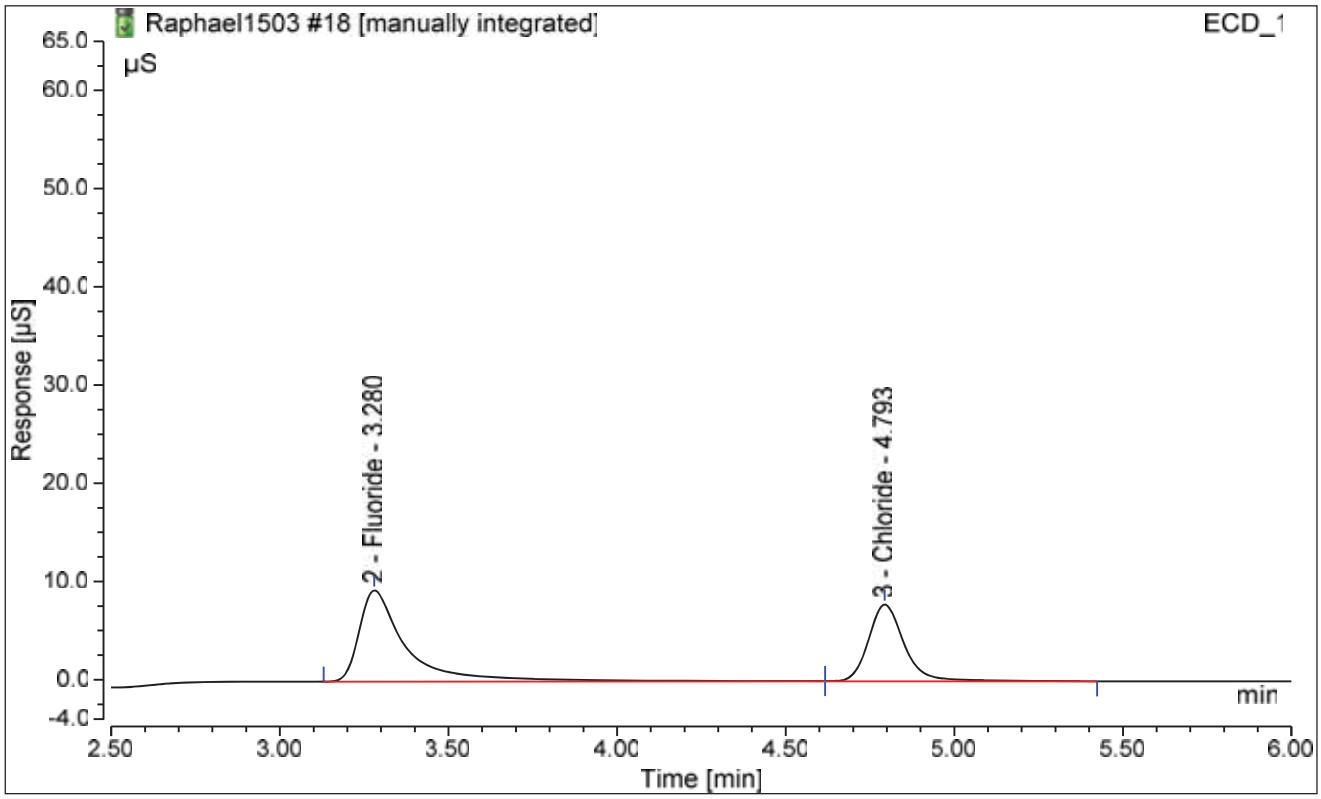


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.28	Fluoride	1.524	9.216	5.36160	FALSE	TRUE
3	4.80	Chloride	0.963	7.795	5.35516	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**29-Dec-2023 / 20:50**	Run Time:	**14.50**

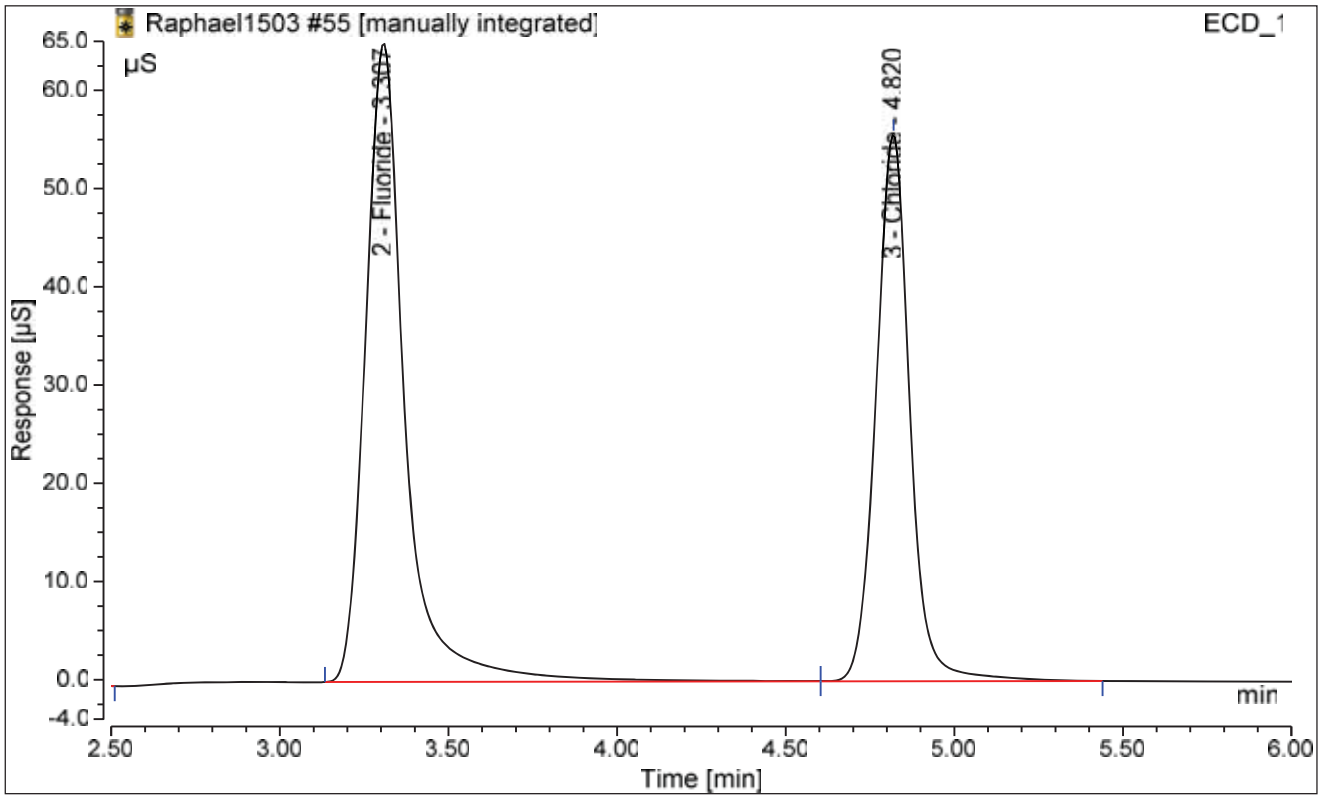


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.28	Fluoride	1.527	9.288	5.36989	FALSE	TRUE
3	4.79	Chloride	0.962	7.817	5.34767	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 06:46**	Run Time:	**14.50**

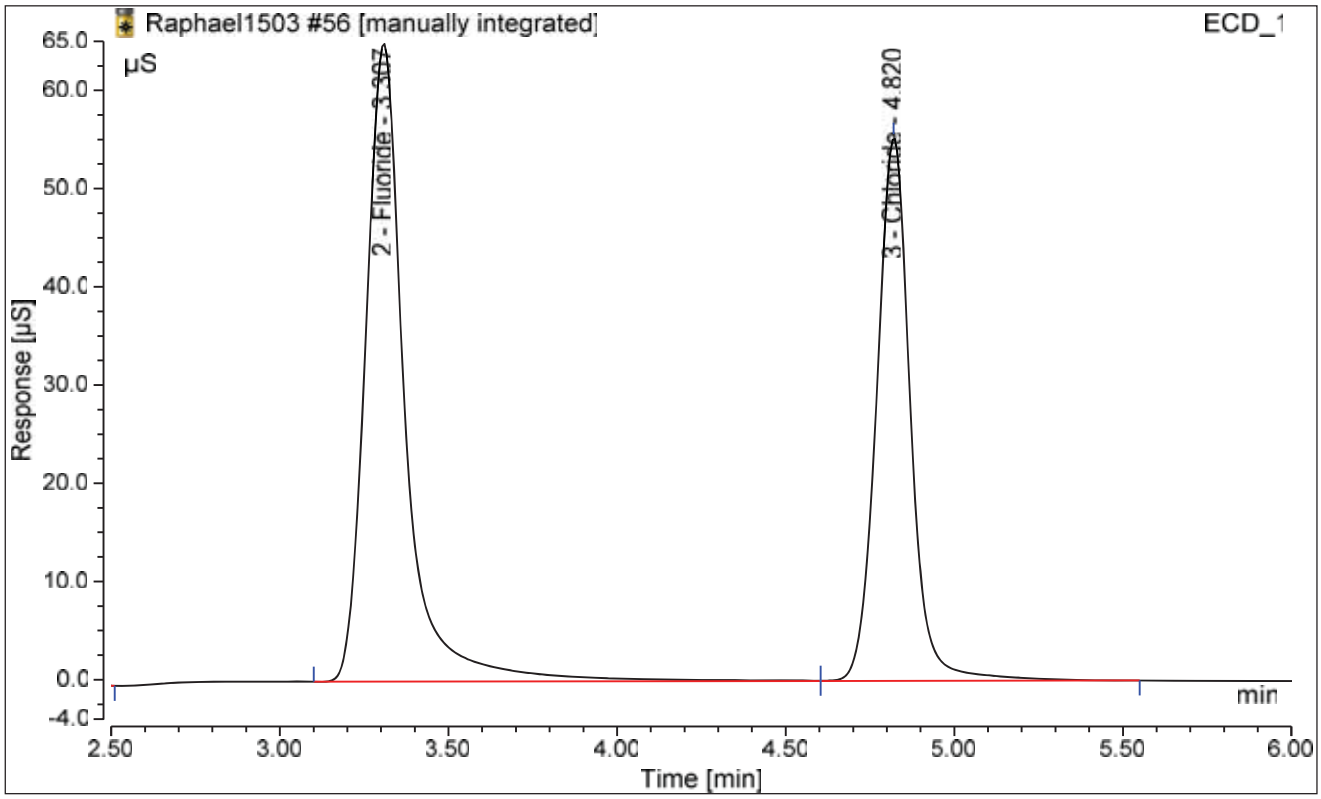


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.31	Fluoride	8.882	65.057	30.11750	FALSE	TRUE
3	4.82	Chloride	6.418	55.664	30.06496	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 07:02**	Run Time:	**14.50**

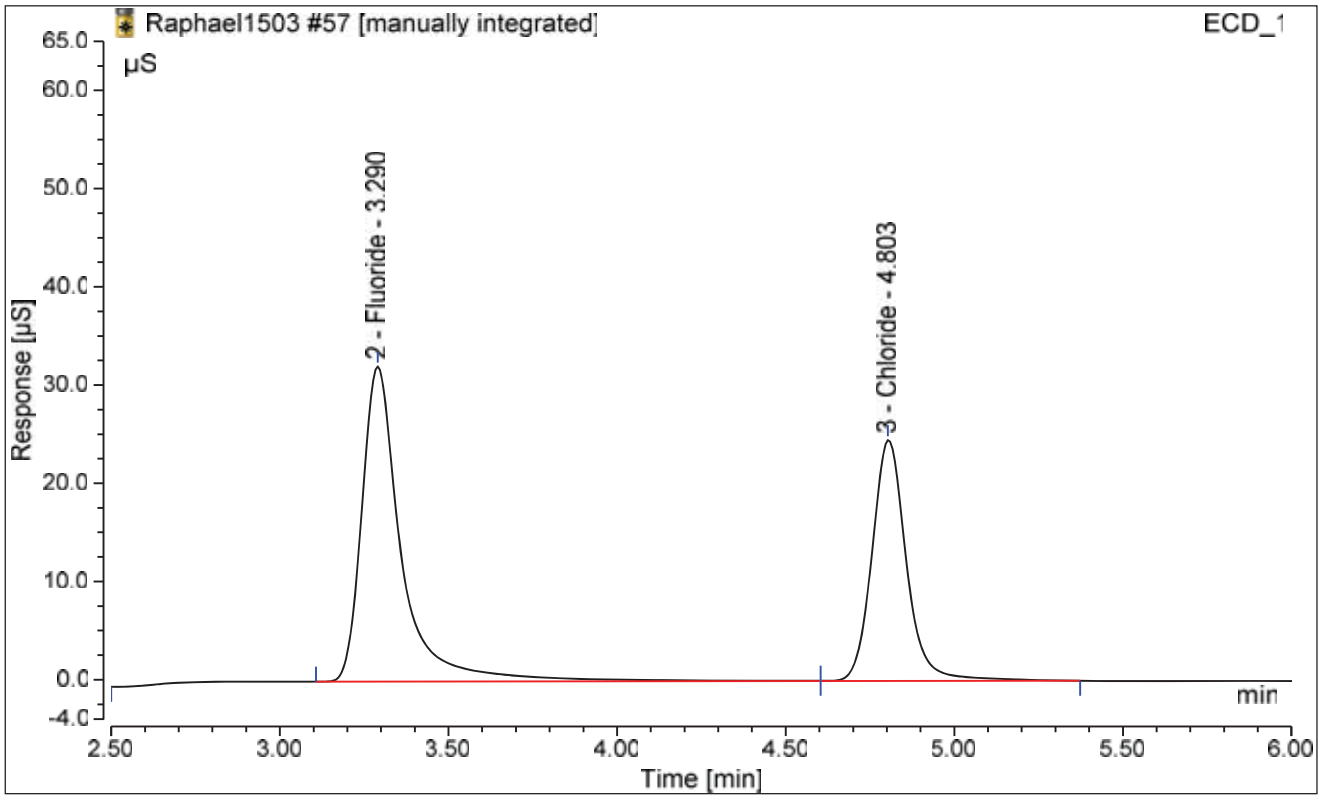


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.31	Fluoride	8.878	64.962	30.10501	FALSE	TRUE
3	4.82	Chloride	6.393	55.290	29.97423	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 07:18**	Run Time:	**14.50**

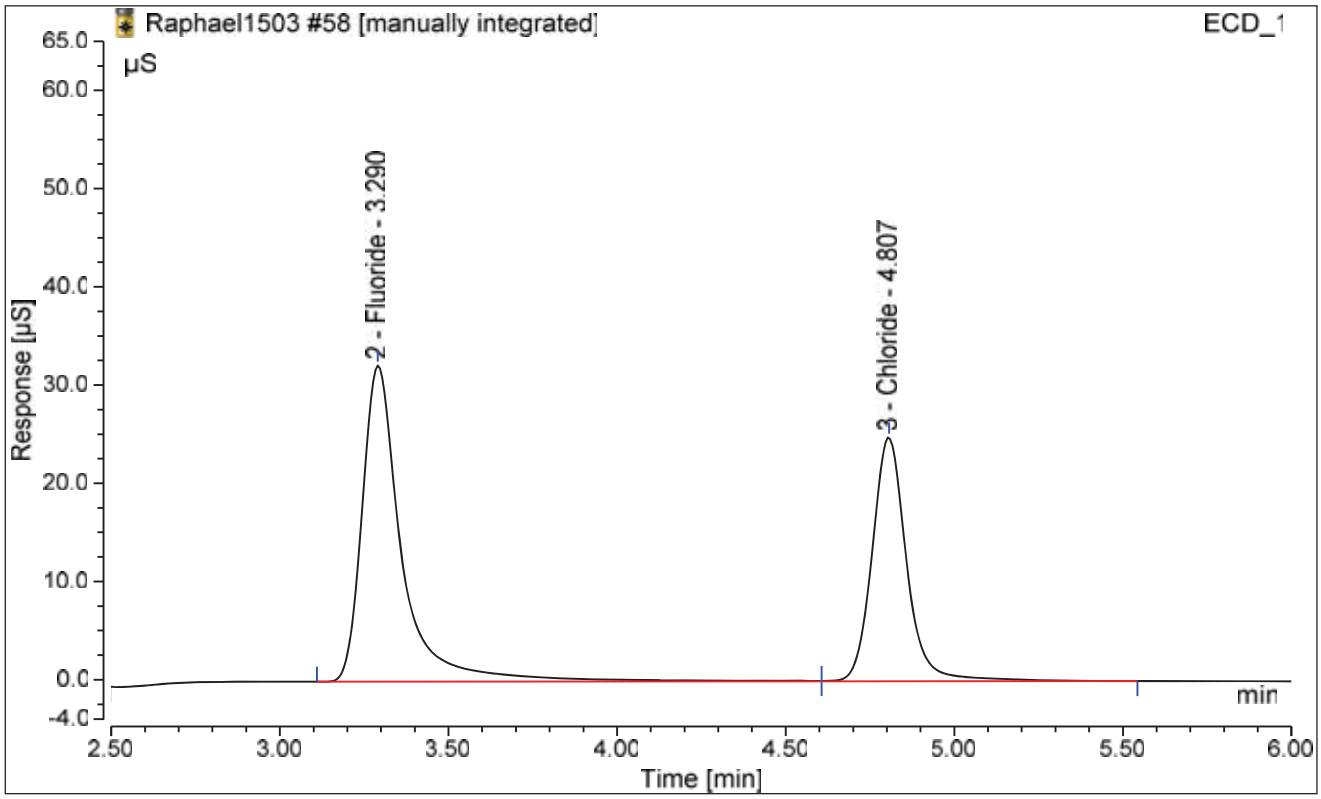


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	4.386	32.090	15.32153	FALSE	TRUE
3	4.80	Chloride	2.888	24.538	15.17886	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 07:34**	Run Time:	**14.50**

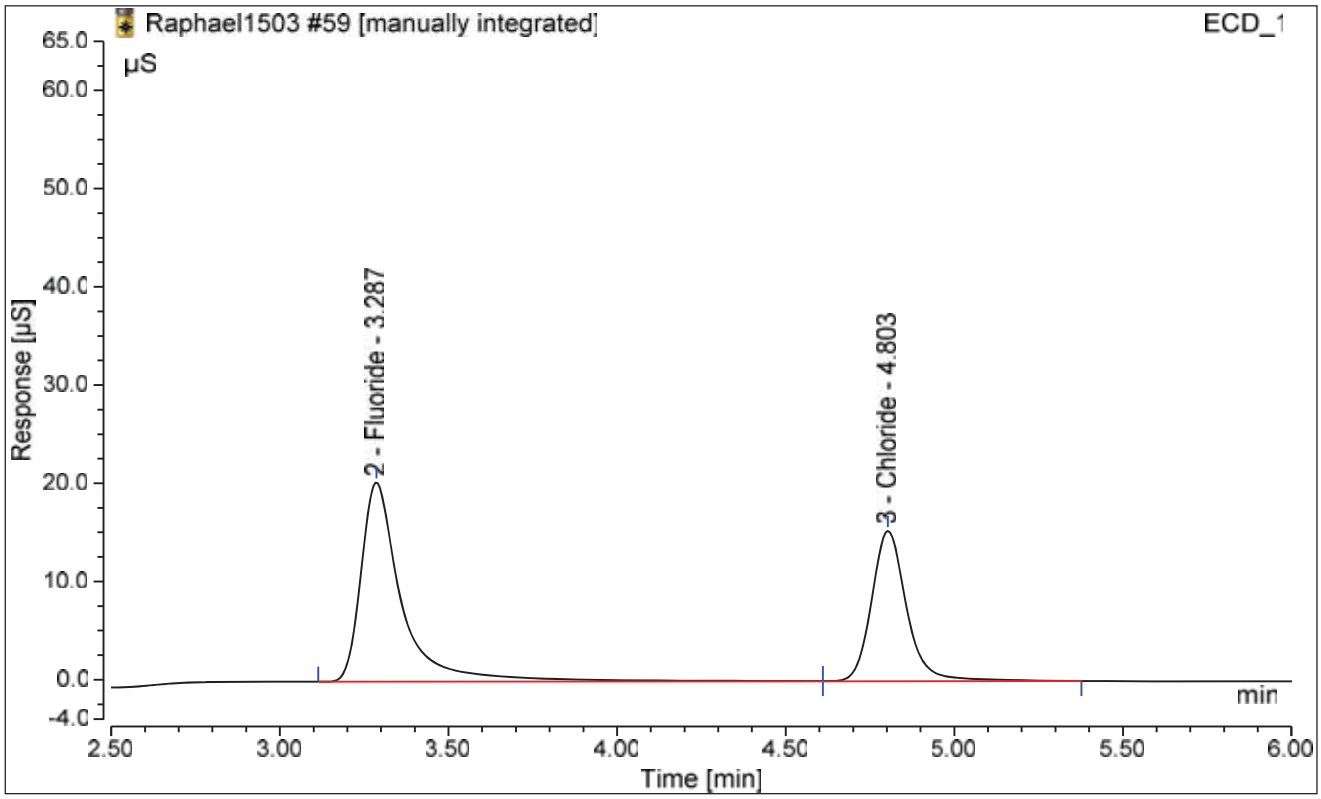


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	4.419	32.182	15.43364	FALSE	TRUE
3	4.81	Chloride	2.926	24.810	15.36006	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 07:50**	Run Time:	**14.50**

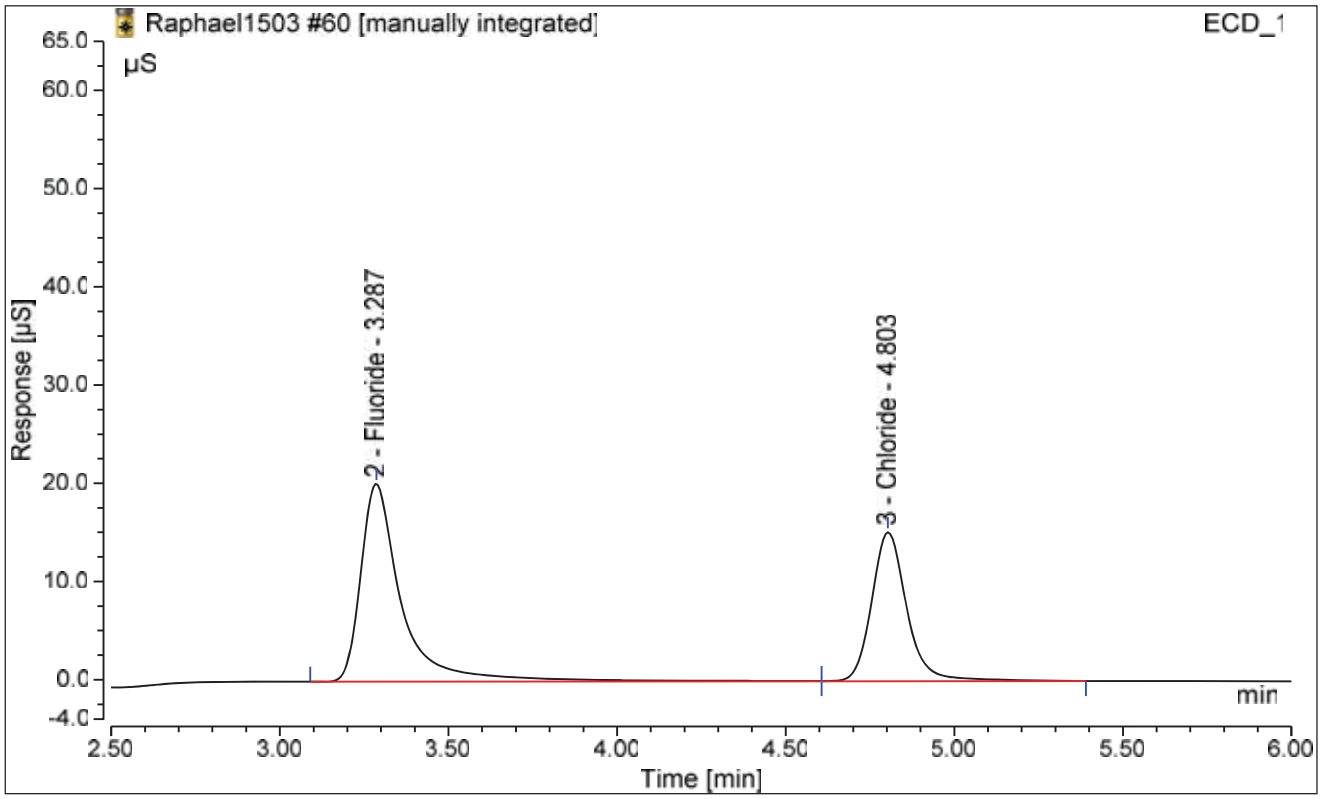


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	2.866	20.296	10.08351	FALSE	TRUE
3	4.80	Chloride	1.838	15.313	9.96796	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 08:06**	Run Time:	**14.50**

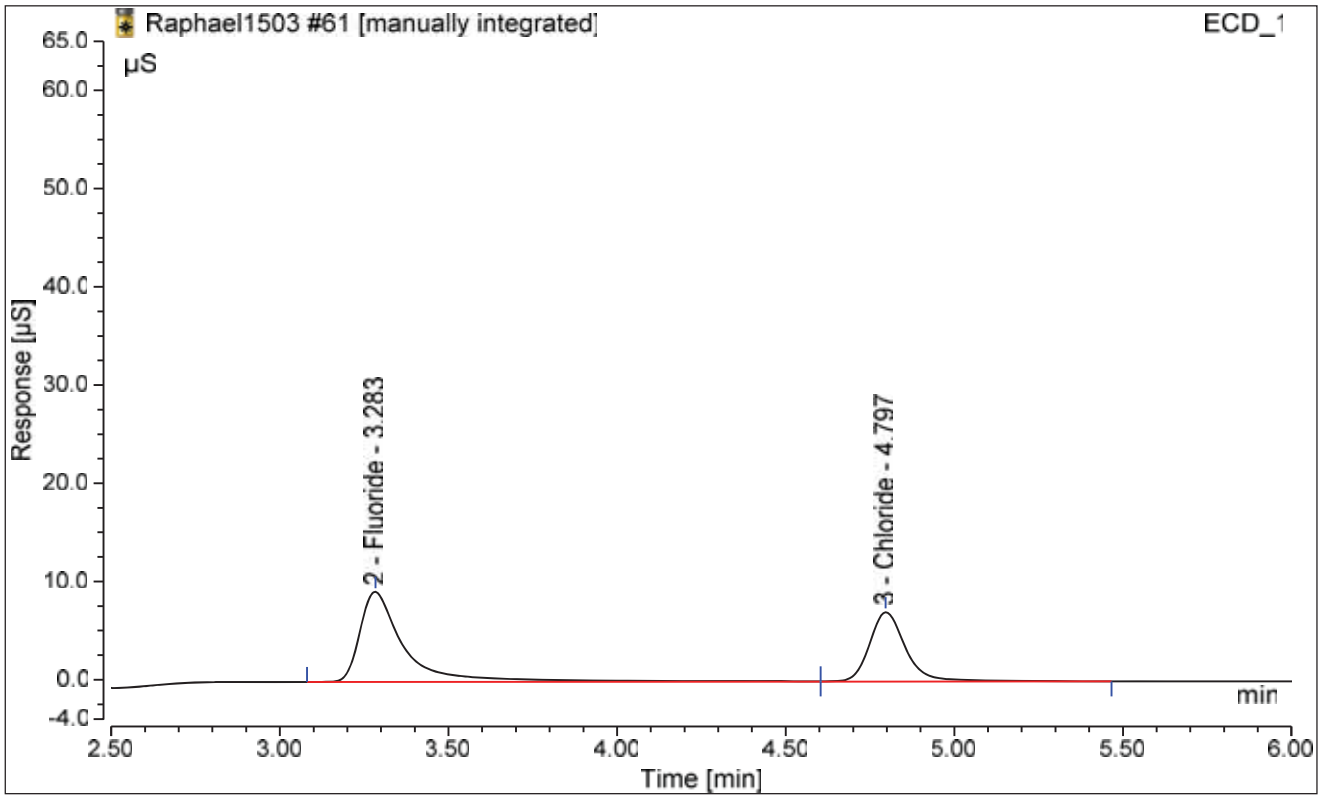


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	2.844	20.128	10.00555	FALSE	TRUE
3	4.80	Chloride	1.828	15.169	9.91816	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 08:22**	Run Time:	**14.50**

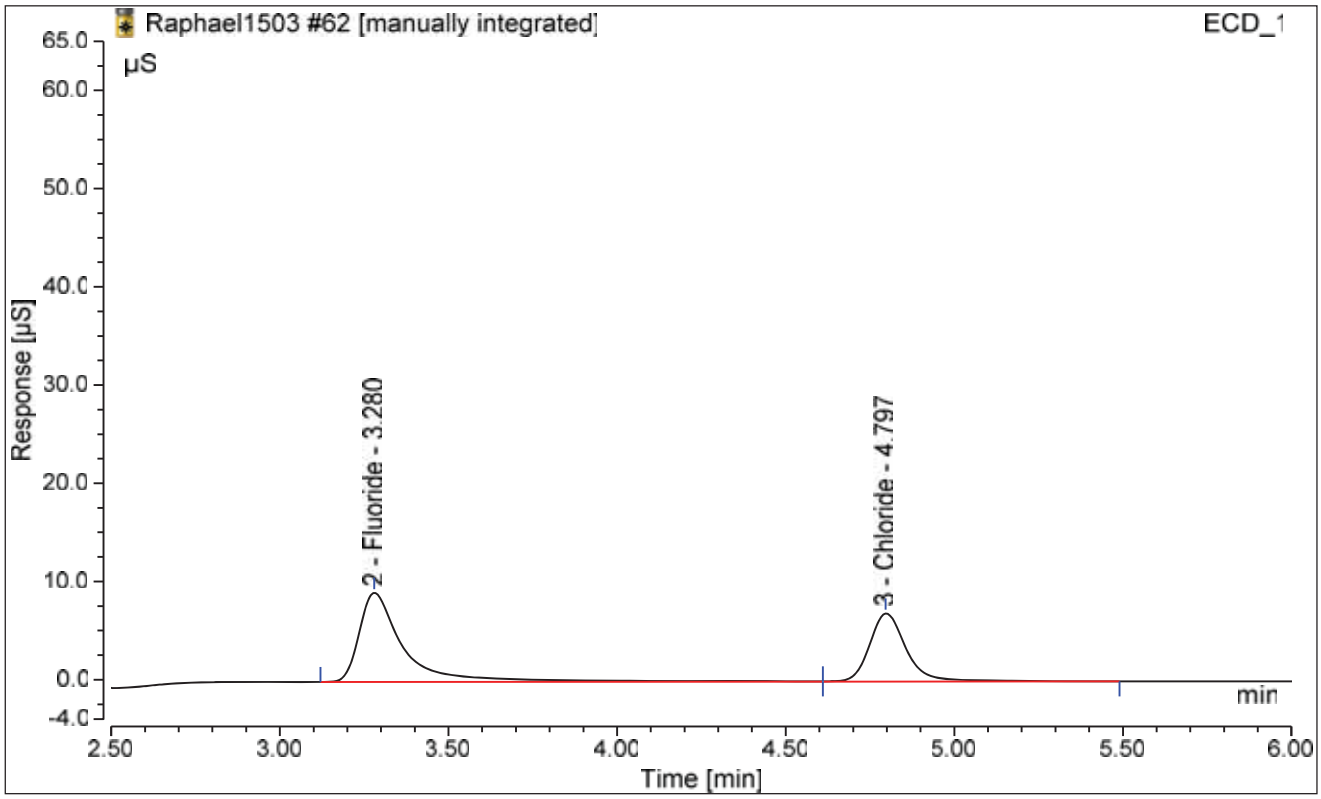


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.28	Fluoride	1.416	9.152	4.97694	FALSE	TRUE
3	4.80	Chloride	0.878	7.061	4.88986	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 08:39**	Run Time:	**14.50**

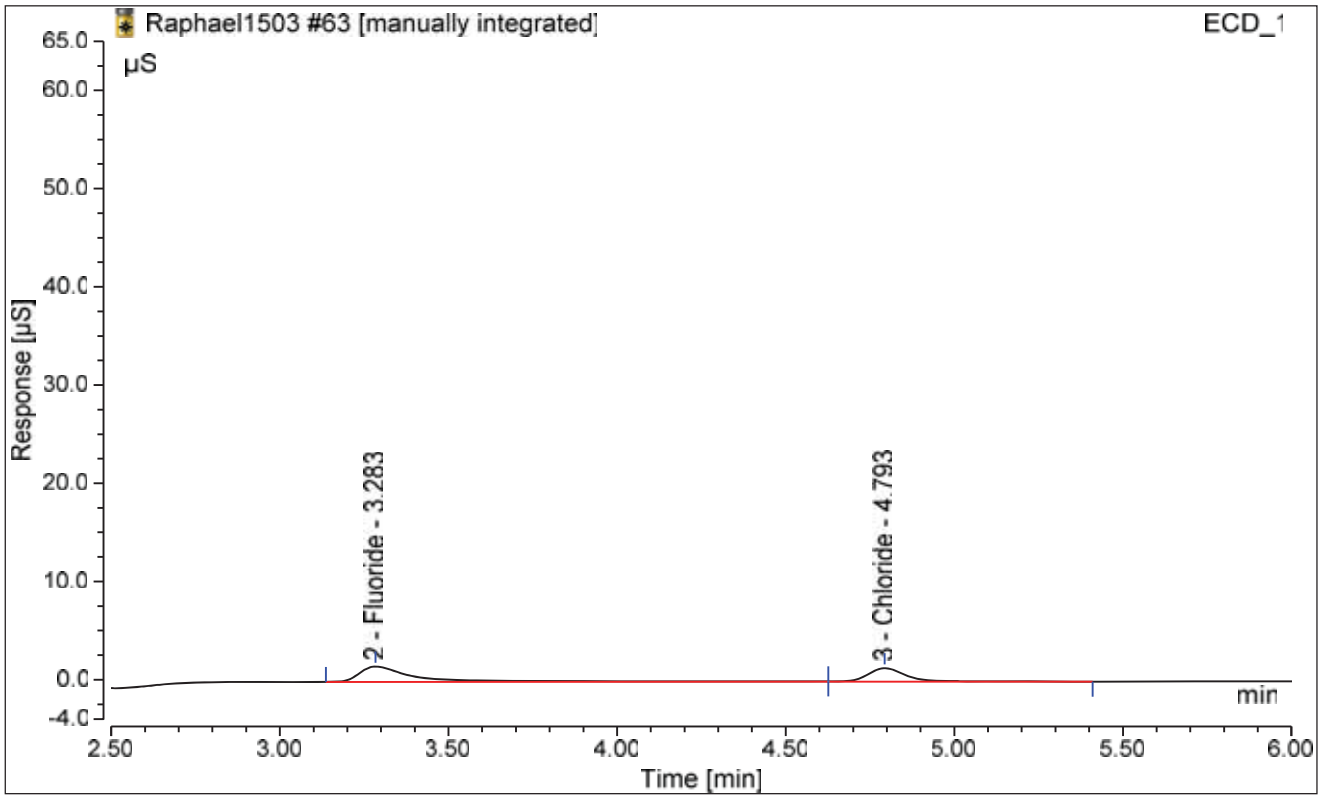


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.28	Fluoride	1.400	9.060	4.92044	FALSE	TRUE
3	4.80	Chloride	0.874	6.940	4.86900	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 08:55**	Run Time:	**14.50**

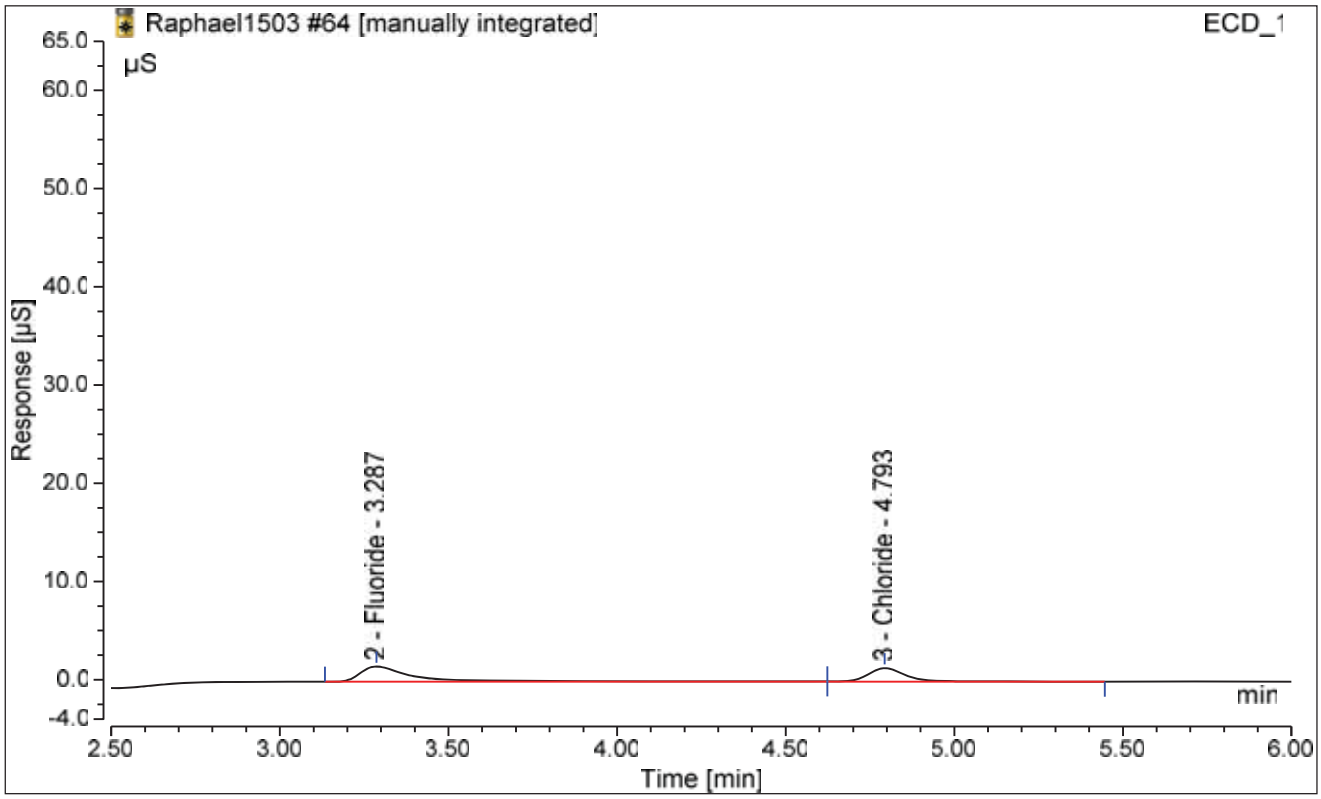


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.28	Fluoride	0.313	1.555	1.01955	FALSE	TRUE
3	4.79	Chloride	0.182	1.374	1.02400	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 09:11**	Run Time:	**14.50**

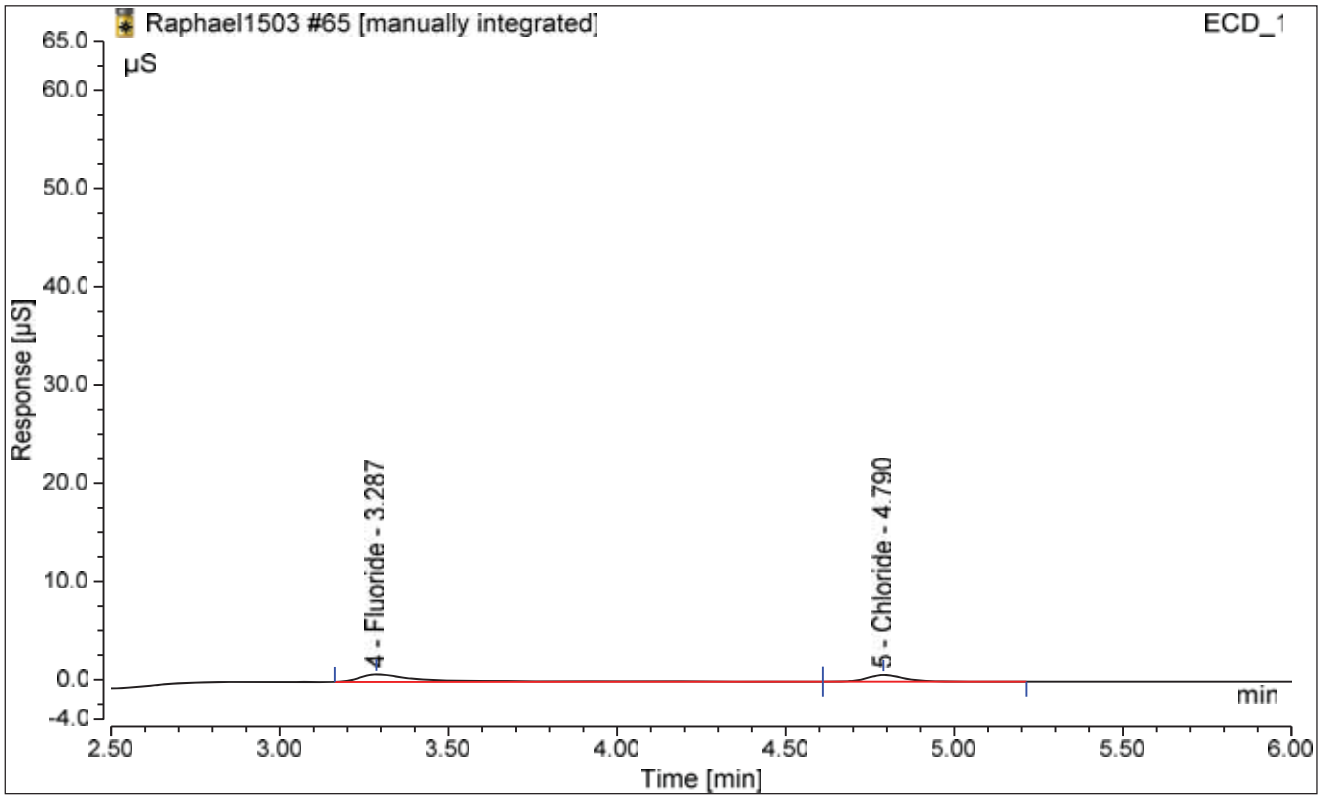


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
2	3.29	Fluoride	0.313	1.556	1.01922	FALSE	TRUE
3	4.79	Chloride	0.183	1.381	1.02747	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 09:27**	Run Time:	**14.50**

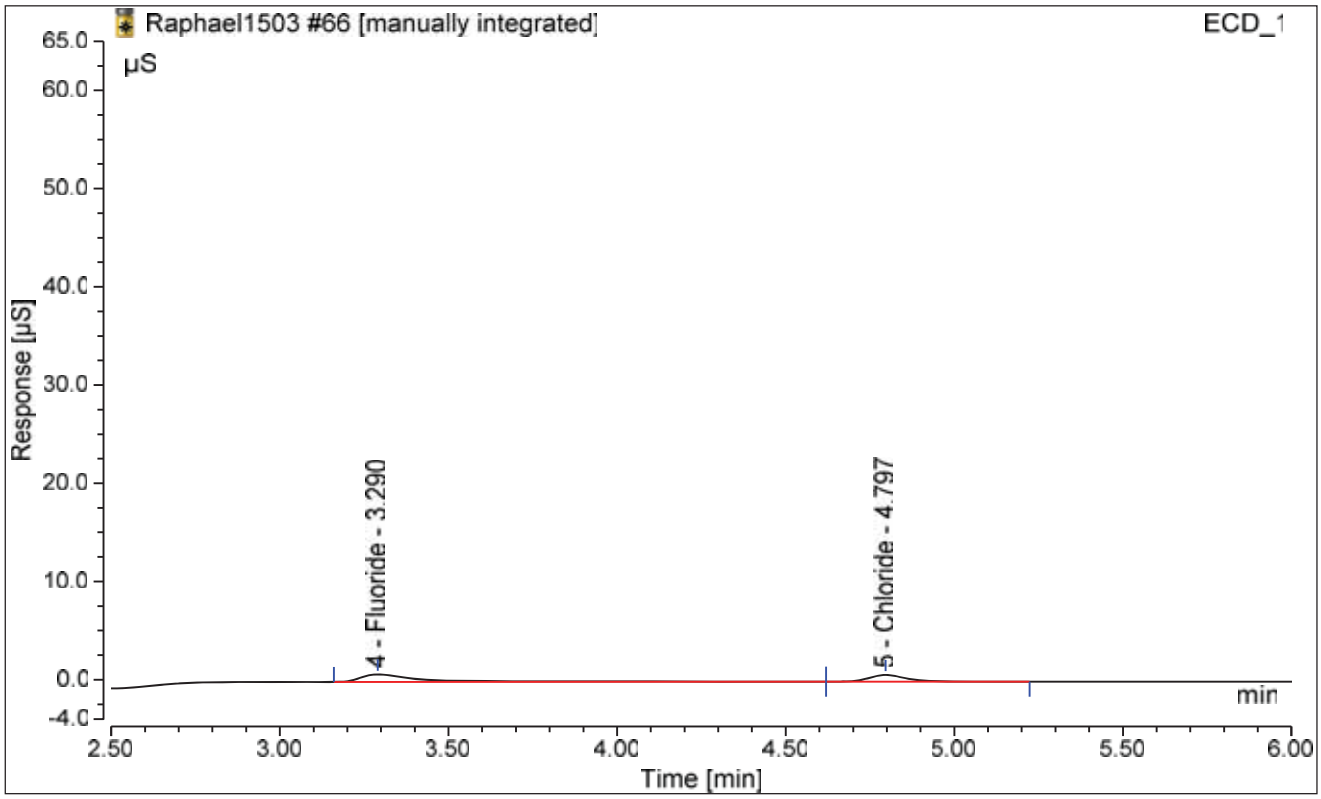


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
4	3.29	Fluoride	0.171	0.757	0.50373	FALSE	TRUE
5	4.79	Chloride	0.090	0.690	0.50082	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1652 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 ASAP new**	Operator:	**searundhati**
Inj. Date / Time:	**30-Dec-2023 / 09:43**	Run Time:	**14.50**

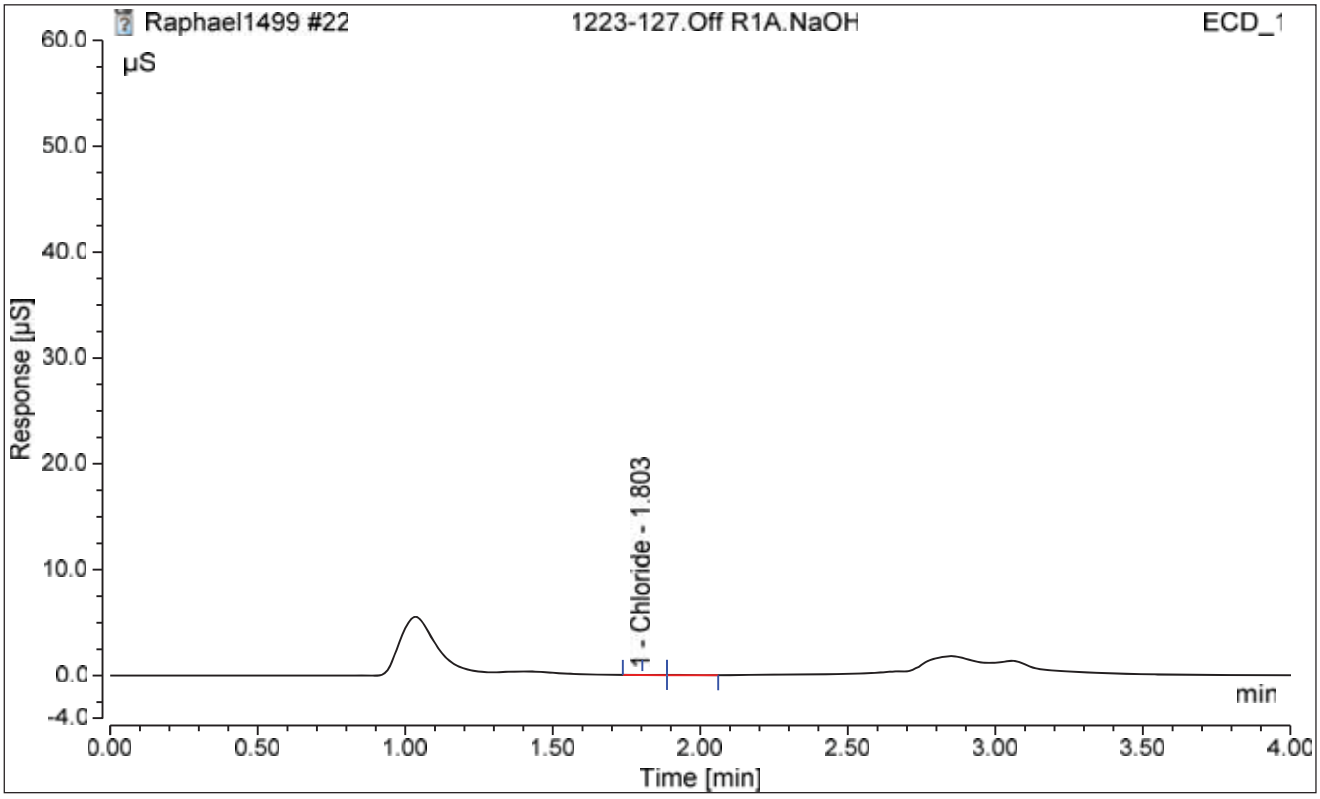


Analyst Comment: II KLB 12/30/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
4	3.29	Fluoride	0.172	0.757	0.50892	FALSE	TRUE
5	4.80	Chloride	0.091	0.696	0.50743	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R1A.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 16:39**	Run Time:	**12.50**

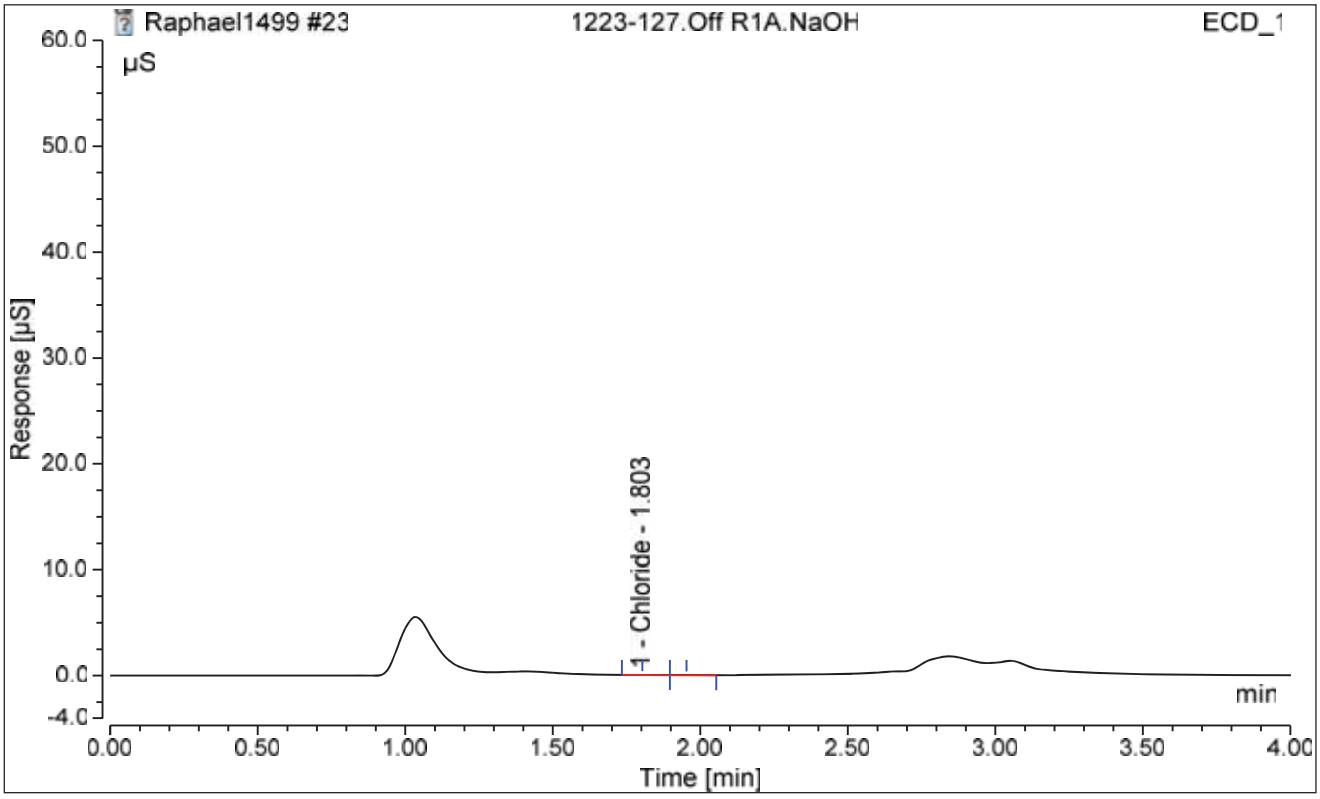


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.80	Chloride	0.001	0.013	0.05682	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.Off R1A.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 16:53**	Run Time:	**12.50**

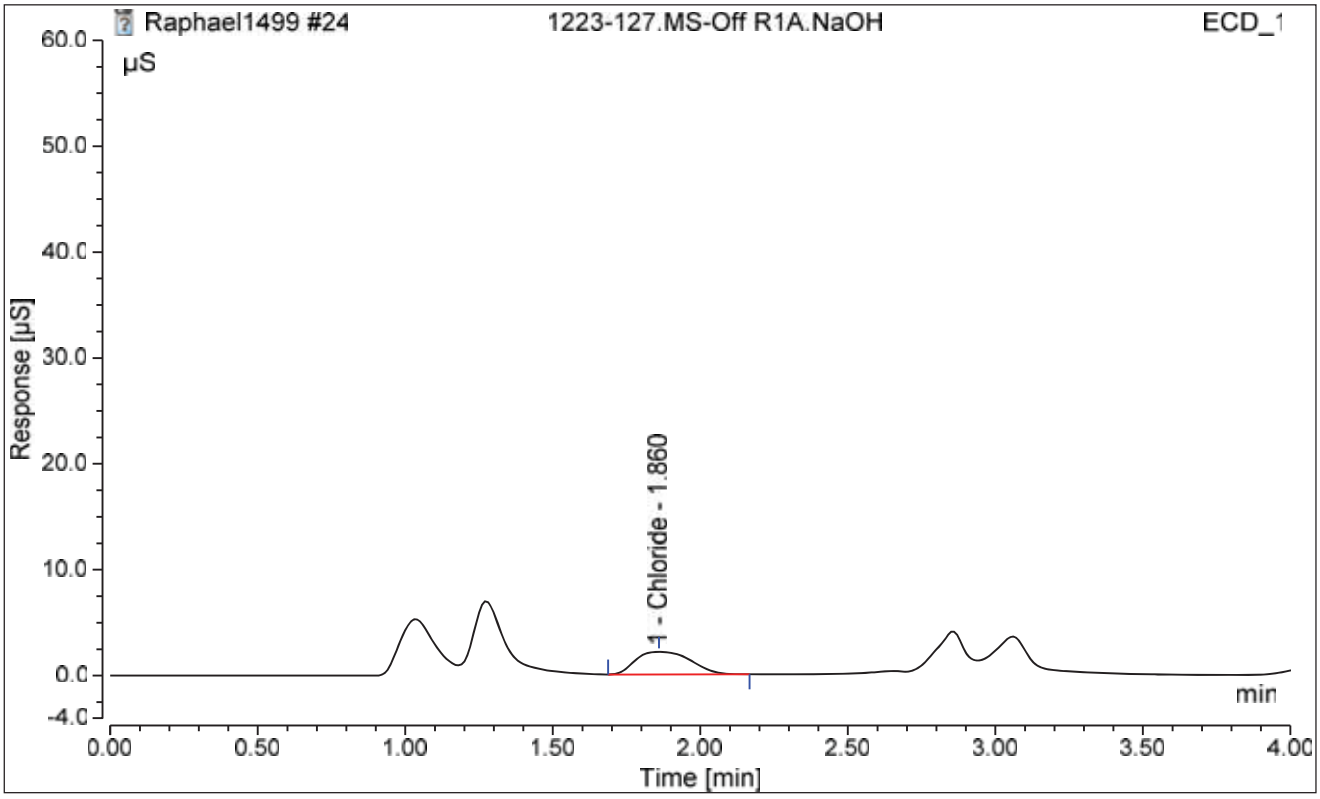


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.80	Chloride	0.001	0.013	0.05735	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.MS-Off R1A.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 17:08**	Run Time:	**12.50**

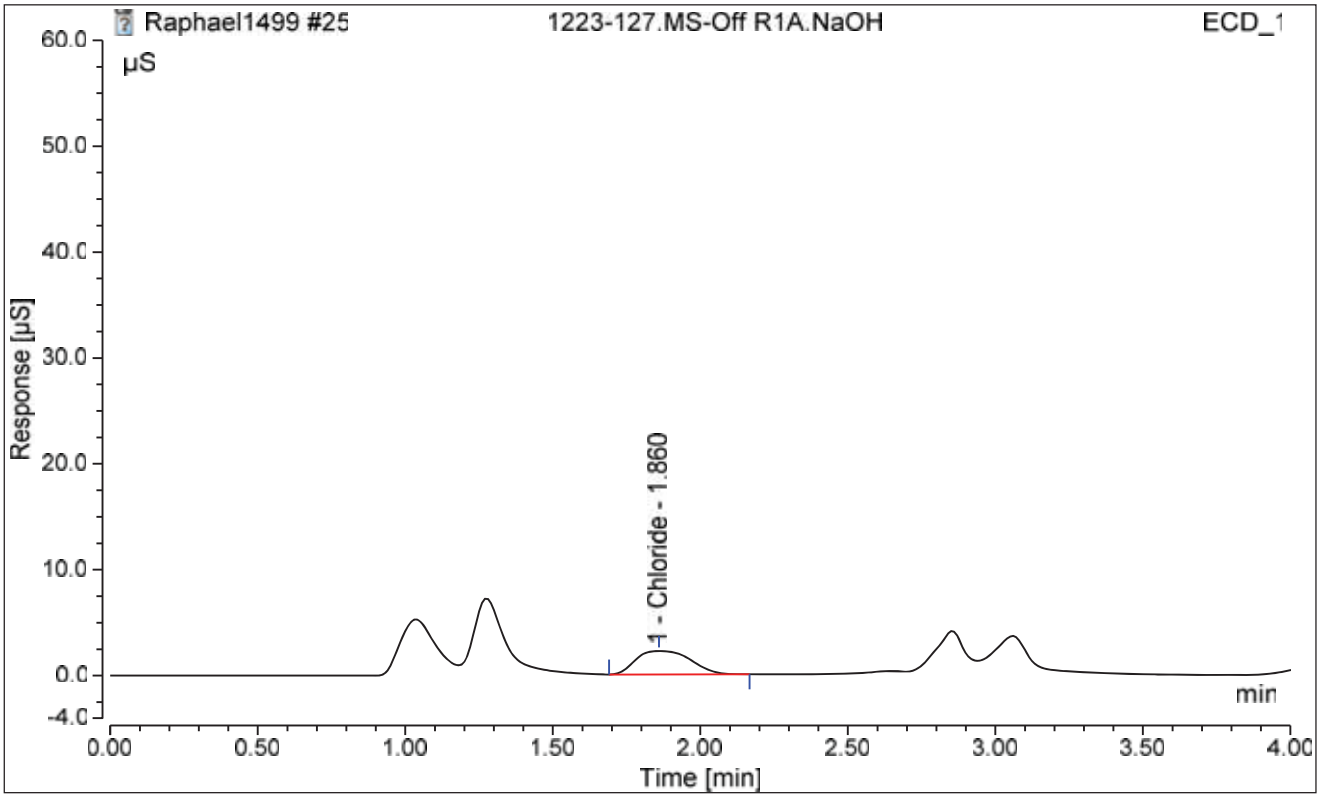


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.86	Chloride	0.460	2.125	4.38979	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.MS-Off R1A.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 17:22**	Run Time:	**12.50**

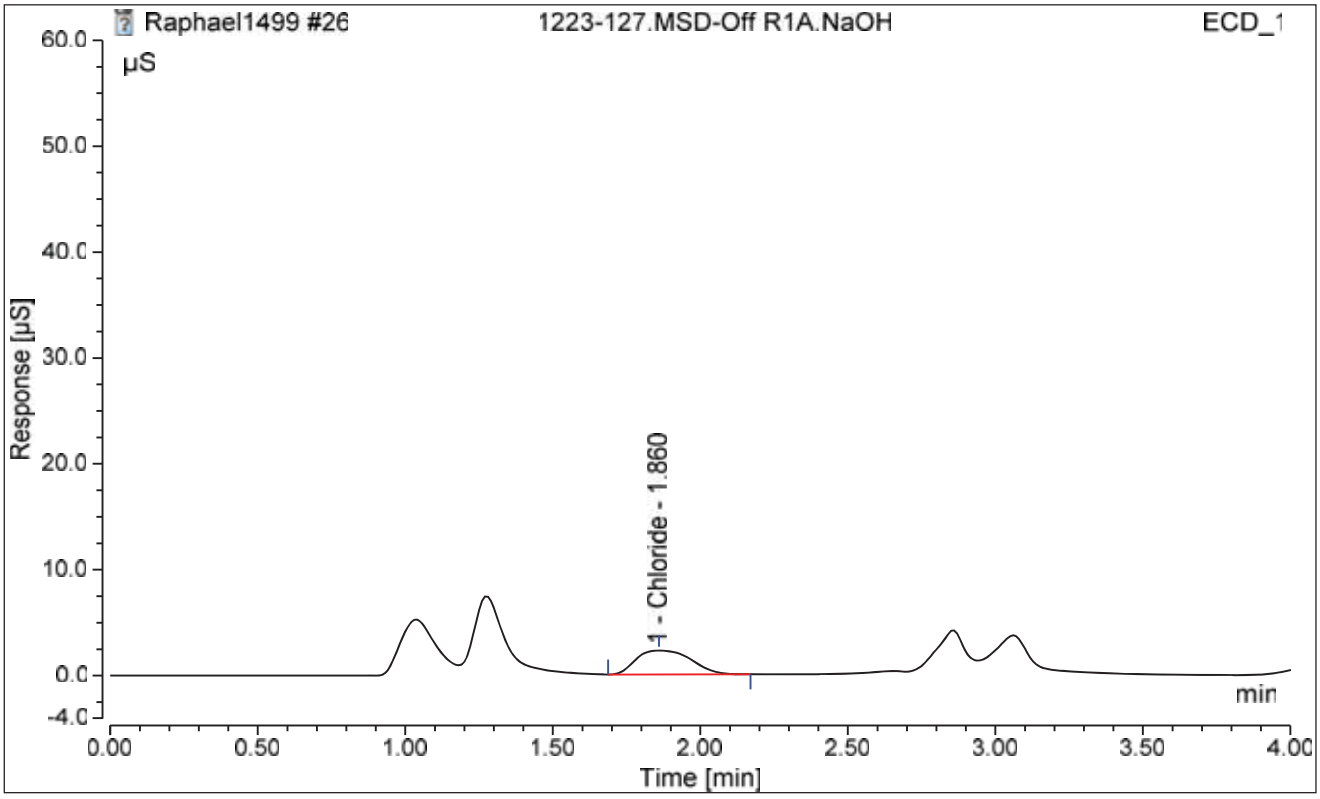


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.86	Chloride	0.474	2.209	4.51409	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.MSD-Off R1A.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 17:36**	Run Time:	**12.50**

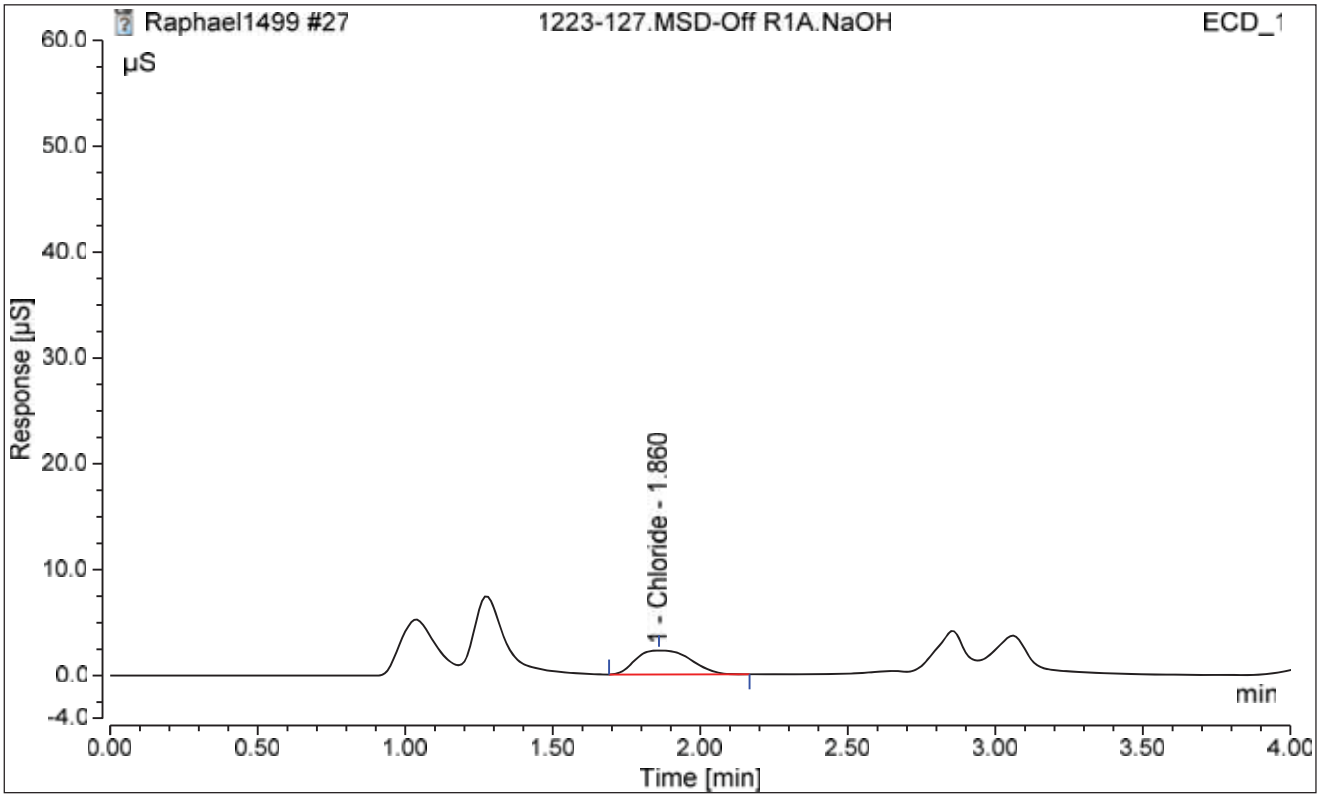


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.86	Chloride	0.485	2.247	4.61386	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.MSD-Off R1A.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 17:50**	Run Time:	**12.50**

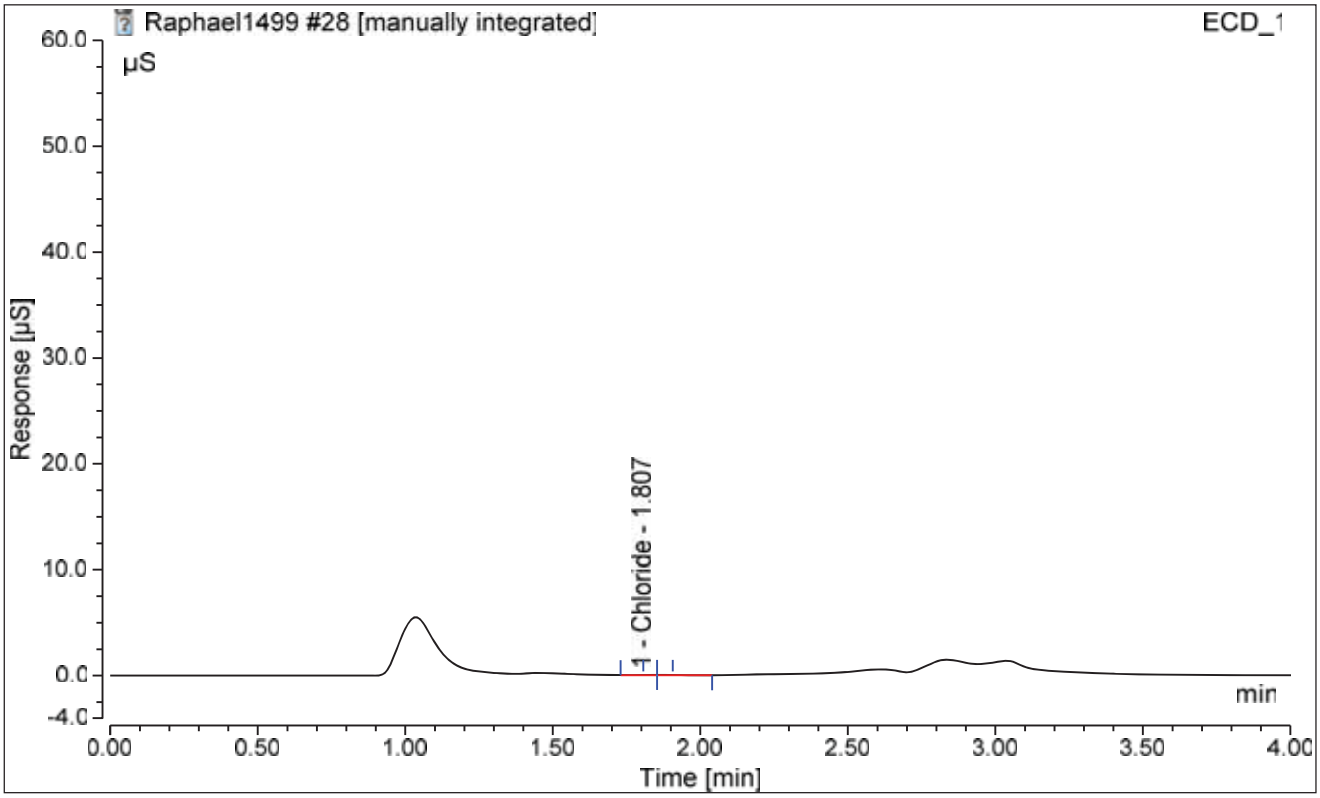


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.86	Chloride	0.486	2.269	4.62787	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.Off R1B.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 18:04**	Run Time:	**12.50**

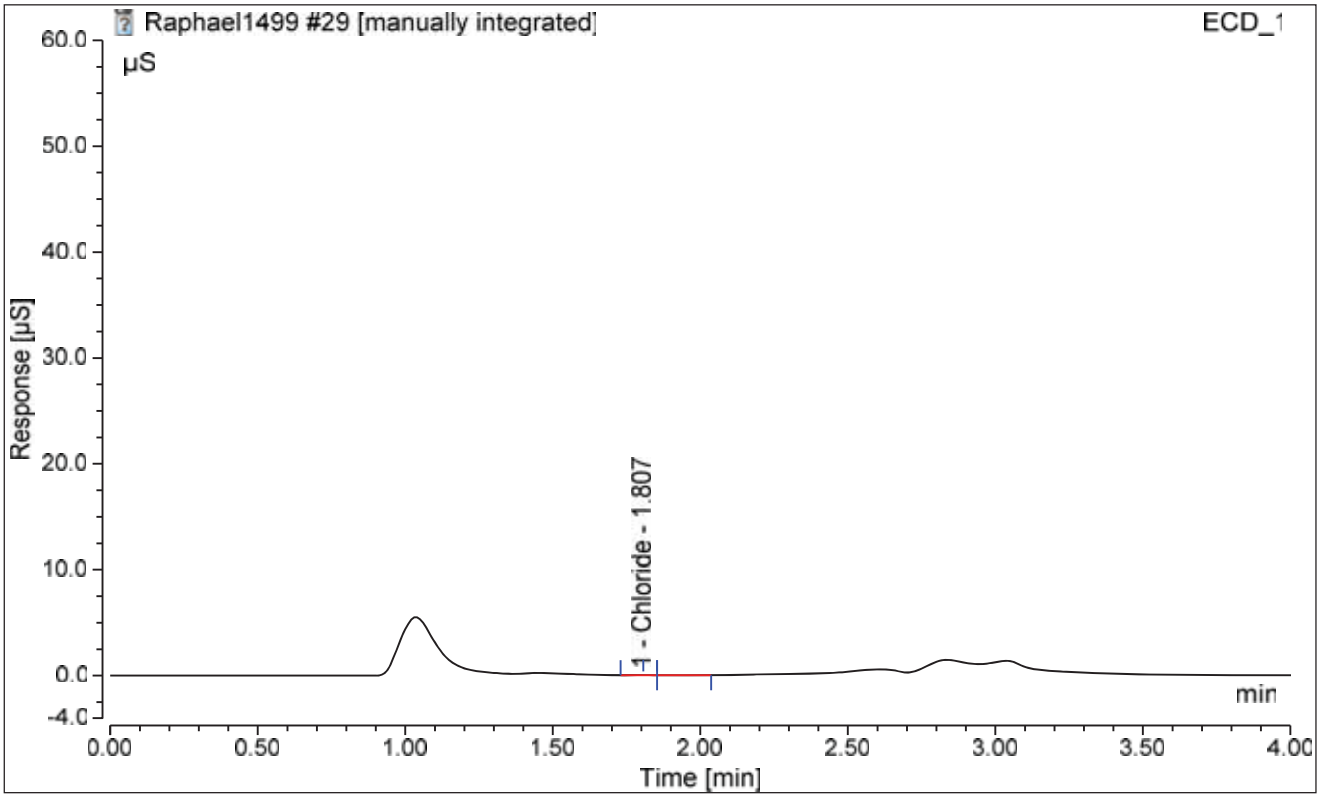


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.81	Chloride	0.001	0.014	0.05456	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R1B.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 18:18**	Run Time:	**12.50**

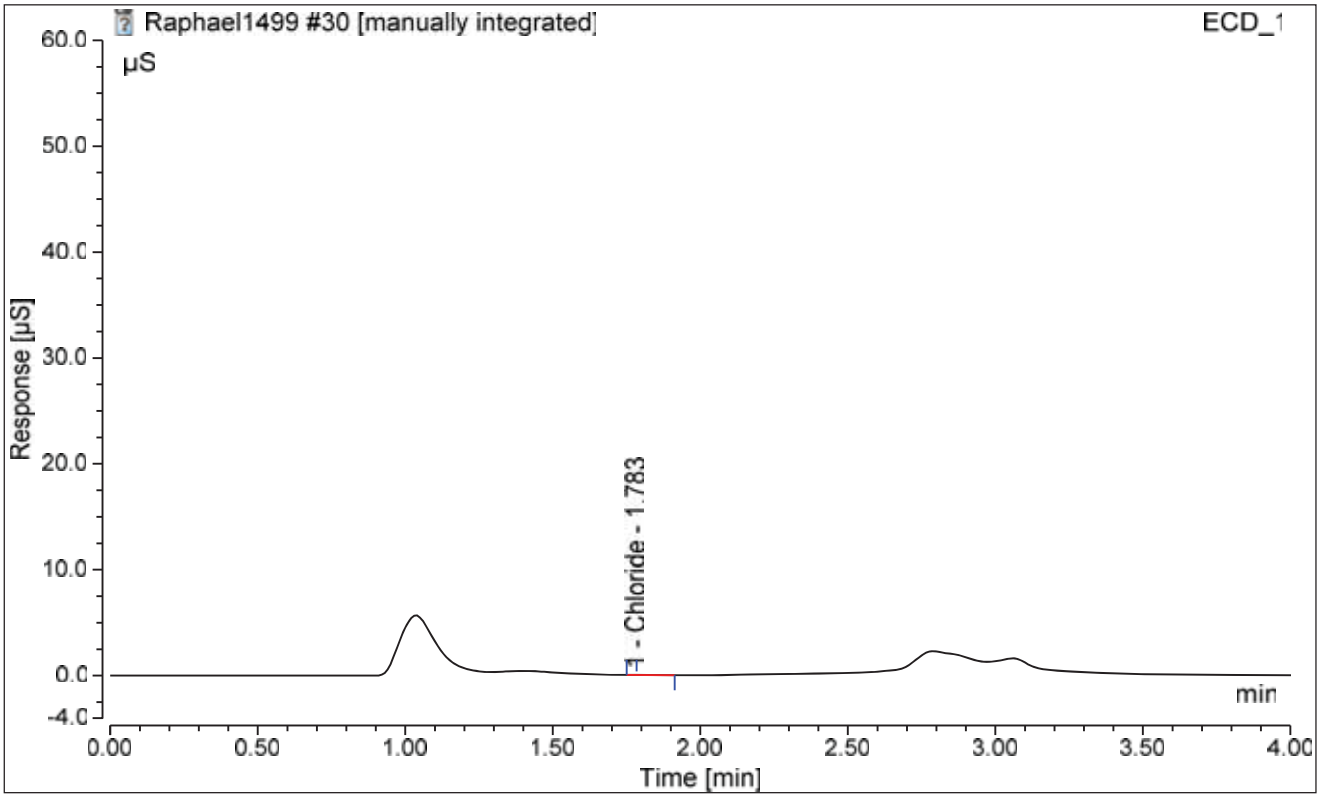


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.81	Chloride	0.001	0.015	0.05535	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R2A.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 18:32**	Run Time:	**12.50**

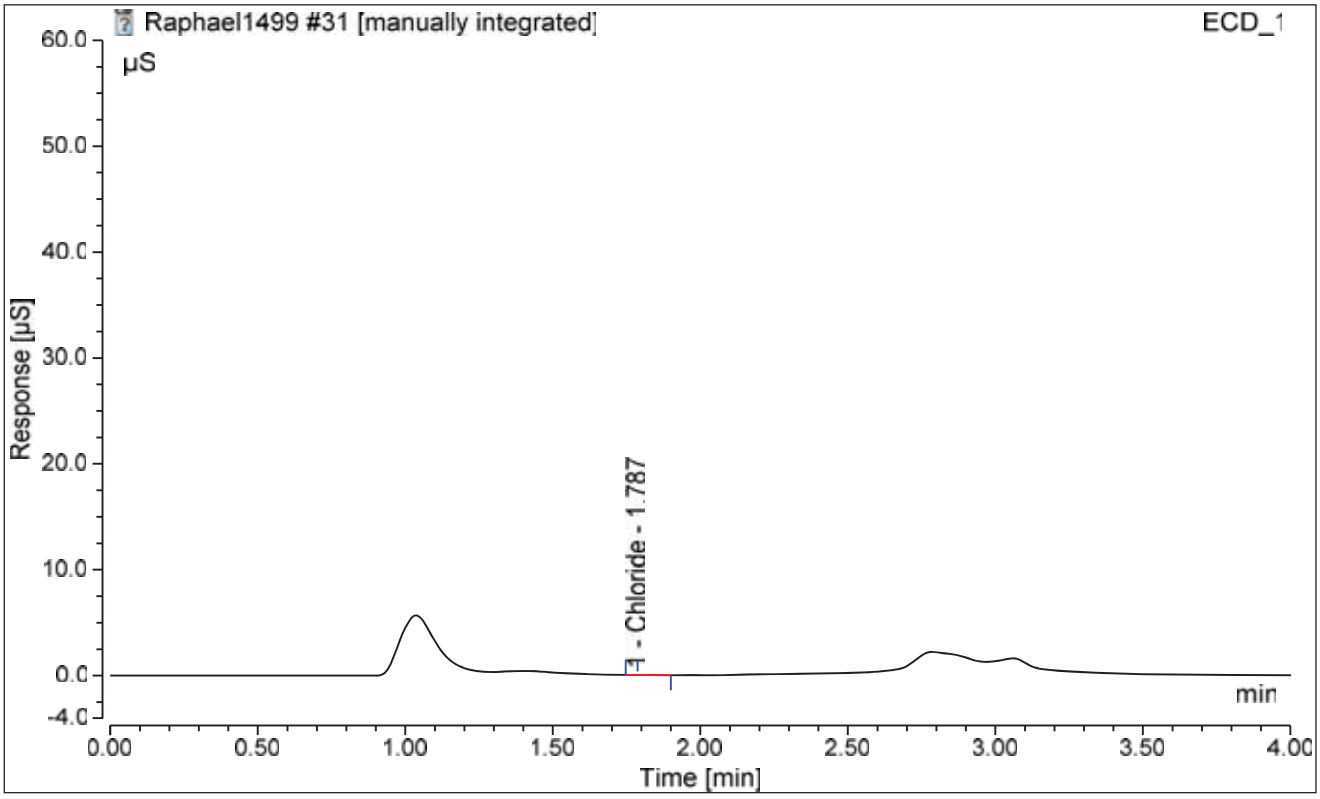


Analyst Comment: II, NI SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.78	Chloride	0.000	0.003	0.04517	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R2A.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 18:46**	Run Time:	**12.50**

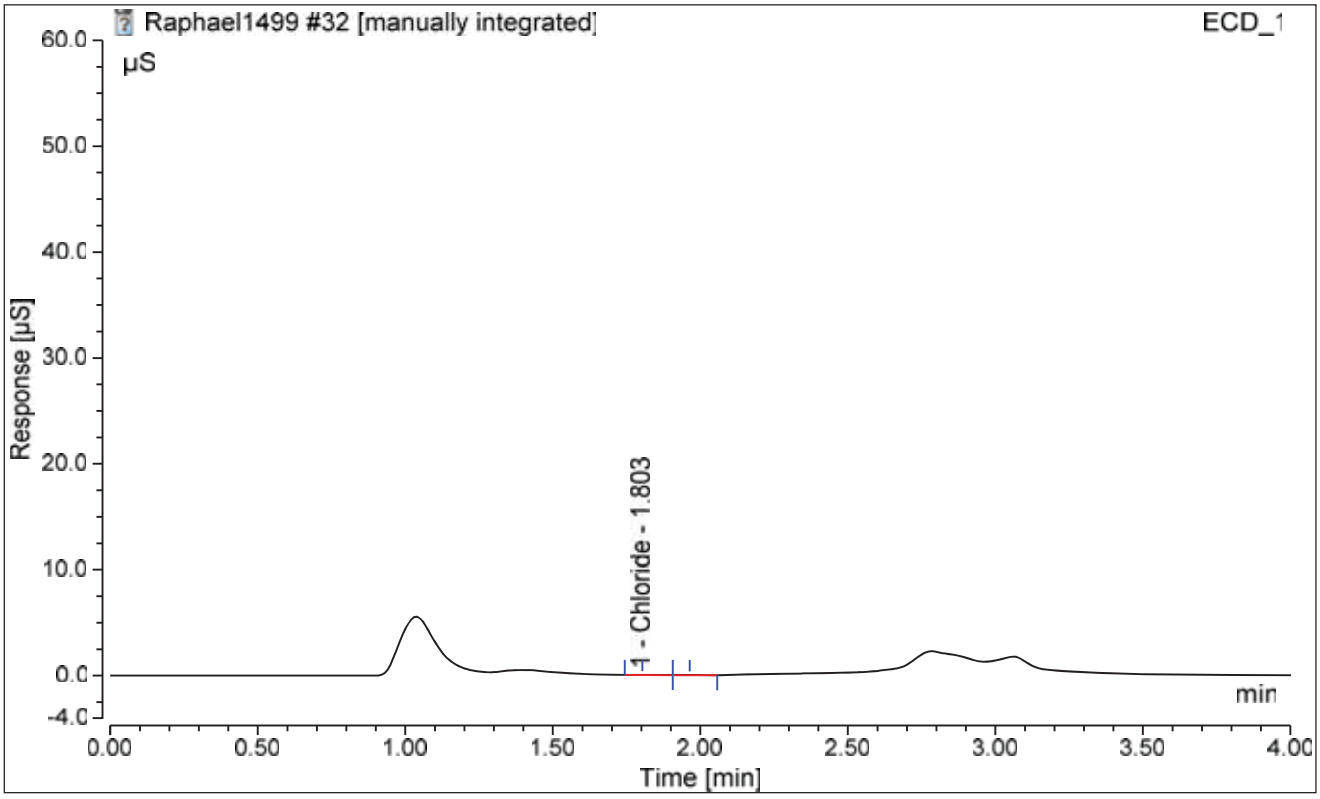


Analyst Comment: II, NI SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.79	Chloride	0.000	0.003	0.04497	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R2B.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 19:00**	Run Time:	**12.50**

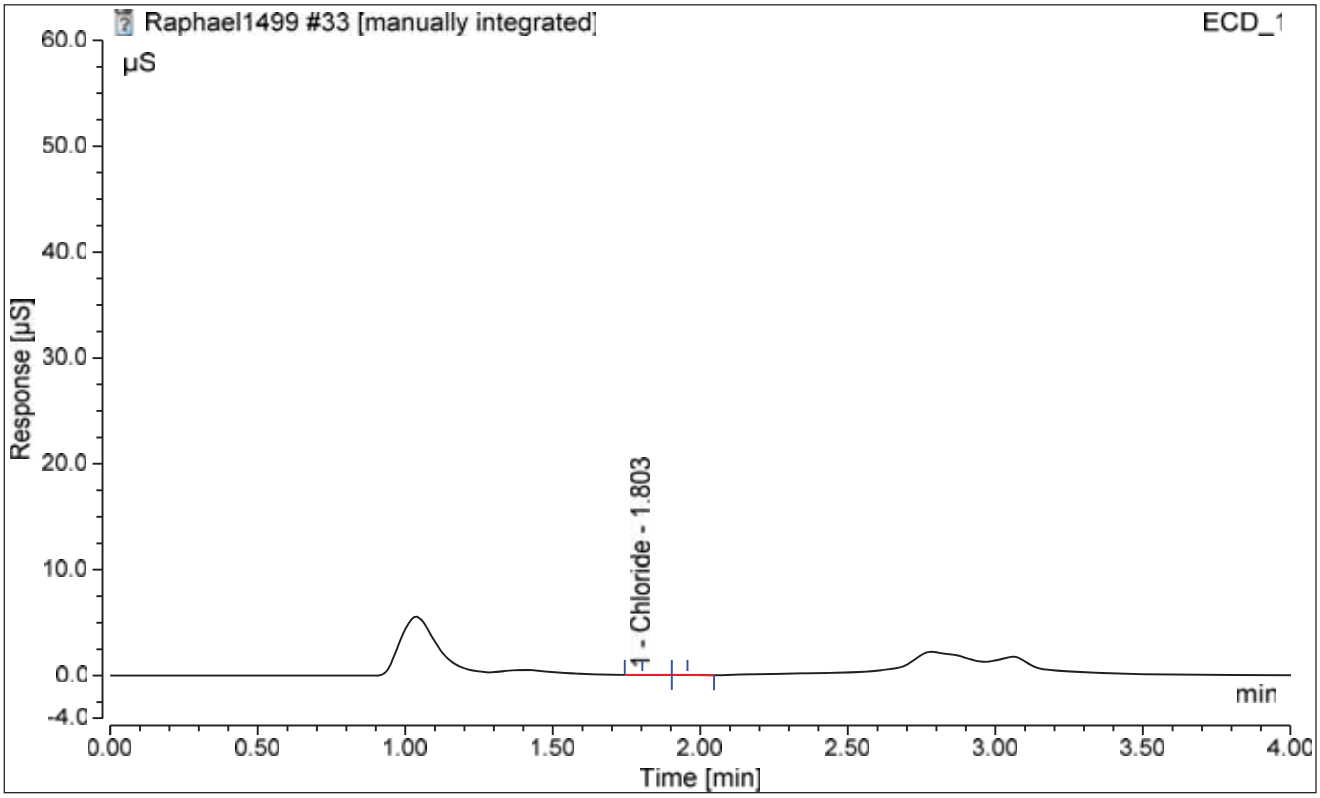


Analyst Comment: II, NI SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.80	Chloride	0.001	0.009	0.05374	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R2B.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 19:14**	Run Time:	**12.50**

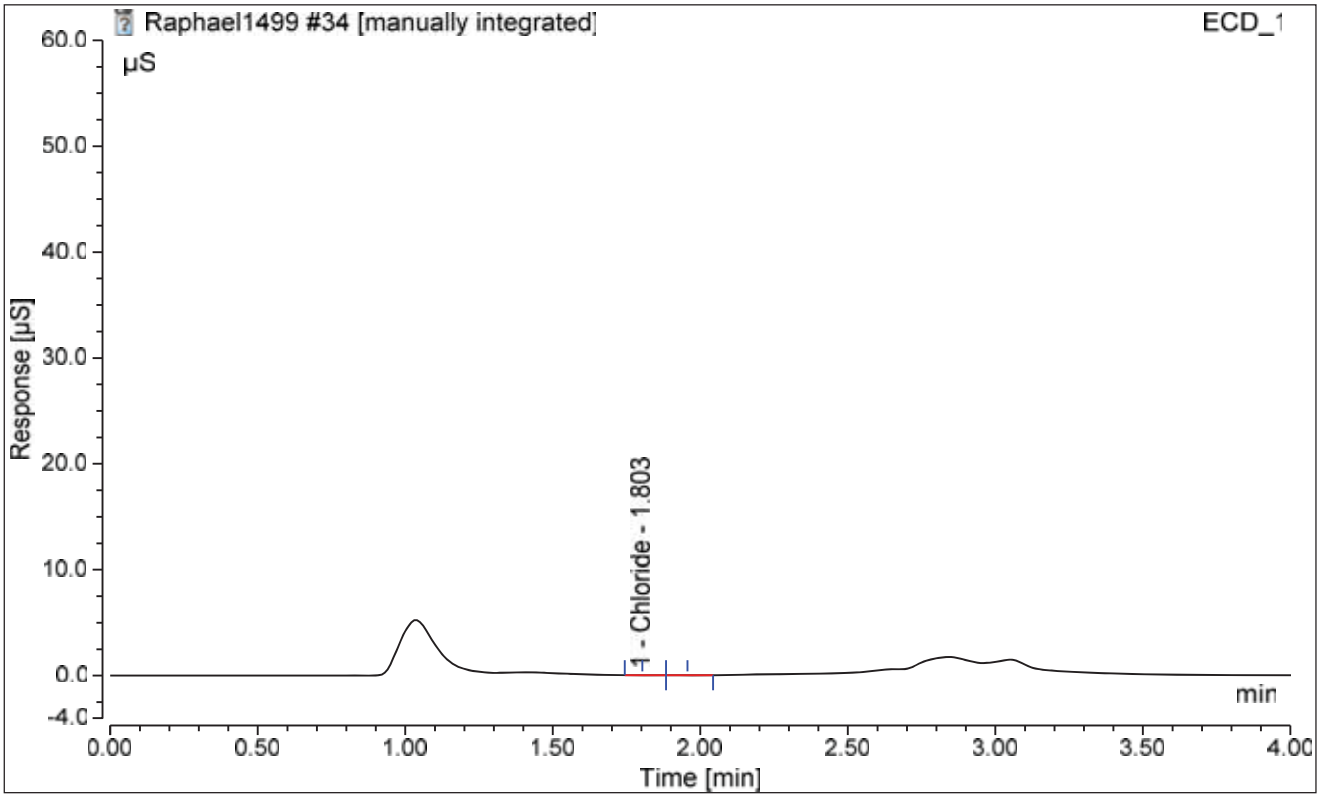


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.80	Chloride	0.001	0.010	0.05473	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R3A.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 19:29**	Run Time:	**12.50**

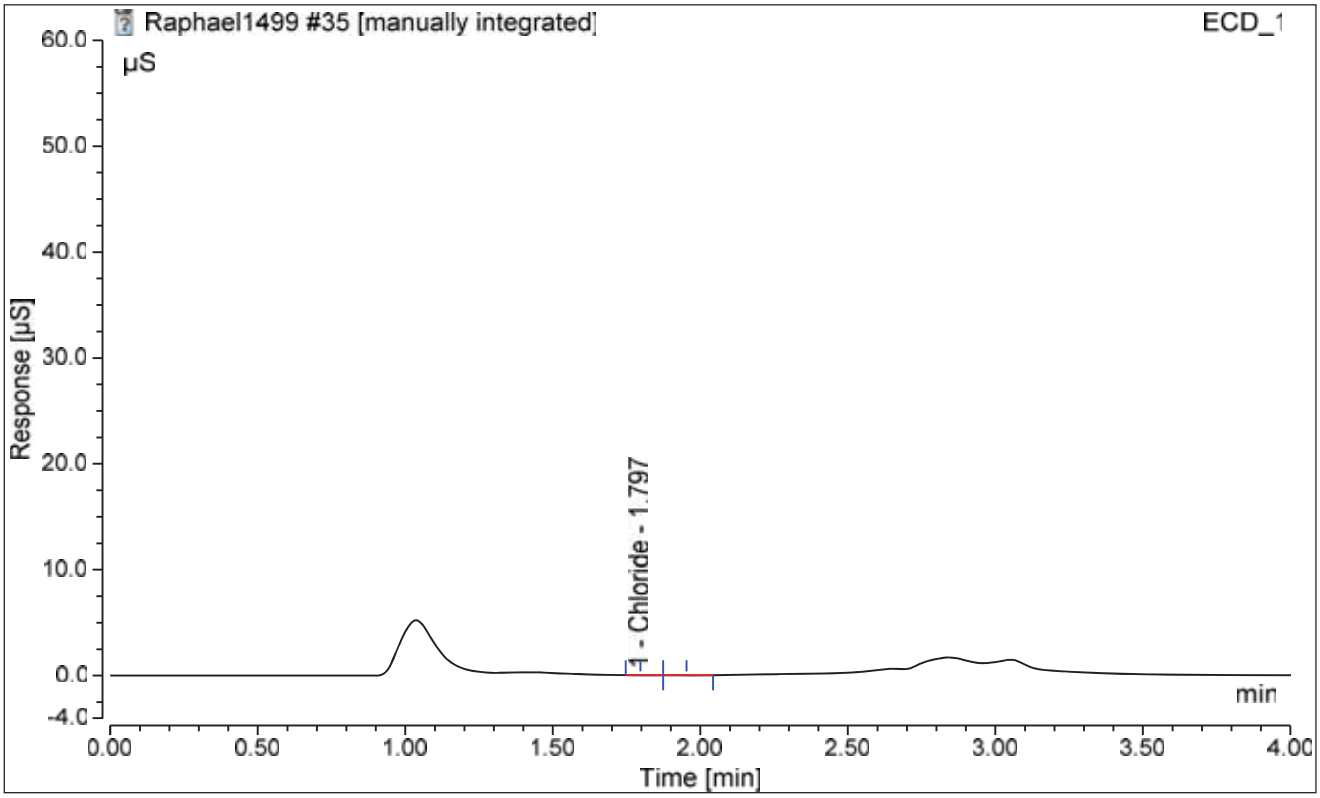


Analyst Comment: II, NI SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.80	Chloride	0.001	0.005	0.04820	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R3A.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 19:43**	Run Time:	**12.50**

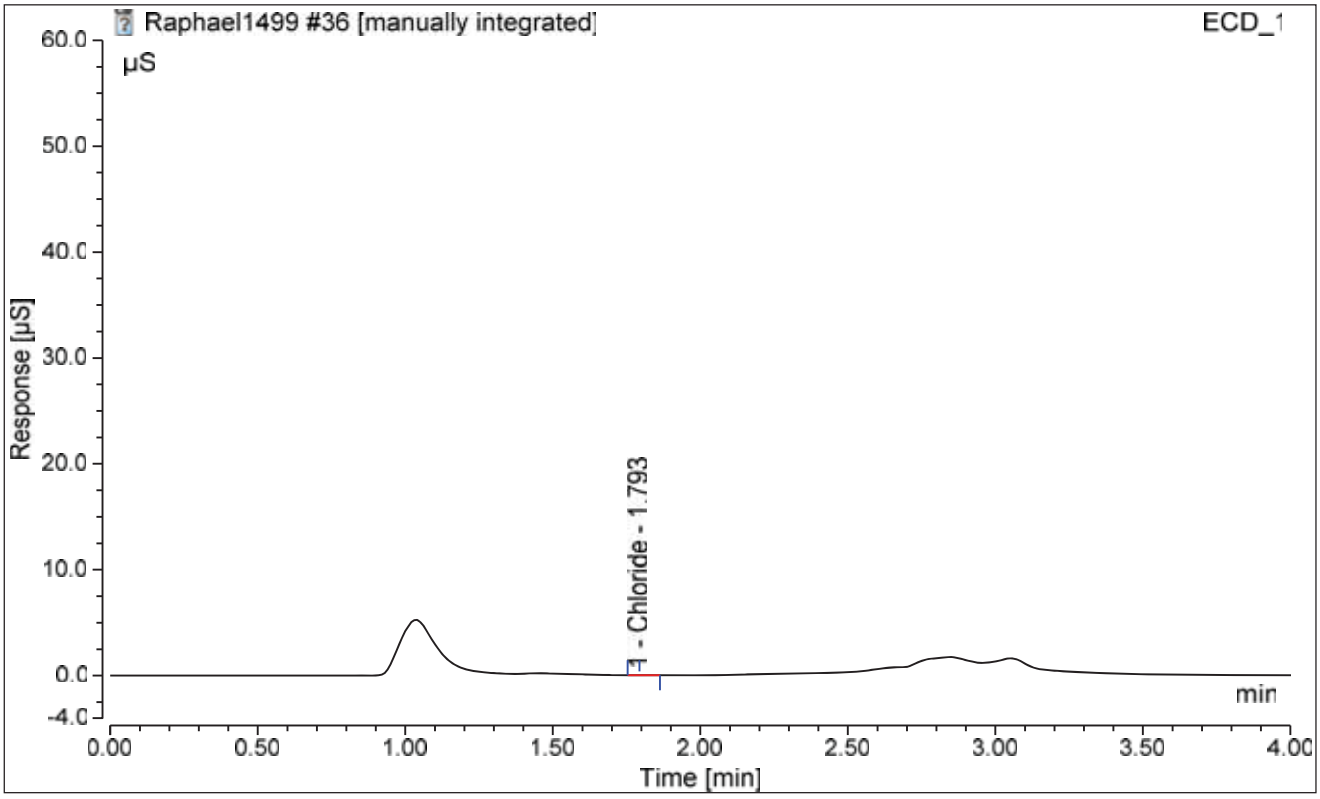


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.80	Chloride	0.001	0.005	0.04818	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R3B.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 19:57**	Run Time:	**12.50**

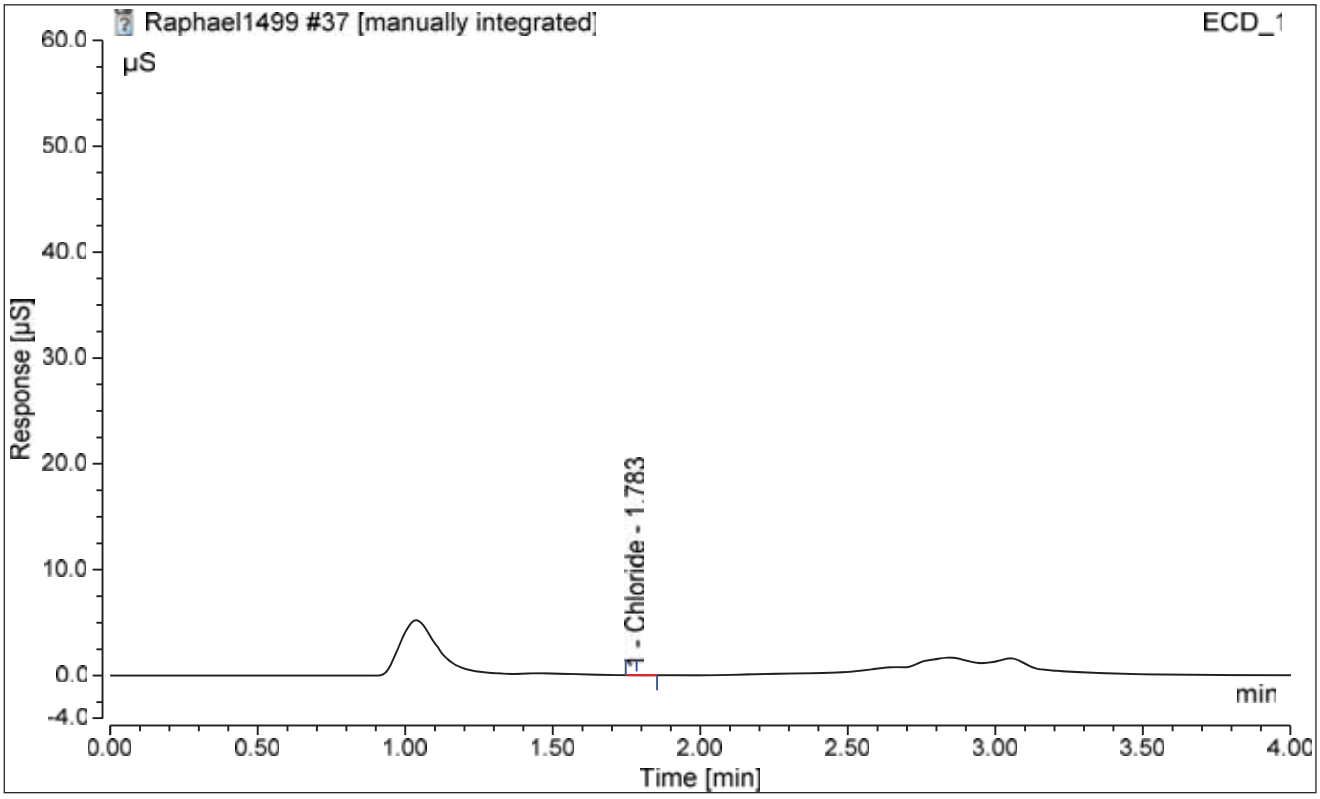


Analyst Comment: II, NI SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.79	Chloride	0.000	0.002	0.04414	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off R3B.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 20:11**	Run Time:	**12.50**

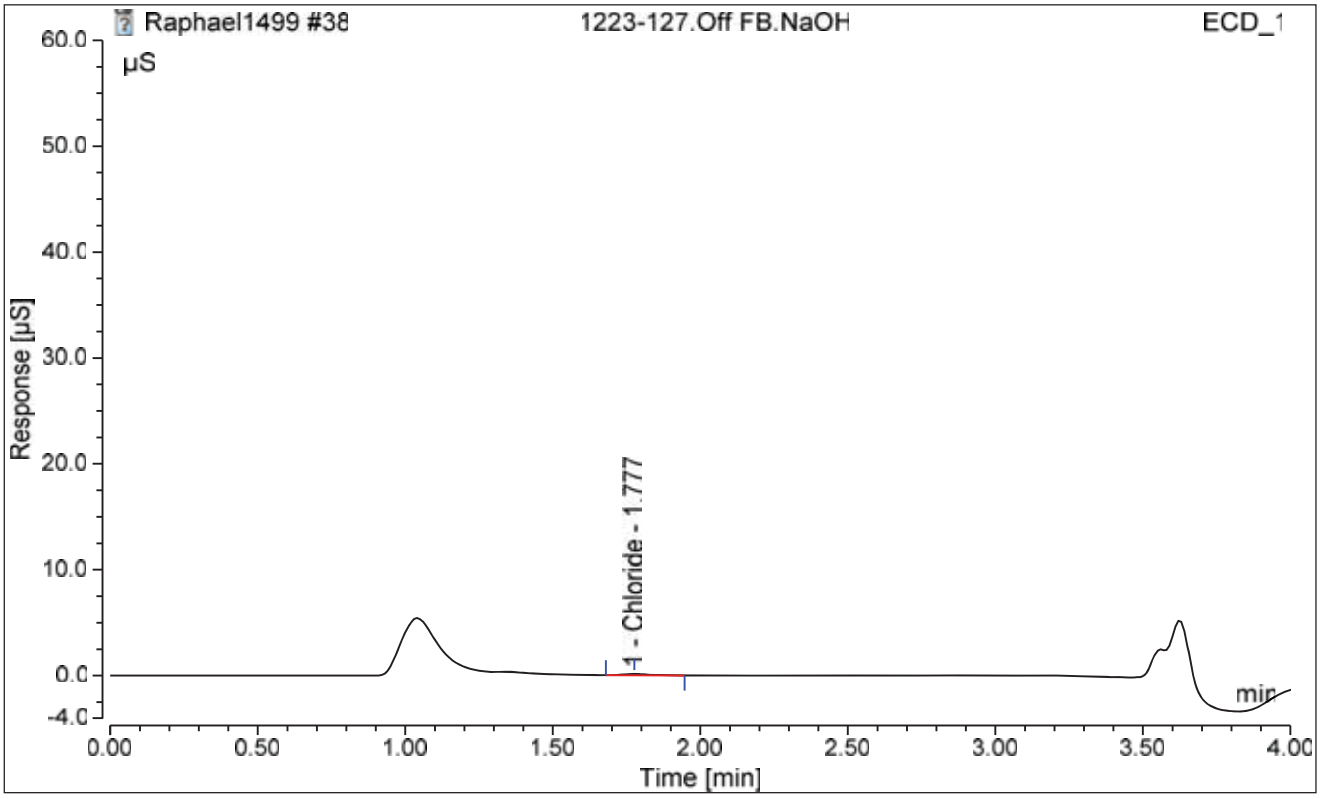


Analyst Comment: II, NI SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.78	Chloride	0.000	0.002	0.04444	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.Off FB.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 20:25**	Run Time:	**12.50**

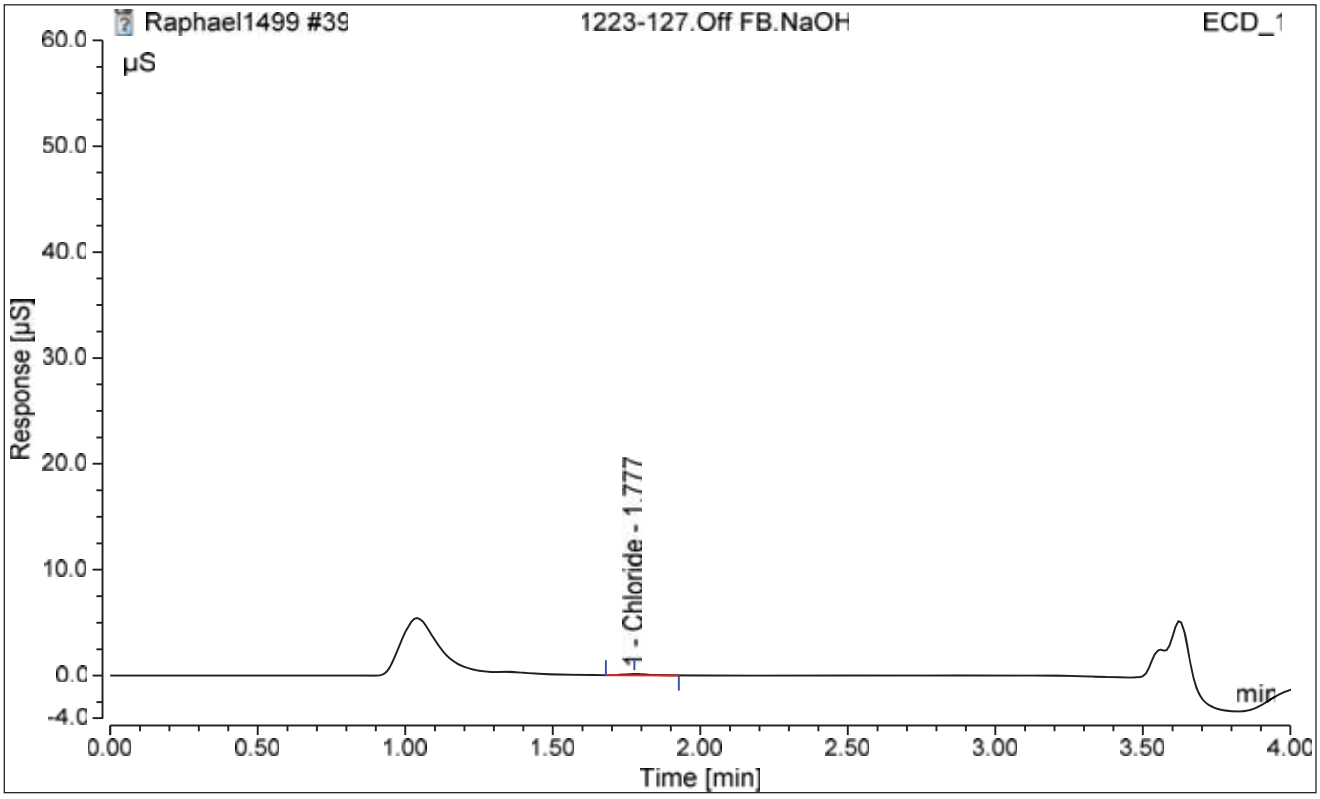


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.78	Chloride	0.011	0.119	0.14766	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.Off FB.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 20:39**	Run Time:	**12.50**

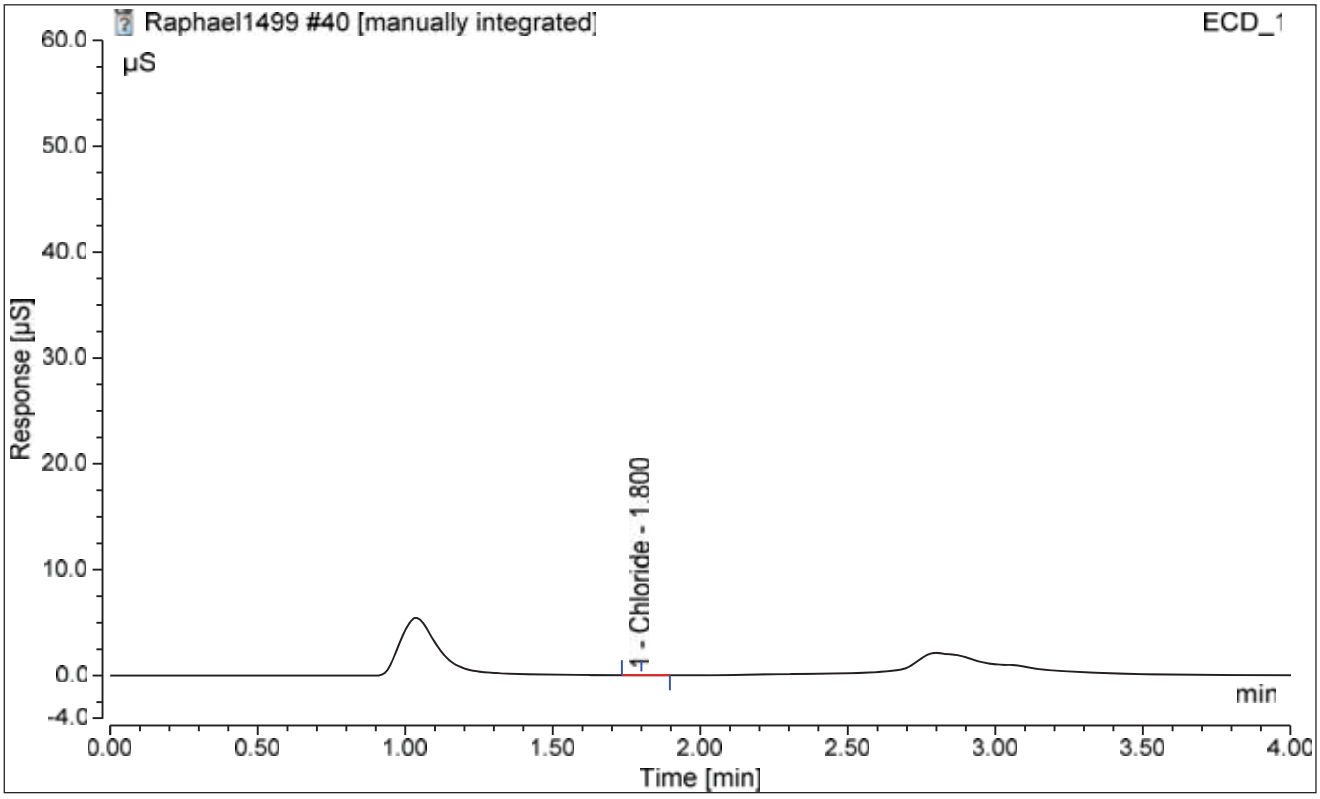


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.78	Chloride	0.010	0.117	0.14414	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.On R1A.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 20:53**	Run Time:	**12.50**

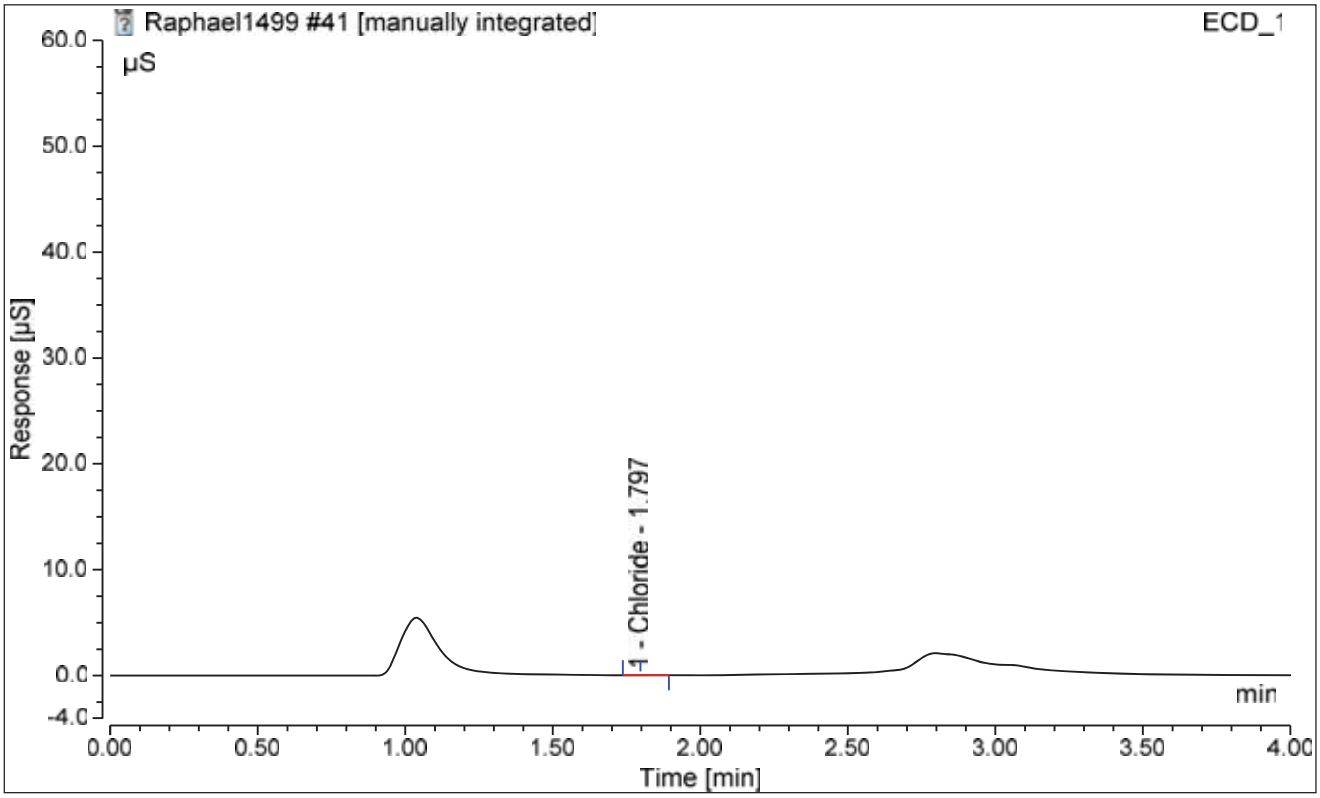


Analyst Comment: II, NI SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.80	Chloride	0.000	0.004	0.04578	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.On R1A.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 21:07**	Run Time:	**12.50**

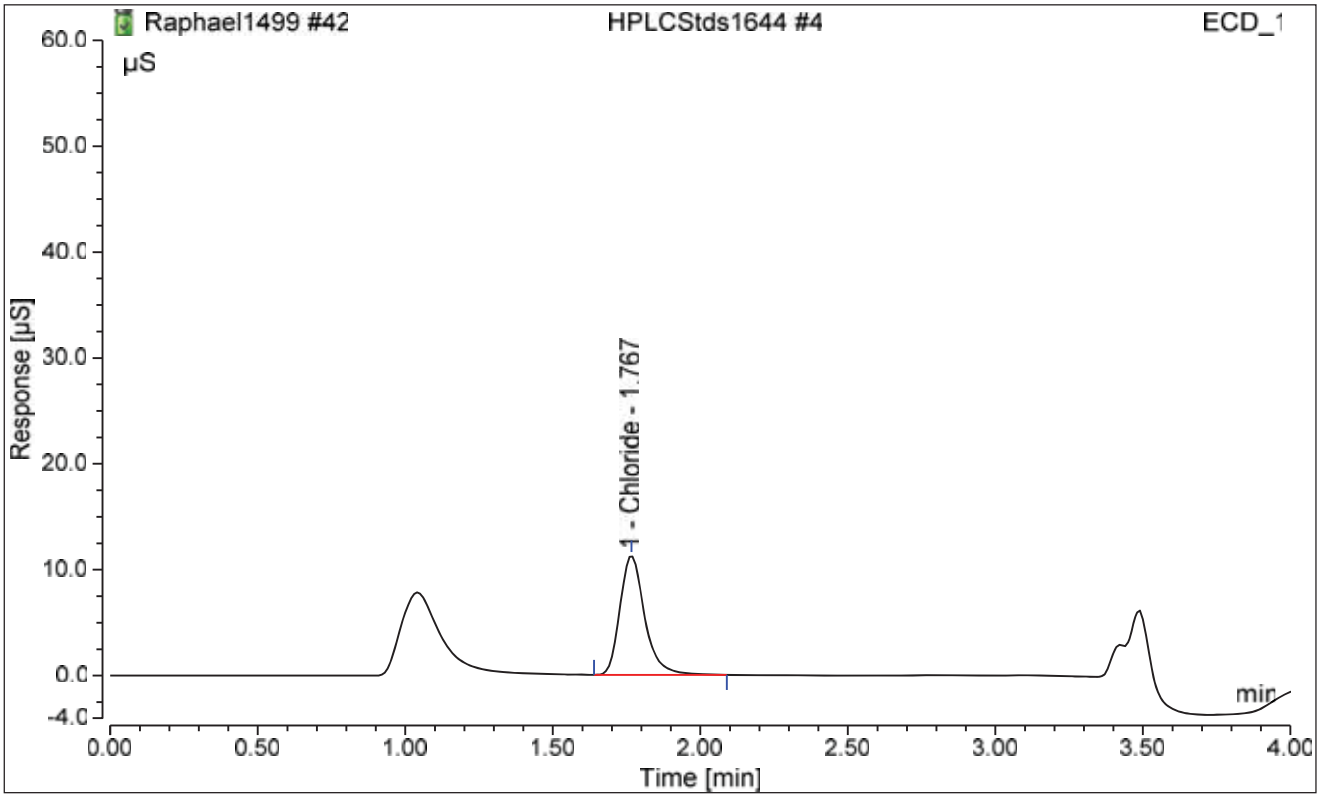


Analyst Comment: II, NI SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.80	Chloride	0.000	0.003	0.04545	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 21:21**	Run Time:	**12.50**

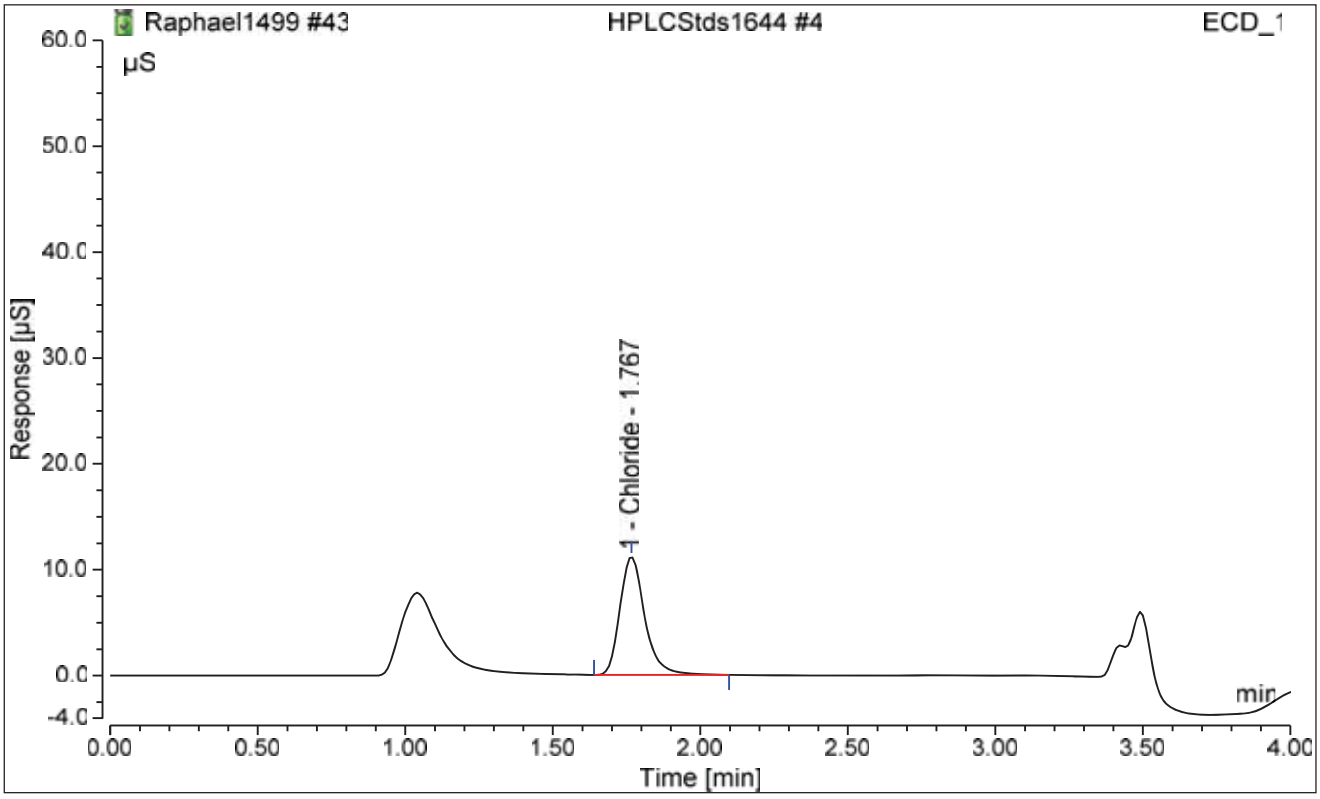


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.092	11.251	10.05162	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 21:36**	Run Time:	**12.50**

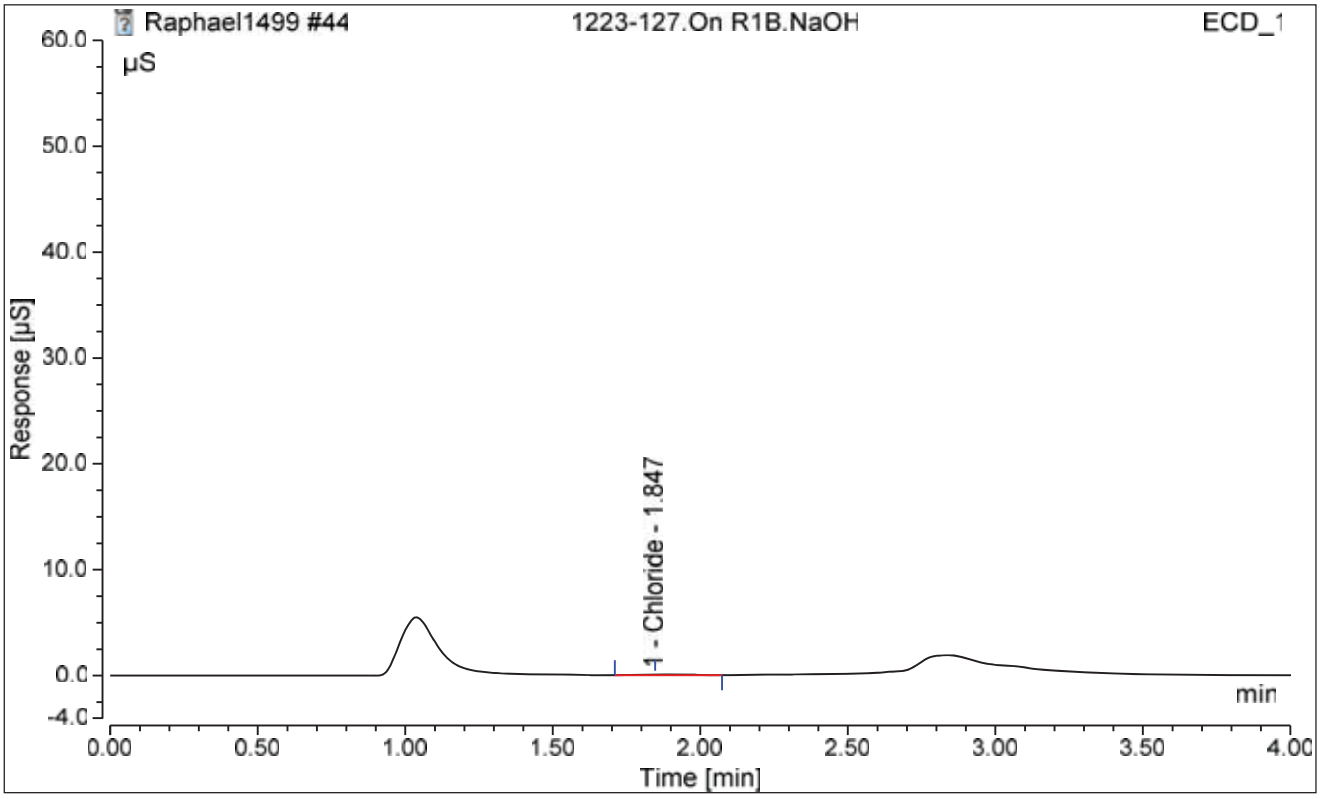


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.087	11.156	10.00616	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.On R1B.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 21:50**	Run Time:	**12.50**

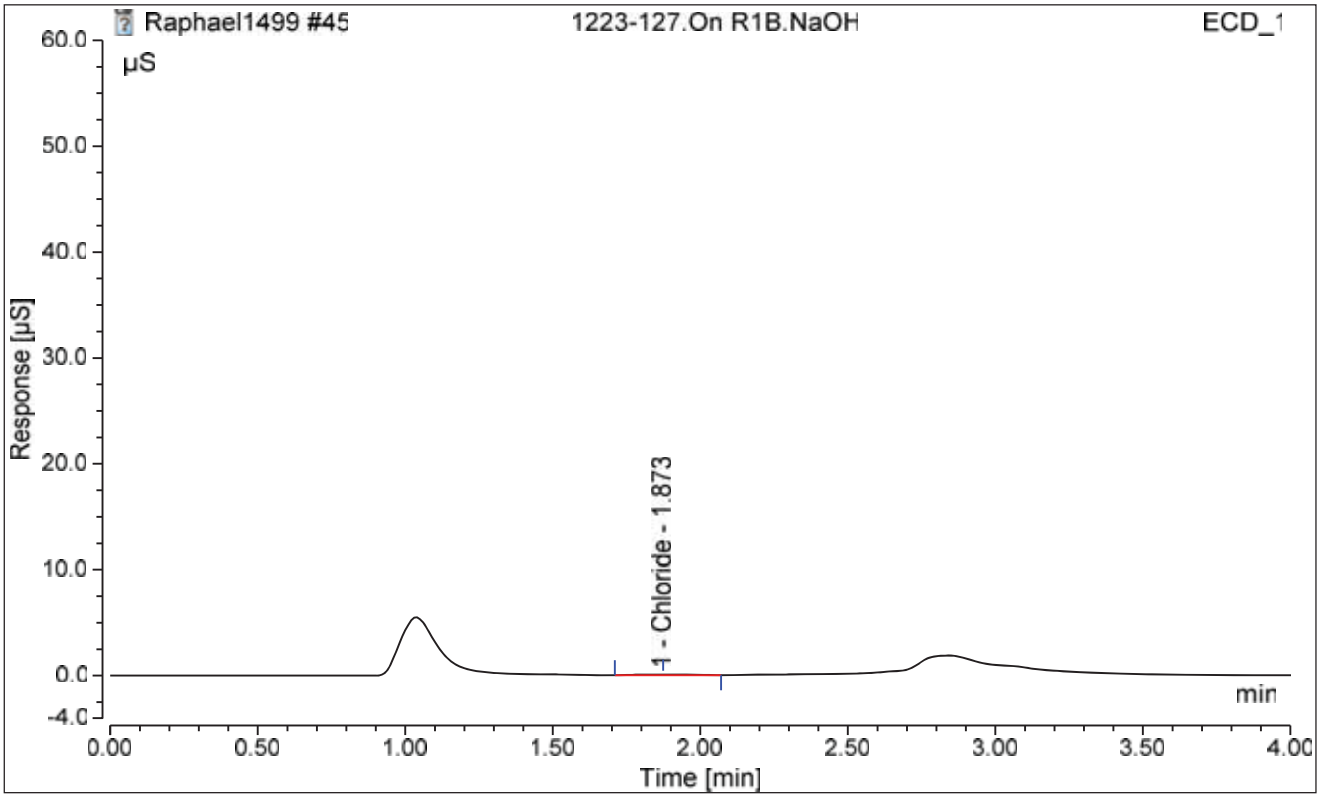


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.85	Chloride	0.015	0.067	0.19152	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.On R1B.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 22:04**	Run Time:	**12.50**

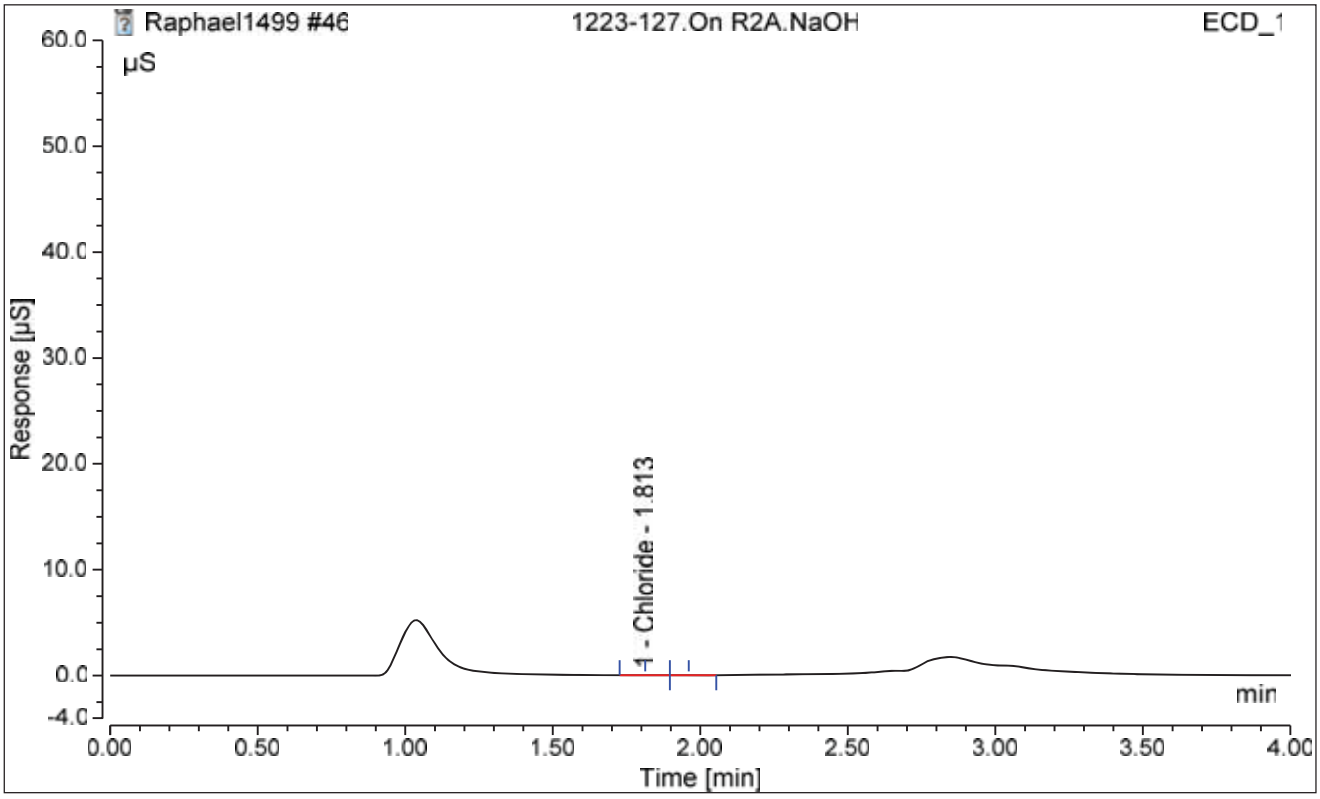


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.87	Chloride	0.016	0.068	0.19347	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.On R2A.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 22:18**	Run Time:	**12.50**

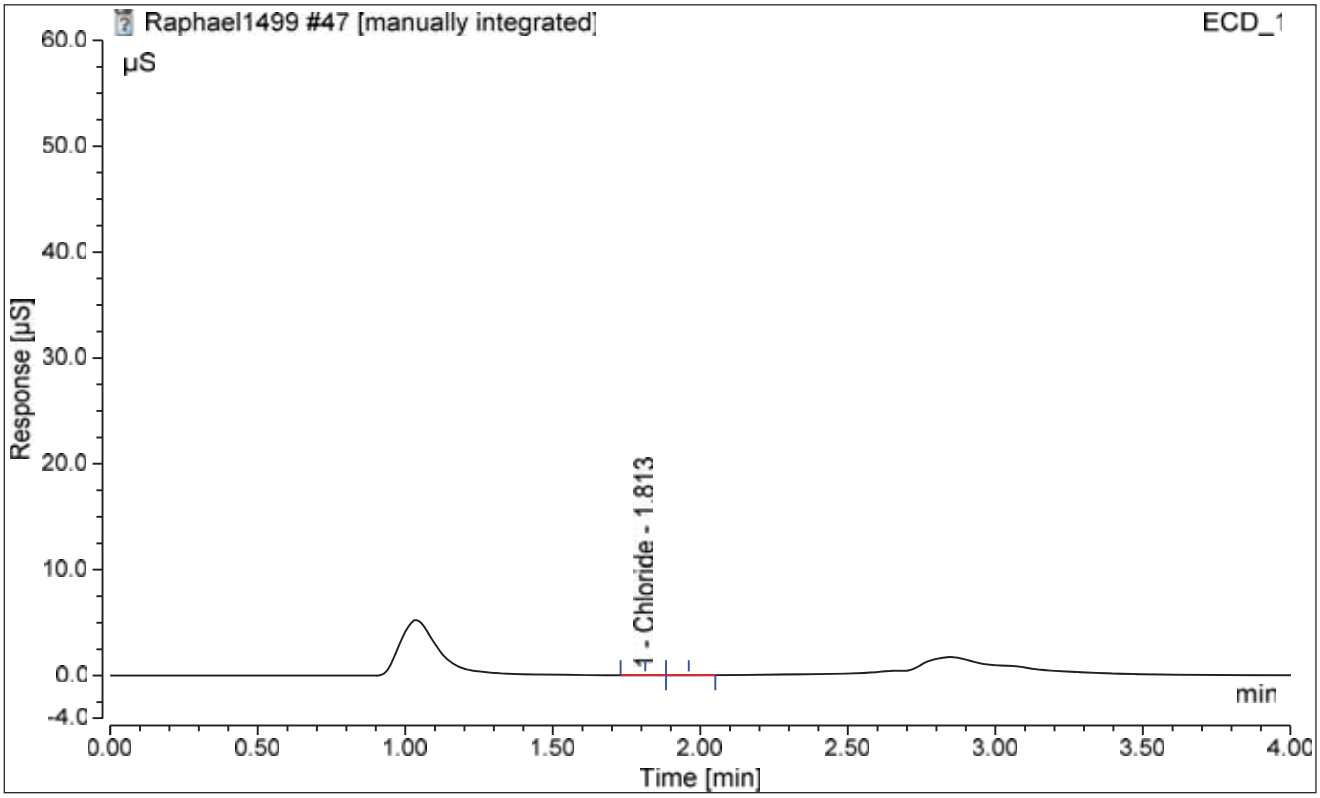


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.81	Chloride	0.001	0.012	0.05682	FALSE	FALSE

Peak Analysis Report

Sample Name:	**1223-127.On R2A.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 22:32**	Run Time:	**12.50**

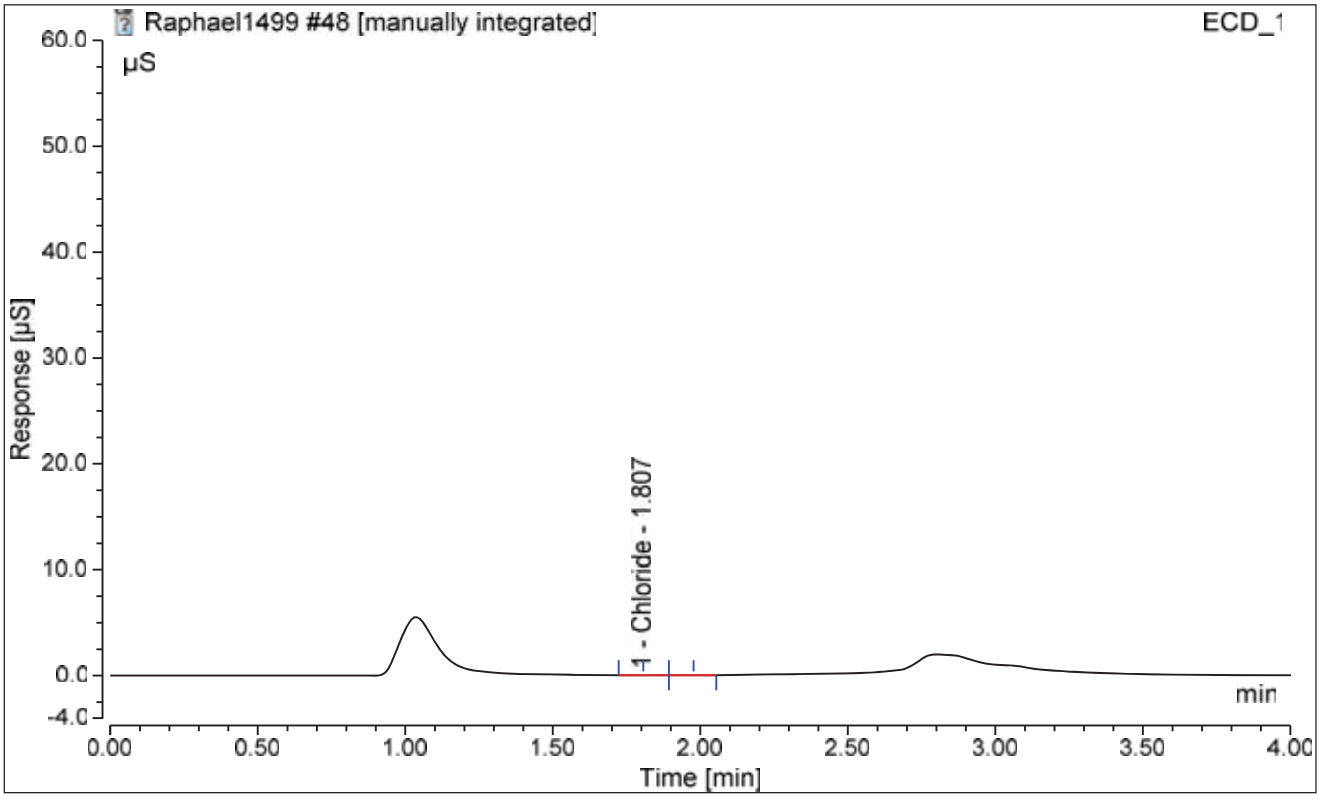


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.81	Chloride	0.001	0.011	0.05479	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.On R2B.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 22:46**	Run Time:	**12.50**

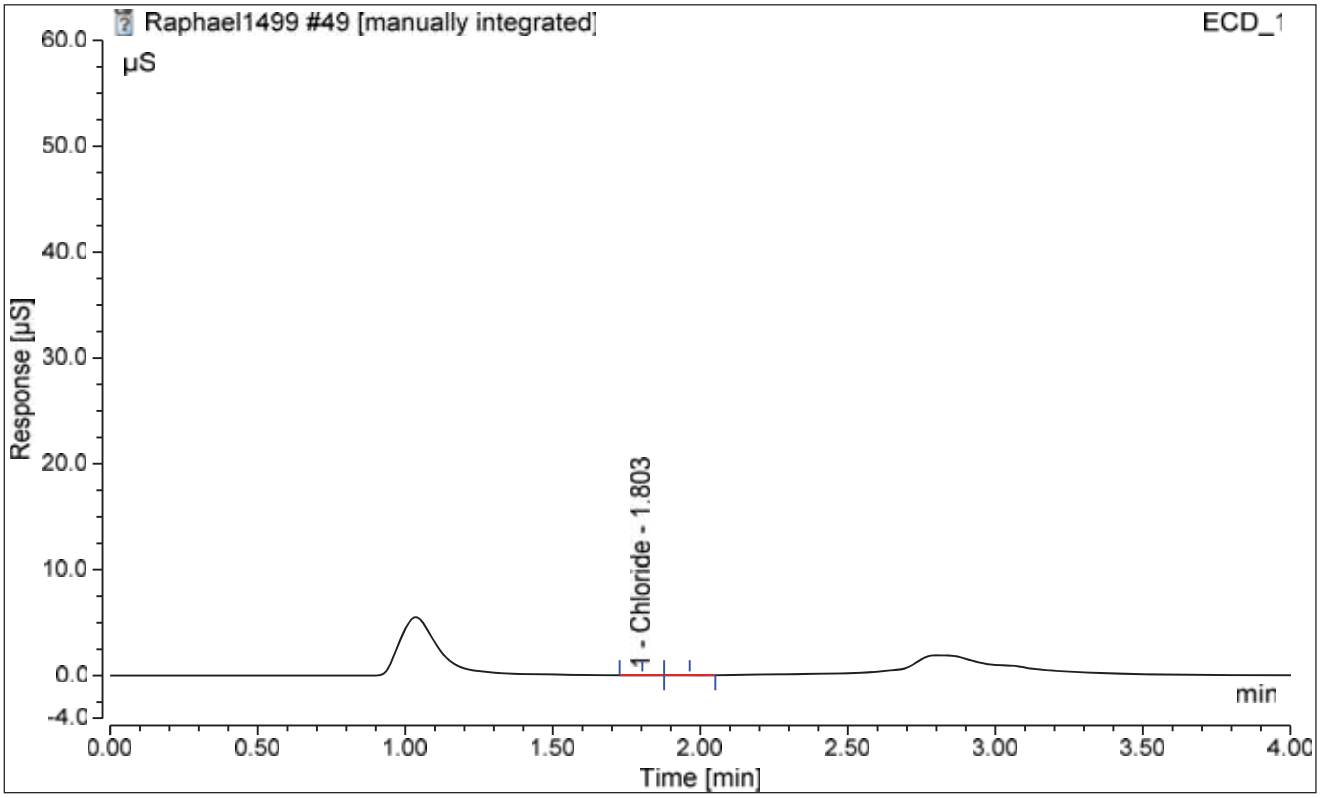


Analyst Comment: NI SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.81	Chloride	0.001	0.006	0.04961	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.On R2B.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 23:00**	Run Time:	**12.50**

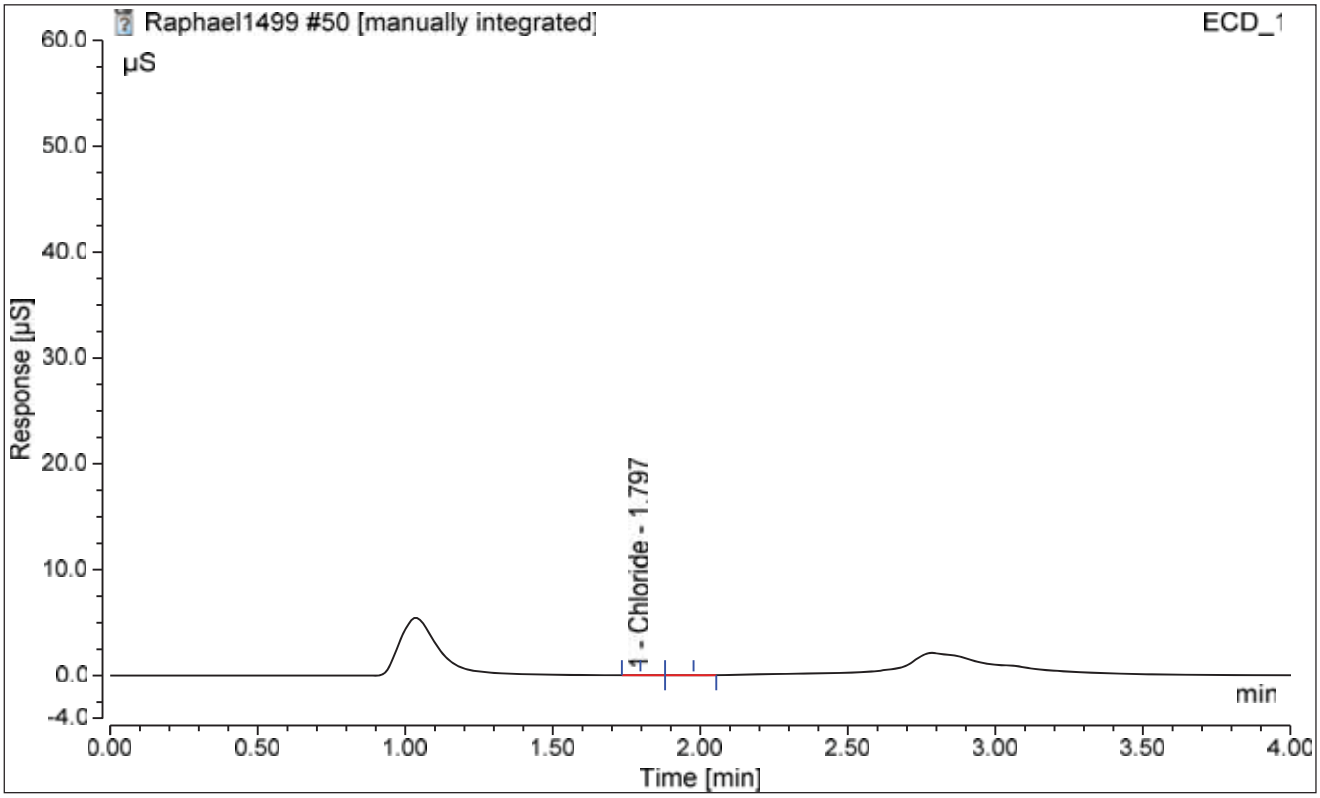


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.80	Chloride	0.001	0.007	0.05058	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.On R3A.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 23:14**	Run Time:	**12.50**

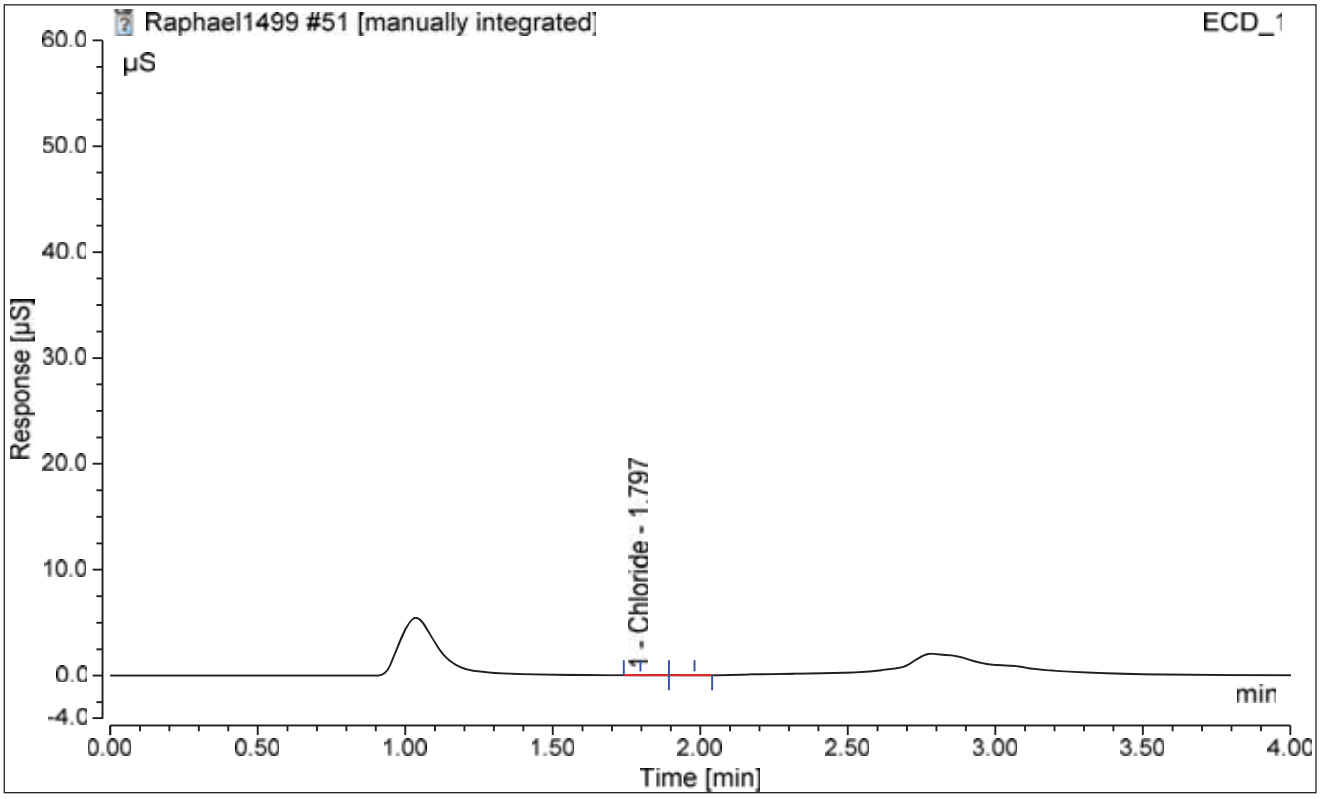


Analyst Comment: NI SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.80	Chloride	0.000	0.004	0.04618	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.On R3A.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 23:28**	Run Time:	**12.50**

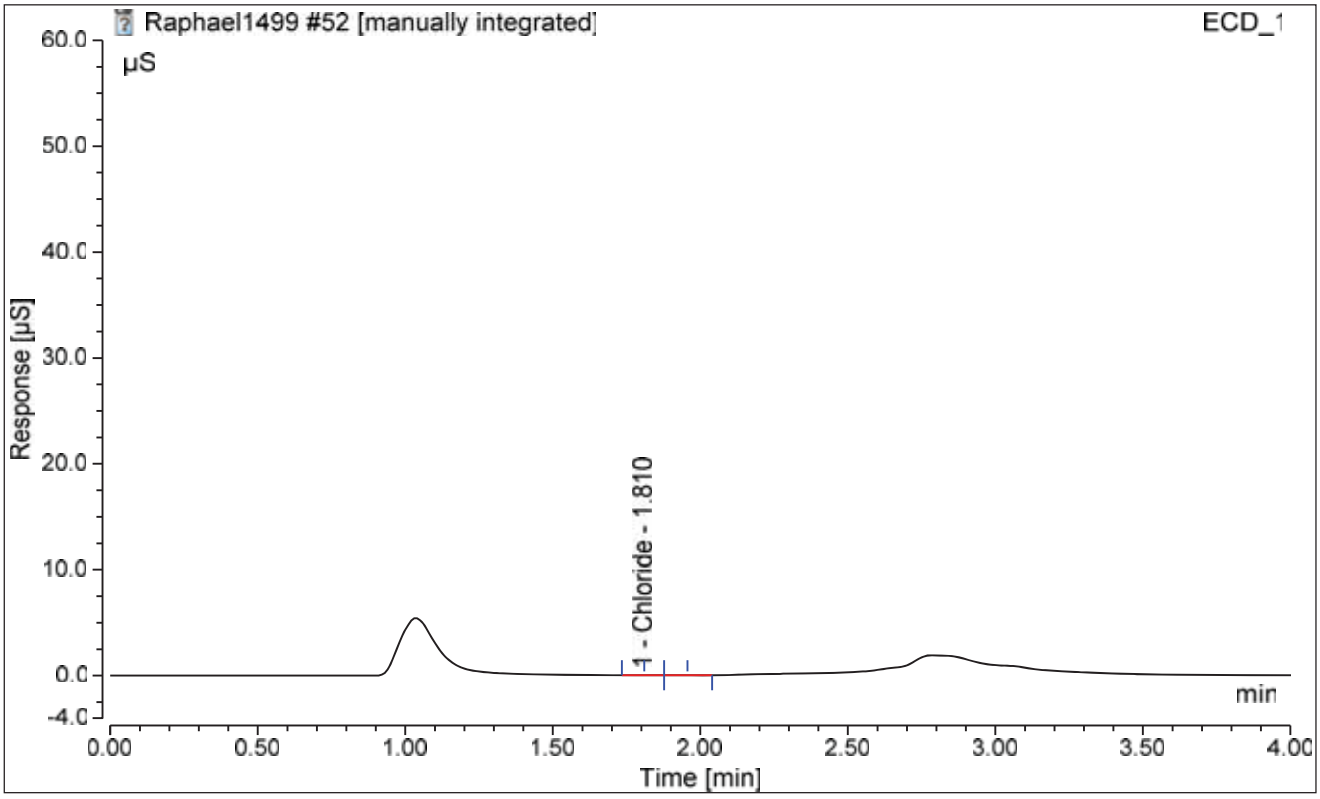


Analyst Comment: NI SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.80	Chloride	0.000	0.003	0.04545	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.On R3B.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 23:42**	Run Time:	**12.50**

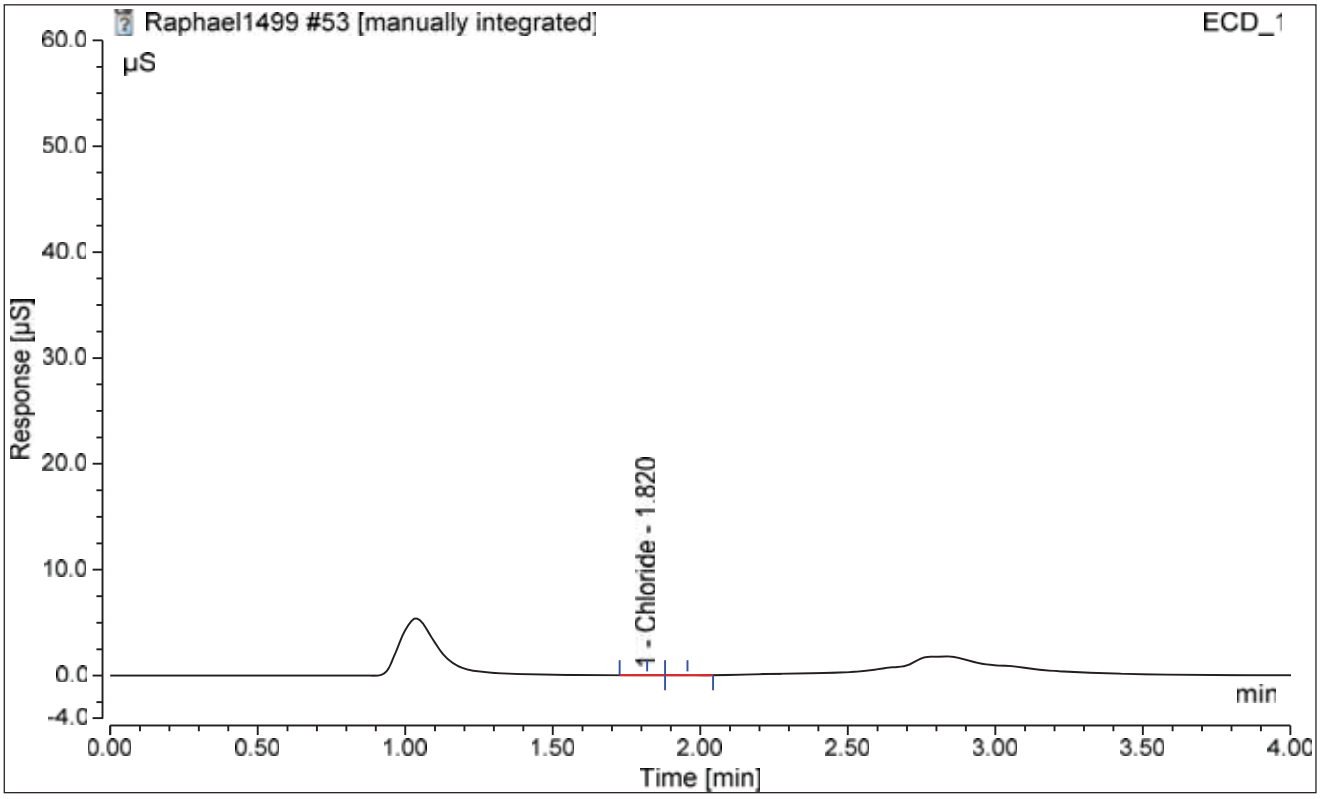


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.81	Chloride	0.001	0.008	0.05168	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.On R3B.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 23:57**	Run Time:	**12.50**

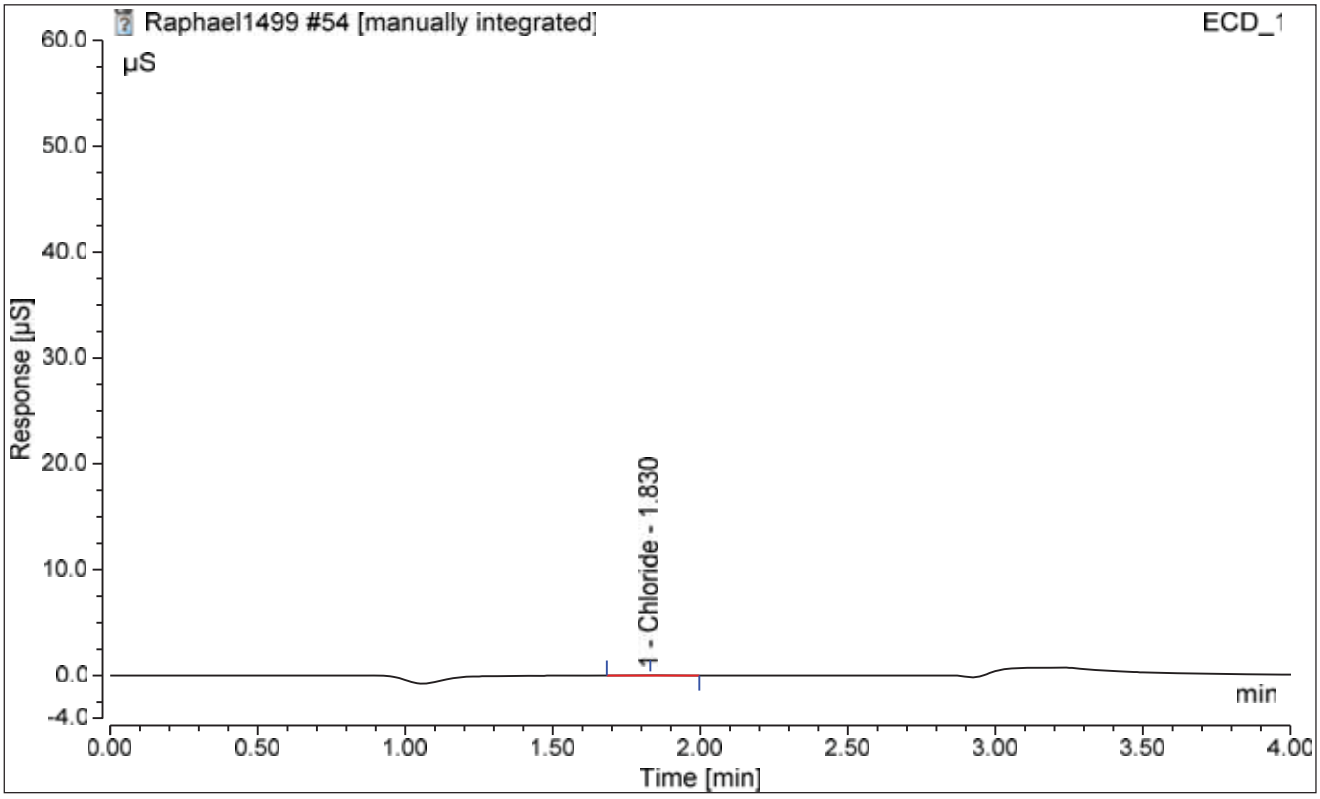


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.82	Chloride	0.001	0.011	0.05475	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.On FB.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 00:11**	Run Time:	**12.50**

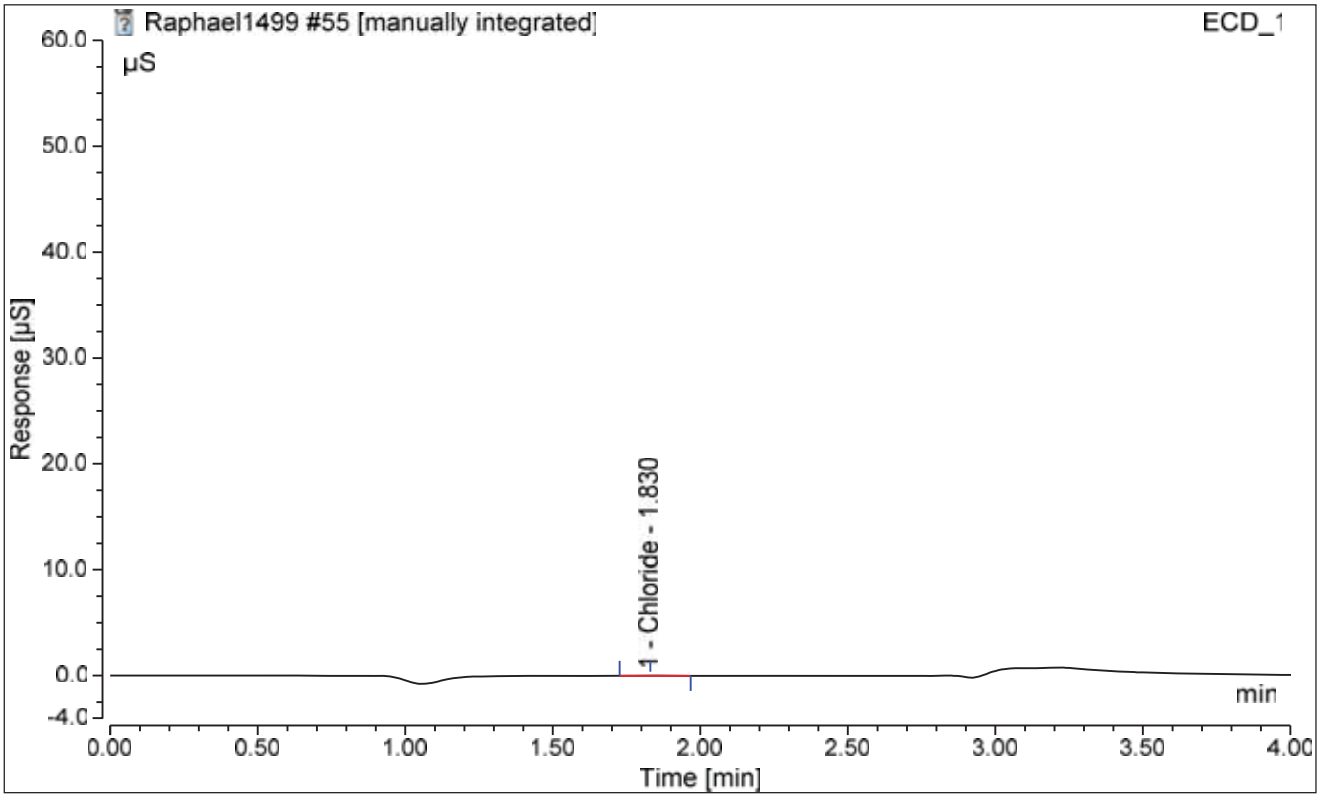


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.83	Chloride	0.005	0.046	0.08915	FALSE	TRUE

Peak Analysis Report

Sample Name:	**1223-127.On FB.NaOH**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 00:25**	Run Time:	**12.50**

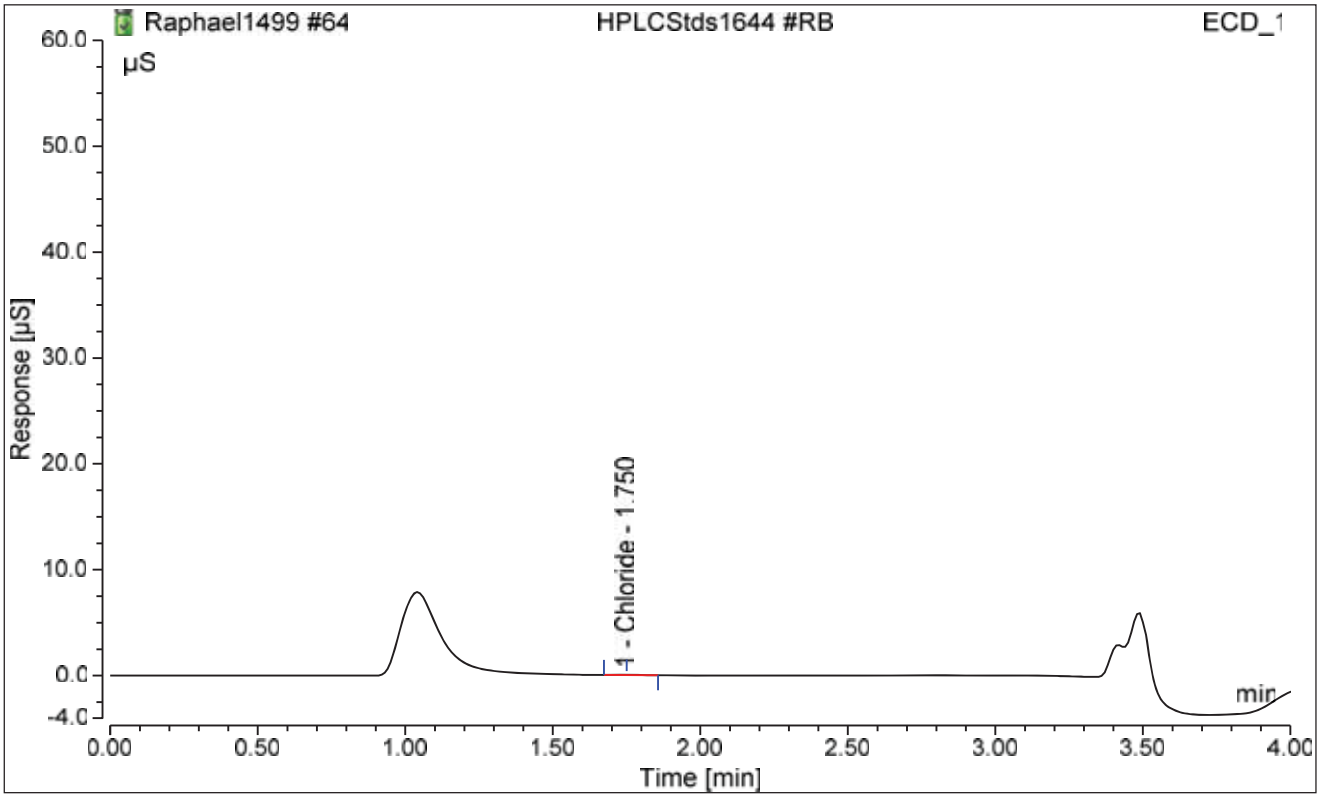


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.83	Chloride	0.003	0.037	0.07431	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 02:32**	Run Time:	**12.50**

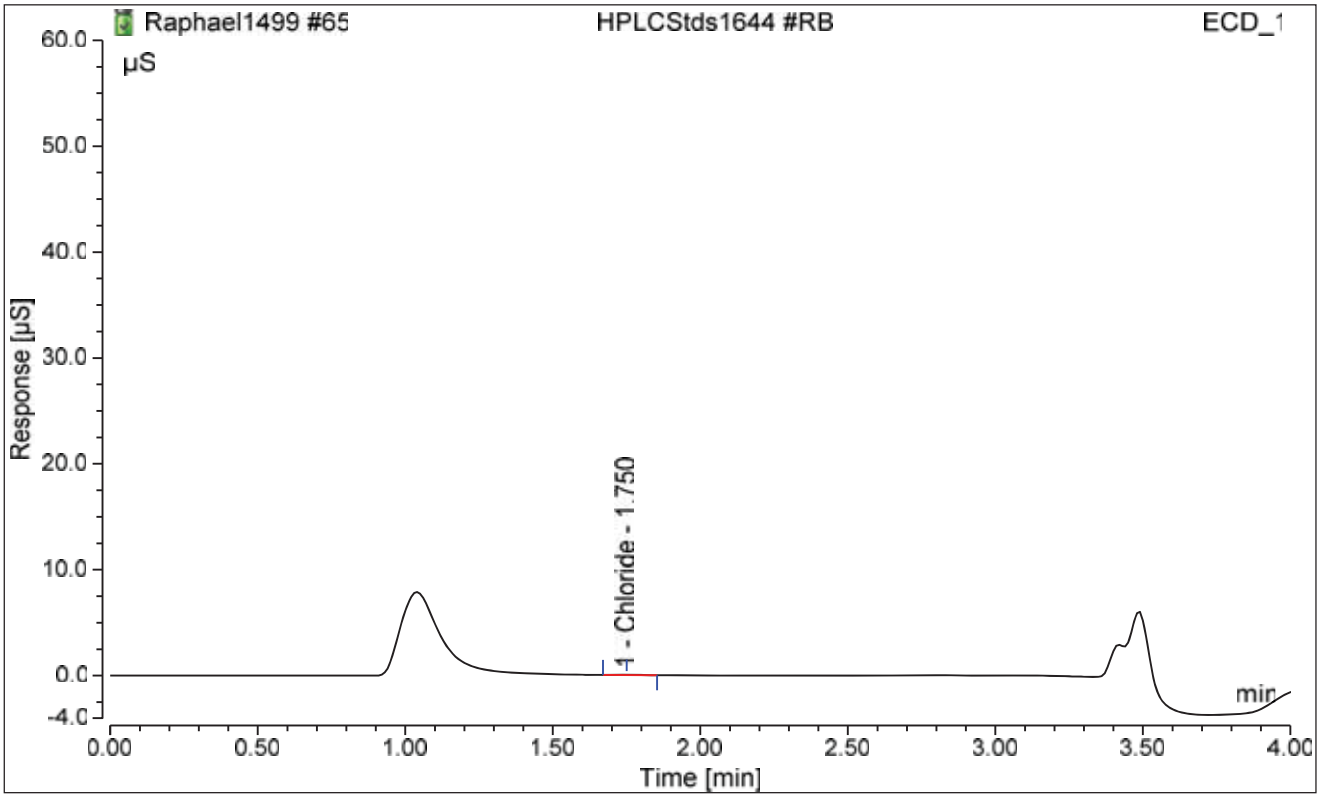


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.75	Chloride	0.003	0.039	0.07306	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 02:46**	Run Time:	**12.50**

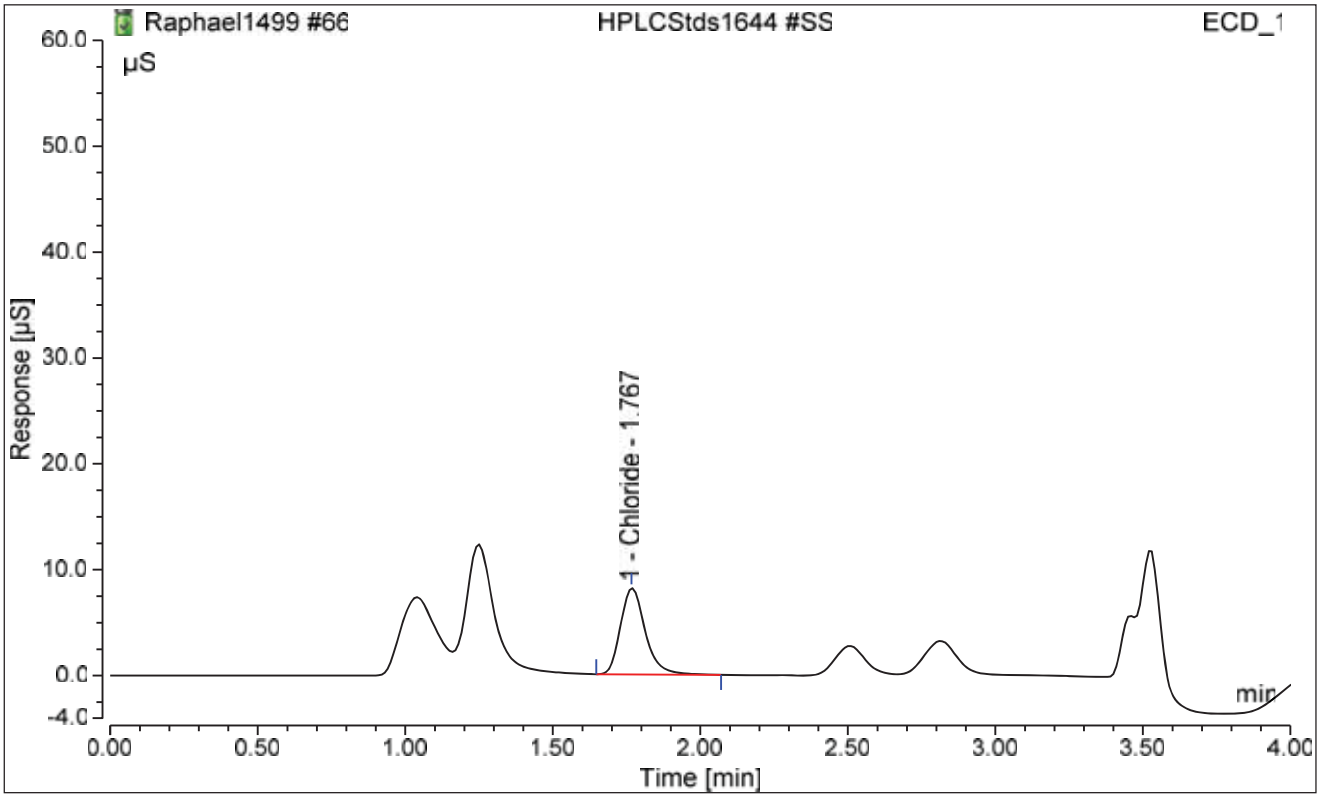


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.75	Chloride	0.003	0.038	0.07212	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 03:00**	Run Time:	**12.50**

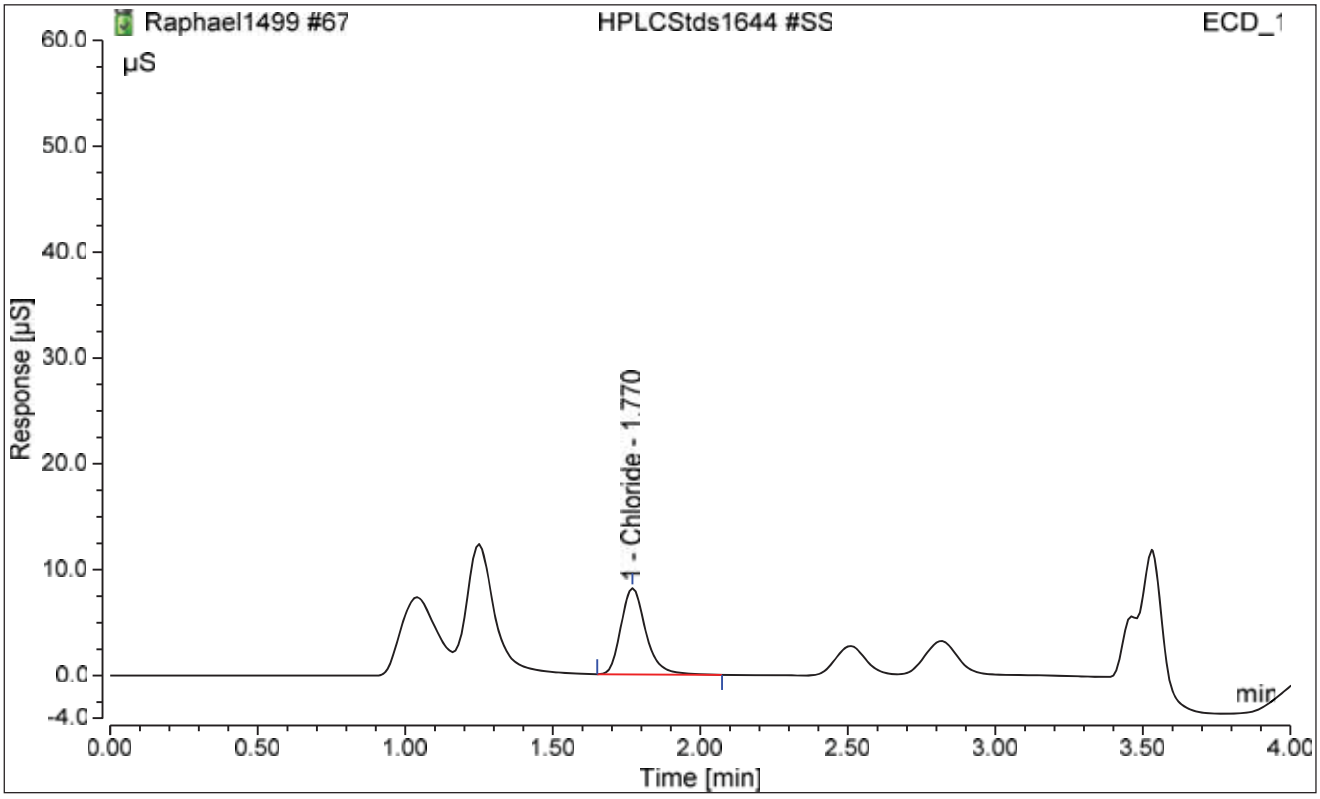


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	0.791	8.131	7.39266	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 03:14**	Run Time:	**12.50**



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	0.790	8.141	7.38902	FALSE	FALSE

Calibration Table

No.	Injection Name	Inject Time	Pos.	Level	Ref.Amount	Calibration Point Status	Dil.Factor
					µg/mL ECD_1 Chloride	ECD_1 Chloride	
6	HPLCStds1644 #6	22/Dec/2023 12:54	BA6	06	30.0000	Ok	1.0000
7	HPLCStds1644 #6	22/Dec/2023 13:08	BA6	06	30.0000	Ok	1.0000
8	HPLCStds1644 #5	22/Dec/2023 13:22	BA5	05	15.0000	Ok	1.0000
9	HPLCStds1644 #5	22/Dec/2023 13:36	BA5	05	15.0000	Ok	1.0000
10	HPLCStds1644 #4	22/Dec/2023 13:50	BA4	04	10.0000	Ok	1.0000
11	HPLCStds1644 #4	22/Dec/2023 14:04	BA4	04	10.0000	Ok	1.0000
12	HPLCStds1644 #3	22/Dec/2023 14:18	BA3	03	5.0000	Ok	1.0000
13	HPLCStds1644 #3	22/Dec/2023 14:32	BA3	03	5.0000	Ok	1.0000
14	HPLCStds1644 #2	22/Dec/2023 14:46	BA2	02	1.0000	Ok	1.0000
15	HPLCStds1644 #2	22/Dec/2023 15:01	BA2	02	1.0000	Ok	1.0000
16	HPLCStds1644 #1	22/Dec/2023 15:15	BA1	01	0.5000	Ok	1.0000
17	HPLCStds1644 #1	22/Dec/2023 15:29	BA1	01	0.5000	Ok	1.0000
120	HPLCStds1644 #6	23/Dec/2023 15:42	BA6	06	30.0000	Ok	1.0000
121	HPLCStds1644 #6	23/Dec/2023 15:56	BA6	06	30.0000	Ok	1.0000
122	HPLCStds1644 #5	23/Dec/2023 16:10	BA5	05	15.0000	Ok	1.0000
123	HPLCStds1644 #5	23/Dec/2023 16:24	BA5	05	15.0000	Ok	1.0000
124	HPLCStds1644 #4	23/Dec/2023 16:38	BA4	04	10.0000	Ok	1.0000
125	HPLCStds1644 #4	23/Dec/2023 16:52	BA4	04	10.0000	Ok	1.0000
126	HPLCStds1644 #3	23/Dec/2023 17:06	BA3	03	5.0000	Ok	1.0000
127	HPLCStds1644 #3	23/Dec/2023 17:21	BA3	03	5.0000	Ok	1.0000
128	HPLCStds1644 #2	23/Dec/2023 17:35	BA2	02	1.0000	Ok	1.0000
129	HPLCStds1644 #2	23/Dec/2023 17:49	BA2	02	1.0000	Ok	1.0000
130	HPLCStds1644 #1	23/Dec/2023 18:03	BA1	01	0.5000	Ok	1.0000
131	HPLCStds1644 #1	23/Dec/2023 18:17	BA1	01	0.5000	Ok	1.0000

Detection Parameters

Ret. Time min	Param. Name	Param. Value	Inj. Type	Channel
Always	Baseline Noise Auto Range	Off	Any	All Channels
Always	Baseline Noise Start Time	0.000 [min]	Any	All Channels
Always	Baseline Noise End Time	0.776 [min]	Any	All Channels
Always	Cobra Smoothing Width	Auto	Any	All Channels
Always	Consider Void Peak	Off	Any	All Channels
0.000	Maximum Rider Ratio	10 [%]	Any	All Channels
0.000	Tailing Sensitivity Factor	0.250 [%]	Any	All Channels
0.000	Inhibit Integration	On	Any	All Channels
0.000	Minimum Area	Auto	Any	All Channels
1.550	Inhibit Integration	Off	Any	All Channels
2.171	Inhibit Integration	On	Any	All Channels

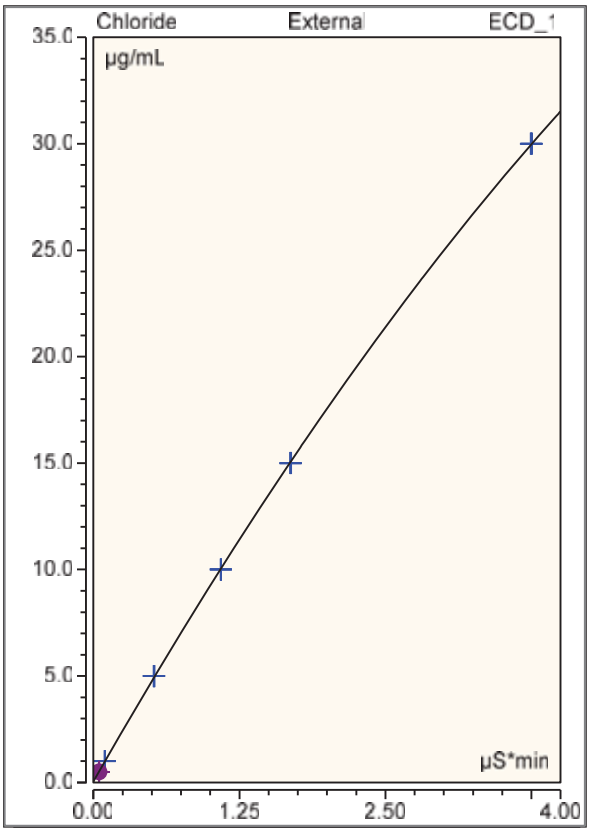
Calibration Batch Report

Sequence:	Raphael1499	*Injection Volume:*	25.00
Instrument Method:	AS22 FAST ASAP Base2	*Operator:*	searundhati
Inj. Date / Time:	23-Dec-2023 / 18:17	*Run Time:*	12.5

Calibration Summary

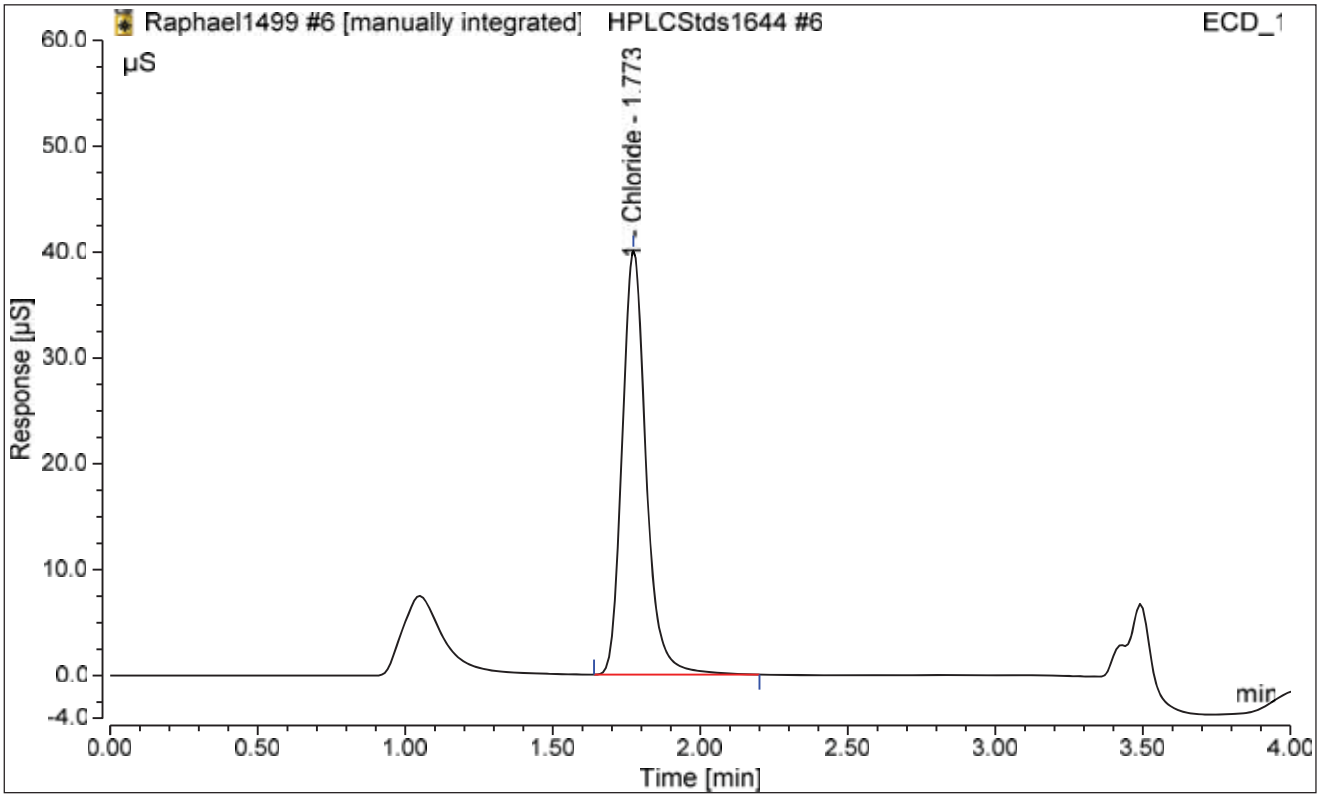
Peak Name	Eval.Type	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
Chloride	Area	Quad, WithOffset, 1/A	24.000	0.043	9.646	-0.443	99.995
		AVERAGE:		0.0431	9.6460	-0.4434	99.9948

Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount µg/mL ECD_1
	Chloride	Chloride	Chloride	Chloride
HPLCStds1644 #6	1.773	3.747	40.051	29.962
HPLCStds1644 #6	1.770	3.744	40.200	29.939
HPLCStds1644 #5	1.770	1.685	17.621	15.034
HPLCStds1644 #5	1.770	1.689	17.733	15.071
HPLCStds1644 #4	1.767	1.090	11.385	10.034
HPLCStds1644 #4	1.767	1.091	11.271	10.041
HPLCStds1644 #3	1.763	0.517	5.283	4.913
HPLCStds1644 #3	1.767	0.516	5.278	4.902
HPLCStds1644 #2	1.763	0.097	1.007	0.976
HPLCStds1644 #2	1.767	0.097	0.997	0.973
HPLCStds1644 #1	1.763	0.049	0.510	0.513
HPLCStds1644 #1	1.767	0.049	0.513	0.516
HPLCStds1644 #6	1.770	3.749	38.396	29.974
HPLCStds1644 #6	1.770	3.755	38.583	30.012
HPLCStds1644 #5	1.767	1.688	17.093	15.064
HPLCStds1644 #5	1.767	1.691	17.093	15.089
HPLCStds1644 #4	1.763	1.092	10.950	10.048
HPLCStds1644 #4	1.767	1.091	10.955	10.042
HPLCStds1644 #3	1.763	0.520	5.142	4.944
HPLCStds1644 #3	1.767	0.522	5.123	4.954
HPLCStds1644 #2	1.763	0.098	0.972	0.982
HPLCStds1644 #2	1.763	0.097	0.970	0.976
HPLCStds1644 #1	1.760	0.049	0.497	0.514
HPLCStds1644 #1	1.763	0.049	0.498	0.517



Peak Analysis Report

Sample Name:	**HPLCStds1644 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 12:54**	Run Time:	**12.50**

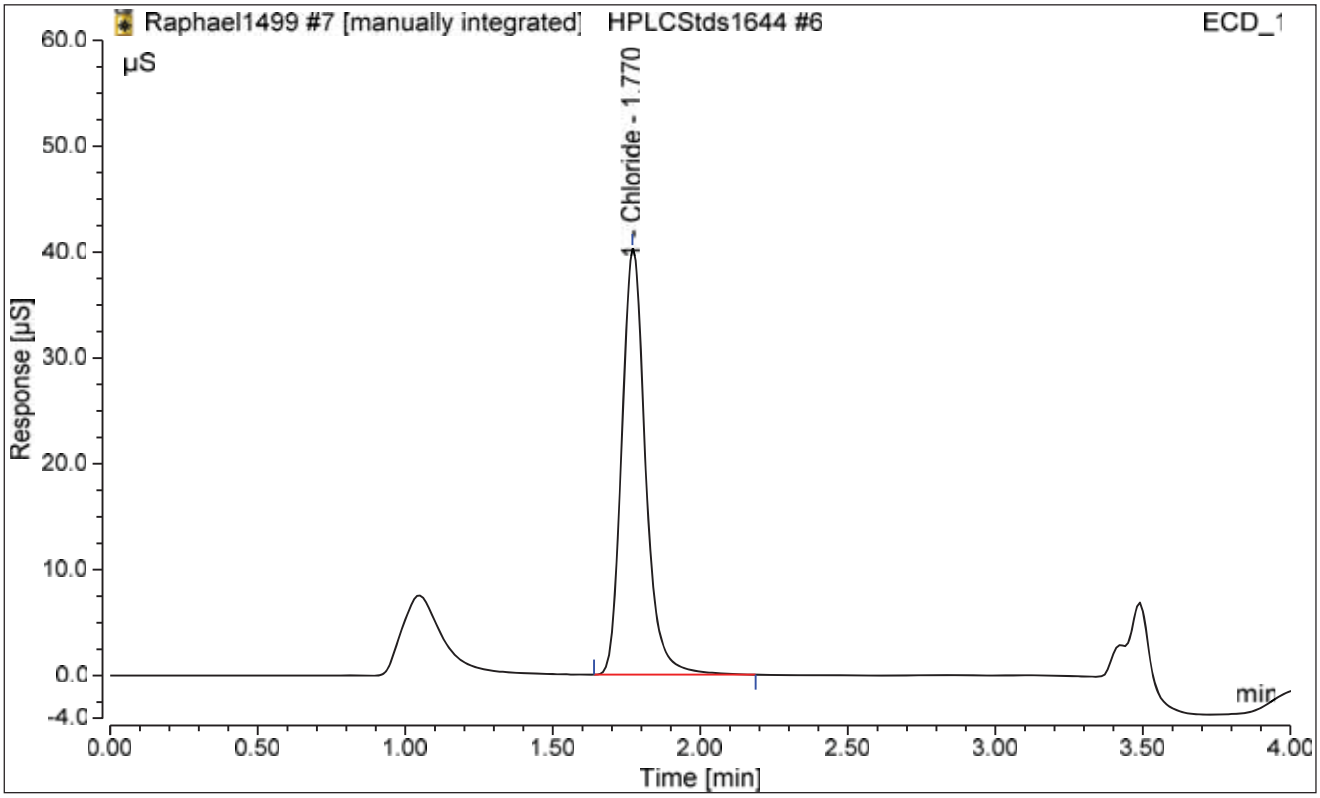


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	3.747	40.051	29.96238	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 13:08**	Run Time:	**12.50**

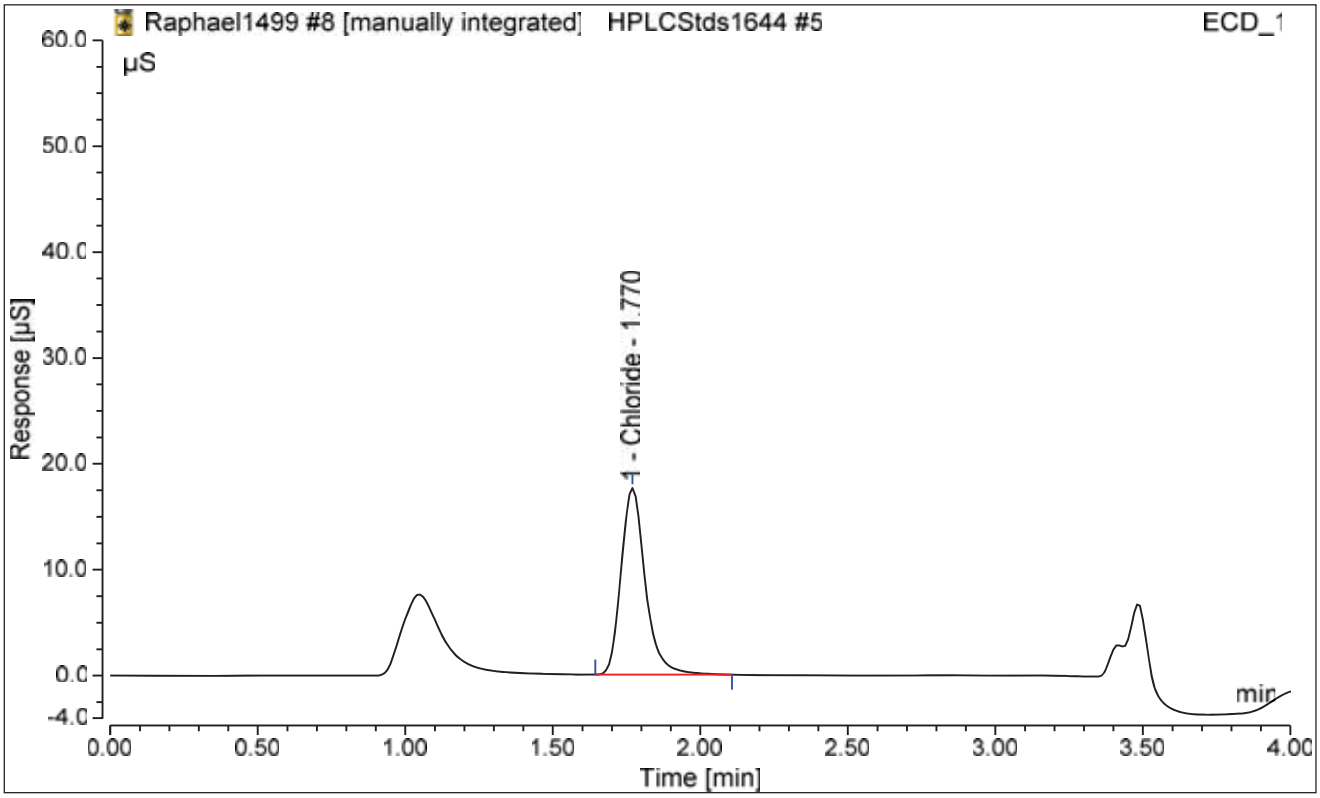


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	3.744	40.200	29.93950	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 13:22**	Run Time:	**12.50**

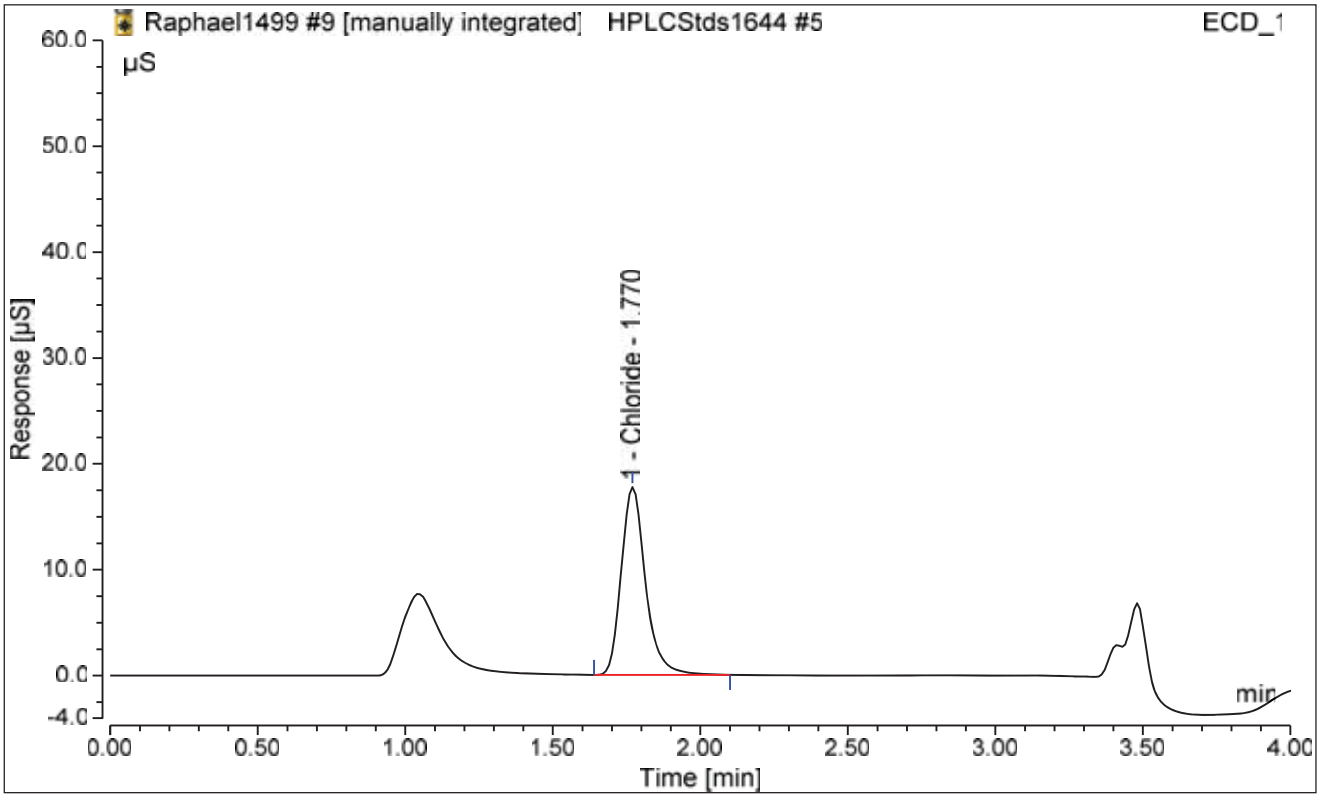


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.685	17.621	15.03379	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 13:36**	Run Time:	**12.50**

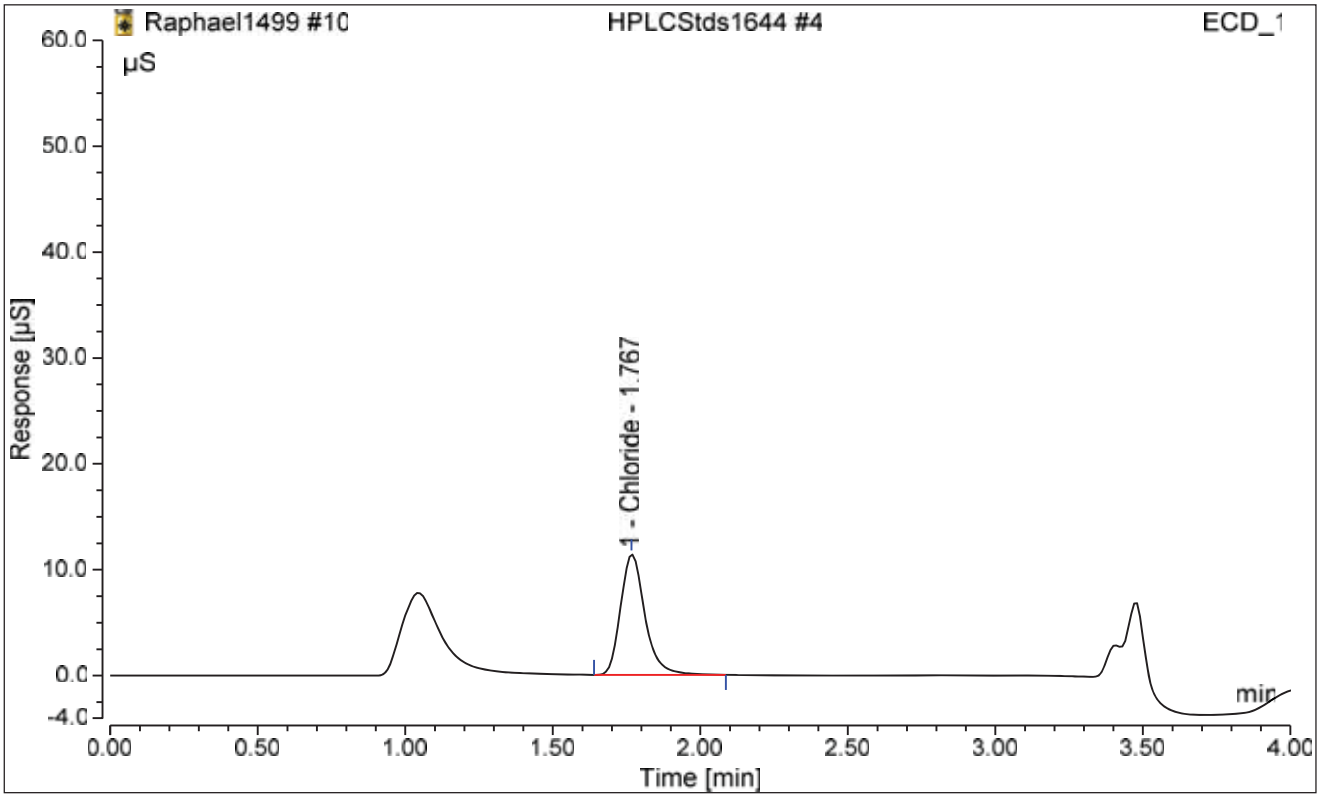


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.689	17.733	15.07096	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 13:50**	Run Time:	**12.50**

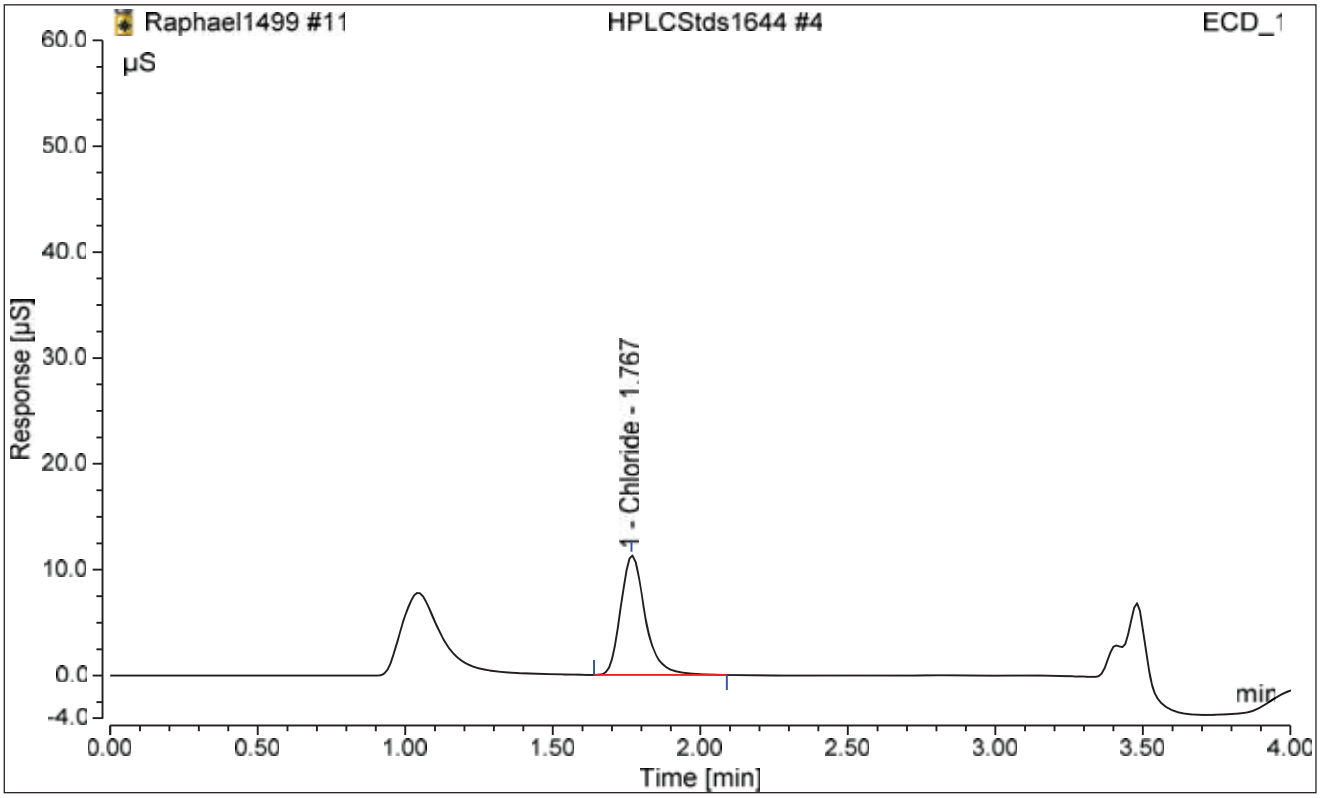


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.090	11.385	10.03383	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 14:04**	Run Time:	**12.50**

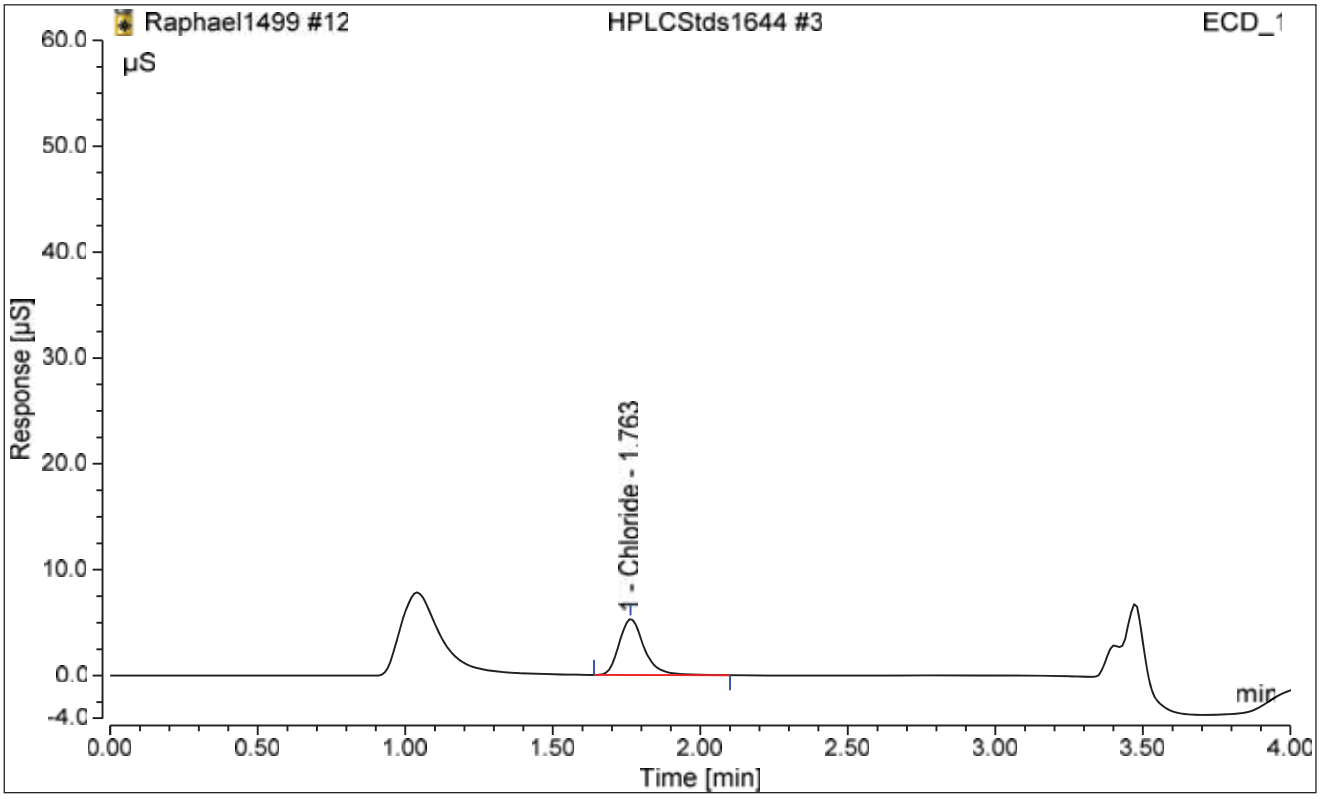


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.091	11.271	10.04147	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 14:18**	Run Time:	**12.50**

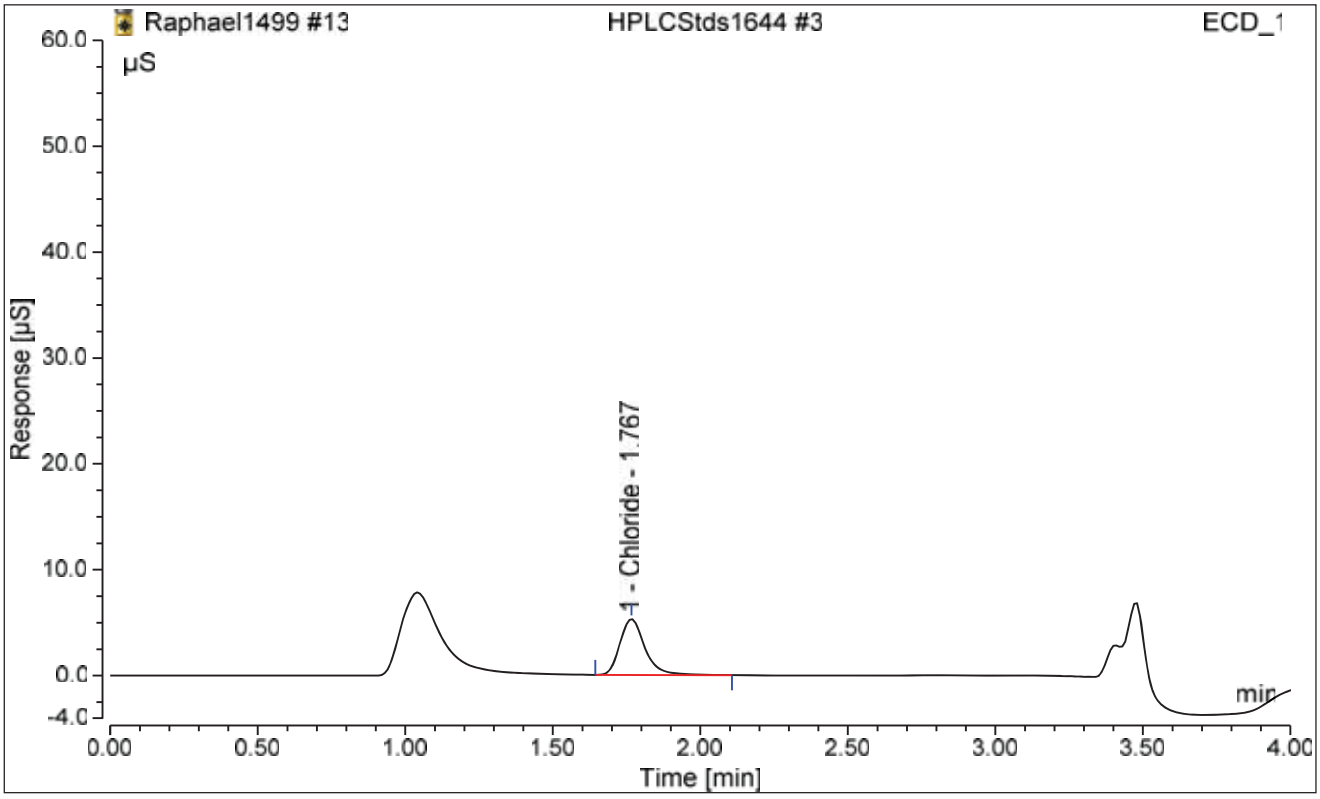


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.76	Chloride	0.517	5.283	4.91288	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 14:32**	Run Time:	**12.50**

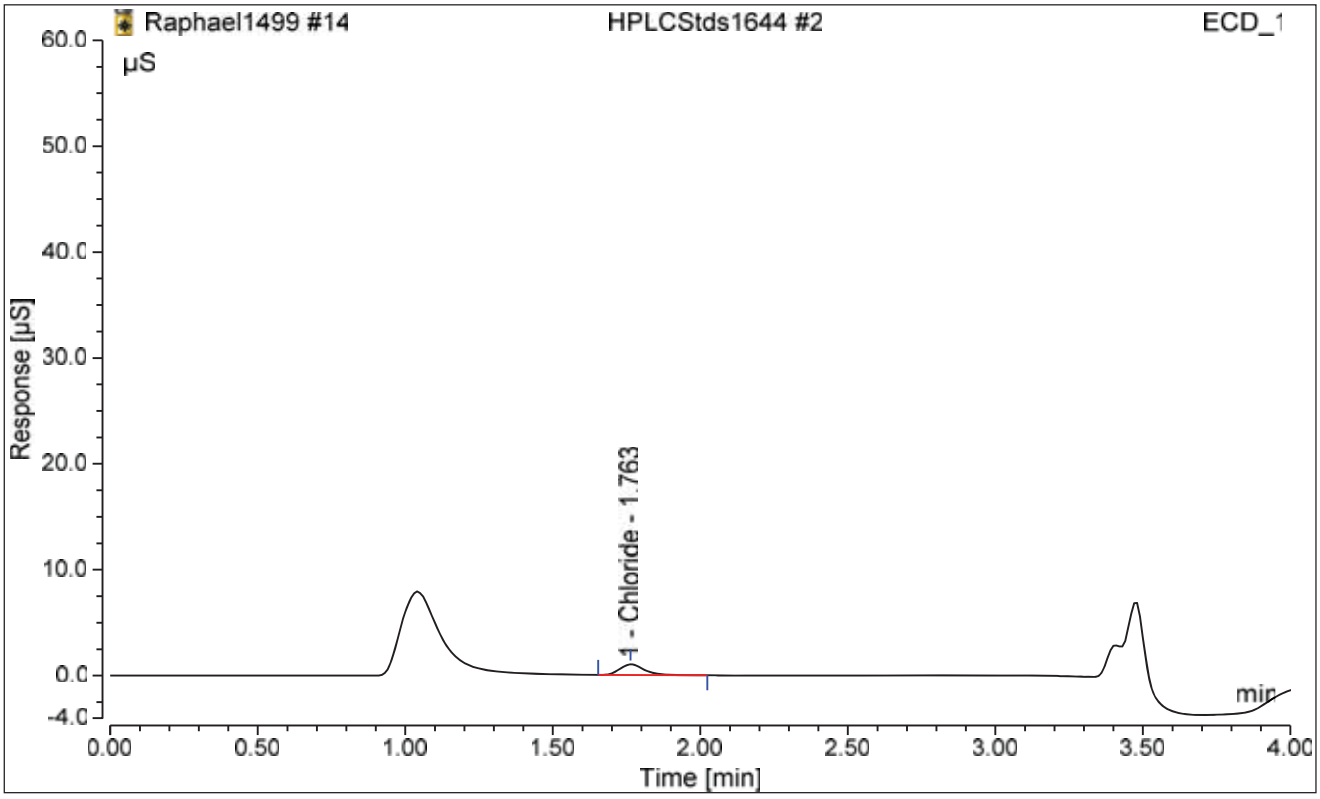


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	0.516	5.278	4.90172	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 14:46**	Run Time:	**12.50**

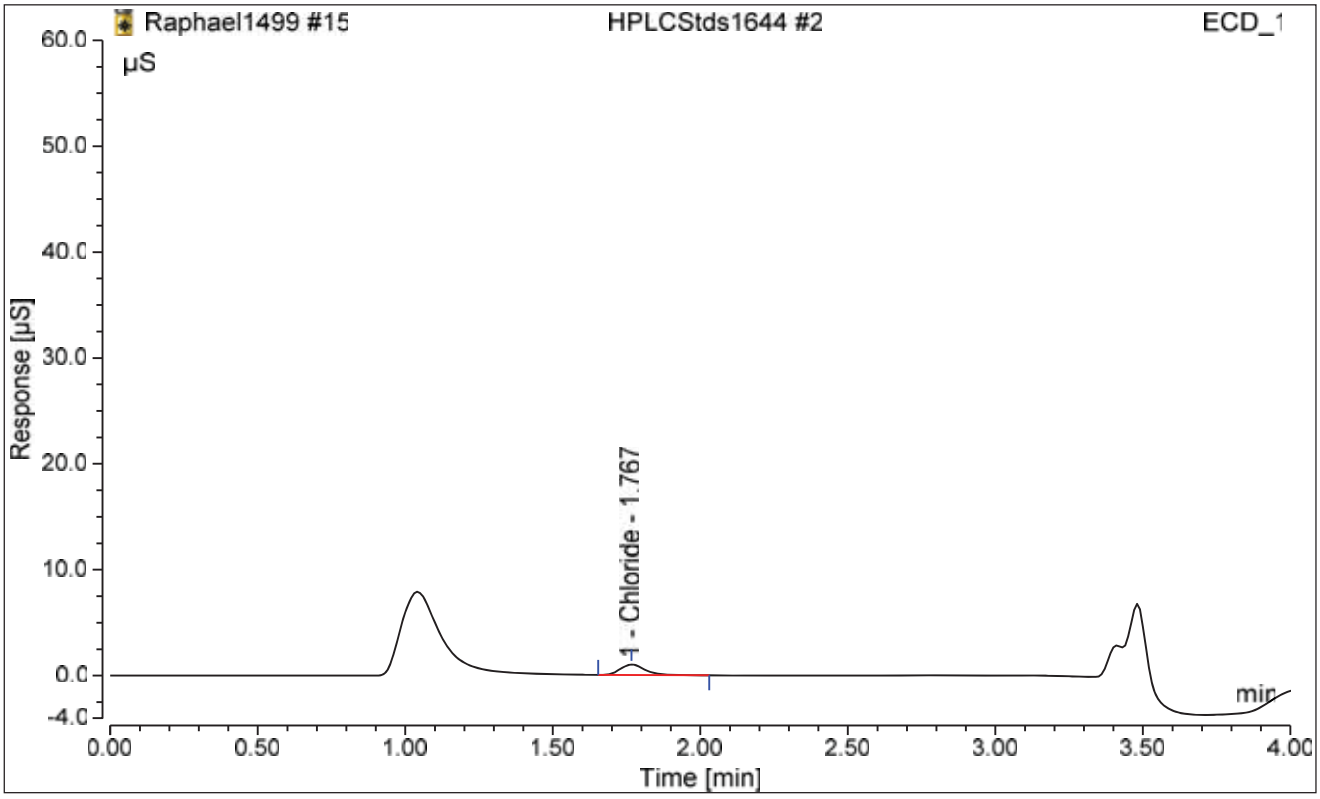


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.76	Chloride	0.097	1.007	0.97560	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 15:01**	Run Time:	**12.50**

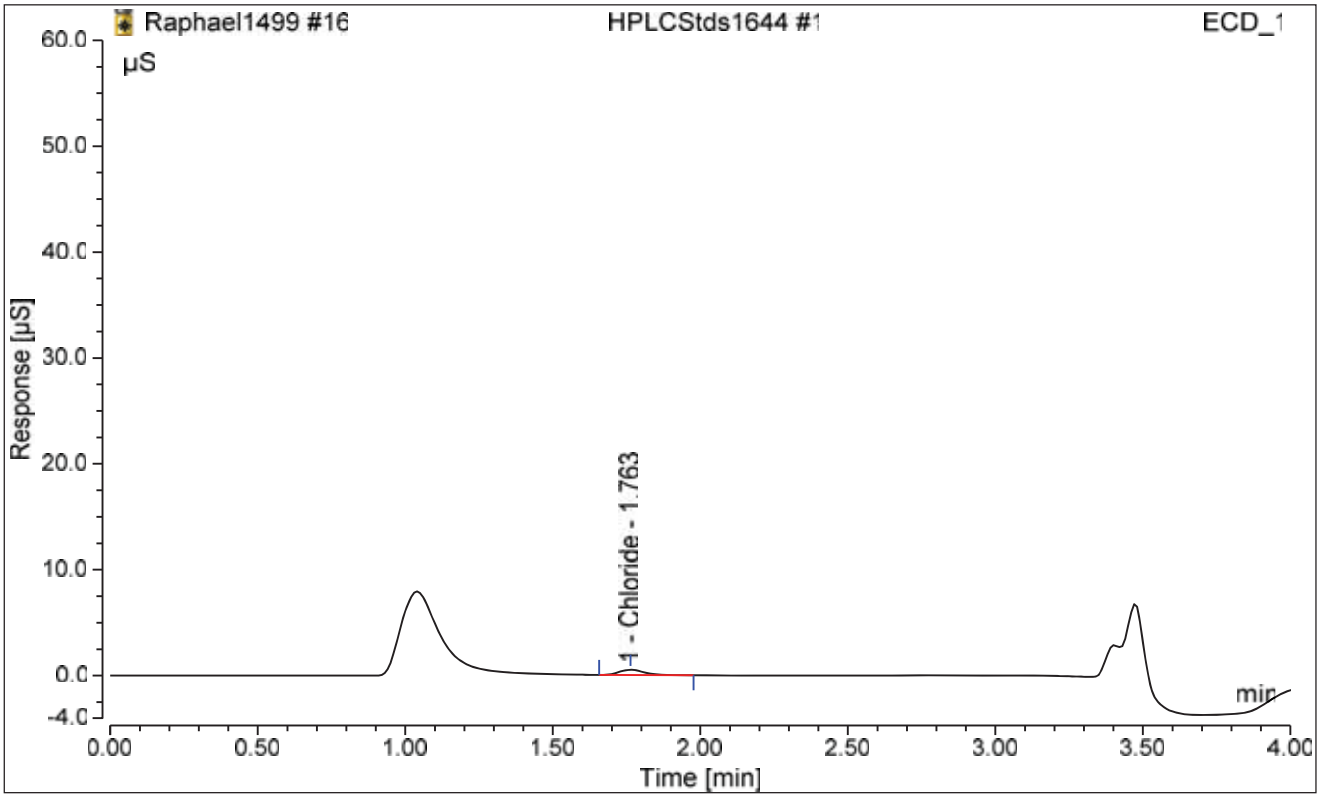


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	0.097	0.997	0.97291	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 15:15**	Run Time:	**12.50**

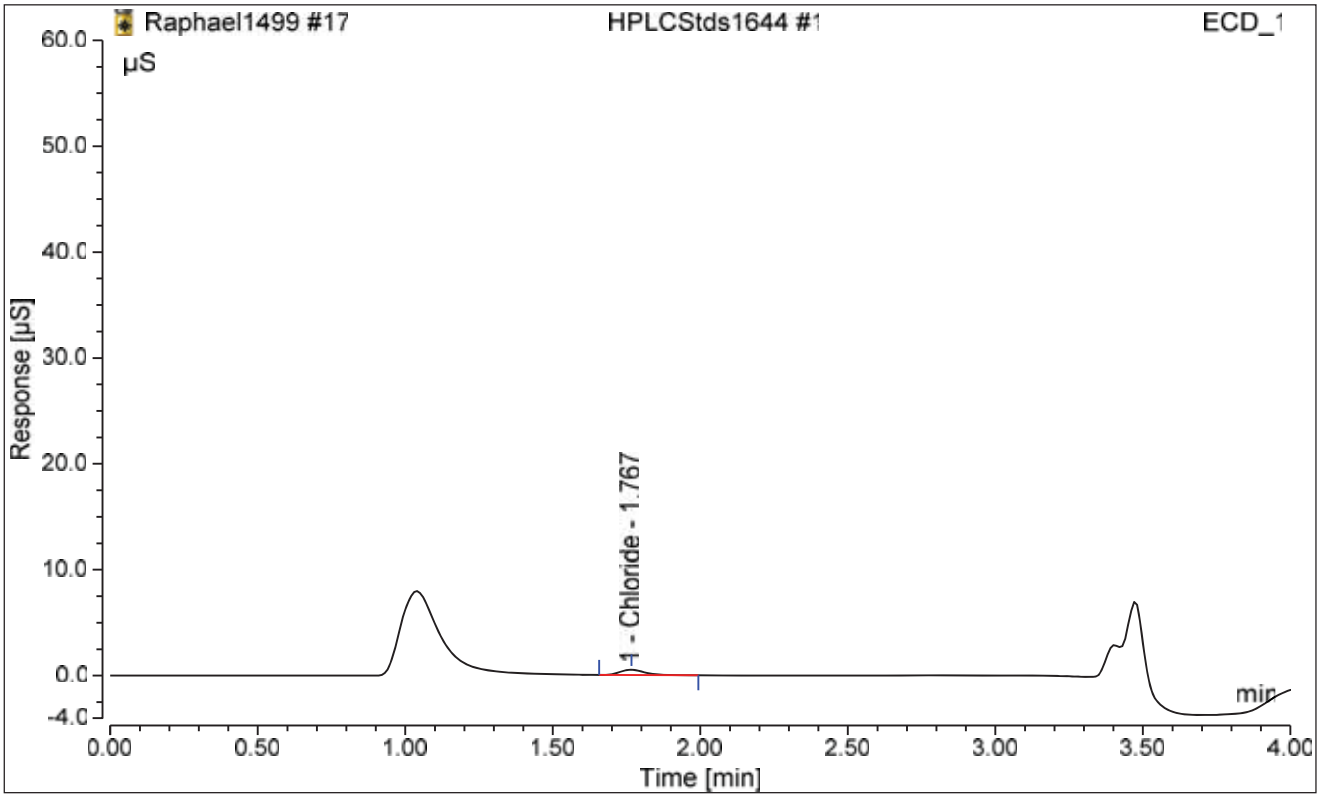


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.76	Chloride	0.049	0.510	0.51309	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 15:29**	Run Time:	**12.50**

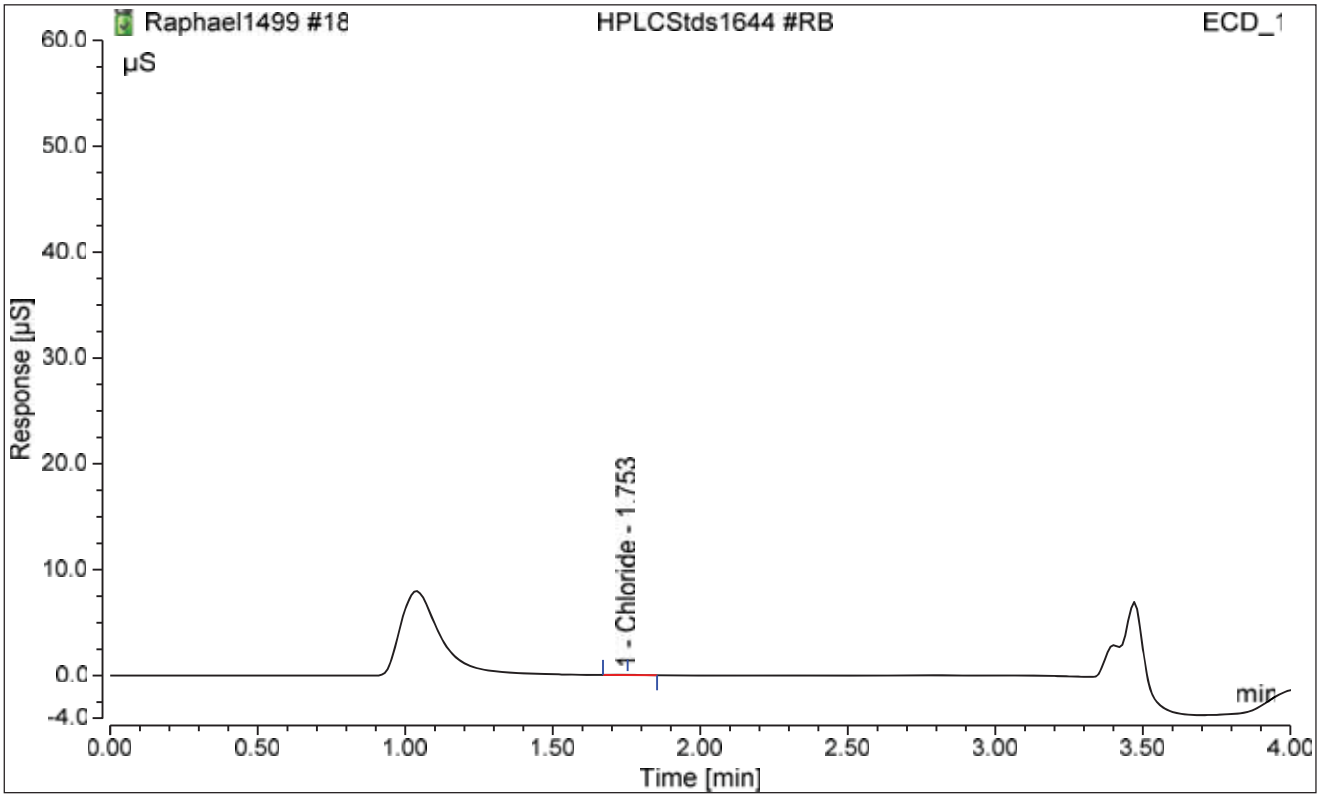


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	0.049	0.513	0.51591	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 15:43**	Run Time:	**12.50**

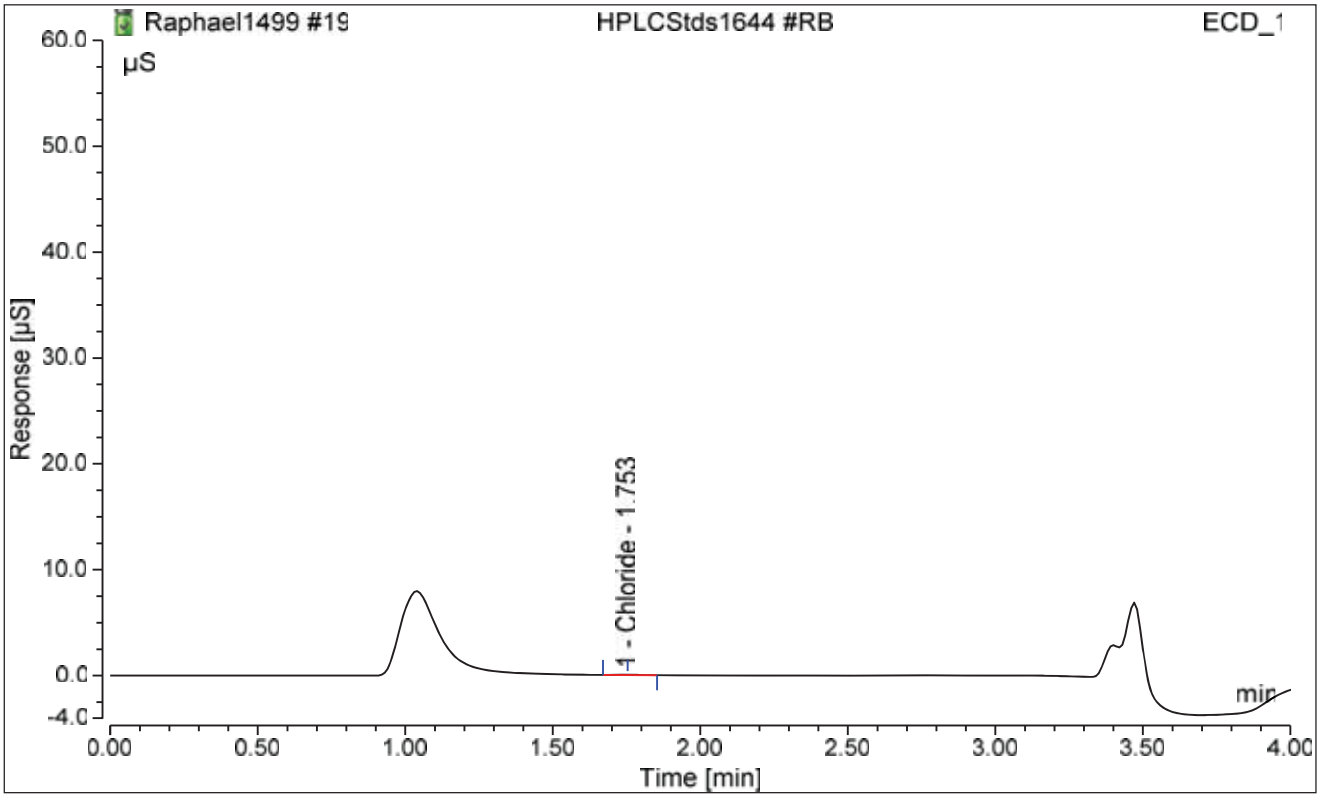


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.75	Chloride	0.003	0.039	0.07239	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 15:57**	Run Time:	**12.50**

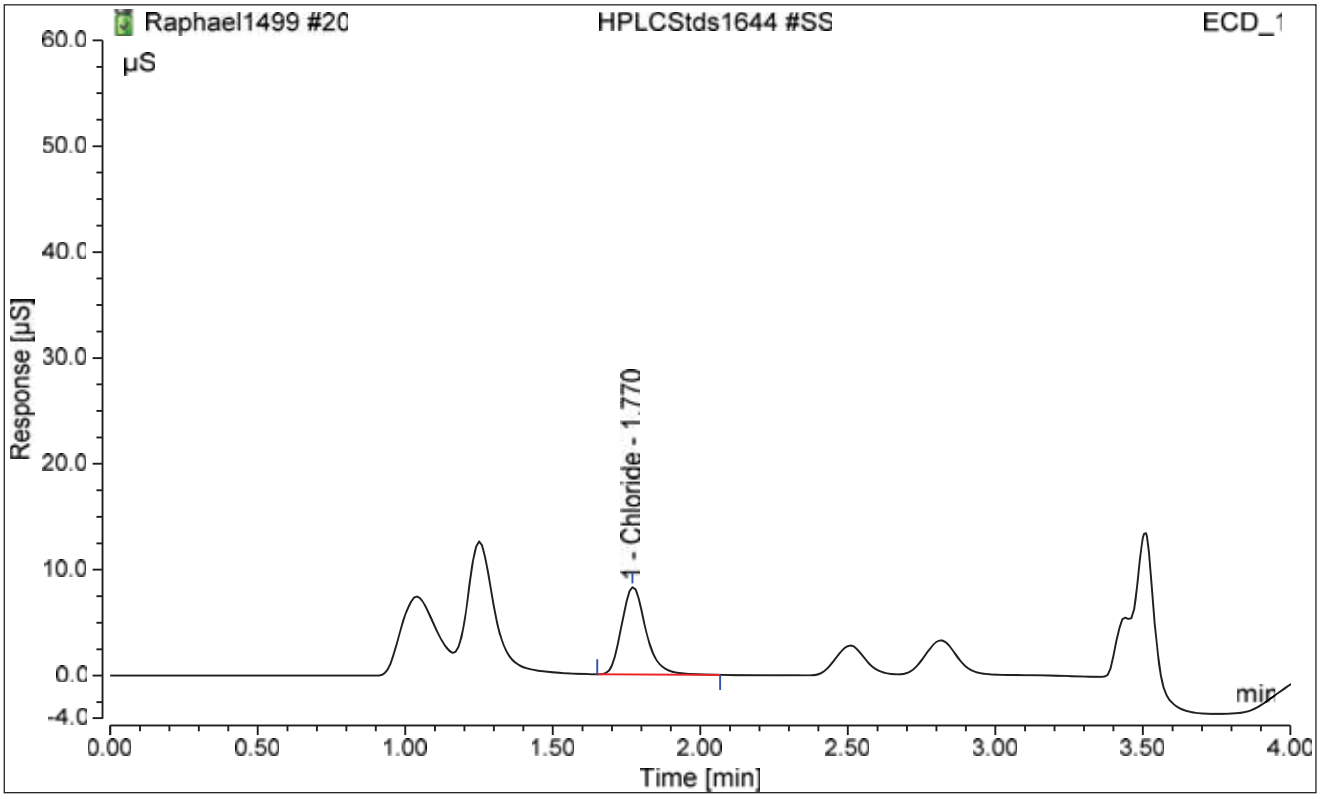


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.75	Chloride	0.003	0.038	0.07200	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 16:11**	Run Time:	**12.50**

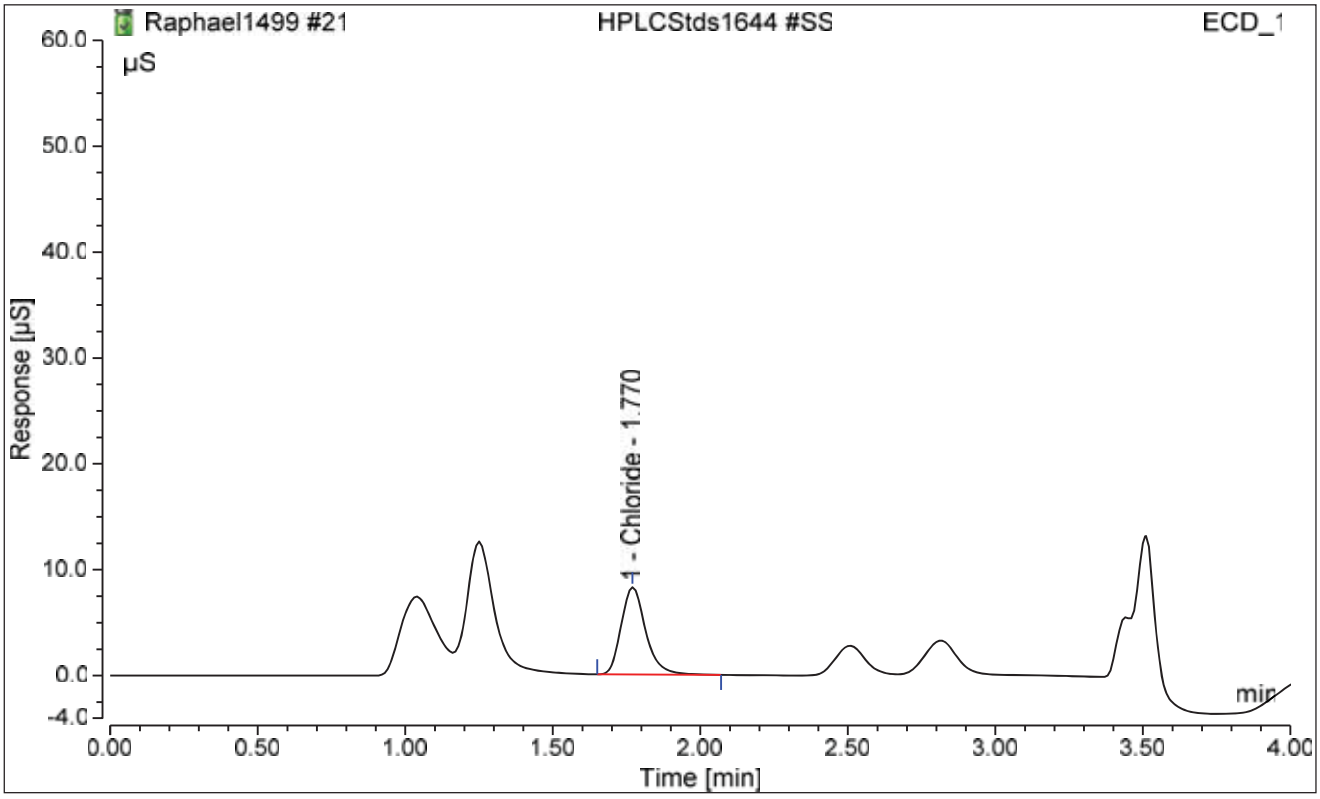


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	0.791	8.243	7.39893	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #SS**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**22-Dec-2023 / 16:25**	Run Time:	**12.50**

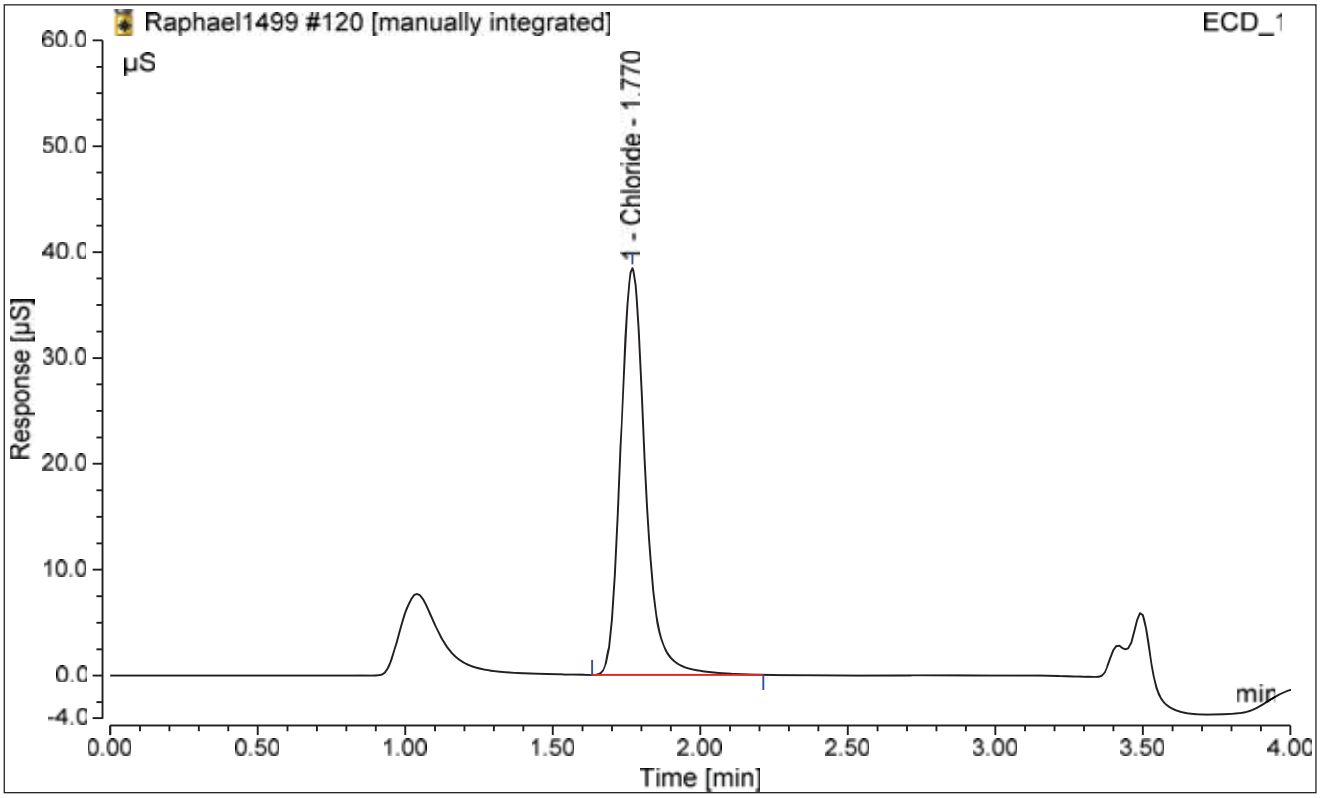


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	0.793	8.228	7.41675	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 15:42**	Run Time:	**12.50**

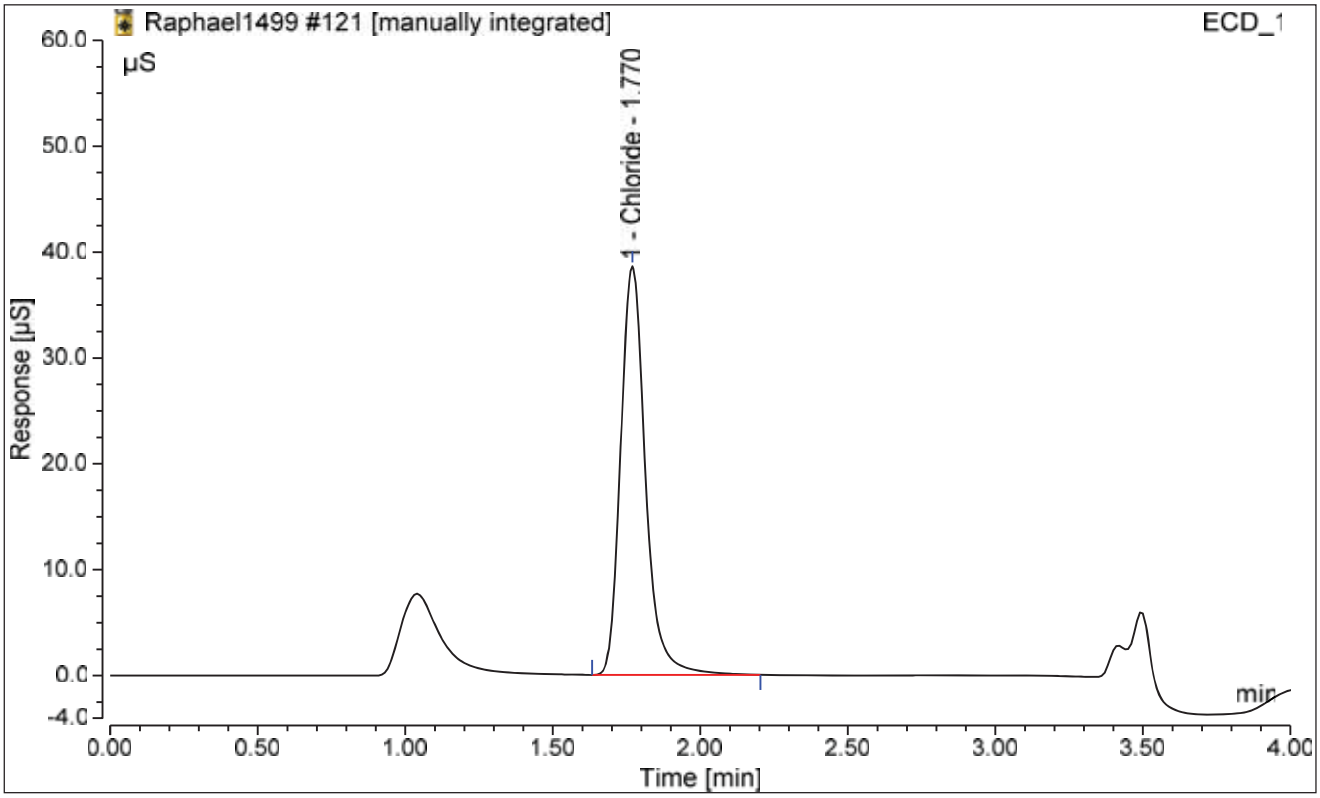


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	3.749	38.396	29.97377	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 15:56**	Run Time:	**12.50**

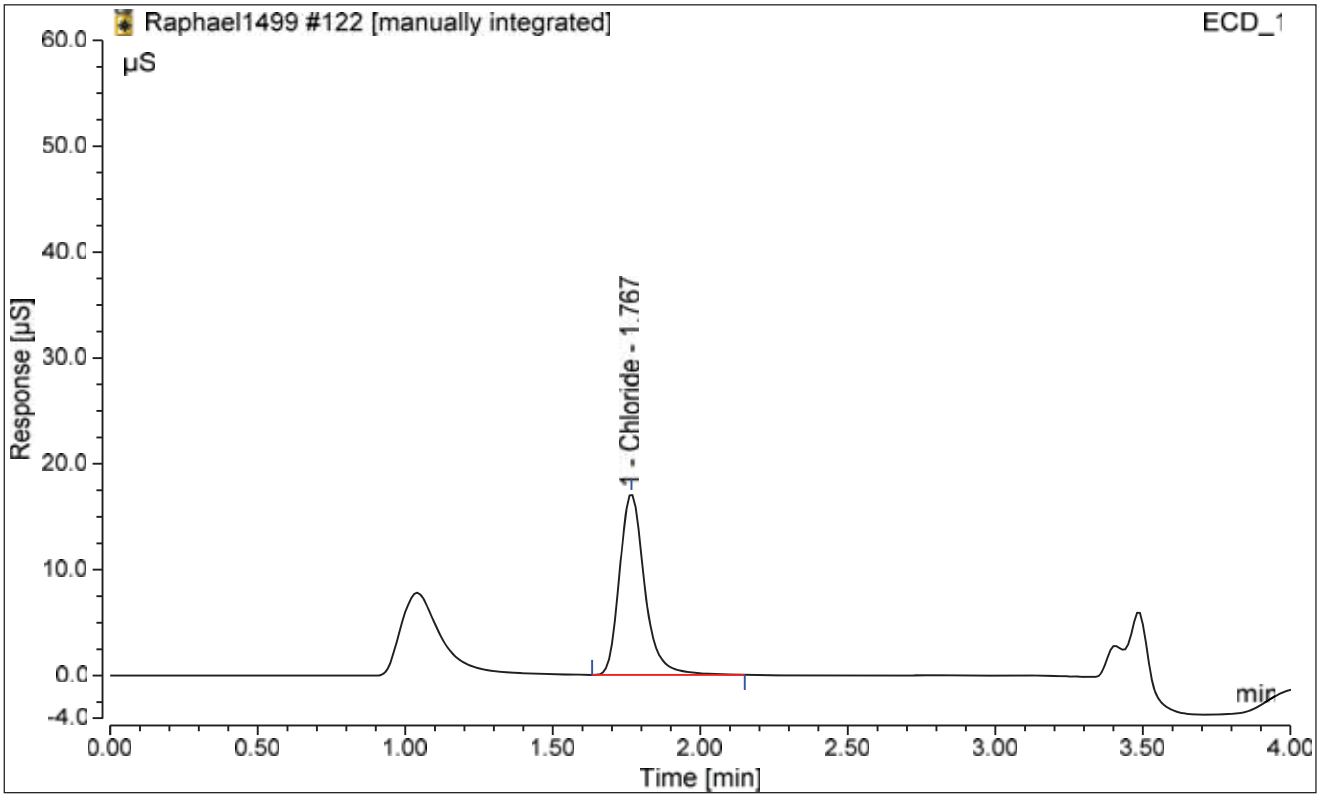


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	3.755	38.583	30.01181	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 16:10**	Run Time:	**12.50**

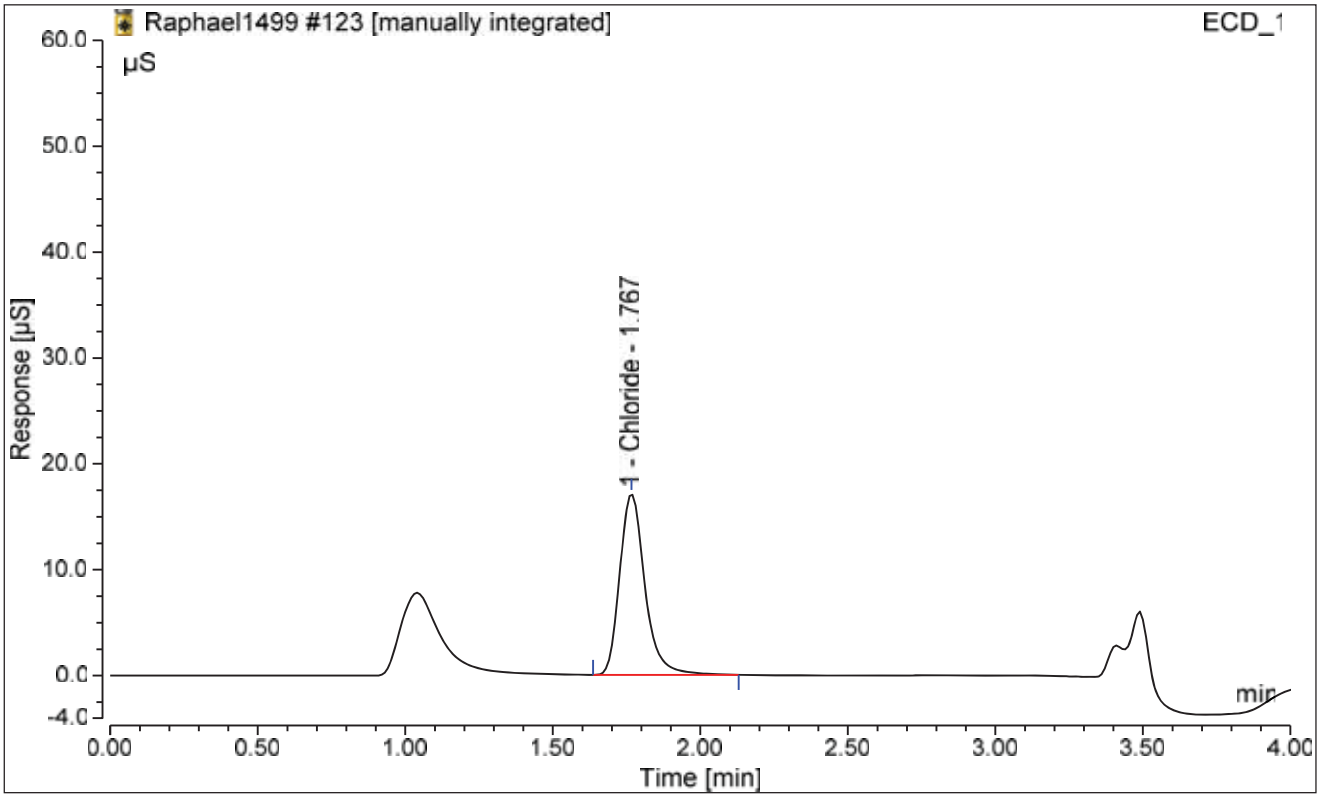


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.688	17.093	15.06383	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #5**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 16:24**	Run Time:	**12.50**

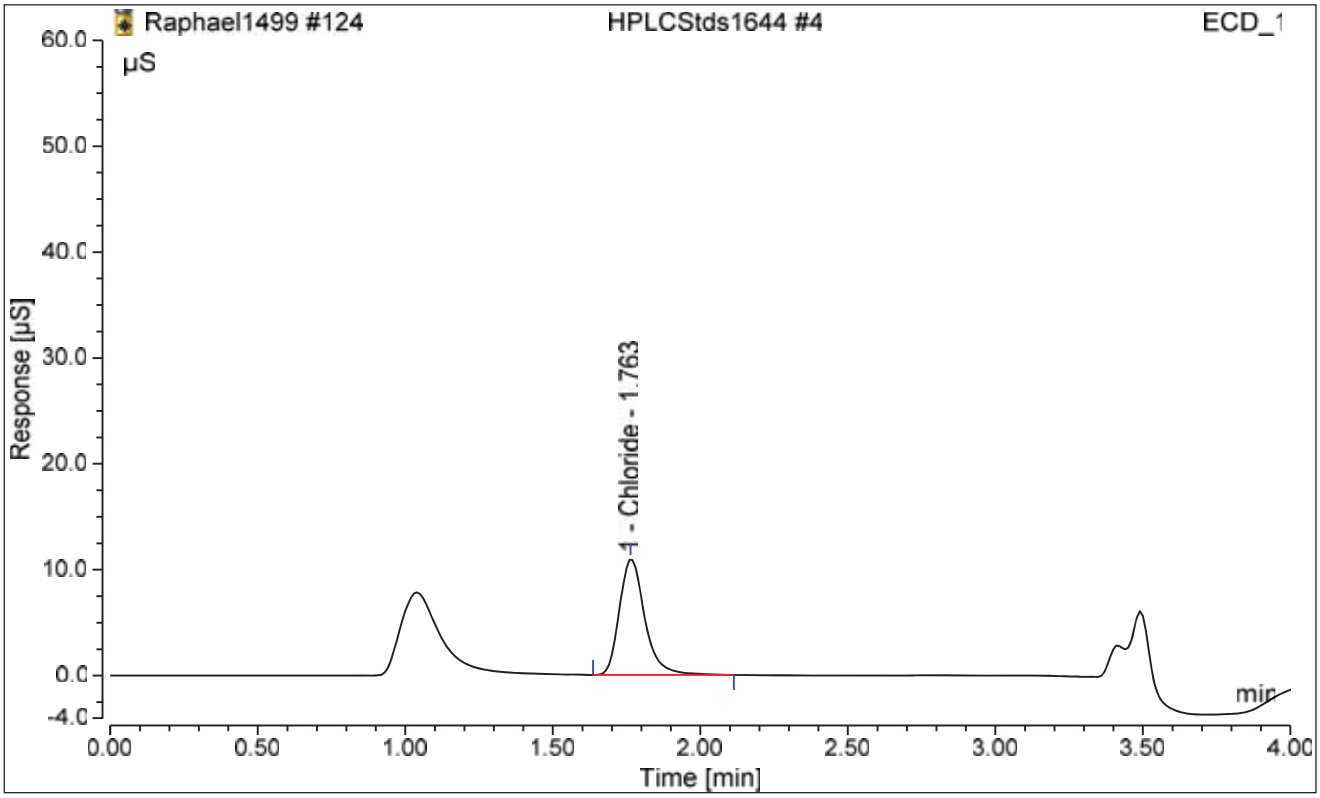


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.691	17.093	15.08915	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 16:38**	Run Time:	**12.50**

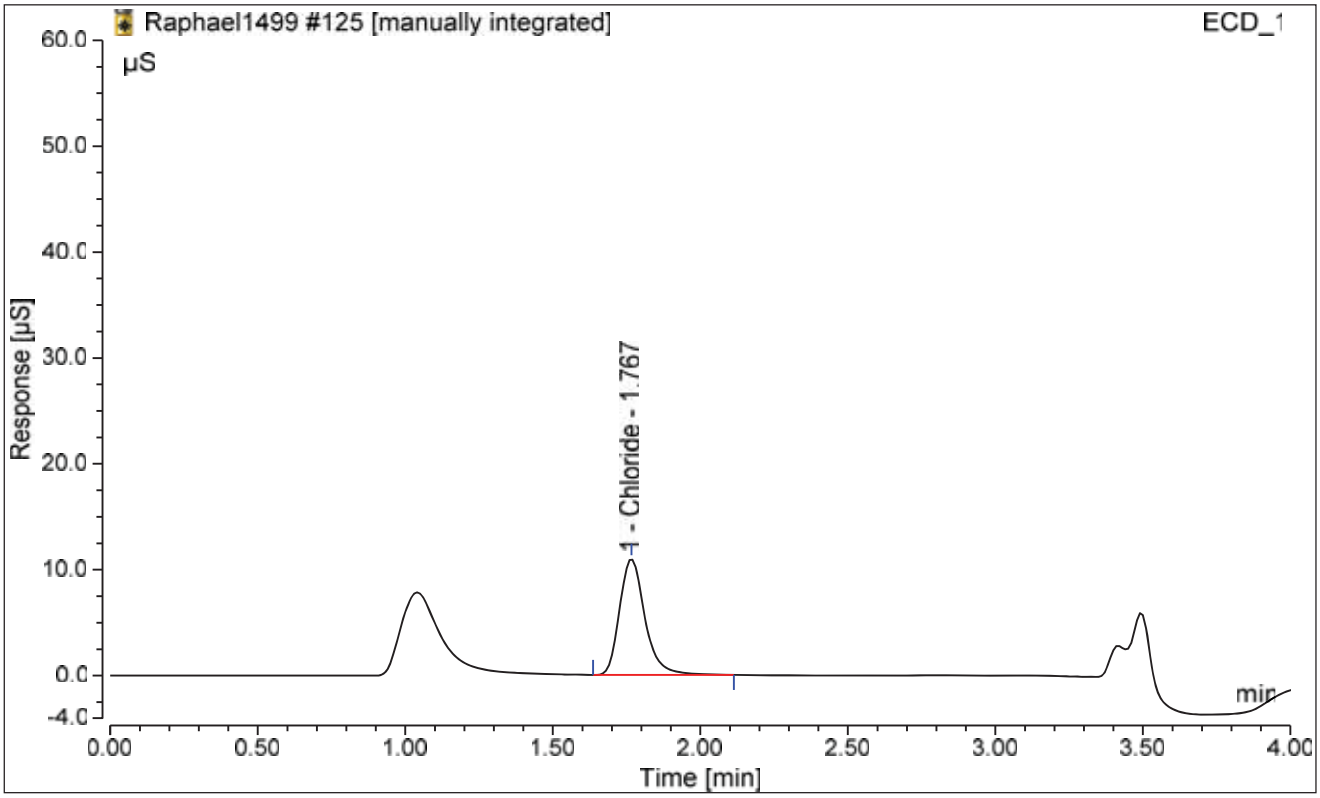


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.76	Chloride	1.092	10.950	10.04811	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 16:52**	Run Time:	**12.50**

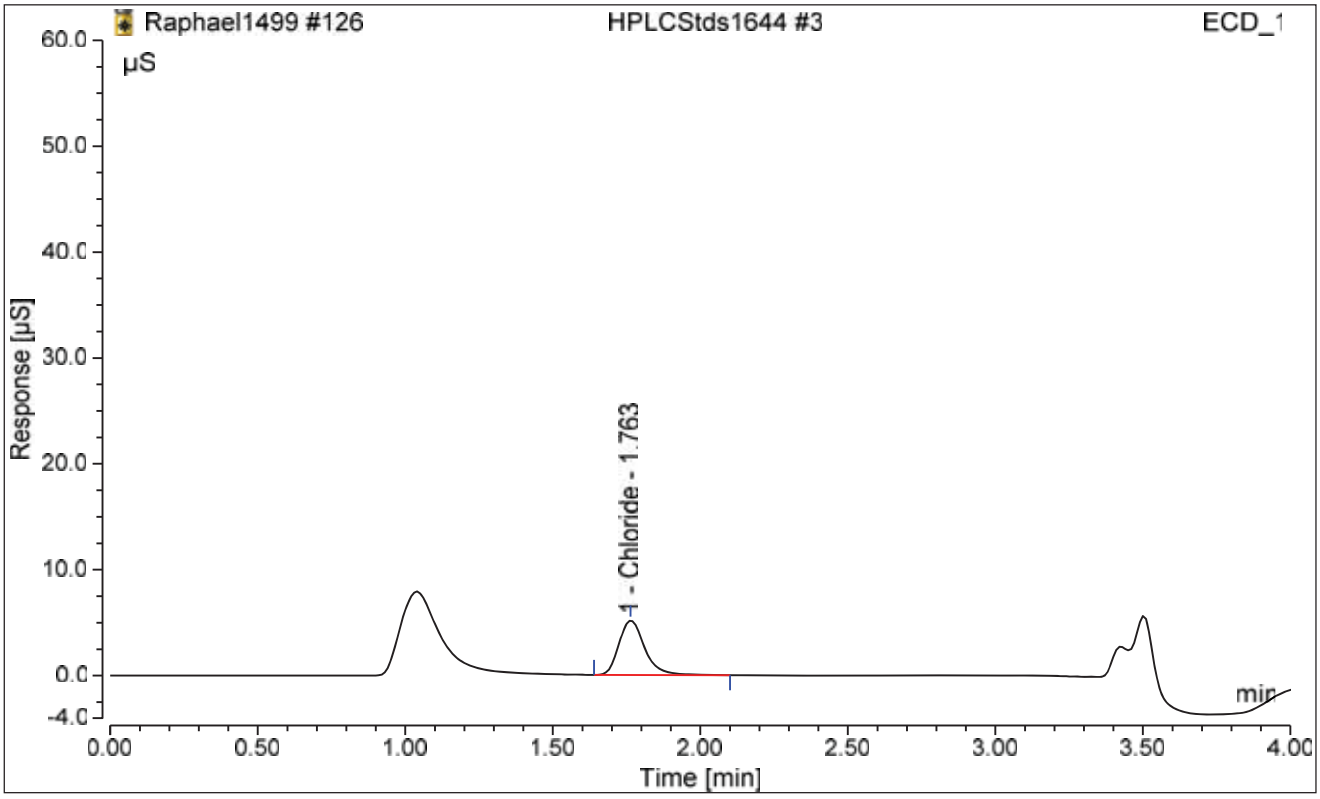


Analyst Comment: II SEA 12/27/23

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	1.091	10.955	10.04157	FALSE	TRUE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 17:06**	Run Time:	**12.50**

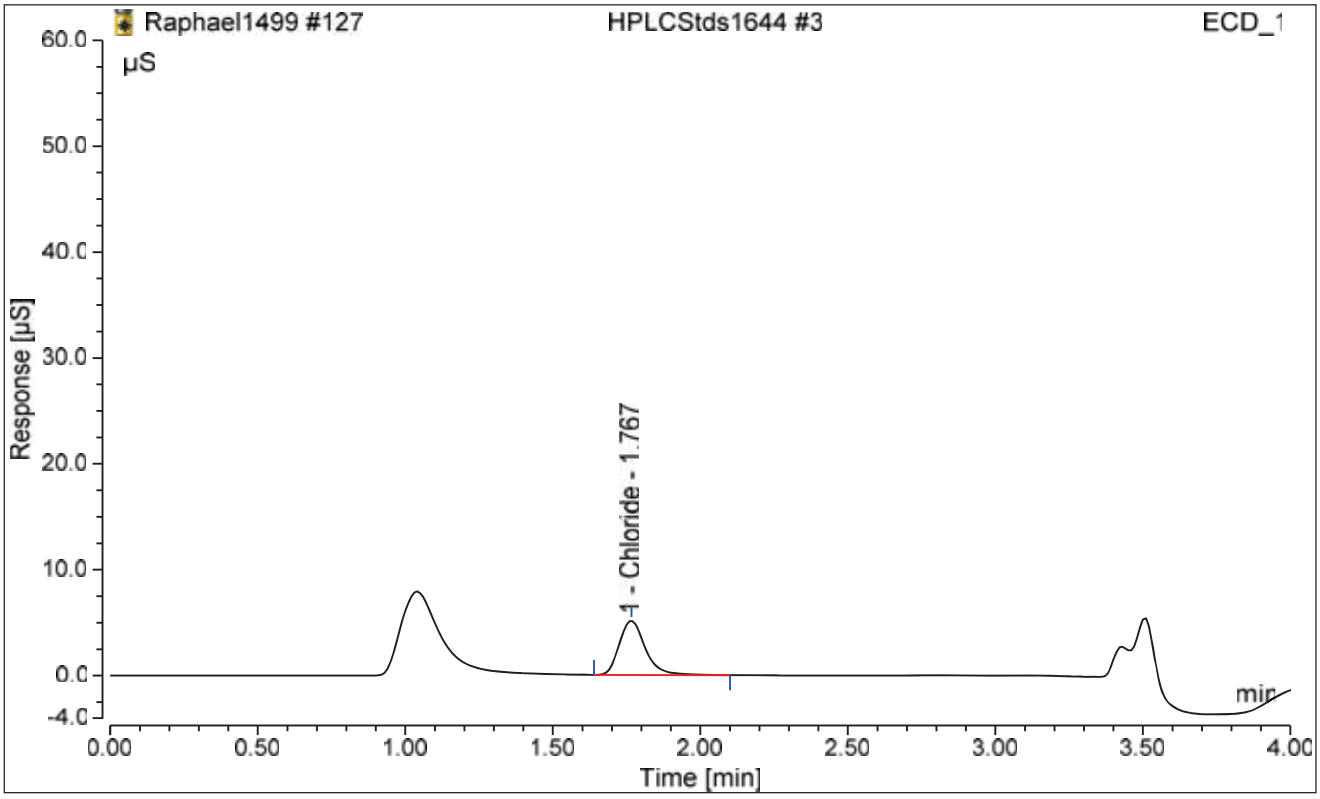


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.76	Chloride	0.520	5.142	4.94353	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 17:21**	Run Time:	**12.50**

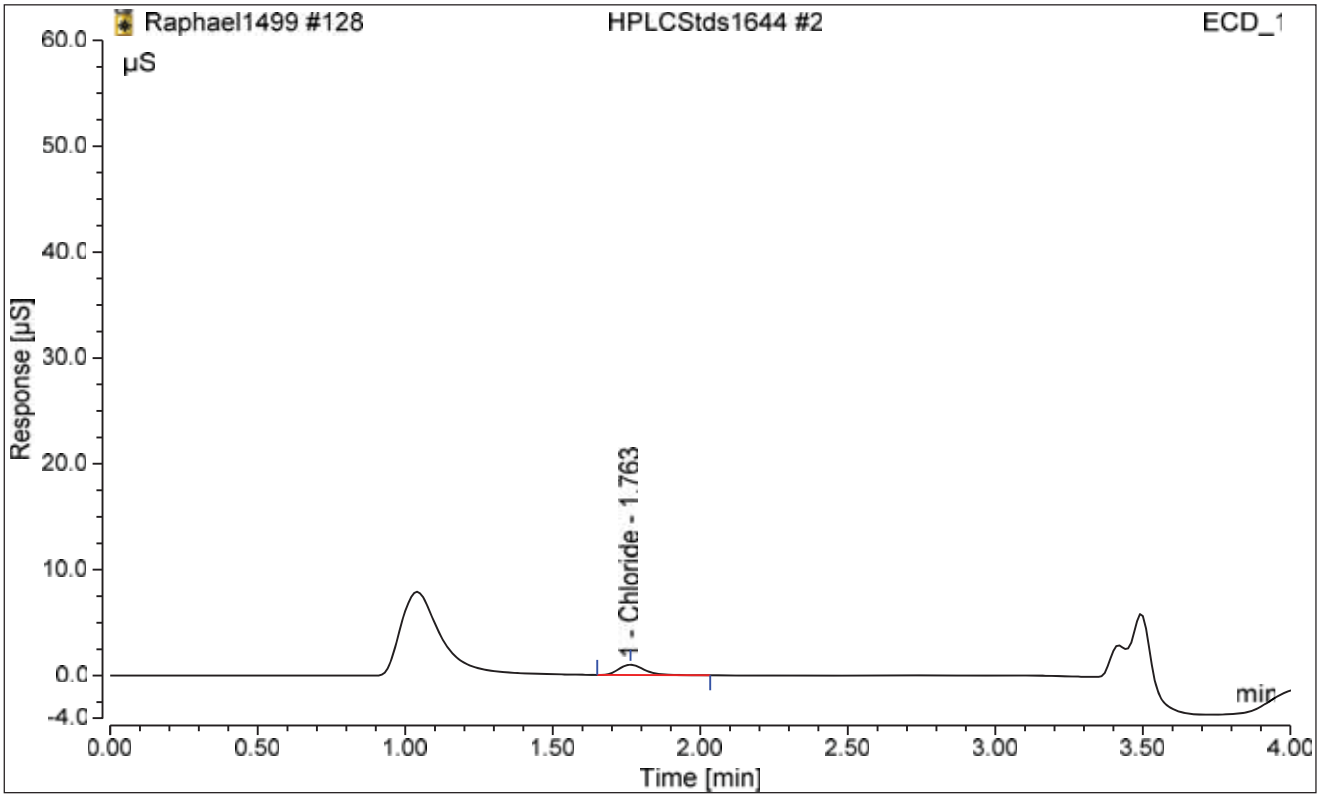


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.77	Chloride	0.522	5.123	4.95375	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 17:35**	Run Time:	**12.50**

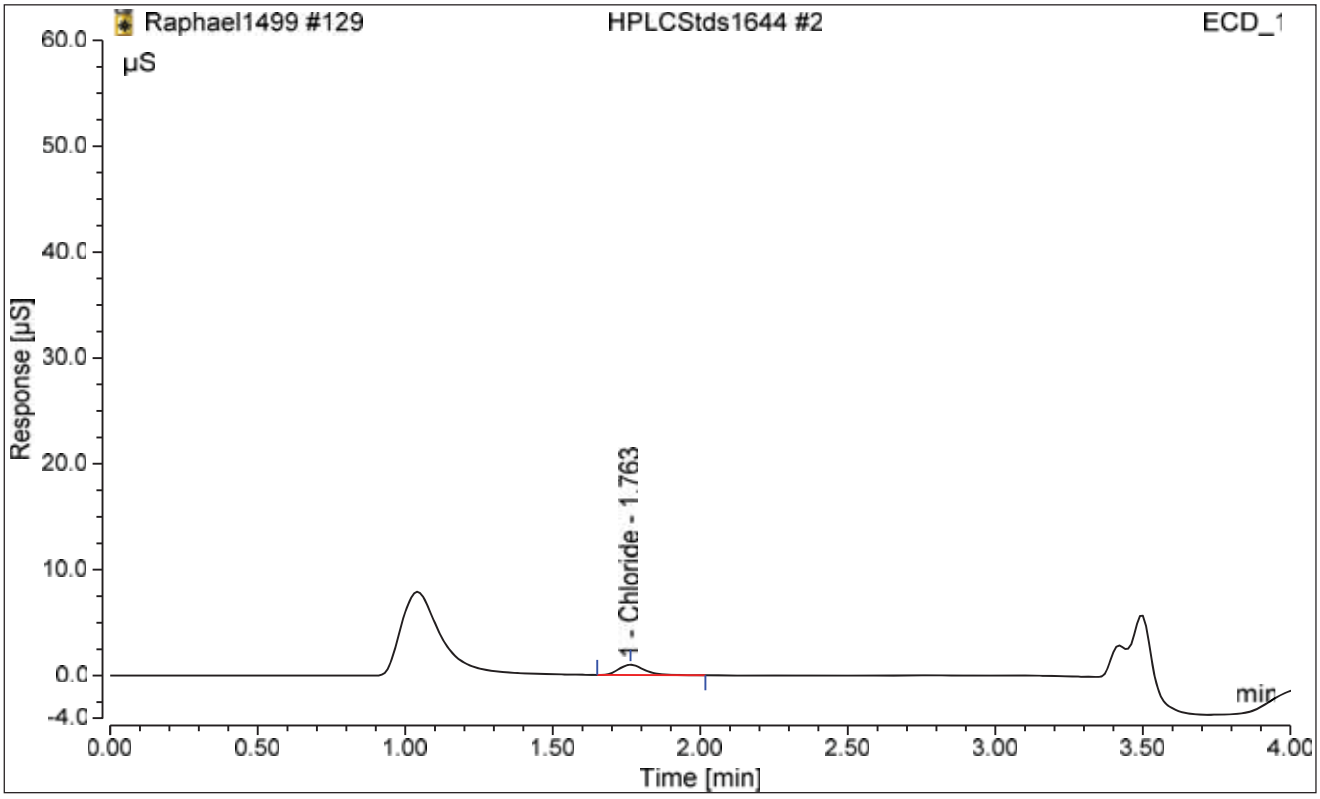


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.76	Chloride	0.098	0.972	0.98191	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 17:49**	Run Time:	**12.50**

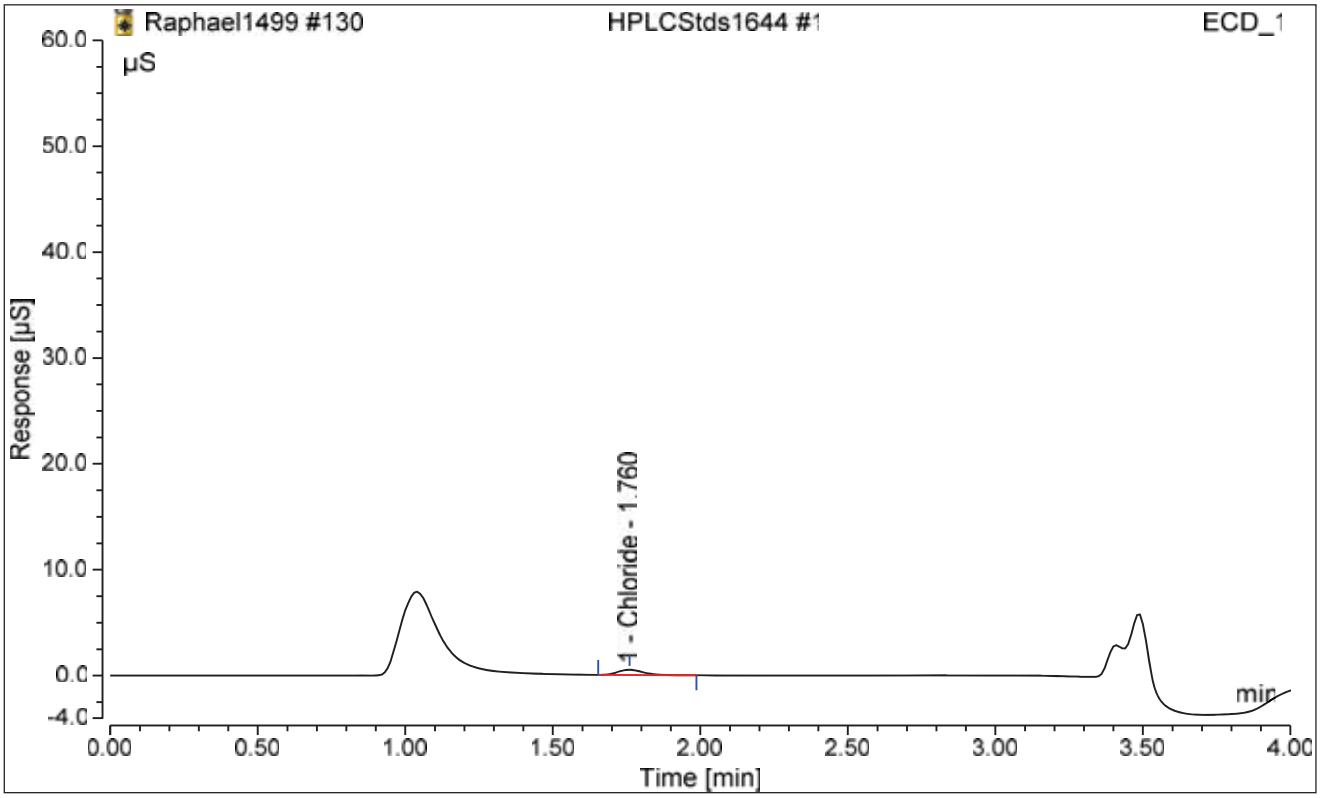


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.76	Chloride	0.097	0.970	0.97644	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 18:03**	Run Time:	**12.50**

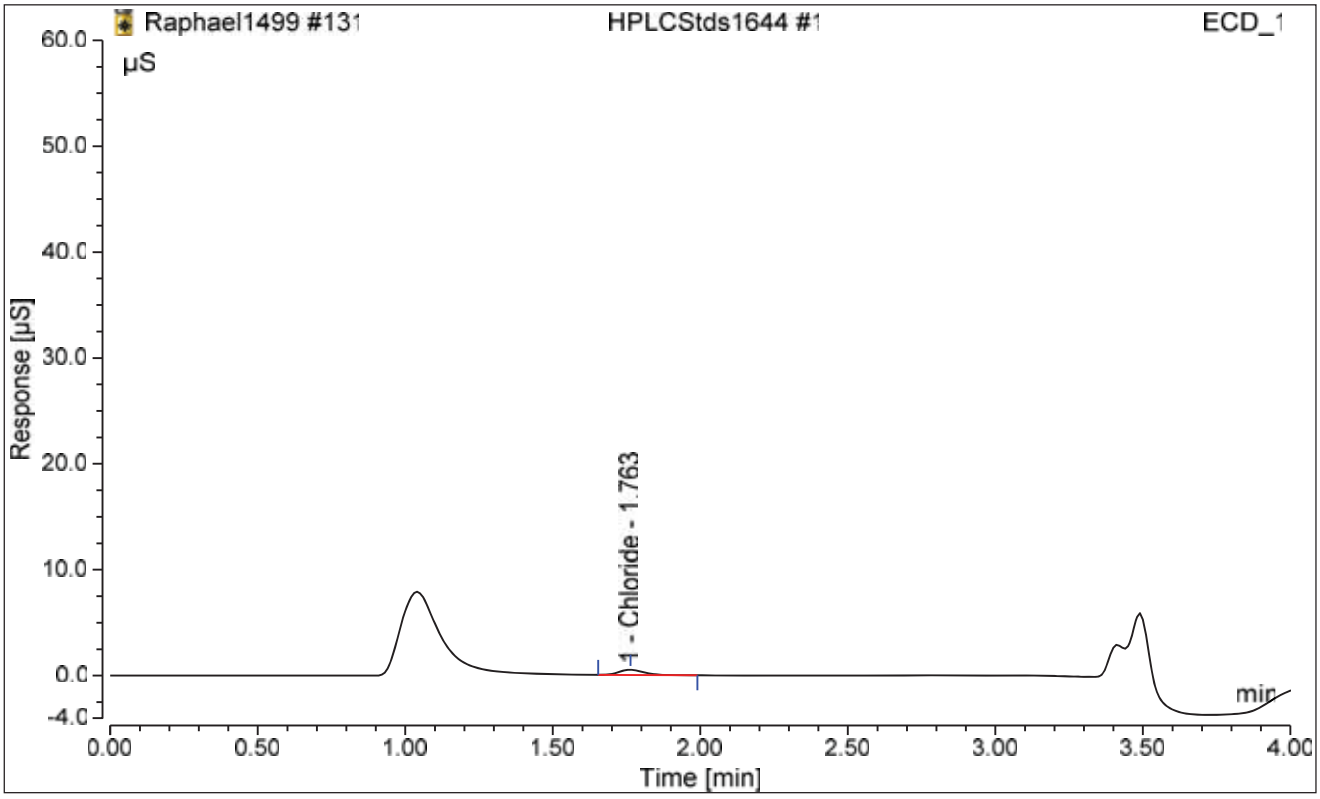


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.76	Chloride	0.049	0.497	0.51404	FALSE	FALSE

Peak Analysis Report

Sample Name:	**HPLCStds1644 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP Base2**	Operator:	**searundhati**
Inj. Date / Time:	**23-Dec-2023 / 18:17**	Run Time:	**12.50**



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.76	Chloride	0.049	0.498	0.51737	FALSE	FALSE

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Appendix C.2
EPA 320 (FTIR) Analyses

CEMEX
Brooksville, FL
Kilns 1 & 2
USEPA Methods 320
FTIR Emissions Testing
November 29th - December 1st , 2023
PROJ-031486

By

Shane Douglas
Field Technician / Chemist

June 6th, 2024

2625 Denison Drive · Mount Pleasant, MI 48858 · (989) 772-5088 · Fax (989) 772-5870

CEMEX
Brooksville, FL
Kilns 1 & 2
USEPA Method 320
FTIR Emissions Testing
November 29th – December 1st, 2023
PROJ-031486

Scope

Montrose Air Quality Services (MAQS, Mt. Pleasant, MI) was contracted by CEMEX (Brooksville, FL) to conduct emissions testing on Kilns 1 & 2. Testing was performed November 29th – December 1st, 2023 to determine concentrations of gaseous hydrogen cyanide (HCN), carbon dioxide (CO_2), hydrogen fluoride (HF), and moisture (H_2O) from Kiln 1 while operating with the inline raw mill and Kiln 2 while operating with and without the inline raw mill.

US EPA Method 320 was performed to quantify the concentration levels of gaseous hydrogen cyanide, carbon dioxide, hydrogen fluoride, and moisture. Amanda Nilles (MAQS) performed data collection, Shane Douglas (MAQS) data validation and report generation, and Phillip Kauppi (MAQS) reviewed the report.

Procedures

FTIR Instrumental Configuration

FTIR data were collected using an MKS MultiGas 2030 FTIR spectrometer. The FTIR was equipped with a temperature-controlled, 5.11-meter multipass gas cell maintained at 191°C. All data were collected at 0.5 cm-1 resolution. Each FTIR spectrum was derived from the coaddition of 64 scans, with a new data point generated approximately every 60 seconds.

Sample gas continuously passed through the FTIR gas cell via heated head sampling pump. Total sample flow was approximately ten liters per minute. Gas flow and sampling system pressure were monitored using a rotameter and pressure transducer. See Table 1 below for sampling system details.

Table 1 – FTIR Sampling System Parameters

Source	MKS Serial #	Sampling Line	Probe Assembly	Particulate Filter Media	Operating Temperatures
Kiln 1, Kiln 2	001738345	50' 3/8" dia., heated Teflon	Heated 8', 3/8" dia. SS	0.01µ heated borosilicate glass fiber	191°C

FTIR QA/QC Methodology

QA/QC procedures followed US EPA Method 320. See Tables 2 and 3 below for QA/QC procedure details and list of calibration gas standards. All calibration gases were introduced to the analyzer and sampling system using instrument grade stainless steel rotameters. All QA/QC procedures were within the acceptance criteria allowance of the EPA methodology. See the Kiln 1 – FTIR QA/QC Data Appendix for numerical results.

Table 2 – FTIR QA/QC Procedures

QAQC Specification	Purpose	Calibration Gas	Delivery	Frequency	Acceptance Criteria	Result
M320: Zero	Verify that the FTIR is free of contaminants & zero the FTIR	Nitrogen (zero)	Direct to FTIR	pre/post test	< MDL or Noise	**Pass**
M320: Calibration Transfer Standard (CTS) Direct	Verify FTIR stability, confirm optical path length	Ethylene	Direct to FTIR	pre/post test	+/- 5% cert. value	**Pass**
M320: Analyte Direct	Verify FTIR calibration	HCN, SF_6	Direct to FTIR	pretest	+/- 5% cert. value	**Pass**
M320: CTS Response	Verify system stability, recovery, RT	Ethylene	Sampling System	pre/post run	+/- 5% of Direct Measurement	**Pass**
M320: Zero Response	Verify system is free of contaminants, system bias	Ethylene	Sampling System	pre/post run	Bias correct data	**Pass**
M320: Analyte Spike	Verify system ability to deliver and quantify analyte of interest in the presence of other effluent gases	HCN, SF_6	Dynamic Addition to Sampling System, 1:10 effluent	pre/post run	+/- 20% theoretical recovery	**Pass**
SNR	Signal to Noise Ratio	-	Sampling System	Test runs	>2500	**Pass**
SBeam at 2500 cm-1	Signal intensity at 2500 wavenumber	-	All	All	>0.9	**Pass**
Calculated Residual	The calculated residual is used to determine the interference within the analysis band for a given compound	-	All	Test runs	< 0.4 ppm for HCN and HF	**Pass**

Table 3 – Calibration Gas Standards

Components	Concentration (ppm)	Vendor	Cylinder #	Standard Type
Ethylene	99.97	Airgas	EB0158986	Primary +/- 1%
HCN, SF_6	49.1, 5.00	Airgas	CC768259	Certified +/- 5%, 5%
Nitrogen	zero gas	Airgas	n/a	UHP Grade

FTIR QA/QC Calculations

Method 320: Analyte Spiking

Hydrogen cyanide spiking was performed in ambient air and at the source prior to and after each run to verify the ability of the sampling systems to quantitatively deliver a sample containing hydrogen cyanide from the base of the probe to the FTIR. The spike target dilution ratio was

1:10 or less, or to add 3-4 ppm to the native sample, whichever results in a greater spiked concentration. Spike recovery results are within ±20% or ±0.5ppm, whichever is least restrictive. Analyte spiking assures the ability of the FTIR to quantify hydrogen cyanide in the presence of effluent gas.

As part of the spiking procedure, samples from the source were measured before and after each spike to determine hydrogen cyanide concentrations to be used in the spike recovery calculations. The analyte spiking gas contained a low concentration of sulfur hexafluoride (SF_6). The determined SF_6 concentration in the spiked sample was used to calculate the dilution factor of the spike and thus used to calculate the concentration of the spiked hydrogen cyanide.

$$DF = \frac{SF6(spk) - SF6(nat)}{SF6(Direct)}$$

$$CS = DF * Spike(dir) + Unspike(1 - DF) \quad \text{(Sec. 9.3.1 (2) USEPA Method 320)}$$

DF = Dilution factor of the spike gas
$SF_{6(dir)}$ = SF_6 concentration measured directly in undiluted spike gas
$SF_{6(spk)}$ = Diluted SF_6 concentration measured in a spiked sample
$SF_{6(nat)}$ = Native SF_6 concentration measured in unspiked samples
$Spike_{dir}$ = Concentration of the analyte in the spike standard measure by the FTIR directly
CS = Expected concentration of the spiked samples
Unspike = Native concentration of analytes in unspiked samples

A total of thirteen HCN spikes were performed during the test program. Nine HCN spikes were performed on stack gas with an average recovery of 97.1%. Four HCN spike were performed on ambient air with an average recovery of 99.2%. See the FTIR QAQC appendix for all spiking results.

FTIR Post Collection Data Validation

As part of the data validation procedure, reference spectra are manually fit to that of the sample spectra and a concentration is determined. The reference spectra are scaled to match the peak amplitude of the sample, thus providing a scale factor. The scale factor multiplied by the reference spectra concentration is used to determine the concentration value for the sample spectra. Sample pressure and temperature corrections are then applied to compute the final sample concentration. The manually calculated results are then compared with the software-generated results. The data is then validated if the two concentrations are within ± 20% agreement. If there is a difference greater than ± 20% the spectra are reviewed for possible spectral interferences or any other probable causes leading to misquantified data.

FTIR Detection Limit

The detection limit for each analyte was calculated using the determined target results from nitrogen spectra collected through the sampling system. The minimum detectable concentration of each analyte was calculated as three times the standard deviation of the noise in the FTIR system. This minimum concentration can be detected with a probability of 99.7 %. See Table 4 below for determined minimum detectable concentrations. The FTIR Detection Limit Data appendix contains all results used for the detection limit calculation.

Table 4 - FTIR Detection Limits

Analyte	Detection Limit (ppmv wet)	Detection Limit (%)
Hydrogen Cyanide	0.4	-
Hydrogen Fluoride	0.1	-
Moisture	-	0.1
Carbon Dioxide	-	0.1

Results and Discussion

On November 29th, 2023, three, sixty-minute test runs were performed on Kiln 1 with the Mill On. Three, sixty-minute test runs were performed on Kiln 2 on November 30th, 2023 with the Mill Off. Three, sixty-minute test runs were performed on Kiln 2 with the Mill On. One test run on November 30th, 2023 and two on December 1st, 2023.

Analyte spiking was performed to confirm the ability of the measurement system to deliver and quantify hydrogen cyanide. See the FTIR QA/QC Data and Run Results Appendix for all concentration results. See Tables 5, 6, and 7 below for a summary of the test run results.

Table 5 – Kiln 1 Mill On Test Summary

Test Run Detail	Calculation	CO2 (%)	H2O (%)	HF (ppmv wet)	HCN (ppmv wet)
Kiln 1 - Raw Mill On Test Run 1 11/29/2023 10:10 - 11:10	Minimum	5.76	5.55	-0.17 (< 0.1)	0.56
	Maximum	6.15	6.08	-0.04 (< 0.1)	0.87
	Average	5.90	5.79	-0.10 (< 0.1)	0.69
	Std Dev	0.09	0.15	0.02	0.07
	3 Sigma	0.26	0.45	0.07	0.21
Kiln 1 - Raw Mill On Test Run 2 11/29/2023 12:45 - 13:51	Minimum	5.80	5.66	-0.15 (< 0.1)	0.54
	Maximum	6.20	6.34	-0.03 (< 0.1)	0.80
	Average	6.02	6.06	-0.11 (< 0.1)	0.65
	Std Dev	0.08	0.14	0.02	0.08
	3 Sigma	0.25	0.43	0.07	0.23
Kiln 1 - Raw Mill On Test Run 3 11/29/2023 14:39 - 15:39	Minimum	5.98	5.84	-0.16 (< 0.1)	0.49
	Maximum	6.77	6.34	-0.07 (< 0.1)	0.95
	Average	6.43	6.11	-0.12 (< 0.1)	0.66
	Std Dev	0.20	0.13	0.02	0.10
	3 Sigma	0.59	0.39	0.06	0.29

Table 6 – Kiln 2 Mill Off Test Summary

Test Run Detail	Calculation	CO2 (%)	H2O (%)	HF (ppmv wet)	HCN (ppmv wet)
Kiln 2 - Raw Mill Off Test Run 1 11/30/2023 10:25 - 11:25	Minimum	11.65	12.15	-0.11(< 0.1)	4.11
	Maximum	13.28	12.95	-0.04(< 0.1)	4.82
	Average	12.25	12.50	-0.07(< 0.1)	4.54
	Std Dev	0.32	0.22	0.02	0.14
	3 Sigma	0.97	0.67	0.05	0.42
Kiln 2 - Raw Mill Off Test Run 2 11/30/2023 12:10 - 13:10	Minimum	13.26	13.58	-0.11(< 0.1)	4.57
	Maximum	14.70	14.67	-0.02(< 0.1)	5.48
	Average	14.03	13.94	-0.06(< 0.1)	4.97
	Std Dev	0.33	0.24	0.02	0.20
	3 Sigma	1.00	0.73	0.06	0.60
Kiln 2 - Raw Mill Off Test Run 3 11/30/2023 13:55 - 14:55	Minimum	10.08	13.70	-0.15(< 0.1)	2.66
	Maximum	15.24	15.94	-0.06(< 0.1)	5.21
	Average	12.80	14.86	-0.09(< 0.1)	4.30
	Std Dev	1.62	0.60	0.02	0.82
	3 Sigma	4.86	1.81	0.06	2.45

Table 7 – Kiln 2 Mill On Test Summary

Test Run Detail	Calculation	CO2 (%)	H2O (%)	HF (ppmv wet)	HCN (ppmv wet)
Kiln 2 - Raw Mill On Test Run 1 11/30/2023 17:09 - 18:09	Minimum	9.43	11.92	-0.17(< 0.1)	2.98
	Maximum	10.78	13.63	-0.05(< 0.1)	4.10
	Average	10.27	12.86	-0.10(< 0.1)	3.48
	Std Dev	0.34	0.55	0.02	0.27
	3 Sigma	1.03	1.66	0.06	0.80
Kiln 2 - Raw Mill On Test Run 2 12/01/2023 10:37 - 11:37	Minimum	10.95	13.52	-0.10(< 0.1)	3.88
	Maximum	11.84	14.39	0.01(< 0.1)	4.50
	Average	11.41	13.99	-0.04(< 0.1)	4.15
	Std Dev	0.21	0.22	0.02	0.11
	3 Sigma	0.63	0.66	0.06	0.34
Kiln 2 - Raw Mill On Test Run 3 12/01/2023 12:20 - 13:20	Minimum	10.57	13.71	-0.11(< 0.1)	3.65
	Maximum	11.58	14.96	-0.01(< 0.1)	5.47
	Average	11.21	14.40	-0.06(< 0.1)	4.12
	Std Dev	0.25	0.31	0.02	0.26
	3 Sigma	0.76	0.93	0.06	0.77

The following Appendices include:

- FTIR Test Run Data
- FTIR QA/QC Data
- FTIR Detection Limit Data
- Gas Certificates

Shane Douglas Date: June 6th, 2024

Shane Douglas
FTIR Technician / Chemist
CEMEX_BrooksvileFL_2023Nov_PROJ-031486_txt

APPENDIX

FTIR Test Run Data

Kiln 1 - Raw Mill On Test Run 1

Spectrum	Date	Time	H2O (%v)	CO2 (%v wet)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_0289.LAB	11/29/2023	10:10:38	5.63	6.06	-0.11	0.72	191.5	1.03	0.05	0.22	2693	1.23
KILN1_0290.LAB	11/29/2023	10:11:38	5.63	6.03	-0.10	0.67	191.5	1.03	0.05	0.21	3156	1.23
KILN1_0291.LAB	11/29/2023	10:12:38	5.63	6.05	-0.09	0.75	191.5	1.03	0.05	0.20	2838	1.23
KILN1_0292.LAB	11/29/2023	10:13:38	5.70	6.05	-0.04	0.77	191.5	1.03	0.05	0.20	2711	1.23
KILN1_0293.LAB	11/29/2023	10:14:38	5.73	5.98	-0.12	0.75	191.5	1.03	0.05	0.22	2691	1.23
KILN1_0294.LAB	11/29/2023	10:15:38	5.65	5.90	-0.10	0.74	191.5	1.03	0.05	0.21	2518	1.23
KILN1_0295.LAB	11/29/2023	10:16:38	5.60	5.86	-0.09	0.59	191.5	1.03	0.05	0.21	2751	1.23
KILN1_0296.LAB	11/29/2023	10:17:38	5.57	5.90	-0.11	0.82	191.5	1.03	0.05	0.22	3055	1.23
KILN1_0297.LAB	11/29/2023	10:18:39	5.58	5.92	-0.09	0.66	191.5	1.03	0.05	0.22	2885	1.23
KILN1_0298.LAB	11/29/2023	10:19:39	5.55	5.90	-0.10	0.71	191.5	1.03	0.05	0.22	3648	1.23
KILN1_0299.LAB	11/29/2023	10:20:39	5.55	5.90	-0.10	0.71	191.5	1.03	0.05	0.20	2830	1.23
KILN1_0300.LAB	11/29/2023	10:21:39	5.55	5.84	-0.12	0.71	191.5	1.03	0.05	0.23	3098	1.23
KILN1_0301.LAB	11/29/2023	10:22:39	5.66	5.87	-0.09	0.75	191.5	1.03	0.06	0.23	2573	1.23
KILN1_0302.LAB	11/29/2023	10:23:39	5.68	5.81	-0.14	0.68	191.5	1.03	0.06	0.22	2616	1.23
KILN1_0303.LAB	11/29/2023	10:24:39	5.74	5.83	-0.09	0.63	191.5	1.03	0.05	0.21	2004	1.23
KILN1_0304.LAB	11/29/2023	10:25:39	5.87	5.89	-0.09	0.78	191.5	1.03	0.04	0.21	1940	1.24
KILN1_0305.LAB	11/29/2023	10:26:40	5.86	5.90	-0.06	0.67	191.5	1.03	0.05	0.21	2315	1.24
KILN1_0306.LAB	11/29/2023	10:27:40	5.81	5.84	-0.08	0.78	191.5	1.03	0.05	0.21	3111	1.24
KILN1_0307.LAB	11/29/2023	10:28:39	5.78	5.85	-0.08	0.76	191.5	1.03	0.05	0.21	2604	1.24
KILN1_0308.LAB	11/29/2023	10:29:39	5.81	5.82	-0.08	0.72	191.5	1.03	0.05	0.21	2428	1.24
KILN1_0309.LAB	11/29/2023	10:30:40	5.96	5.97	-0.05	0.81	191.5	1.03	0.06	0.20	2654	1.24
KILN1_0310.LAB	11/29/2023	10:31:40	6.01	5.97	-0.09	0.69	191.5	1.03	0.05	0.21	3265	1.24
KILN1_0311.LAB	11/29/2023	10:32:40	6.01	5.93	-0.12	0.71	191.5	1.03	0.05	0.21	3274	1.24
KILN1_0312.LAB	11/29/2023	10:33:40	6.06	5.96	-0.09	0.75	191.5	1.03	0.05	0.21	2074	1.24
KILN1_0313.LAB	11/29/2023	10:34:40	6.08	6.02	-0.11	0.65	191.4	1.03	0.05	0.22	2212	1.24
KILN1_0314.LAB	11/29/2023	10:35:40	6.01	5.93	-0.12	0.72	191.5	1.03	0.06	0.22	3512	1.24
KILN1_0315.LAB	11/29/2023	10:36:40	5.99	5.90	-0.11	0.70	191.5	1.03	0.06	0.23	4399	1.24
KILN1_0316.LAB	11/29/2023	10:37:40	6.03	5.92	-0.08	0.71	191.5	1.03	0.05	0.22	3117	1.24
KILN1_0317.LAB	11/29/2023	10:38:40	6.05	5.96	-0.08	0.70	191.5	1.03	0.05	0.20	2809	1.24
KILN1_0318.LAB	11/29/2023	10:39:40	5.99	5.90	-0.11	0.66	191.5	1.03	0.05	0.21	2665	1.24
KILN1_0319.LAB	11/29/2023	10:40:40	5.96	5.86	-0.10	0.70	191.5	1.03	0.06	0.23	3684	1.24
KILN1_0320.LAB	11/29/2023	10:41:40	5.97	5.93	-0.14	0.60	191.5	1.03	0.06	0.22	3060	1.24
KILN1_0321.LAB	11/29/2023	10:42:41	6.00	5.95	-0.14	0.65	191.5	1.03	0.06	0.24	4136	1.24
KILN1_0322.LAB	11/29/2023	10:43:41	5.92	5.89	-0.14	0.77	191.5	1.03	0.06	0.22	2941	1.24
KILN1_0323.LAB	11/29/2023	10:44:41	5.87	5.83	-0.11	0.68	191.5	1.03	0.05	0.23	2337	1.24
KILN1_0324.LAB	11/29/2023	10:45:41	5.81	5.82	-0.08	0.70	191.5	1.03	0.05	0.22	2550	1.24
KILN1_0325.LAB	11/29/2023	10:46:41	5.85	5.94	-0.10	0.82	191.5	1.03	0.06	0.21	3000	1.24
KILN1_0326.LAB	11/29/2023	10:47:41	5.87	5.86	-0.11	0.60	191.5	1.03	0.06	0.20	1640	1.24
KILN1_0327.LAB	11/29/2023	10:48:41	5.85	5.86	-0.11	0.75	191.5	1.03	0.05	0.21	1747	1.24
KILN1_0328.LAB	11/29/2023	10:49:41	5.90	5.85	-0.17	0.60	191.5	1.03	0.05	0.22	1573	1.24
KILN1_0329.LAB	11/29/2023	10:50:41	5.86	5.84	-0.12	0.68	191.5	1.03	0.06	0.22	1616	1.24
KILN1_0330.LAB	11/29/2023	10:51:41	5.85	5.80	-0.08	0.62	191.5	1.03	0.06	0.22	3095	1.24
KILN1_0331.LAB	11/29/2023	10:52:41	5.83	5.78	-0.13	0.56	191.5	1.03	0.06	0.22	2815	1.24
KILN1_0332.LAB	11/29/2023	10:53:41	5.85	5.82	-0.11	0.61	191.5	1.03	0.06	0.23	2749	1.24
KILN1_0333.LAB	11/29/2023	10:54:42	5.88	5.86	-0.11	0.67	191.5	1.03	0.05	0.21	3236	1.24
KILN1_0334.LAB	11/29/2023	10:55:42	5.83	5.82	-0.09	0.68	191.5	1.03	0.05	0.21	3003	1.24
KILN1_0335.LAB	11/29/2023	10:56:42	5.78	5.82	-0.09	0.80	191.5	1.03	0.04	0.22	3059	1.24
KILN1_0336.LAB	11/29/2023	10:57:42	5.73	5.77	-0.11	0.64	191.5	1.03	0.05	0.22	2291	1.24
KILN1_0337.LAB	11/29/2023	10:58:42	5.76	5.89	-0.10	0.71	191.5	1.03	0.05	0.22	1878	1.24
KILN1_0338.LAB	11/29/2023	10:59:42	5.73	5.88	-0.14	0.62	191.5	1.03	0.06	0.24	2010	1.24
KILN1_0339.LAB	11/29/2023	11:00:42	5.69	5.87	-0.12	0.66	191.5	1.03	0.06	0.24	1977	1.24
KILN1_0340.LAB	11/29/2023	11:01:42	5.71	5.92	-0.11	0.61	191.5	1.03	0.06	0.25	2837	1.24
KILN1_0341.LAB	11/29/2023	11:02:43	5.65	5.85	-0.12	0.69	191.5	1.03	0.05	0.22	3321	1.24
KILN1_0342.LAB	11/29/2023	11:03:43	5.60	5.76	-0.13	0.59	191.5	1.03	0.06	0.22	2117	1.24
KILN1_0343.LAB	11/29/2023	11:04:42	5.57	5.77	-0.11	0.56	191.5	1.03	0.05	0.24	1909	1.24
KILN1_0344.LAB	11/29/2023	11:05:42	5.64	5.86	-0.09	0.76	191.5	1.03	0.06	0.21	2670	1.24
KILN1_0345.LAB	11/29/2023	11:06:43	5.66	5.94	-0.13	0.87	191.5	1.03	0.05	0.23	2655	1.24
KILN1_0346.LAB	11/29/2023	11:07:43	5.63	5.91	-0.11	0.79	191.5	1.03	0.05	0.22	2098	1.24
KILN1_0347.LAB	11/29/2023	11:08:43	5.77	6.07	-0.13	0.71	191.5	1.03	0.05	0.21	1540	1.24
KILN1_0348.LAB	11/29/2023	11:09:43	5.83	6.15	-0.09	0.66	191.5	1.03	0.06	0.21	1504	1.24
KILN1_0349.LAB	11/29/2023	11:10:43	5.79	6.12	-0.12	0.60	191.5	1.03	0.06	0.21	2564	1.24
Kiln 1 - Raw Mill On Test Run 1 11/29/2023 10:10 - 11:10		**Minimum**	**5.55**	**5.76**	**-0.17**	**0.56**	**191.4**	**1.03**	**0.04**	**0.20**	**1504**	**1.23**
		Maximum	**6.08**	**6.15**	**-0.04**	**0.87**	**191.5**	**1.03**	**0.06**	**0.25**	**4399**	**1.24**
		Average	**5.79**	**5.90**	**-0.10**	**0.69**	**191.5**	**1.03**	**0.05**	**0.22**	**2657**	**1.24**
		Std Dev	**0.15**	**0.09**	**0.02**	**0.07**						
		3 Sigma	**0.45**	**0.26**	**0.07**	**0.21**						

Kiln 1 - Raw Mill On Test Run 2

Spectrum	Date	Time	H2O (%v)	CO2 (%v wet)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_0476.LAB	11/29/2023	12:45:15	6.20	6.12	-0.08	0.75	191.5	1.03	0.06	0.24	2531	1.26
KILN1_0477.LAB	11/29/2023	12:46:15	6.34	6.20	-0.10	0.59	191.5	1.03	0.06	0.25	2703	1.26
KILN1_0478.LAB	11/29/2023	12:47:15	6.32	6.10	-0.12	0.64	191.5	1.03	0.07	0.25	3247	1.26
KILN1_0479.LAB	11/29/2023	12:48:15	6.28	6.06	-0.13	0.68	191.5	1.03	0.06	0.24	2053	1.26
KILN1_0480.LAB	11/29/2023	12:49:15	6.34	6.12	-0.10	0.76	191.4	1.03	0.06	0.25	2431	1.26
KILN1_0481.LAB	11/29/2023	12:50:15	6.29	6.15	-0.08	0.58	191.5	1.03	0.07	0.24	2358	1.26
KILN1_0482.LAB	11/29/2023	12:51:15	6.19	5.99	-0.08	0.75	191.5	1.03	0.06	0.22	2530	1.26
KILN1_0483.LAB	11/29/2023	12:52:16	6.15	5.95	-0.12	0.66	191.5	1.03	0.06	0.23	2428	1.26
KILN1_0484.LAB	11/29/2023	12:53:16	6.15	5.92	-0.11	0.62	191.4	1.03	0.06	0.23	3121	1.26
KILN1_0485.LAB	11/29/2023	12:54:16	6.25	6.08	-0.12	0.61	191.4	1.03	0.06	0.24	2575	1.26
KILN1_0486.LAB	11/29/2023	12:55:16	6.21	6.04	-0.14	0.67	191.4	1.03	0.07	0.24	3027	1.26
KILN1_0487.LAB	11/29/2023	12:56:16	6.18	6.02	-0.12	0.62	191.4	1.03	0.06	0.23	3619	1.26
KILN1_0488.LAB	11/29/2023	12:57:16	6.24	6.09	-0.12	0.69	191.4	1.03	0.06	0.24	3503	1.26
KILN1_0489.LAB	11/29/2023	12:58:16	6.17	6.07	-0.12	0.78	191.4	1.03	0.06	0.24	3599	1.26
KILN1_0490.LAB	11/29/2023	12:59:16	6.10	5.97	-0.09	0.71	191.4	1.03	0.05	0.22	2880	1.26
KILN1_0491.LAB	11/29/2023	13:00:16	6.05	6.01	-0.09	0.64	191.4	1.03	0.06	0.23	2802	1.26
KILN1_0492.LAB	11/29/2023	13:01:16	6.08	6.03	-0.13	0.55	191.4	1.03	0.06	0.23	3790	1.26
KILN1_0493.LAB	11/29/2023	13:02:16	6.13	6.11	-0.14	0.59	191.4	1.03	0.07	0.23	2980	1.25
KILN1_0494.LAB	11/29/2023	13:03:17	6.10	6.02	-0.10	0.61	191.4	1.03	0.06	0.23	2824	1.25
KILN1_0495.LAB	11/29/2023	13:04:16	6.09	5.96	-0.12	0.54	191.4	1.03	0.06	0.23	3321	1.25
KILN1_0496.LAB	11/29/2023	13:05:17	6.08	6.06	-0.12	0.60	191.5	1.03	0.06	0.24	3385	1.25
KILN1_0497.LAB	11/29/2023	13:06:17	6.04	6.01	-0.14	0.72	191.4	1.03	0.07	0.22	2282	1.25
KILN1_0498.LAB	11/29/2023	13:07:17	6.01	5.99	-0.12	0.56	191.4	1.03	0.06	0.22	2289	1.26
KILN1_0499.LAB	11/29/2023	13:08:17	5.98	5.92	-0.09	0.77	191.4	1.03	0.06	0.22	3258	1.26
KILN1_0500.LAB	11/29/2023	13:09:17	6.06	5.95	-0.03	0.68	191.4	1.03	0.06	0.23	3302	1.26
KILN1_0501.LAB	11/29/2023	13:10:17	6.14	6.00	-0.14	0.54	191.4	1.03	0.06	0.23	3131	1.25
KILN1_0502.LAB	11/29/2023	13:11:17	6.11	5.97	-0.11	0.66	191.4	1.03	0.06	0.23	2785	1.25
KILN1_0503.LAB	11/29/2023	13:12:18	6.07	5.90	-0.09	0.59	191.4	1.03	0.06	0.24	2873	1.25
KILN1_0504.LAB	11/29/2023	13:13:18	6.11	5.95	-0.13	0.63	191.4	1.03	0.06	0.24	3046	1.25
KILN1_0505.LAB	11/29/2023	13:14:18	6.08	5.94	-0.11	0.54	191.4	1.03	0.06	0.23	3367	1.26
KILN1_0506.LAB	11/29/2023	13:15:18	6.02	5.93	-0.09	0.61	191.4	1.03	0.06	0.23	3060	1.26
KILN1_0507.LAB	11/29/2023	13:16:17	6.03	5.96	-0.11	0.73	191.4	1.03	0.06	0.21	3072	1.26
KILN1_0508.LAB	11/29/2023	13:17:18	6.02	6.01	-0.13	0.68	191.4	1.03	0.06	0.22	3013	1.26
KILN1_0509.LAB	11/29/2023	13:18:18	6.05	5.96	-0.08	0.69	191.4	1.03	0.06	0.22	3029	1.26
KILN1_0510.LAB	11/29/2023	13:19:18	6.05	5.97	-0.14	0.61	191.4	1.03	0.06	0.22	3831	1.25
KILN1_0511.LAB	11/29/2023	13:20:18	6.03	5.94	-0.15	0.66	191.4	1.03	0.07	0.23	3494	1.25
KILN1_0512.LAB	11/29/2023	13:21:18	6.10	5.98	-0.15	0.56	191.4	1.03	0.06	0.22	2802	1.25
KILN1_0513.LAB	11/29/2023	13:22:18	6.19	6.10	-0.12	0.77	191.4	1.03	0.07	0.22	3412	1.25
KILN1_0514.LAB	11/29/2023	13:23:18	6.16	6.07	-0.10	0.70	191.4	1.03	0.06	0.22	2634	1.25
KILN1_0515.LAB	11/29/2023	13:24:19	6.11	6.04	-0.13	0.57	191.5	1.03	0.06	0.23	2287	1.26
KILN1_0516.LAB	11/29/2023	13:25:18	6.11	6.08	-0.09	0.77	191.5	1.03	0.06	0.22	3485	1.26
KILN1_0517.LAB	11/29/2023	13:26:18	6.08	5.96	-0.13	0.70	191.5	1.03	0.06	0.23	2625	1.26
KILN1_0518.LAB	11/29/2023	13:27:18	5.97	5.84	-0.11	0.74	191.5	1.03	0.06	0.21	2922	1.26
KILN1_0519.LAB	11/29/2023	13:28:18	5.92	5.80	-0.13	0.66	191.5	1.03	0.06	0.23	2486	1.26
KILN1_0520.LAB	11/29/2023	13:29:19	5.96	5.85	-0.09	0.57	191.5	1.03	0.05	0.22	2650	1.25
KILN1_0521.LAB	11/29/2023	13:30:19	6.00	5.93	-0.08	0.54	191.5	1.03	0.06	0.22	4692	1.26
KILN1_0522.LAB	11/29/2023	13:31:19	6.01	5.99	-0.09	0.61	191.5	1.03	0.05	0.22	2742	1.26
KILN1_0523.LAB	11/29/2023	13:32:19	6.05	6.10	-0.09	0.67	191.5	1.03	0.07	0.23	2913	1.26
KILN1_0524.LAB	11/29/2023	13:33:19	6.09	6.15	-0.11	0.63	191.5	1.03	0.07	0.23	2310	1.26
KILN1_0525.LAB	11/29/2023	13:34:19	6.06	6.15	-0.12	0.80	191.5	1.03	0.06	0.23	2615	1.26
KILN1_0526.LAB	11/29/2023	13:35:19	5.93	6.03	-0.13	0.68	191.5	1.03	0.07	0.23	2897	1.26
KILN1_0527.LAB	11/29/2023	13:36:19	5.88	6.00	-0.11	0.80	191.5	1.03	0.05	0.23	3373	1.26
KILN1_0528.LAB	11/29/2023	13:37:19	5.93	6.09	-0.13	0.57	191.5	1.03	0.06	0.23	3741	1.26
KILN1_0529.LAB	11/29/2023	13:38:20	5.94	6.17	-0.11	0.56	191.5	1.03	0.06	0.23	2944	1.26
KILN1_0530.LAB	11/29/2023	13:39:19	5.93	6.14	-0.12	0.61	191.5	1.03	0.06	0.24	2731	1.26
KILN1_0531.LAB	11/29/2023	13:40:19	5.86	6.04	-0.13	0.59	191.4	1.03	0.06	0.23	2406	1.26
KILN1_0532.LAB	11/29/2023	13:41:20	5.94	6.07	-0.07	0.66	191.4	1.03	0.06	0.24	2590	1.26
KILN1_0533.LAB	11/29/2023	13:42:20	5.92	6.00	-0.07	0.72	191.4	1.03	0.06	0.23	2922	1.26
KILN1_0534.LAB	11/29/2023	13:49:17	5.68	6.00	-0.12	0.61	191.0	1.03	0.06	0.22	NaN	1.26
KILN1_0535.LAB	11/29/2023	13:50:17	5.71	5.98	-0.11	0.80	191.1	1.03	0.06	0.24	1886	1.26
KILN1_0536.LAB	11/29/2023	13:51:17	5.66	5.97	-0.10	0.54	191.1	1.03	0.06	0.23	1626	1.26
Kiln 1 - Raw Mill On Test Run 2 11/29/2023 12:45 - 13:51		**Minimum**	**5.66**	**5.80**	**-0.15**	**0.54**	**191.0**	**1.03**	**0.05**	**0.21**	**1626**	**1.25**
		Maximum	**6.34**	**6.20**	**-0.03**	**0.80**	**191.5**	**1.03**	**0.07**	**0.25**	**4692**	**1.26**
		Average	**6.06**	**6.02**	**-0.11**	**0.65**	**191.4**	**1.03**	**0.06**	**0.23**	**2921**	**1.26**
		Std Dev	**0.14**	**0.08**	**0.02**	**0.08**						
		3 Sigma	**0.43**	**0.25**	**0.07**	**0.23**						

Kiln 1 - Raw Mill On Test Run 3

Spectrum	Date	Time	H2O (%v)	CO2 (%v wet)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_0616.LAB	11/29/2023	14:39:15	5.88	5.98	-0.09	0.58	191.4	1.03	0.06	0.23	2749	1.25
KILN1_0617.LAB	11/29/2023	14:40:15	5.95	6.01	-0.11	0.64	191.4	1.03	0.06	0.24	2986	1.25
KILN1_0618.LAB	11/29/2023	14:41:15	6.05	6.12	-0.11	0.64	191.4	1.03	0.06	0.24	2862	1.25
KILN1_0619.LAB	11/29/2023	14:42:15	6.09	6.13	-0.13	0.60	191.4	1.03	0.06	0.24	2969	1.25
KILN1_0620.LAB	11/29/2023	14:43:15	6.10	6.11	-0.14	0.63	191.4	1.03	0.06	0.23	3121	1.25
KILN1_0621.LAB	11/29/2023	14:44:15	6.10	6.11	-0.11	0.58	191.4	1.03	0.06	0.22	2736	1.25
KILN1_0622.LAB	11/29/2023	14:45:16	6.14	6.16	-0.15	0.62	191.4	1.03	0.06	0.23	2892	1.25
KILN1_0623.LAB	11/29/2023	14:46:16	6.19	6.19	-0.11	0.63	191.4	1.03	0.06	0.24	3209	1.25
KILN1_0624.LAB	11/29/2023	14:47:16	6.10	6.14	-0.13	0.62	191.4	1.03	0.06	0.23	4058	1.25
KILN1_0625.LAB	11/29/2023	14:48:16	6.13	6.25	-0.09	0.71	191.4	1.03	0.06	0.23	2938	1.25
KILN1_0626.LAB	11/29/2023	14:49:16	6.21	6.67	-0.11	0.72	191.4	1.03	0.06	0.23	2529	1.25
KILN1_0627.LAB	11/29/2023	14:50:16	6.20	6.77	-0.13	0.76	191.4	1.03	0.07	0.22	3014	1.25
KILN1_0628.LAB	11/29/2023	14:51:16	6.16	6.72	-0.13	0.85	191.4	1.03	0.06	0.23	3037	1.25
KILN1_0629.LAB	11/29/2023	14:52:16	6.18	6.75	-0.09	0.78	191.4	1.03	0.06	0.23	3974	1.25
KILN1_0630.LAB	11/29/2023	14:53:16	6.22	6.74	-0.14	0.65	191.4	1.03	0.07	0.25	3681	1.25
KILN1_0631.LAB	11/29/2023	14:54:16	6.23	6.72	-0.13	0.68	191.4	1.03	0.06	0.23	3633	1.25
KILN1_0632.LAB	11/29/2023	14:55:16	6.16	6.62	-0.12	0.77	191.4	1.03	0.06	0.24	2941	1.25
KILN1_0633.LAB	11/29/2023	14:56:16	6.10	6.55	-0.12	0.52	191.4	1.03	0.06	0.22	3055	1.25
KILN1_0634.LAB	11/29/2023	14:57:17	6.21	6.63	-0.16	0.80	191.4	1.03	0.05	0.23	2271	1.25
KILN1_0635.LAB	11/29/2023	14:58:17	6.22	6.71	-0.10	0.78	191.4	1.03	0.05	0.23	2737	1.25
KILN1_0636.LAB	11/29/2023	14:59:17	6.18	6.77	-0.09	0.93	191.4	1.03	0.05	0.23	2750	1.25
KILN1_0637.LAB	11/29/2023	15:00:17	6.15	6.76	-0.10	0.95	191.4	1.03	0.05	0.24	3028	1.25
KILN1_0638.LAB	11/29/2023	15:01:17	6.15	6.68	-0.12	0.71	191.4	1.03	0.06	0.22	2327	1.25
KILN1_0639.LAB	11/29/2023	15:02:17	6.09	6.62	-0.10	0.65	191.4	1.03	0.06	0.22	2762	1.25
KILN1_0640.LAB	11/29/2023	15:03:17	6.05	6.56	-0.14	0.56	191.4	1.03	0.07	0.22	2568	1.25
KILN1_0641.LAB	11/29/2023	15:04:17	6.01	6.56	-0.12	0.65	191.4	1.03	0.06	0.23	3504	1.25
KILN1_0642.LAB	11/29/2023	15:05:17	6.08	6.60	-0.13	0.65	191.4	1.03	0.07	0.22	3765	1.25
KILN1_0643.LAB	11/29/2023	15:06:17	6.03	6.57	-0.10	0.70	191.5	1.03	0.06	0.23	4014	1.25
KILN1_0644.LAB	11/29/2023	15:07:17	5.95	6.43	-0.14	0.78	191.4	1.03	0.06	0.23	2566	1.25
KILN1_0645.LAB	11/29/2023	15:08:17	5.88	6.30	-0.10	0.74	191.4	1.03	0.06	0.24	2768	1.25
KILN1_0646.LAB	11/29/2023	15:09:18	5.96	6.45	-0.11	0.67	191.4	1.03	0.05	0.23	2869	1.25
KILN1_0647.LAB	11/29/2023	15:10:18	5.95	6.47	-0.14	0.65	191.4	1.03	0.06	0.24	4029	1.25
KILN1_0648.LAB	11/29/2023	15:11:18	5.91	6.44	-0.09	0.52	191.4	1.03	0.06	0.23	2528	1.25
KILN1_0649.LAB	11/29/2023	15:12:18	5.90	6.42	-0.13	0.70	191.4	1.03	0.06	0.23	2894	1.25
KILN1_0650.LAB	11/29/2023	15:13:18	5.91	6.47	-0.08	0.59	191.4	1.03	0.06	0.23	3139	1.25
KILN1_0651.LAB	11/29/2023	15:14:18	5.97	6.46	-0.12	0.57	191.4	1.03	0.06	0.24	1953	1.25
KILN1_0652.LAB	11/29/2023	15:15:18	5.84	6.32	-0.12	0.58	191.4	1.03	0.06	0.23	2795	1.25
KILN1_0653.LAB	11/29/2023	15:16:18	5.84	6.30	-0.15	0.77	191.4	1.03	0.06	0.23	2982	1.25
KILN1_0654.LAB	11/29/2023	15:17:19	5.95	6.40	-0.13	0.52	191.4	1.03	0.06	0.24	2626	1.25
KILN1_0655.LAB	11/29/2023	15:18:18	5.97	6.45	-0.11	0.56	191.4	1.03	0.06	0.23	2504	1.25
KILN1_0656.LAB	11/29/2023	15:19:18	6.01	6.51	-0.10	0.61	191.4	1.03	0.06	0.23	3830	1.25
KILN1_0657.LAB	11/29/2023	15:20:19	6.03	6.47	-0.13	0.62	191.4	1.03	0.06	0.23	2589	1.25
KILN1_0658.LAB	11/29/2023	15:21:19	6.10	6.44	-0.12	0.59	191.5	1.03	0.06	0.23	2306	1.25
KILN1_0659.LAB	11/29/2023	15:22:19	6.12	6.49	-0.08	0.54	191.4	1.03	0.05	0.24	2856	1.25
KILN1_0660.LAB	11/29/2023	15:23:19	6.08	6.39	-0.10	0.55	191.4	1.03	0.05	0.23	3008	1.25
KILN1_0661.LAB	11/29/2023	15:24:19	6.13	6.40	-0.07	0.60	191.4	1.03	0.05	0.23	3115	1.25
KILN1_0662.LAB	11/29/2023	15:25:19	6.26	6.51	-0.10	0.67	191.4	1.03	0.05	0.22	2995	1.25
KILN1_0663.LAB	11/29/2023	15:26:19	6.25	6.46	-0.09	0.67	191.4	1.03	0.05	0.23	2948	1.25
KILN1_0664.LAB	11/29/2023	15:27:19	6.25	6.40	-0.08	0.60	191.4	1.03	0.06	0.23	2752	1.25
KILN1_0665.LAB	11/29/2023	15:28:19	6.26	6.40	-0.13	0.72	191.5	1.03	0.06	0.23	2708	1.25
KILN1_0666.LAB	11/29/2023	15:29:19	6.33	6.42	-0.10	0.71	191.4	1.03	0.06	0.24	3217	1.25
KILN1_0667.LAB	11/29/2023	15:30:19	6.31	6.37	-0.10	0.69	191.5	1.03	0.06	0.24	2824	1.25
KILN1_0668.LAB	11/29/2023	15:31:19	6.23	6.35	-0.14	0.59	191.4	1.03	0.06	0.24	3906	1.25
KILN1_0669.LAB	11/29/2023	15:32:19	6.18	6.27	-0.11	0.69	191.4	1.03	0.05	0.23	2834	1.25
KILN1_0670.LAB	11/29/2023	15:33:20	6.26	6.38	-0.10	0.70	191.4	1.03	0.06	0.24	2898	1.25
KILN1_0671.LAB	11/29/2023	15:34:20	6.20	6.37	-0.14	0.67	191.4	1.03	0.06	0.24	2923	1.25
KILN1_0672.LAB	11/29/2023	15:35:20	6.23	6.35	-0.14	0.53	191.4	1.03	0.06	0.24	3060	1.25
KILN1_0673.LAB	11/29/2023	15:36:20	6.22	6.35	-0.11	0.49	191.4	1.03	0.06	0.24	2635	1.25
KILN1_0674.LAB	11/29/2023	15:37:20	6.19	6.31	-0.14	0.56	191.4	1.03	0.06	0.24	2126	1.25
KILN1_0675.LAB	11/29/2023	15:38:20	6.24	6.26	-0.08	0.76	191.4	1.03	0.06	0.25	2455	1.25
KILN1_0676.LAB	11/29/2023	15:39:20	6.34	6.27	-0.15	0.69	191.4	1.03	0.06	0.24	2495	1.25
Kiln 1 - Raw Mill On Test Run 3 11/29/2023 14:39 - 15:39		**Minimum**	**5.84**	**5.98**	**-0.16**	**0.49**	**191.4**	**1.03**	**0.05**	**0.22**	**1953**	**1.25**
		Maximum	**6.34**	**6.77**	**-0.07**	**0.95**	**191.5**	**1.03**	**0.07**	**0.25**	**4058**	**1.25**
		Average	**6.11**	**6.43**	**-0.12**	**0.66**	**191.4**	**1.03**	**0.06**	**0.23**	**2955**	**1.25**
		Std Dev	**0.13**	**0.20**	**0.02**	**0.10**						
		3 Sigma	**0.39**	**0.59**	**0.06**	**0.29**						

Kiln 2 - Raw Mill Off Test Run 1

Spectrum	Date	Time	H2O (%v)	CO2 (%v wet)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_0242.LAB	11/30/2023	10:25:05	12.88	12.46	-0.05	4.57	191.52	1.02	0.07	0.33	2809	1.24
KILN2_0243.LAB	11/30/2023	10:26:06	12.72	12.49	-0.07	4.81	191.53	1.02	0.07	0.33	3142	1.24
KILN2_0244.LAB	11/30/2023	10:27:06	12.85	12.43	-0.04	4.70	191.54	1.02	0.08	0.33	2650	1.24
KILN2_0245.LAB	11/30/2023	10:28:06	12.71	12.26	-0.07	4.53	191.56	1.02	0.08	0.34	2720	1.24
KILN2_0246.LAB	11/30/2023	10:29:06	12.77	12.54	-0.06	4.70	191.56	1.02	0.07	0.33	2596	1.24
KILN2_0247.LAB	11/30/2023	10:30:06	12.85	12.30	-0.09	4.63	191.56	1.02	0.08	0.33	2321	1.24
KILN2_0248.LAB	11/30/2023	10:31:06	12.77	12.17	-0.08	4.45	191.56	1.02	0.07	0.35	2650	1.24
KILN2_0249.LAB	11/30/2023	10:32:06	12.95	12.46	-0.08	4.40	191.55	1.02	0.08	0.34	2339	1.24
KILN2_0250.LAB	11/30/2023	10:33:06	12.89	12.68	-0.05	4.41	191.53	1.02	0.08	0.34	2981	1.24
KILN2_0251.LAB	11/30/2023	10:34:06	12.87	13.10	-0.08	4.38	191.51	1.02	0.08	0.34	2933	1.24
KILN2_0252.LAB	11/30/2023	10:35:06	12.83	12.97	-0.09	4.51	191.53	1.02	0.07	0.34	3241	1.24
KILN2_0253.LAB	11/30/2023	10:36:06	12.72	12.34	-0.06	4.66	191.52	1.02	0.06	0.34	2428	1.24
KILN2_0254.LAB	11/30/2023	10:37:06	12.70	12.28	-0.07	4.53	191.56	1.02	0.07	0.33	2639	1.24
KILN2_0255.LAB	11/30/2023	10:38:07	12.57	12.11	-0.05	4.44	191.53	1.02	0.07	0.32	4819	1.24
KILN2_0256.LAB	11/30/2023	10:39:07	12.37	12.11	-0.09	4.56	191.56	1.02	0.07	0.33	2821	1.24
KILN2_0257.LAB	11/30/2023	10:40:07	12.20	11.93	-0.09	4.52	191.55	1.02	0.07	0.32	2669	1.24
KILN2_0258.LAB	11/30/2023	10:41:07	12.18	11.65	-0.11	4.38	191.56	1.02	0.08	0.32	3218	1.24
KILN2_0259.LAB	11/30/2023	10:42:07	12.15	11.79	-0.08	4.11	191.56	1.02	0.07	0.32	2400	1.24
KILN2_0260.LAB	11/30/2023	10:43:07	12.18	12.05	-0.05	4.57	191.57	1.02	0.08	0.32	3046	1.24
KILN2_0261.LAB	11/30/2023	10:44:07	12.24	12.46	-0.07	4.34	191.57	1.02	0.07	0.33	2458	1.24
KILN2_0262.LAB	11/30/2023	10:45:07	12.20	12.35	-0.09	4.48	191.56	1.02	0.07	0.32	2430	1.24
KILN2_0263.LAB	11/30/2023	10:46:08	12.23	11.92	-0.10	4.44	191.54	1.02	0.08	0.32	2953	1.24
KILN2_0264.LAB	11/30/2023	10:47:07	12.21	11.96	-0.10	4.55	191.56	1.02	0.08	0.31	3791	1.24
KILN2_0265.LAB	11/30/2023	10:48:07	12.16	12.00	-0.05	4.49	191.57	1.02	0.07	0.30	4053	1.24
KILN2_0266.LAB	11/30/2023	10:49:07	12.24	12.07	-0.09	4.57	191.54	1.02	0.07	0.32	2488	1.24
KILN2_0267.LAB	11/30/2023	10:50:08	12.15	11.92	-0.08	4.61	191.53	1.02	0.07	0.31	2174	1.24
KILN2_0268.LAB	11/30/2023	10:51:08	12.32	11.71	-0.05	4.44	191.49	1.02	0.08	0.31	2880	1.24
KILN2_0269.LAB	11/30/2023	10:52:08	12.35	11.74	-0.06	4.36	191.52	1.02	0.07	0.31	3001	1.24
KILN2_0270.LAB	11/30/2023	10:53:08	12.35	11.78	-0.06	4.29	191.52	1.02	0.08	0.32	2976	1.24
KILN2_0271.LAB	11/30/2023	10:54:08	12.39	11.95	-0.09	4.29	191.55	1.02	0.08	0.34	2399	1.24
KILN2_0272.LAB	11/30/2023	10:55:08	12.38	12.05	-0.08	4.51	191.56	1.02	0.08	0.33	3162	1.24
KILN2_0273.LAB	11/30/2023	10:56:08	12.48	12.12	-0.07	4.52	191.56	1.02	0.07	0.33	2519	1.24
KILN2_0274.LAB	11/30/2023	10:57:08	12.45	11.96	-0.08	4.51	191.53	1.02	0.07	0.34	2698	1.24
KILN2_0275.LAB	11/30/2023	10:58:08	12.40	12.10	-0.09	4.48	191.54	1.02	0.07	0.32	3760	1.24
KILN2_0276.LAB	11/30/2023	10:59:08	12.39	13.28	-0.06	4.72	191.54	1.02	0.08	0.33	2906	1.24
KILN2_0277.LAB	11/30/2023	11:00:08	12.35	12.47	-0.11	4.82	191.55	1.02	0.07	0.32	3541	1.24
KILN2_0278.LAB	11/30/2023	11:01:09	12.42	12.46	-0.06	4.66	191.53	1.02	0.07	0.33	2767	1.24
KILN2_0279.LAB	11/30/2023	11:02:09	12.33	12.37	-0.06	4.80	191.52	1.02	0.07	0.32	3904	1.24
KILN2_0280.LAB	11/30/2023	11:03:09	12.34	12.39	-0.05	4.68	191.57	1.02	0.06	0.32	4011	1.24
KILN2_0281.LAB	11/30/2023	11:04:09	12.35	12.62	-0.08	4.74	191.53	1.02	0.07	0.32	3062	1.24
KILN2_0282.LAB	11/30/2023	11:05:09	12.38	12.46	-0.07	4.73	191.50	1.02	0.07	0.33	3183	1.24
KILN2_0283.LAB	11/30/2023	11:06:09	12.54	12.41	-0.05	4.64	191.52	1.02	0.08	0.33	3342	1.24
KILN2_0284.LAB	11/30/2023	11:07:09	12.48	12.47	-0.06	4.66	191.54	1.02	0.07	0.33	3063	1.24
KILN2_0285.LAB	11/30/2023	11:08:09	12.56	12.52	-0.05	4.53	191.54	1.02	0.07	0.34	2340	1.24
KILN2_0286.LAB	11/30/2023	11:09:09	12.55	12.40	-0.08	4.62	191.55	1.02	0.08	0.34	2470	1.24
KILN2_0287.LAB	11/30/2023	11:10:09	12.69	12.29	-0.09	4.62	191.55	1.02	0.07	0.34	2421	1.24
KILN2_0288.LAB	11/30/2023	11:11:09	12.56	12.08	-0.09	4.42	191.50	1.02	0.08	0.33	3316	1.24
KILN2_0289.LAB	11/30/2023	11:12:09	12.37	12.54	-0.06	4.36	191.53	1.02	0.08	0.32	3073	1.24
KILN2_0290.LAB	11/30/2023	11:13:09	12.41	11.92	-0.07	4.49	191.56	1.02	0.07	0.32	3293	1.24
KILN2_0291.LAB	11/30/2023	11:14:10	12.45	11.81	-0.04	4.35	191.53	1.02	0.08	0.32	3506	1.24
KILN2_0292.LAB	11/30/2023	11:15:10	12.41	11.87	-0.09	4.52	191.57	1.02	0.07	0.32	2938	1.24
KILN2_0293.LAB	11/30/2023	11:16:10	12.52	12.02	-0.08	4.57	191.56	1.02	0.06	0.32	3508	1.24
KILN2_0294.LAB	11/30/2023	11:17:10	12.64	12.13	-0.08	4.41	191.57	1.02	0.07	0.33	3025	1.24
KILN2_0295.LAB	11/30/2023	11:18:10	12.70	12.26	-0.07	4.57	191.55	1.02	0.08	0.33	2549	1.24
KILN2_0296.LAB	11/30/2023	11:19:10	12.74	12.44	-0.09	4.65	191.57	1.02	0.07	0.34	2786	1.24
KILN2_0297.LAB	11/30/2023	11:20:10	12.73	12.24	-0.06	4.73	191.56	1.02	0.08	0.34	2128	1.24
KILN2_0298.LAB	11/30/2023	11:21:10	12.74	12.45	-0.10	4.62	191.54	1.02	0.07	0.33	2372	1.24
KILN2_0299.LAB	11/30/2023	11:22:10	12.54	12.19	-0.08	4.68	191.57	1.02	0.07	0.32	3449	1.24
KILN2_0300.LAB	11/30/2023	11:23:10	12.58	12.10	-0.05	4.47	191.56	1.02	0.08	0.33	3301	1.24
KILN2_0301.LAB	11/30/2023	11:24:10	12.66	12.33	-0.07	4.65	191.57	1.02	0.07	0.33	2552	1.24
KILN2_0302.LAB	11/30/2023	11:25:10	12.65	12.28	-0.04	4.57	191.55	1.02	0.07	0.33	2717	1.24
Kiln 2 - Raw Mill Off Test Run 1 11/30/2023 10:25 - 11:25		**Minimum**	**12.15**	**11.65**	**-0.11**	**4.11**	**191.5**	**1.017**	**0.06**	**0.30**	**2128**	**1.24**
		Maximum	**12.95**	**13.28**	**-0.04**	**4.82**	**191.6**	**1.019**	**0.08**	**0.35**	**4819**	**1.24**
		Average	**12.50**	**12.25**	**-0.07**	**4.54**	**191.5**	**1.018**	**0.07**	**0.33**	**2946**	**1.24**
		Std Dev	**0.22**	**0.32**	**0.02**	**0.14**						
		3 Sigma	**0.67**	**0.97**	**0.05**	**0.42**						

Kiln 2 - Raw Mill Off Test Run 2

Spectrum	Date	Time	H2O (%v)	CO2 (%v wet)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_0392.LAB	11/30/2023	12:10:51	13.69	13.61	-0.07	4.86	191.53	1.02	0.08	0.36	2529	1.24
KILN2_0393.LAB	11/30/2023	12:11:51	13.69	13.67	-0.09	4.92	191.50	1.02	0.08	0.36	2870	1.24
KILN2_0394.LAB	11/30/2023	12:12:51	13.63	13.93	-0.07	4.90	191.51	1.02	0.07	0.36	2643	1.24
KILN2_0395.LAB	11/30/2023	12:13:51	13.62	13.75	-0.08	4.99	191.51	1.02	0.07	0.35	3272	1.24
KILN2_0396.LAB	11/30/2023	12:14:51	13.61	13.52	-0.06	4.92	191.55	1.02	0.08	0.35	2838	1.24
KILN2_0397.LAB	11/30/2023	12:15:51	13.58	13.28	-0.11	4.92	191.56	1.02	0.07	0.34	4389	1.24
KILN2_0398.LAB	11/30/2023	12:16:51	13.58	13.42	-0.04	4.86	191.57	1.02	0.07	0.35	2727	1.24
KILN2_0399.LAB	11/30/2023	12:17:51	13.73	14.06	-0.04	4.78	191.57	1.02	0.08	0.35	2882	1.24
KILN2_0400.LAB	11/30/2023	12:18:52	13.81	13.95	-0.06	5.03	191.57	1.02	0.07	0.37	3025	1.24
KILN2_0401.LAB	11/30/2023	12:19:51	13.81	13.98	-0.06	5.03	191.56	1.02	0.07	0.36	3166	1.24
KILN2_0402.LAB	11/30/2023	12:23:34	13.61	13.36	-0.08	4.89	190.96	1.02	0.08	0.34	NaN	1.24
KILN2_0403.LAB	11/30/2023	12:24:34	13.62	13.47	-0.06	4.86	191.15	1.02	0.08	0.36	2489	1.24
KILN2_0404.LAB	11/30/2023	12:25:34	13.67	13.26	-0.06	4.91	191.20	1.02	0.07	0.35	3208	1.24
KILN2_0405.LAB	11/30/2023	12:26:34	13.69	13.26	-0.05	4.90	191.27	1.02	0.08	0.33	3601	1.24
KILN2_0406.LAB	11/30/2023	12:27:34	13.78	13.75	-0.02	4.97	191.28	1.02	0.07	0.36	4063	1.24
KILN2_0407.LAB	11/30/2023	12:28:34	13.86	13.84	-0.05	5.07	191.30	1.02	0.08	0.36	3383	1.24
KILN2_0408.LAB	11/30/2023	12:29:34	14.21	14.34	-0.07	4.57	191.31	1.02	0.07	0.35	4042	1.24
KILN2_0409.LAB	11/30/2023	12:30:34	14.41	14.26	-0.11	4.62	191.34	1.02	0.08	0.34	3121	1.24
KILN2_0410.LAB	11/30/2023	12:31:34	14.38	14.29	-0.04	4.62	191.37	1.02	0.08	0.37	3865	1.24
KILN2_0411.LAB	11/30/2023	12:32:34	14.26	14.43	-0.06	4.83	191.44	1.02	0.07	0.37	2923	1.24
KILN2_0412.LAB	11/30/2023	12:33:35	14.25	14.42	-0.06	4.84	191.47	1.02	0.08	0.36	2694	1.24
KILN2_0413.LAB	11/30/2023	12:34:35	14.22	13.93	-0.05	5.11	191.47	1.02	0.08	0.37	2557	1.24
KILN2_0414.LAB	11/30/2023	12:35:35	14.21	13.99	-0.06	4.84	191.47	1.02	0.08	0.37	3831	1.24
KILN2_0415.LAB	11/30/2023	12:36:35	13.97	13.76	-0.07	5.17	191.47	1.02	0.07	0.37	2659	1.24
KILN2_0416.LAB	11/30/2023	12:37:35	13.83	14.02	-0.06	5.01	191.47	1.02	0.07	0.36	3604	1.24
KILN2_0417.LAB	11/30/2023	12:38:35	13.85	14.18	-0.04	5.17	191.47	1.02	0.07	0.35	2621	1.24
KILN2_0418.LAB	11/30/2023	12:39:35	13.94	14.28	-0.08	5.18	191.48	1.02	0.07	0.35	3755	1.24
KILN2_0419.LAB	11/30/2023	12:40:35	13.79	14.11	-0.08	5.36	191.49	1.02	0.08	0.35	3685	1.24
KILN2_0420.LAB	11/30/2023	12:41:35	13.84	14.18	-0.07	5.12	191.49	1.02	0.08	0.36	2961	1.24
KILN2_0421.LAB	11/30/2023	12:42:35	13.85	14.16	-0.06	5.24	191.49	1.02	0.07	0.36	2145	1.24
KILN2_0422.LAB	11/30/2023	12:43:35	13.89	14.17	-0.08	5.06	191.48	1.02	0.07	0.37	2564	1.24
KILN2_0423.LAB	11/30/2023	12:44:36	13.86	14.70	-0.06	5.07	191.47	1.02	0.09	0.36	3196	1.24
KILN2_0424.LAB	11/30/2023	12:45:36	13.91	14.31	-0.05	5.21	191.48	1.02	0.08	0.37	3600	1.24
KILN2_0425.LAB	11/30/2023	12:46:36	13.88	14.37	-0.08	5.07	191.48	1.02	0.09	0.38	2272	1.24
KILN2_0426.LAB	11/30/2023	12:47:36	13.88	14.26	-0.09	5.02	191.49	1.02	0.09	0.38	2077	1.24
KILN2_0427.LAB	11/30/2023	12:48:36	13.86	14.39	-0.06	5.05	191.56	1.02	0.08	0.38	2310	1.24
KILN2_0428.LAB	11/30/2023	12:49:36	13.86	14.31	-0.10	5.24	191.57	1.02	0.08	0.36	1675	1.24
KILN2_0429.LAB	11/30/2023	12:50:36	13.87	14.19	-0.10	5.48	191.53	1.02	0.08	0.37	2421	1.24
KILN2_0430.LAB	11/30/2023	12:51:36	13.79	14.41	-0.09	5.04	191.55	1.02	0.07	0.35	1261	1.24
KILN2_0431.LAB	11/30/2023	12:52:36	13.70	13.99	-0.06	5.05	191.55	1.02	0.07	0.36	3288	1.24
KILN2_0432.LAB	11/30/2023	12:53:36	13.74	14.02	-0.05	4.97	191.54	1.02	0.07	0.37	3335	1.24
KILN2_0433.LAB	11/30/2023	12:54:36	13.86	14.06	-0.08	5.00	191.54	1.02	0.08	0.36	3346	1.24
KILN2_0434.LAB	11/30/2023	12:55:37	14.00	14.21	-0.07	5.34	191.53	1.02	0.08	0.37	1963	1.24
KILN2_0435.LAB	11/30/2023	12:56:37	14.14	14.34	-0.06	5.29	191.54	1.02	0.08	0.37	2615	1.24
KILN2_0436.LAB	11/30/2023	12:57:37	14.16	14.13	-0.06	5.10	191.54	1.02	0.08	0.36	2566	1.24
KILN2_0437.LAB	11/30/2023	12:58:37	14.09	14.07	-0.08	5.02	191.50	1.02	0.08	0.37	3512	1.24
KILN2_0438.LAB	11/30/2023	12:59:37	14.10	13.68	-0.07	4.78	191.49	1.02	0.08	0.37	3515	1.24
KILN2_0439.LAB	11/30/2023	13:00:37	14.03	13.82	-0.05	4.81	191.49	1.02	0.08	0.37	3898	1.24
KILN2_0440.LAB	11/30/2023	13:01:37	14.20	14.56	-0.04	4.64	191.50	1.02	0.07	0.37	2447	1.24
KILN2_0441.LAB	11/30/2023	13:02:37	14.02	14.04	-0.06	4.94	191.53	1.02	0.08	0.38	2134	1.24
KILN2_0442.LAB	11/30/2023	13:03:37	14.13	14.07	-0.04	4.74	191.58	1.02	0.07	0.36	3090	1.24
KILN2_0443.LAB	11/30/2023	13:04:37	14.17	14.09	-0.03	4.64	191.58	1.02	0.08	0.36	3744	1.24
KILN2_0444.LAB	11/30/2023	13:05:38	14.16	14.44	-0.03	4.73	191.56	1.02	0.08	0.37	2678	1.24
KILN2_0445.LAB	11/30/2023	13:06:37	14.10	14.25	-0.04	4.83	191.58	1.02	0.07	0.36	2724	1.24
KILN2_0446.LAB	11/30/2023	13:07:37	14.09	14.17	-0.06	5.05	191.60	1.02	0.07	0.37	3282	1.24
KILN2_0447.LAB	11/30/2023	13:08:38	13.99	14.01	-0.04	4.88	191.58	1.02	0.08	0.37	3271	1.24
KILN2_0448.LAB	11/30/2023	13:09:38	14.46	13.96	-0.05	4.61	191.58	1.02	0.08	0.37	3590	1.24
KILN2_0449.LAB	11/30/2023	13:10:38	14.67	14.19	-0.08	4.83	191.57	1.02	0.08	0.36	2944	1.24
Kiln 2 - Raw Mill Off Test Run 2 11/30/2023 12:10 - 13:10		**Minimum**	**13.58**	**13.26**	**-0.11**	**4.57**	**191.0**	**1.016**	**0.07**	**0.33**	**1261**	**1.24**
		Maximum	**14.67**	**14.70**	**-0.02**	**5.48**	**191.6**	**1.018**	**0.09**	**0.38**	**4389**	**1.24**
		Average	**13.94**	**14.03**	**-0.06**	**4.97**	**191.5**	**1.017**	**0.08**	**0.36**	**2998**	**1.24**
		Std Dev	**0.24**	**0.33**	**0.02**	**0.20**						
		3 Sigma	**0.73**	**1.00**	**0.06**	**0.60**						

Kiln 2 - Raw Mill Off Test Run 3

Spectrum	Date	Time	H2O (%v)	CO2 (%v wet)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_0536.LAB	11/30/2023	13:55:40	13.87	12.34	-0.09	4.48	191.53	1.02	0.08	0.36	3182	1.24
KILN2_0537.LAB	11/30/2023	13:56:41	13.87	13.09	-0.10	4.35	191.54	1.02	0.07	0.36	4389	1.24
KILN2_0538.LAB	11/30/2023	13:57:41	13.80	12.61	-0.12	4.47	191.55	1.01	0.07	0.36	3495	1.24
KILN2_0539.LAB	11/30/2023	13:58:41	13.89	13.17	-0.07	4.65	191.58	1.02	0.08	0.35	3961	1.24
KILN2_0540.LAB	11/30/2023	13:59:41	14.23	13.42	-0.09	4.64	191.63	1.02	0.07	0.37	2866	1.24
KILN2_0541.LAB	11/30/2023	14:00:41	14.46	13.97	-0.09	4.89	191.63	1.01	0.08	0.36	3106	1.24
KILN2_0542.LAB	11/30/2023	14:01:41	14.55	13.96	-0.07	5.04	191.60	1.02	0.08	0.37	3121	1.24
KILN2_0543.LAB	11/30/2023	14:02:41	14.65	14.25	-0.10	5.21	191.61	1.02	0.08	0.36	3907	1.24
KILN2_0544.LAB	11/30/2023	14:03:41	14.75	14.67	-0.08	5.09	191.61	1.02	0.07	0.36	2936	1.24
KILN2_0545.LAB	11/30/2023	14:04:41	14.84	14.28	-0.14	5.08	191.61	1.01	0.08	0.38	2675	1.24
KILN2_0546.LAB	11/30/2023	14:05:41	15.05	14.37	-0.09	5.06	191.58	1.01	0.08	0.37	2143	1.24
KILN2_0547.LAB	11/30/2023	14:06:41	15.09	14.23	-0.06	4.90	191.59	1.01	0.08	0.38	2342	1.24
KILN2_0548.LAB	11/30/2023	14:07:41	15.09	14.39	-0.06	5.11	191.57	1.01	0.08	0.37	2247	1.24
KILN2_0549.LAB	11/30/2023	14:08:42	15.09	14.63	-0.08	5.14	191.59	1.02	0.07	0.37	3094	1.24
KILN2_0550.LAB	11/30/2023	14:09:42	15.20	14.82	-0.11	4.87	191.55	1.02	0.08	0.37	2943	1.24
KILN2_0551.LAB	11/30/2023	14:10:42	15.08	15.24	-0.12	4.97	191.58	1.02	0.08	0.36	2397	1.24
KILN2_0552.LAB	11/30/2023	14:11:42	15.17	14.54	-0.10	4.97	191.60	1.02	0.07	0.38	2303	1.24
KILN2_0553.LAB	11/30/2023	14:12:42	15.14	14.88	-0.15	5.04	191.56	1.01	0.07	0.38	3164	1.24
KILN2_0554.LAB	11/30/2023	14:13:42	15.08	14.64	-0.09	4.77	191.57	1.01	0.08	0.37	4365	1.24
KILN2_0555.LAB	11/30/2023	14:14:42	15.03	14.64	-0.09	4.95	191.53	1.01	0.07	0.37	4230	1.24
KILN2_0556.LAB	11/30/2023	14:15:42	15.06	14.39	-0.08	5.03	191.54	1.01	0.08	0.36	3742	1.24
KILN2_0557.LAB	11/30/2023	14:16:42	15.02	14.26	-0.10	5.02	191.54	1.02	0.07	0.36	3947	1.24
KILN2_0558.LAB	11/30/2023	14:17:42	14.99	14.39	-0.07	4.99	191.56	1.02	0.09	0.35	3433	1.24
KILN2_0559.LAB	11/30/2023	14:18:42	15.00	14.07	-0.11	5.03	191.52	1.01	0.08	0.36	2598	1.24
KILN2_0560.LAB	11/30/2023	14:19:42	14.95	14.33	-0.11	5.01	191.54	1.02	0.07	0.36	2389	1.24
KILN2_0561.LAB	11/30/2023	14:20:43	14.89	13.97	-0.08	5.12	191.55	1.02	0.08	0.36	2750	1.24
KILN2_0562.LAB	11/30/2023	14:21:43	14.99	14.21	-0.07	4.95	191.55	1.02	0.08	0.37	2300	1.24
KILN2_0563.LAB	11/30/2023	14:22:43	15.06	14.41	-0.09	4.79	191.57	1.01	0.08	0.37	2990	1.24
KILN2_0564.LAB	11/30/2023	14:23:43	15.19	14.96	-0.09	4.84	191.55	1.01	0.07	0.39	3762	1.24
KILN2_0565.LAB	11/30/2023	14:24:43	15.06	14.30	-0.10	5.10	191.56	1.02	0.08	0.38	2461	1.24
KILN2_0566.LAB	11/30/2023	14:25:43	15.12	13.87	-0.07	5.13	191.57	1.01	0.08	0.38	2555	1.24
KILN2_0567.LAB	11/30/2023	14:26:43	15.00	13.81	-0.06	5.07	191.52	1.01	0.07	0.37	2806	1.24
KILN2_0568.LAB	11/30/2023	14:27:43	15.07	13.10	-0.07	4.75	191.52	1.01	0.07	0.37	2831	1.24
KILN2_0569.LAB	11/30/2023	14:28:43	15.26	13.56	-0.10	4.37	191.54	1.01	0.08	0.38	3509	1.24
KILN2_0570.LAB	11/30/2023	14:29:43	15.21	12.95	-0.08	4.37	191.55	1.01	0.08	0.36	4359	1.24
KILN2_0571.LAB	11/30/2023	14:30:44	15.26	11.73	-0.11	4.27	191.52	1.02	0.08	0.37	2745	1.24
KILN2_0572.LAB	11/30/2023	14:31:43	15.53	11.31	-0.08	3.96	191.54	1.01	0.09	0.38	2897	1.24
KILN2_0573.LAB	11/30/2023	14:32:44	15.68	10.82	-0.12	3.78	191.53	1.01	0.08	0.37	3544	1.24
KILN2_0574.LAB	11/30/2023	14:33:44	15.67	10.93	-0.06	3.27	191.56	1.01	0.08	0.38	2894	1.24
KILN2_0575.LAB	11/30/2023	14:34:44	15.78	10.43	-0.13	2.73	191.59	1.01	0.08	0.36	3139	1.24
KILN2_0576.LAB	11/30/2023	14:35:44	15.88	10.44	-0.08	2.70	191.58	1.01	0.08	0.37	2986	1.24
KILN2_0577.LAB	11/30/2023	14:36:44	15.78	10.52	-0.08	2.78	191.57	1.01	0.08	0.36	2583	1.24
KILN2_0578.LAB	11/30/2023	14:37:44	15.90	10.08	-0.10	2.66	191.58	1.01	0.08	0.37	2120	1.24
KILN2_0579.LAB	11/30/2023	14:38:44	15.90	10.08	-0.12	2.68	191.58	1.01	0.08	0.36	2892	1.24
KILN2_0580.LAB	11/30/2023	14:39:44	15.94	10.32	-0.10	2.82	191.57	1.01	0.08	0.37	2907	1.24
KILN2_0581.LAB	11/30/2023	14:40:44	15.04	10.85	-0.10	2.81	191.58	1.01	0.08	0.36	3552	1.24
KILN2_0582.LAB	11/30/2023	14:41:44	14.84	10.87	-0.10	2.81	191.57	1.01	0.08	0.37	3035	1.24
KILN2_0583.LAB	11/30/2023	14:42:44	14.82	11.01	-0.11	3.08	191.60	1.01	0.07	0.38	3400	1.24
KILN2_0584.LAB	11/30/2023	14:43:44	14.76	10.97	-0.14	3.15	191.57	1.01	0.08	0.36	4712	1.24
KILN2_0585.LAB	11/30/2023	14:44:44	14.70	10.92	-0.10	3.41	191.57	1.01	0.08	0.37	3651	1.24
KILN2_0586.LAB	11/30/2023	14:45:45	14.66	11.01	-0.09	3.68	191.60	1.01	0.08	0.37	2683	1.24
KILN2_0587.LAB	11/30/2023	14:46:45	14.65	11.37	-0.10	3.98	191.61	1.01	0.08	0.37	3274	1.24
KILN2_0588.LAB	11/30/2023	14:47:45	14.70	11.96	-0.13	3.93	191.59	1.01	0.08	0.37	3041	1.24
KILN2_0589.LAB	11/30/2023	14:48:45	14.32	11.48	-0.10	3.86	191.55	1.01	0.08	0.37	2312	1.24
KILN2_0590.LAB	11/30/2023	14:49:45	14.02	11.06	-0.08	3.81	191.50	1.01	0.08	0.37	3115	1.24
KILN2_0591.LAB	11/30/2023	14:50:45	13.83	11.33	-0.10	4.02	191.50	1.01	0.08	0.38	3176	1.24
KILN2_0592.LAB	11/30/2023	14:51:45	13.83	11.36	-0.07	4.08	191.50	1.02	0.08	0.37	3253	1.24
KILN2_0593.LAB	11/30/2023	14:52:45	13.83	11.64	-0.07	4.25	191.48	1.01	0.08	0.37	2741	1.24
KILN2_0594.LAB	11/30/2023	14:53:45	13.70	11.53	-0.10	4.03	191.54	1.01	0.08	0.37	2592	1.24
KILN2_0595.LAB	11/30/2023	14:54:46	13.82	12.18	-0.09	4.28	191.54	1.01	0.08	0.38	3298	1.24
KILN2_0596.LAB	11/30/2023	14:55:45	13.81	12.04	-0.09	4.30	191.54	1.01	0.08	0.37	3820	1.24
Kiln 2 - Raw Mill Off Test Run 3 11/30/2023 13:55 - 14:55		**Minimum**	**13.70**	**10.08**	**-0.15**	**2.66**	**191.5**	**1.014**	**0.07**	**0.35**	**2120**	**1.24**
		Maximum	**15.94**	**15.24**	**-0.06**	**5.21**	**191.6**	**1.016**	**0.09**	**0.39**	**4712**	**1.24**
		Average	**14.86**	**12.80**	**-0.09**	**4.30**	**191.6**	**1.015**	**0.08**	**0.37**	**3109**	**1.24**
		Std Dev	**0.60**	**1.62**	**0.02**	**0.82**						
		3 Sigma	**1.81**	**4.86**	**0.06**	**2.45**						

Kiln 2 - Raw Mill On Test Run 1

Spectrum	Date	Time	H2O (%v)	CO2 (%v wet)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_0754.LAB	11/30/2023	17:09:06	11.98	10.03	-0.05	3.12	190.78	1.01	0.07	0.32	NaN	1.23
KILN2_0755.LAB	11/30/2023	17:10:07	11.92	9.97	-0.07	3.09	191.17	1.01	0.06	0.33	3442	1.23
KILN2_0756.LAB	11/30/2023	17:11:07	12.05	10.29	-0.07	3.29	191.29	1.01	0.07	0.33	2902	1.23
KILN2_0757.LAB	11/30/2023	17:12:07	11.95	10.30	-0.06	3.28	191.31	1.02	0.07	0.32	2313	1.23
KILN2_0758.LAB	11/30/2023	17:13:07	12.16	10.09	-0.10	3.24	191.35	1.02	0.08	0.33	2734	1.23
KILN2_0759.LAB	11/30/2023	17:14:07	12.13	10.13	-0.10	3.29	191.37	1.02	0.07	0.33	3183	1.23
KILN2_0760.LAB	11/30/2023	17:15:07	12.14	10.20	-0.09	3.26	191.40	1.01	0.08	0.34	3244	1.22
KILN2_0761.LAB	11/30/2023	17:16:07	12.19	10.09	-0.10	3.35	191.43	1.01	0.07	0.32	3333	1.21
KILN2_0762.LAB	11/30/2023	17:17:07	12.30	9.74	-0.12	3.05	191.47	1.01	0.08	0.33	2613	1.23
KILN2_0763.LAB	11/30/2023	17:18:07	11.98	9.70	-0.08	2.98	191.45	1.01	0.08	0.33	1938	1.23
KILN2_0764.LAB	11/30/2023	17:19:08	12.26	9.43	-0.10	3.09	191.42	1.01	0.08	0.34	2952	1.23
KILN2_0765.LAB	11/30/2023	17:20:08	12.18	9.69	-0.12	3.24	191.45	1.02	0.07	0.34	4123	1.23
KILN2_0766.LAB	11/30/2023	17:21:07	12.25	9.67	-0.14	3.24	191.48	1.01	0.07	0.33	2570	1.23
KILN2_0767.LAB	11/30/2023	17:22:07	12.20	9.91	-0.09	3.41	191.47	1.01	0.08	0.33	2115	1.23
KILN2_0768.LAB	11/30/2023	17:23:08	12.37	9.84	-0.08	3.27	191.48	1.01	0.07	0.33	2384	1.23
KILN2_0769.LAB	11/30/2023	17:24:08	12.36	10.32	-0.09	3.37	191.49	1.01	0.08	0.33	3303	1.23
KILN2_0770.LAB	11/30/2023	17:25:08	12.45	10.50	-0.09	3.65	191.50	1.01	0.06	0.35	2748	1.23
KILN2_0771.LAB	11/30/2023	17:26:08	12.30	10.30	-0.09	3.61	191.50	1.01	0.08	0.34	2847	1.23
KILN2_0772.LAB	11/30/2023	17:27:08	12.58	10.60	-0.10	3.38	191.51	1.01	0.08	0.36	2431	1.23
KILN2_0773.LAB	11/30/2023	17:28:08	12.50	10.04	-0.12	3.13	191.56	1.02	0.07	0.36	3087	1.23
KILN2_0774.LAB	11/30/2023	17:29:08	12.45	9.71	-0.08	3.18	191.55	1.02	0.07	0.36	2311	1.23
KILN2_0775.LAB	11/30/2023	17:30:08	12.64	9.64	-0.12	3.15	191.55	1.01	0.08	0.35	2145	1.23
KILN2_0776.LAB	11/30/2023	17:31:08	12.70	9.84	-0.09	3.18	191.57	1.01	0.08	0.36	2517	1.23
KILN2_0777.LAB	11/30/2023	17:32:08	12.69	9.55	-0.11	3.05	191.57	1.01	0.08	0.35	2497	1.23
KILN2_0778.LAB	11/30/2023	17:33:08	13.37	10.25	-0.07	3.28	191.58	1.01	0.07	0.38	2449	1.23
KILN2_0779.LAB	11/30/2023	17:34:09	13.36	10.70	-0.10	3.36	191.58	1.01	0.08	0.36	4250	1.23
KILN2_0780.LAB	11/30/2023	17:35:09	13.48	10.65	-0.17	3.52	191.57	1.02	0.08	0.36	2930	1.23
KILN2_0781.LAB	11/30/2023	17:36:09	13.29	10.59	-0.11	3.79	191.59	1.01	0.08	0.36	670	1.23
KILN2_0782.LAB	11/30/2023	17:37:09	13.21	10.67	-0.09	3.99	191.57	1.01	0.08	0.37	1036	1.23
KILN2_0783.LAB	11/30/2023	17:38:09	13.37	10.78	-0.10	4.10	191.61	1.01	0.08	0.38	960	1.23
KILN2_0784.LAB	11/30/2023	17:39:09	13.09	10.54	-0.14	4.07	191.58	1.01	0.08	0.37	1417	1.23
KILN2_0785.LAB	11/30/2023	17:40:09	13.17	10.33	-0.08	3.80	191.62	1.01	0.07	0.35	1534	1.23
KILN2_0786.LAB	11/30/2023	17:41:09	13.02	10.23	-0.09	3.44	191.60	1.01	0.07	0.36	2768	1.23
KILN2_0787.LAB	11/30/2023	17:42:09	13.12	10.36	-0.12	3.40	191.61	1.01	0.07	0.35	2473	1.23
KILN2_0788.LAB	11/30/2023	17:43:09	13.37	10.59	-0.06	3.48	191.58	1.01	0.07	0.36	2735	1.23
KILN2_0789.LAB	11/30/2023	17:44:09	13.45	10.50	-0.11	3.70	191.57	1.01	0.07	0.38	2921	1.23
KILN2_0790.LAB	11/30/2023	17:45:10	13.30	10.46	-0.11	3.61	191.60	1.01	0.07	0.36	3229	1.23
KILN2_0791.LAB	11/30/2023	17:46:10	13.38	10.70	-0.08	3.57	191.64	1.01	0.08	0.35	2505	1.23
KILN2_0792.LAB	11/30/2023	17:47:10	13.34	10.53	-0.13	3.73	191.64	1.01	0.07	0.36	4154	1.23
KILN2_0793.LAB	11/30/2023	17:48:10	13.16	10.33	-0.08	3.67	191.64	1.01	0.07	0.36	2889	1.23
KILN2_0794.LAB	11/30/2023	17:49:10	13.30	10.46	-0.10	3.62	191.63	1.01	0.07	0.35	2465	1.24
KILN2_0795.LAB	11/30/2023	17:50:10	13.42	10.55	-0.08	3.71	191.66	1.01	0.07	0.36	2746	1.24
KILN2_0796.LAB	11/30/2023	17:51:10	13.32	10.39	-0.10	3.52	191.64	1.01	0.07	0.35	2979	1.24
KILN2_0797.LAB	11/30/2023	17:52:10	13.25	10.42	-0.11	3.63	191.61	1.01	0.07	0.36	2424	1.24
KILN2_0798.LAB	11/30/2023	17:53:10	13.57	10.43	-0.12	3.60	191.62	1.01	0.07	0.36	2184	1.24
KILN2_0799.LAB	11/30/2023	17:54:10	13.60	10.32	-0.09	3.82	191.62	1.01	0.07	0.35	2634	1.24
KILN2_0800.LAB	11/30/2023	17:55:10	13.63	10.68	-0.09	3.79	191.63	1.01	0.08	0.37	3474	1.24
KILN2_0801.LAB	11/30/2023	17:56:10	13.46	10.66	-0.09	3.73	191.62	1.01	0.07	0.34	3197	1.24
KILN2_0802.LAB	11/30/2023	17:57:10	13.63	10.39	-0.10	3.69	191.62	1.02	0.08	0.34	2752	1.24
KILN2_0803.LAB	11/30/2023	17:58:11	13.46	10.14	-0.05	3.48	191.59	1.02	0.07	0.35	3739	1.24
KILN2_0804.LAB	11/30/2023	17:59:11	13.58	9.95	-0.10	3.35	191.61	1.01	0.07	0.36	2981	1.24
KILN2_0805.LAB	11/30/2023	18:00:11	13.43	10.60	-0.11	3.68	191.64	1.01	0.07	0.36	2791	1.24
KILN2_0806.LAB	11/30/2023	18:01:11	13.33	10.15	-0.10	3.35	191.64	1.01	0.07	0.37	2803	1.24
KILN2_0807.LAB	11/30/2023	18:02:11	12.79	9.85	-0.07	3.25	191.65	1.01	0.07	0.36	2909	1.24
KILN2_0808.LAB	11/30/2023	18:03:11	12.90	10.36	-0.08	3.50	191.67	1.01	0.07	0.36	2822	1.24
KILN2_0809.LAB	11/30/2023	18:04:11	13.06	10.63	-0.11	3.70	191.65	1.02	0.07	0.37	2313	1.24
KILN2_0810.LAB	11/30/2023	18:05:11	13.15	10.57	-0.10	3.69	191.59	1.02	0.08	0.37	2977	1.24
KILN2_0811.LAB	11/30/2023	18:06:12	13.20	10.49	-0.08	3.57	191.58	1.01	0.08	0.36	3014	1.24
KILN2_0812.LAB	11/30/2023	18:07:11	12.30	10.65	-0.07	3.69	191.59	1.02	0.07	0.36	2908	1.24
KILN2_0813.LAB	11/30/2023	18:08:11	12.19	10.63	-0.10	3.81	191.58	1.02	0.07	0.36	3675	1.24
KILN2_0814.LAB	11/30/2023	18:09:12	12.91	10.38	-0.09	3.69	191.60	1.01	0.07	0.36	2716	1.24
Kiln 2 - Raw Mill On Test Run 1 11/30/2023 17:09 - 18:09		**Minimum**	**11.92**	**9.43**	**-0.17**	**2.98**	**190.8**	**1.014**	**0.06**	**0.32**	**670**	**1.21**
		Maximum	**13.63**	**10.78**	**-0.05**	**4.10**	**191.7**	**1.016**	**0.08**	**0.38**	**4250**	**1.24**
		Average	**12.86**	**10.27**	**-0.10**	**3.48**	**191.5**	**1.015**	**0.07**	**0.35**	**2719**	**1.23**
		Std Dev	**0.55**	**0.34**	**0.02**	**0.27**						
		3 Sigma	**1.66**	**1.03**	**0.06**	**0.80**						

Kiln 2 - Raw Mill On Test Run 2

Spectrum	Date	Time	H2O (%v)	CO2 (%v wet)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_1091.LAB	12/1/2023	10:37:54	14.27	11.12	-0.03	4.29	191.42	1.02	0.07	0.34	2158	1.22
KILN2_1092.LAB	12/1/2023	10:38:53	14.12	11.12	-0.02	4.11	191.44	1.02	0.08	0.34	2833	1.22
KILN2_1093.LAB	12/1/2023	10:39:53	14.17	10.97	-0.01	4.11	191.47	1.02	0.09	0.35	3523	1.22
KILN2_1094.LAB	12/1/2023	10:40:54	14.29	10.97	-0.02	4.29	191.47	1.02	0.07	0.35	3620	1.22
KILN2_1095.LAB	12/1/2023	10:41:54	14.17	11.19	-0.07	4.22	191.47	1.02	0.07	0.33	3068	1.22
KILN2_1096.LAB	12/1/2023	10:42:54	14.16	11.34	-0.04	4.15	191.45	1.02	0.07	0.34	4282	1.22
KILN2_1097.LAB	12/1/2023	10:43:54	14.24	11.25	-0.04	3.97	191.47	1.02	0.07	0.34	3043	1.22
KILN2_1098.LAB	12/1/2023	10:44:54	14.10	11.30	-0.05	4.18	191.44	1.02	0.08	0.35	3600	1.22
KILN2_1099.LAB	12/1/2023	10:45:54	14.22	11.48	-0.04	4.22	191.45	1.02	0.07	0.34	2793	1.22
KILN2_1100.LAB	12/1/2023	10:46:54	14.39	11.55	-0.07	4.13	191.47	1.02	0.08	0.35	2709	1.22
KILN2_1101.LAB	12/1/2023	10:47:54	14.22	11.44	-0.06	4.13	191.48	1.02	0.07	0.35	3640	1.22
KILN2_1102.LAB	12/1/2023	10:48:54	13.96	11.63	-0.03	4.25	191.48	1.02	0.07	0.33	2818	1.22
KILN2_1103.LAB	12/1/2023	10:49:54	14.09	11.54	-0.01	4.27	191.48	1.02	0.07	0.33	2534	1.22
KILN2_1104.LAB	12/1/2023	10:50:54	13.99	11.53	-0.03	4.18	191.47	1.02	0.07	0.33	3419	1.22
KILN2_1105.LAB	12/1/2023	10:51:54	13.93	11.57	-0.05	4.16	191.47	1.02	0.07	0.32	2931	1.22
KILN2_1106.LAB	12/1/2023	10:52:54	13.79	11.59	-0.06	4.08	191.47	1.02	0.07	0.33	3035	1.22
KILN2_1107.LAB	12/1/2023	10:53:55	13.74	11.60	-0.05	4.14	191.47	1.02	0.07	0.34	3112	1.22
KILN2_1108.LAB	12/1/2023	10:54:55	13.81	11.67	-0.02	4.13	191.44	1.02	0.08	0.35	2898	1.22
KILN2_1109.LAB	12/1/2023	10:55:55	13.73	11.56	-0.06	4.11	191.45	1.02	0.07	0.33	2804	1.22
KILN2_1110.LAB	12/1/2023	10:56:55	13.52	11.79	-0.04	3.88	191.45	1.02	0.08	0.33	2725	1.22
KILN2_1111.LAB	12/1/2023	10:57:55	13.64	11.16	-0.02	4.27	191.45	1.02	0.07	0.32	2105	1.22
KILN2_1112.LAB	12/1/2023	10:58:55	13.68	11.35	-0.04	4.10	191.42	1.02	0.07	0.31	2546	1.22
KILN2_1113.LAB	12/1/2023	10:59:55	13.65	11.49	-0.04	4.19	191.40	1.02	0.07	0.33	2624	1.22
KILN2_1114.LAB	12/1/2023	11:00:55	13.68	11.39	-0.03	4.12	191.43	1.02	0.08	0.34	2907	1.22
KILN2_1115.LAB	12/1/2023	11:01:55	13.77	11.48	-0.10	4.01	191.39	1.02	0.08	0.33	3496	1.22
KILN2_1116.LAB	12/1/2023	11:02:55	13.77	11.45	-0.02	4.20	191.46	1.02	0.07	0.34	3100	1.22
KILN2_1117.LAB	12/1/2023	11:03:55	13.87	11.25	-0.07	4.01	191.42	1.02	0.08	0.33	3217	1.22
KILN2_1118.LAB	12/1/2023	11:04:56	13.93	11.49	-0.04	4.28	191.38	1.02	0.07	0.32	3457	1.22
KILN2_1119.LAB	12/1/2023	11:05:56	14.07	11.78	-0.08	4.04	191.43	1.02	0.07	0.33	3281	1.22
KILN2_1120.LAB	12/1/2023	11:06:56	14.28	11.66	-0.05	4.18	191.42	1.02	0.07	0.34	3216	1.22
KILN2_1121.LAB	12/1/2023	11:07:56	14.37	11.84	-0.06	4.39	191.48	1.02	0.08	0.34	3831	1.22
KILN2_1122.LAB	12/1/2023	11:08:56	14.16	11.77	-0.07	4.50	191.46	1.02	0.09	0.35	2665	1.22
KILN2_1123.LAB	12/1/2023	11:09:56	14.08	11.58	-0.09	4.30	191.47	1.02	0.08	0.35	2498	1.22
KILN2_1124.LAB	12/1/2023	11:10:56	14.33	11.66	0.01	4.17	191.46	1.02	0.08	0.34	2634	1.22
KILN2_1125.LAB	12/1/2023	11:11:56	14.16	11.70	-0.01	4.15	191.47	1.02	0.08	0.34	3148	1.22
KILN2_1126.LAB	12/1/2023	11:12:56	14.02	11.62	-0.06	4.27	191.47	1.02	0.07	0.32	2759	1.22
KILN2_1127.LAB	12/1/2023	11:13:56	13.94	11.56	-0.03	4.18	191.47	1.02	0.07	0.33	3001	1.22
KILN2_1128.LAB	12/1/2023	11:14:56	13.93	11.42	-0.06	4.25	191.47	1.02	0.08	0.34	3465	1.22
KILN2_1129.LAB	12/1/2023	11:15:56	13.91	11.08	-0.03	4.29	191.47	1.02	0.08	0.35	3000	1.22
KILN2_1130.LAB	12/1/2023	11:16:56	14.08	11.33	-0.04	4.09	191.48	1.02	0.08	0.35	3169	1.22
KILN2_1131.LAB	12/1/2023	11:17:57	14.12	11.38	-0.04	4.17	191.48	1.02	0.07	0.34	3053	1.22
KILN2_1132.LAB	12/1/2023	11:18:57	14.04	11.38	-0.06	4.03	191.47	1.02	0.07	0.33	2396	1.22
KILN2_1133.LAB	12/1/2023	11:19:57	14.25	11.42	-0.01	4.14	191.48	1.02	0.07	0.34	3826	1.22
KILN2_1134.LAB	12/1/2023	11:20:57	14.10	11.42	-0.01	4.10	191.48	1.02	0.07	0.33	2950	1.22
KILN2_1135.LAB	12/1/2023	11:21:57	14.11	11.50	-0.05	4.05	191.49	1.02	0.06	0.34	3001	1.22
KILN2_1136.LAB	12/1/2023	11:22:57	14.10	11.50	-0.03	3.98	191.48	1.02	0.07	0.34	3486	1.22
KILN2_1137.LAB	12/1/2023	11:23:57	14.01	11.46	-0.04	3.98	191.51	1.02	0.08	0.34	2867	1.22
KILN2_1138.LAB	12/1/2023	11:24:57	14.15	11.32	-0.05	4.19	191.52	1.02	0.07	0.35	3500	1.22
KILN2_1139.LAB	12/1/2023	11:25:57	14.29	11.36	-0.07	3.94	191.51	1.02	0.08	0.36	2886	1.22
KILN2_1140.LAB	12/1/2023	11:26:57	14.09	11.44	-0.06	4.06	191.49	1.02	0.09	0.34	2317	1.22
KILN2_1141.LAB	12/1/2023	11:27:57	13.84	11.48	-0.02	4.09	191.48	1.02	0.07	0.34	2809	1.22
KILN2_1142.LAB	12/1/2023	11:28:57	13.84	11.18	-0.05	4.30	191.49	1.02	0.07	0.32	2778	1.22
KILN2_1143.LAB	12/1/2023	11:29:58	13.86	10.95	-0.06	4.32	191.50	1.02	0.07	0.33	3288	1.22
KILN2_1144.LAB	12/1/2023	11:30:58	13.75	11.09	-0.03	4.14	191.52	1.02	0.07	0.34	2838	1.22
KILN2_1145.LAB	12/1/2023	11:31:58	13.68	11.22	-0.04	4.09	191.50	1.02	0.07	0.34	3386	1.22
KILN2_1146.LAB	12/1/2023	11:32:58	13.59	11.21	-0.06	4.03	191.49	1.02	0.08	0.33	3698	1.22
KILN2_1147.LAB	12/1/2023	11:33:58	13.69	11.22	-0.07	4.21	191.49	1.02	0.07	0.34	3008	1.22
KILN2_1148.LAB	12/1/2023	11:34:58	13.77	11.35	-0.05	4.03	191.46	1.02	0.08	0.35	3952	1.22
KILN2_1149.LAB	12/1/2023	11:35:58	13.88	11.22	-0.03	4.10	191.46	1.02	0.08	0.34	2851	1.22
KILN2_1150.LAB	12/1/2023	11:36:58	13.97	11.16	-0.05	4.15	191.49	1.02	0.07	0.34	2744	1.22
KILN2_1151.LAB	12/1/2023	11:37:58	14.31	11.45	-0.02	4.04	191.49	1.02	0.07	0.34	3199	1.22
Kiln 2 - Raw Mill On Test Run 2 12/01/2023 10:37 - 11:37		**Minimum**	**13.52**	**10.95**	**-0.10**	**3.88**	**191.4**	**1.015**	**0.06**	**0.31**	**2105**	**1.22**
		Maximum	**14.39**	**11.84**	**0.01**	**4.50**	**191.5**	**1.018**	**0.09**	**0.36**	**4282**	**1.22**
		Average	**13.99**	**11.41**	**-0.04**	**4.15**	**191.5**	**1.017**	**0.07**	**0.34**	**3057**	**1.22**
		Std Dev	**0.22**	**0.21**	**0.02**	**0.11**						
		3 Sigma	**0.66**	**0.63**	**0.06**	**0.34**						

Kiln 2 - Raw Mill On Test Run 3

Spectrum	Date	Time	H2O (%v)	CO2 (%v wet)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_1229.LAB	12/1/2023	12:20:16	14.60	11.44	-0.05	4.33	191.51	1.02	0.06	0.34	2536	1.22
KILN2_1230.LAB	12/1/2023	12:21:16	14.42	11.51	-0.05	3.94	191.50	1.01	0.07	0.32	3363	1.22
KILN2_1231.LAB	12/1/2023	12:22:16	14.25	11.58	-0.03	4.07	191.48	1.01	0.08	0.34	2475	1.22
KILN2_1232.LAB	12/1/2023	12:23:16	14.48	11.57	-0.07	4.06	191.44	1.01	0.07	0.34	2944	1.22
KILN2_1233.LAB	12/1/2023	12:24:17	14.55	11.44	-0.08	3.98	191.45	1.01	0.07	0.33	3326	1.22
KILN2_1234.LAB	12/1/2023	12:25:17	14.66	11.34	-0.06	4.01	191.46	1.02	0.07	0.35	2889	1.22
KILN2_1235.LAB	12/1/2023	12:26:17	14.66	11.27	-0.11	4.61	191.48	1.01	0.09	0.35	2066	1.22
KILN2_1236.LAB	12/1/2023	12:27:17	14.85	11.28	-0.09	5.47	191.49	1.01	0.08	0.34	2459	1.22
KILN2_1237.LAB	12/1/2023	12:28:17	14.68	11.49	-0.08	4.60	191.45	1.02	0.08	0.36	2492	1.22
KILN2_1238.LAB	12/1/2023	12:29:17	14.39	11.15	-0.03	4.36	191.42	1.01	0.07	0.35	2726	1.22
KILN2_1239.LAB	12/1/2023	12:30:17	14.29	11.21	-0.05	4.10	191.41	1.01	0.07	0.33	2377	1.22
KILN2_1240.LAB	12/1/2023	12:31:17	14.09	11.00	-0.03	4.37	191.46	1.01	0.07	0.34	2897	1.22
KILN2_1241.LAB	12/1/2023	12:32:17	14.20	10.67	-0.06	4.16	191.45	1.01	0.06	0.34	2899	1.22
KILN2_1242.LAB	12/1/2023	12:33:17	14.25	10.74	-0.04	4.02	191.45	1.01	0.08	0.34	3366	1.22
KILN2_1243.LAB	12/1/2023	12:34:17	14.15	11.08	-0.01	4.03	191.42	1.01	0.07	0.36	3327	1.22
KILN2_1244.LAB	12/1/2023	12:35:17	14.33	11.35	-0.05	4.01	191.44	1.01	0.08	0.36	3567	1.22
KILN2_1245.LAB	12/1/2023	12:36:18	14.78	11.35	-0.05	3.96	191.45	1.01	0.07	0.34	2677	1.22
KILN2_1246.LAB	12/1/2023	12:37:18	14.64	11.36	-0.08	4.12	191.44	1.02	0.07	0.35	2977	1.22
KILN2_1247.LAB	12/1/2023	12:38:18	14.48	11.27	-0.08	4.32	191.45	1.01	0.07	0.36	2488	1.22
KILN2_1248.LAB	12/1/2023	12:39:18	14.48	11.27	-0.06	4.21	191.46	1.01	0.06	0.33	2846	1.22
KILN2_1249.LAB	12/1/2023	12:40:18	14.81	11.05	-0.07	4.07	191.46	1.01	0.07	0.34	2975	1.22
KILN2_1250.LAB	12/1/2023	12:41:18	14.69	11.25	-0.08	4.11	191.46	1.01	0.07	0.33	3636	1.22
KILN2_1251.LAB	12/1/2023	12:42:18	14.35	11.44	-0.07	4.08	191.46	1.02	0.07	0.34	2202	1.22
KILN2_1252.LAB	12/1/2023	12:43:18	14.54	11.32	-0.05	4.09	191.45	1.01	0.07	0.34	2845	1.22
KILN2_1253.LAB	12/1/2023	12:44:18	14.86	11.42	-0.08	4.23	191.44	1.01	0.08	0.37	3265	1.21
KILN2_1254.LAB	12/1/2023	12:45:18	14.93	11.37	-0.06	4.48	191.46	1.01	0.08	0.37	3349	1.21
KILN2_1255.LAB	12/1/2023	12:46:18	14.76	11.44	-0.06	4.36	191.47	1.01	0.07	0.35	2728	1.21
KILN2_1256.LAB	12/1/2023	12:47:18	14.52	11.45	-0.09	4.05	191.47	1.01	0.07	0.34	4091	1.21
KILN2_1257.LAB	12/1/2023	12:48:18	14.73	11.46	-0.09	4.45	191.46	1.01	0.06	0.34	2731	1.21
KILN2_1258.LAB	12/1/2023	12:49:19	14.65	11.50	-0.04	4.16	191.46	1.01	0.07	0.34	2723	1.22
KILN2_1259.LAB	12/1/2023	12:50:19	14.58	11.26	-0.05	4.17	191.45	1.01	0.08	0.33	3265	1.22
KILN2_1260.LAB	12/1/2023	12:51:19	14.28	11.33	-0.02	4.33	191.44	1.01	0.07	0.33	3087	1.22
KILN2_1261.LAB	12/1/2023	12:52:19	14.26	11.30	-0.05	4.07	191.47	1.01	0.08	0.34	3139	1.21
KILN2_1262.LAB	12/1/2023	12:53:19	14.33	11.45	-0.04	4.10	191.47	1.01	0.08	0.35	2656	1.21
KILN2_1263.LAB	12/1/2023	12:54:19	14.03	11.54	-0.06	4.36	191.46	1.01	0.08	0.35	2592	1.21
KILN2_1264.LAB	12/1/2023	12:55:19	14.26	11.38	-0.09	4.19	191.45	1.01	0.09	0.37	3247	1.21
KILN2_1265.LAB	12/1/2023	12:56:19	13.95	11.47	-0.03	3.98	191.45	1.01	0.08	0.35	2200	1.21
KILN2_1266.LAB	12/1/2023	12:57:19	13.82	11.29	-0.06	4.21	191.43	1.01	0.07	0.36	2520	1.21
KILN2_1267.LAB	12/1/2023	12:58:19	13.75	10.97	-0.07	4.07	191.45	1.01	0.07	0.33	2353	1.21
KILN2_1268.LAB	12/1/2023	12:59:19	13.77	10.95	-0.06	4.04	191.47	1.01	0.07	0.34	2497	1.21
KILN2_1269.LAB	12/1/2023	13:00:19	13.71	11.27	-0.10	4.02	191.47	1.01	0.08	0.34	3706	1.21
KILN2_1270.LAB	12/1/2023	13:01:20	13.71	10.97	-0.04	4.09	191.47	1.01	0.07	0.33	4072	1.21
KILN2_1271.LAB	12/1/2023	13:02:20	13.84	10.57	-0.06	4.25	191.47	1.01	0.06	0.33	3641	1.21
KILN2_1272.LAB	12/1/2023	13:03:20	13.91	10.97	-0.07	4.05	191.47	1.01	0.07	0.33	2744	1.21
KILN2_1273.LAB	12/1/2023	13:04:20	14.28	11.15	-0.04	3.96	191.47	1.01	0.08	0.35	2322	1.21
KILN2_1274.LAB	12/1/2023	13:05:20	14.27	11.11	-0.04	4.10	191.47	1.01	0.07	0.36	2057	1.21
KILN2_1275.LAB	12/1/2023	13:06:20	14.31	10.92	-0.04	3.98	191.47	1.01	0.08	0.36	3086	1.21
KILN2_1276.LAB	12/1/2023	13:07:20	14.51	11.26	-0.08	3.94	191.47	1.01	0.07	0.36	3693	1.21
KILN2_1277.LAB	12/1/2023	13:08:21	14.20	11.04	-0.03	4.10	191.47	1.01	0.08	0.36	3257	1.21
KILN2_1278.LAB	12/1/2023	13:09:20	14.42	10.94	-0.08	3.93	191.47	1.01	0.08	0.34	3412	1.21
KILN2_1279.LAB	12/1/2023	13:10:20	14.24	10.81	-0.05	3.90	191.47	1.01	0.07	0.34	2416	1.21
KILN2_1280.LAB	12/1/2023	13:11:20	14.96	11.40	-0.07	3.96	191.45	1.01	0.07	0.34	2557	1.21
KILN2_1281.LAB	12/1/2023	13:12:20	14.52	11.39	-0.09	3.94	191.47	1.01	0.06	0.34	3923	1.21
KILN2_1282.LAB	12/1/2023	13:13:20	14.41	11.23	-0.06	4.01	191.47	1.01	0.06	0.34	2958	1.21
KILN2_1283.LAB	12/1/2023	13:14:21	14.72	10.82	-0.05	4.04	191.47	1.01	0.06	0.34	2966	1.21
KILN2_1284.LAB	12/1/2023	13:15:21	14.50	10.65	-0.06	3.80	191.47	1.01	0.07	0.35	3016	1.21
KILN2_1285.LAB	12/1/2023	13:16:21	14.60	10.66	-0.10	4.03	191.48	1.01	0.06	0.33	4584	1.21
KILN2_1286.LAB	12/1/2023	13:17:21	14.47	10.94	-0.08	3.96	191.47	1.01	0.07	0.34	3024	1.21
KILN2_1287.LAB	12/1/2023	13:18:21	14.57	11.16	-0.09	3.65	191.48	1.01	0.06	0.35	2651	1.21
KILN2_1288.LAB	12/1/2023	13:19:21	14.52	11.18	-0.06	3.70	191.49	1.01	0.07	0.37	2891	1.21
KILN2_1289.LAB	12/1/2023	13:20:21	14.54	11.12	-0.09	3.84	191.47	1.01	0.07	0.35	2846	1.21
Kiln 2 - Raw Mill On Test Run 3 12/01/2023 12:20 - 13:20		**Minimum**	**13.71**	**10.57**	**-0.11**	**3.65**	**191.4**	**1.013**	**0.06**	**0.32**	**2057**	**1.21**
		Maximum	**14.96**	**11.58**	**-0.01**	**5.47**	**191.5**	**1.015**	**0.09**	**0.37**	**4584**	**1.22**
		Average	**14.40**	**11.21**	**-0.06**	**4.12**	**191.5**	**1.014**	**0.07**	**0.35**	**2961**	**1.21**
		Std Dev	**0.31**	**0.25**	**0.02**	**0.26**						
		3 Sigma	**0.93**	**0.76**	**0.06**	**0.77**						

APPENDIX

FTIR QA/QC Data

Nitrogen Direct to FTIR

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
N2_DIR_0011BKG.LAB	11/29/2023	7:56:12	0.00	0.00	0.00	0.00	0.00	0.00	190.9	0.999	0.00	0.00	1416	1.15
N2_DIR_0012.LAB	11/29/2023	7:56:25	0.00	0.00	-0.06	-0.03	-0.22	0.00	190.9	0.999	0.08	0.18	1504	1.15
N2_DIR_0013.LAB	11/29/2023	7:56:33	0.01	0.00	-0.01	-0.07	0.01	0.00	190.9	0.999	0.06	0.16	937	1.15
N2_DIR_0014.LAB	11/29/2023	7:56:40	0.00	0.01	0.02	-0.03	0.04	0.00	190.9	0.999	0.08	0.18	1080	1.15
N2_DIR_0015.LAB	11/29/2023	7:56:47	0.00	0.00	-0.03	0.11	0.03	0.01	190.9	0.999	0.06	0.17	1041	1.15
N2_DIR_0016.LAB	11/29/2023	7:56:55	-0.02	0.00	0.08	-0.03	0.06	0.00	190.9	0.999	0.06	0.17	914	1.15
N2_DIR_0017.LAB	11/29/2023	7:57:03	0.00	0.02	-0.02	-0.25	-0.11	0.00	190.9	0.999	0.05	0.15	1169	1.15
N2_DIR_0018.LAB	11/29/2023	7:57:10	0.01	-0.01	-0.06	-0.16	-0.09	-0.01	190.9	0.999	0.07	0.16	857	1.15
N2_DIR_0019.LAB	11/29/2023	7:57:17	0.00	-0.02	-0.10	0.04	-0.16	-0.01	190.9	0.999	0.07	0.18	626	1.15
		Average			**-0.02**	**-0.05**								

CTS, 99.97 ppm Ethylene Direct Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
CTS_DIR_0030.LAB	11/29/2023	8:05:36	0.00	0.00	0.06	-0.26	99.03	0.00	190.9	0.999	0.07	0.16	868	1.16	**99.1%**
CTS_DIR_0031.LAB	11/29/2023	8:05:44	-0.01	-0.01	-0.09	0.04	98.80	0.02	190.9	0.999	0.08	0.16	689	1.16	**98.8%**
CTS_DIR_0032.LAB	11/29/2023	8:05:52	0.00	0.01	0.00	0.37	99.22	0.02	191.0	0.999	0.05	0.18	875	1.16	**99.2%**
CTS_DIR_0033.LAB	11/29/2023	8:05:59	0.02	0.00	0.01	0.12	99.48	0.00	191.0	0.999	0.06	0.19	1118	1.16	**99.5%**
CTS_DIR_0034.LAB	11/29/2023	8:06:06	-0.01	0.02	0.01	0.29	99.34	0.01	191.0	0.999	0.06	0.14	812	1.16	**99.4%**
CTS_DIR_0035.LAB	11/29/2023	8:06:14	0.01	0.02	-0.04	0.23	99.37	0.00	191.0	0.999	0.07	0.19	798	1.16	**99.4%**
CTS_DIR_0036.LAB	11/29/2023	8:06:21	0.00	0.01	-0.08	0.23	98.84	0.01	190.9	0.999	0.06	0.20	778	1.16	**98.9%**
CTS_DIR_0037.LAB	11/29/2023	8:06:29	0.01	0.02	-0.02	-0.02	98.81	0.02	190.9	0.999	0.05	0.17	757	1.16	**98.8%**
		Average					**99.11**								**99.1%**

49.10 ppm HCN/5.00 ppm SF6 Direct Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	HCN Recovery (%)
HCN_DIR_0073.LAB	11/29/2023	8:11:52	0.01	0.02	0.04	49.32	-1.43	4.83	191.0	0.999	0.07	0.33	933	1.16	**100.4%**
HCN_DIR_0074.LAB	11/29/2023	8:12:00	0.00	0.01	-0.08	49.17	-0.98	4.84	191.0	0.999	0.06	0.30	1149	1.16	**100.1%**
HCN_DIR_0075.LAB	11/29/2023	8:12:07	-0.01	0.01	-0.15	49.32	-0.95	4.85	191.1	0.999	0.07	0.28	1074	1.16	**100.5%**
HCN_DIR_0076.LAB	11/29/2023	8:12:15	0.01	0.02	-0.03	49.28	-1.03	4.83	191.0	0.999	0.06	0.27	836	1.16	**100.4%**
HCN_DIR_0077.LAB	11/29/2023	8:12:22	0.00	0.02	-0.09	49.27	-1.22	4.84	191.0	0.999	0.06	0.26	907	1.16	**100.4%**
HCN_DIR_0078.LAB	11/29/2023	8:12:30	0.00	-0.02	-0.10	49.22	-1.13	4.82	191.0	0.999	0.07	0.28	1323	1.16	**100.2%**
HCN_DIR_0079.LAB	11/29/2023	8:12:37	-0.01	0.01	0.02	49.38	-1.26	4.82	191.0	0.999	0.06	0.29	1169	1.16	**100.6%**
HCN_DIR_0080.LAB	11/29/2023	8:12:45	0.00	0.02	0.05	49.32	-0.96	4.82	191.0	0.999	0.07	0.29	1001	1.16	**100.4%**
		Average				**49.28**		**4.83**							**100.4%**

CTS, 99.97 ppm Ethylene System Purge and Response Time Test

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)	Response Time (sec)
CTS_RT_0081.LAB	11/29/2023	8:16:04	0.66	0.04	-0.01	-0.22	-0.14	0.00	190.9	1.026	0.06	0.20	NaN	1.17	**-0.1%**	**-**
CTS_RT_0082.LAB	11/29/2023	8:16:11	0.52	0.04	-0.03	1.38	15.99	0.08	190.9	1.026	0.06	0.21	949	1.17	**16.1%**	**8**
CTS_RT_0083.LAB	11/29/2023	8:16:18	0.03	-0.01	-0.03	0.10	98.82	0.01	190.9	1.026	0.06	0.19	1153	1.17	**99.7%**	**16**
CTS_RT_0084.LAB	11/29/2023	8:16:26	0.01	0.01	0.05	-0.03	99.32	0.01	190.9	1.025	0.06	0.18	1221	1.17	**100.2%**	
CTS_RT_0085.LAB	11/29/2023	8:16:33	0.01	0.00	-0.08	0.41	100.29	0.00	190.9	1.025	0.06	0.19	1080	1.17	**101.2%**	
CTS_RT_0086.LAB	11/29/2023	8:16:41	0.01	0.00	0.04	0.42	99.41	-0.01	190.9	1.025	0.07	0.20	851	1.17	**100.3%**	
CTS_RT_0087.LAB	11/29/2023	8:16:48	0.01	-0.02	0.07	0.23	99.26	0.00	190.9	1.025	0.07	0.16	839	1.17	**100.2%**	
CTS_RT_0088.LAB	11/29/2023	8:16:56	0.02	0.00	-0.02	0.33	99.62	0.01	190.9	1.025	0.05	0.18	1201	1.17	**100.5%**	
CTS_RT_0089.LAB	11/29/2023	8:17:03	0.00	0.01	0.00	0.13	99.36	0.00	191.0	1.026	0.06	0.17	1111	1.17	**100.2%**	
CTS_RT_0090.LAB	11/29/2023	8:17:11	-0.01	0.02	0.08	0.20	99.58	0.01	191.0	1.026	0.05	0.15	868	1.17	**100.5%**	
		Average					**99.46**								**100.3%**	

Nitrogen (Zero) System Purge and Response Time Test

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)	Zero Time (sec)
N2_RT_0091.LAB	11/29/2023	8:17:37	0.00	0.00	-0.07	0.05	99.64	0.00	191.0	1.026	0.06	0.16	NaN	1.17	**100.5%**	**-**
N2_RT_0092.LAB	11/29/2023	8:17:45	0.11	0.01	0.10	-0.03	63.68	0.00	191.0	1.025	0.07	0.18	887	1.17	**64.3%**	**8**
N2_RT_0093.LAB	11/29/2023	8:17:53	-0.01	0.00	0.05	0.29	0.40	0.00	191.1	1.026	0.07	0.17	1002	1.17	**0.4%**	**16**
N2_RT_0094.LAB	11/29/2023	8:18:00	-0.01	0.03	-0.07	0.07	-0.15	0.00	191.1	1.026	0.07	0.17	990	1.17	**-0.2%**	
N2_RT_0095.LAB	11/29/2023	8:18:07	0.00	0.02	-0.03	-0.21	0.19	0.00	191.1	1.026	0.08	0.16	871	1.17	**0.2%**	
N2_RT_0096.LAB	11/29/2023	8:18:15	0.00	0.00	0.08	-0.30	-0.04	0.00	191.1	1.025	0.06	0.16	1079	1.17	**0.0%**	
N2_RT_0097.LAB	11/29/2023	8:18:22	0.01	0.02	0.00	-0.10	0.11	0.00	191.1	1.026	0.07	0.18	875	1.17	**0.1%**	
N2_RT_0098.LAB	11/29/2023	8:18:30	-0.01	0.00	0.00	-0.36	-0.31	0.01	191.1	1.026	0.06	0.17	739	1.17	**-0.3%**	
N2_RT_0099.LAB	11/29/2023	8:18:37	0.00	0.01	0.05	0.01	-0.08	0.00	191.1	1.026	0.06	0.16	956	1.17	**-0.1%**	
N2_RT_0100.LAB	11/29/2023	8:18:45	-0.02	0.00	-0.03	-0.02	-0.29	-0.01	191.2	1.026	0.05	0.17	937	1.17	**-0.3%**	
N2_RT_0101.LAB	11/29/2023	8:18:52	-0.01	0.02	-0.04	0.07	-0.08	0.00	191.2	1.026	0.06	0.16	808	1.17	**-0.1%**	
N2_RT_0102.LAB	11/29/2023	8:19:00	-0.01	0.02	0.01	0.12	0.15	-0.01	191.1	1.025	0.06	0.15	936	1.17	**0.2%**	

Ambient Air Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
AMB_0104.LAB	11/29/2023	8:22:57	0.66	0.05	-0.01	0.06	-0.20	0.00	191.3	1.026	0.03	0.13	NaN	1.17
AMB_0105.LAB	11/29/2023	8:23:57	0.64	0.04	-0.01	0.05	-0.06	0.00	191.3	1.026	0.03	0.13	2494	1.17
AMB_0106.LAB	11/29/2023	8:24:57	0.65	0.04	-0.02	0.14	-0.04	0.00	191.3	1.026	0.04	0.13	3007	1.17
	Ambient Average					**0.08**		**0.00**						

Ambient Air Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
AMB_SPK_0122.LAB	11/29/2023	8:29:59	0.64	0.06	-0.03	2.97	-0.03	0.25	191.5	1.026	0.06	0.19	994	1.18	**0.052**	**111.9%**
AMB_SPK_0123.LAB	11/29/2023	8:30:07	0.67	0.08	-0.11	2.99	0.42	0.26	191.5	1.025	0.09	0.27	764	1.18	**0.055**	**107.6%**
AMB_SPK_0124.LAB	11/29/2023	8:30:15	0.62	0.07	0.08	2.53	-0.86	0.28	191.5	1.026	0.08	0.33	746	1.18	**0.057**	**87.4%**
AMB_SPK_0125.LAB	11/29/2023	8:30:22	0.61	0.01	-0.07	2.14	1.01	0.27	191.5	1.027	0.09	0.33	446	1.19	**0.056**	**74.9%**
AMB_SPK_0126.LAB	11/29/2023	8:30:29	0.63	0.03	0.02	2.76	-0.37	0.26	191.5	1.026	0.06	0.26	487	1.18	**0.053**	**102.4%**
AMB_SPK_0127.LAB	11/29/2023	8:30:37	0.63	0.06	0.00	2.80	-0.27	0.27	191.5	1.026	0.06	0.22	695	1.18	**0.056**	**98.4%**
AMB_SPK_0128.LAB	11/29/2023	8:30:44	0.62	0.03	-0.07	2.80	-0.28	0.26	191.6	1.026	0.05	0.18	984	1.18	**0.053**	**104.2%**
AMB_SPK_0129.LAB	11/29/2023	8:30:52	0.64	0.05	-0.03	2.91	-0.33	0.26	191.6	1.026	0.06	0.19	1018	1.18	**0.053**	**108.4%**
	Spike Average					**2.74**		**0.26**							**0.054**	**99.4%**

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_NAT_0134.LAB	11/29/2023	8:58:03	5.63	6.15	-0.05	0.67	0.39	0.00	191.3	1.026	0.06	0.20	2460	1.21
KILN1_NAT_0135.LAB	11/29/2023	8:59:05	5.74	6.24	-0.06	0.77	0.38	0.00	191.4	1.027	0.07	0.21	2018	1.21
KILN1_NAT_0136.LAB	11/29/2023	9:00:03	5.74	6.25	-0.06	0.65	0.51	0.00	191.4	1.028	0.07	0.22	2240	1.21
	Native Average					**0.70**		**0.00**						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN1_NAT_SPK_0185.LAB	11/29/2023	9:06:35	5.47	5.93	-0.12	2.42	0.55	0.21	191.4	1.030	0.08	0.26	986	1.21	**0.045**	**83.9%**
KILN1_NAT_SPK_0186.LAB	11/29/2023	9:06:42	5.43	5.93	-0.07	2.86	0.14	0.21	191.4	1.030	0.08	0.28	1062	1.21	**0.044**	**100.1%**
KILN1_NAT_SPK_0187.LAB	11/29/2023	9:06:50	5.43	5.93	0.03	2.84	0.13	0.22	191.4	1.031	0.08	0.30	1210	1.21	**0.045**	**97.9%**
KILN1_NAT_SPK_0188.LAB	11/29/2023	9:06:57	5.45	5.89	-0.04	2.75	0.68	0.22	191.4	1.031	0.08	0.29	1047	1.21	**0.046**	**94.0%**
KILN1_NAT_SPK_0189.LAB	11/29/2023	9:07:05	5.41	5.93	-0.08	3.07	0.47	0.21	191.4	1.030	0.07	0.25	876	1.21	**0.043**	**109.4%**
KILN1_NAT_SPK_0190.LAB	11/29/2023	9:07:12	5.41	5.92	-0.06	2.93	0.11	0.21	191.4	1.031	0.06	0.26	751	1.21	**0.044**	**103.6%**
KILN1_NAT_SPK_0191.LAB	11/29/2023	9:07:20	5.45	5.94	-0.02	2.70	0.23	0.20	191.5	1.030	0.08	0.26	939	1.21	**0.043**	**97.2%**
KILN1_NAT_SPK_0192.LAB	11/29/2023	9:07:27	5.44	5.90	0.04	2.83	0.12	0.21	191.5	1.030	0.07	0.25	1200	1.21	**0.045**	**98.7%**
	Spike Average					**2.80**		**0.21**							**0.044**	**98.1%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN1_CTS_SYS_0202.LAB	11/29/2023	9:09:31	0.01	0.01	0.09	0.52	98.37	0.01	191.5	1.029	0.07	0.22	560	1.22	**99.3%**
KILN1_CTS_SYS_0203.LAB	11/29/2023	9:09:39	0.00	0.02	-0.01	0.20	97.96	0.01	191.5	1.029	0.05	0.20	862	1.22	**98.8%**
KILN1_CTS_SYS_0204.LAB	11/29/2023	9:09:46	0.01	0.02	-0.08	-0.06	98.60	-0.01	191.5	1.029	0.08	0.26	1112	1.22	**99.5%**
KILN1_CTS_SYS_0205.LAB	11/29/2023	9:09:54	-0.02	0.02	-0.11	0.42	97.82	0.01	191.4	1.030	0.10	0.33	579	1.22	**98.7%**
KILN1_CTS_SYS_0206.LAB	11/29/2023	9:10:02	0.01	0.01	0.06	0.45	97.81	0.00	191.4	1.029	0.06	0.20	713	1.22	**98.7%**
KILN1_CTS_SYS_0207.LAB	11/29/2023	9:10:09	0.00	0.01	0.03	-0.29	98.18	0.01	191.4	1.029	0.05	0.19	1010	1.22	**99.1%**
KILN1_CTS_SYS_0208.LAB	11/29/2023	9:10:16	0.00	0.01	-0.02	0.18	98.17	0.00	191.4	1.029	0.05	0.17	1100	1.22	**99.0%**
KILN1_CTS_SYS_0209.LAB	11/29/2023	9:10:24	0.01	-0.01	-0.10	0.42	97.94	-0.01	191.4	1.029	0.06	0.19	1161	1.22	**98.8%**
		Average					**98.11**								**99.0%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_N2_SYS_0224.LAB	11/29/2023	9:13:36	0.01	0.00	0.04	-0.03	-0.07	-0.01	191.47	1.03	0.06	0.14	1197	1.22
KILN1_N2_SYS_0225.LAB	11/29/2023	9:13:51	-0.01	0.01	0.01	0.09	-0.11	-0.01	191.46	1.03	0.05	0.14	1083	1.22
KILN1_N2_SYS_0226.LAB	11/29/2023	9:14:06	0.00	0.01	-0.09	0.03	-0.02	0.01	191.46	1.03	0.06	0.16	1093	1.22
KILN1_N2_SYS_0227.LAB	11/29/2023	9:14:21	0.00	0.02	-0.02	0.11	0.14	0.00	191.44	1.03	0.05	0.15	2101	1.22
KILN1_N2_SYS_0228.LAB	11/29/2023	9:14:36	-0.01	0.01	-0.02	0.05	-0.19	0.00	191.44	1.03	0.05	0.15	1014	1.22
KILN1_N2_SYS_0229.LAB	11/29/2023	9:14:51	0.00	0.00	0.00	-0.02	-0.05	-0.01	191.45	1.03	0.06	0.15	901	1.22
KILN1_N2_SYS_0230.LAB	11/29/2023	9:15:06	0.00	0.00	0.05	0.27	0.00	0.00	191.47	1.03	0.05	0.13	1105	1.22
KILN1_N2_SYS_128_0231.LAB	11/29/2023	9:17:35	0.00	0.01	-0.05	0.01	0.02	0.00	191.45	1.03	0.04	0.10	NaN	1.22
		Average			**-0.01**	**0.07**								
		Std Dev			**0.05**	**0.10**								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_0347.LAB	11/29/2023	11:08:43	5.77	6.07	-0.13	0.71	0.39	-0.01	191.5	1.030	0.05	0.21	1540	1.24
KILN1_0348.LAB	11/29/2023	11:09:43	5.83	6.15	-0.09	0.66	0.51	0.00	191.5	1.029	0.06	0.21	1504	1.24
KILN1_0349.LAB	11/29/2023	11:10:43	5.79	6.12	-0.12	0.60	0.64	0.00	191.5	1.029	0.06	0.21	2564	1.24
	Native Average					0.65		0.00						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN1_SPK_0362.LAB	11/29/2023	11:13:05	5.39	5.75	-0.03	2.81	0.63	0.25	191.5	1.030	0.08	0.27	978	1.24	**0.052**	**87.8%**
KILN1_SPK_0363.LAB	11/29/2023	11:13:13	5.41	5.78	-0.18	3.15	0.52	0.26	191.5	1.030	0.07	0.27	1110	1.24	**0.055**	**94.7%**
KILN1_SPK_0364.LAB	11/29/2023	11:13:20	5.43	5.81	-0.06	3.13	0.39	0.24	191.5	1.030	0.08	0.25	1120	1.24	**0.049**	**102.3%**
KILN1_SPK_0365.LAB	11/29/2023	11:13:28	5.45	5.84	-0.10	2.83	0.31	0.25	191.5	1.030	0.07	0.25	914	1.24	**0.053**	**87.9%**
KILN1_SPK_0366.LAB	11/29/2023	11:13:35	5.42	5.86	-0.15	3.02	0.73	0.26	191.5	1.030	0.08	0.28	1028	1.24	**0.054**	**91.7%**
KILN1_SPK_0367.LAB	11/29/2023	11:13:43	5.42	5.84	-0.15	3.19	0.57	0.24	191.5	1.031	0.08	0.25	1112	1.24	**0.050**	**103.7%**
KILN1_SPK_0368.LAB	11/29/2023	11:13:50	5.42	5.84	-0.14	3.24	0.46	0.25	191.5	1.031	0.08	0.26	1218	1.24	**0.052**	**101.8%**
KILN1_SPK_0369.LAB	11/29/2023	11:13:58	5.39	5.83	-0.06	2.66	0.50	0.25	191.5	1.030	0.07	0.27	902	1.24	**0.052**	**83.3%**
	Spike Average					3.00		0.25							0.052	94.2%

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN1_CTS_SYS_0373.LAB	11/29/2023	11:15:00	-0.02	-0.01	-0.06	0.22	98.63	0.00	191.6	1.028	0.06	0.16	1198	1.25	**99.5%**
KILN1_CTS_SYS_0374.LAB	11/29/2023	11:15:08	-0.02	0.01	-0.05	0.21	98.59	-0.01	191.6	1.028	0.05	0.19	1140	1.25	**99.5%**
KILN1_CTS_SYS_0375.LAB	11/29/2023	11:15:15	-0.02	0.00	-0.08	-0.05	98.52	0.01	191.6	1.029	0.06	0.17	1094	1.25	**99.4%**
KILN1_CTS_SYS_0376.LAB	11/29/2023	11:15:23	-0.03	0.02	-0.13	0.16	98.48	0.00	191.5	1.028	0.06	0.21	691	1.25	**99.4%**
KILN1_CTS_SYS_0377.LAB	11/29/2023	11:15:30	-0.01	0.01	-0.02	-0.02	98.40	-0.02	191.5	1.028	0.05	0.16	1177	1.25	**99.3%**
KILN1_CTS_SYS_0378.LAB	11/29/2023	11:15:38	-0.02	0.01	-0.09	0.24	99.29	0.00	191.5	1.028	0.05	0.15	1007	1.25	**100.2%**
KILN1_CTS_SYS_0379.LAB	11/29/2023	11:15:45	0.00	-0.01	-0.09	0.17	99.60	0.00	191.5	1.028	0.06	0.18	955	1.25	**100.5%**
KILN1_CTS_SYS_0380.LAB	11/29/2023	11:15:53	0.00	0.02	0.00	0.31	98.79	-0.01	191.5	1.028	0.06	0.18	932	1.25	**99.7%**
		Average					98.79								99.7%

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_N2_SYS_0384.LAB	11/29/2023	11:17:34	-0.01	0.01	-0.01	-0.14	-0.07	0.01	191.47	1.03	0.04	0.16	1351	1.25
KILN1_N2_SYS_0385.LAB	11/29/2023	11:17:50	-0.02	-0.01	-0.10	0.24	0.20	0.00	191.45	1.03	0.04	0.16	1759	1.25
KILN1_N2_SYS_0386.LAB	11/29/2023	11:18:05	-0.02	0.00	-0.04	-0.14	0.30	0.00	191.40	1.03	0.05	0.17	1720	1.25
KILN1_N2_SYS_0387.LAB	11/29/2023	11:18:20	-0.01	-0.01	-0.04	-0.03	0.23	0.00	191.45	1.03	0.04	0.16	1240	1.25
KILN1_N2_SYS_0388.LAB	11/29/2023	11:18:35	0.00	0.01	0.00	-0.09	-0.11	0.01	191.47	1.03	0.04	0.13	1150	1.25
KILN1_N2_SYS_0389.LAB	11/29/2023	11:18:50	0.00	0.00	-0.04	0.11	-0.07	0.00	191.46	1.03	0.04	0.15	1282	1.25
KILN1_N2_SYS_0390.LAB	11/29/2023	11:19:05	-0.02	0.02	-0.08	-0.19	0.16	0.01	191.47	1.03	0.04	0.15	1710	1.25
KILN1_N2_SYS_0391.LAB	11/29/2023	11:19:20	-0.02	0.01	-0.02	-0.18	-0.12	0.00	191.42	1.03	0.05	0.16	1824	1.25
		Average			-0.04	-0.05								
		Std Dev			0.03	0.15								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_0534.LAB	11/29/2023	13:49:17	5.68	6.00	-0.12	0.61	0.47	0.00	191.0	1.027	0.06	0.22	NaN	1.26
KILN1_0535.LAB	11/29/2023	13:50:17	5.71	5.98	-0.11	0.80	0.50	0.00	191.1	1.027	0.06	0.24	1886	1.26
KILN1_0536.LAB	11/29/2023	13:51:17	5.66	5.97	-0.10	0.54	0.51	0.00	191.1	1.027	0.06	0.23	1626	1.26
	Native Average					**0.65**		**0.00**						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN1_SPK_0551.LAB	11/29/2023	13:53:49	5.53	5.77	-0.10	3.27	0.54	0.24	191.2	1.027	0.10	0.29	1149	1.22	**0.049**	**107.1%**
KILN1_SPK_0552.LAB	11/29/2023	13:53:57	5.54	5.79	-0.19	3.07	0.43	0.24	191.1	1.026	0.07	0.27	1207	1.22	**0.050**	**99.5%**
KILN1_SPK_0553.LAB	11/29/2023	13:54:04	5.52	5.81	-0.09	3.37	0.51	0.24	191.2	1.027	0.08	0.29	1044	1.22	**0.050**	**108.6%**
KILN1_SPK_0554.LAB	11/29/2023	13:54:12	5.52	5.79	-0.13	3.08	0.60	0.24	191.2	1.027	0.07	0.28	919	1.22	**0.050**	**99.4%**
KILN1_SPK_0555.LAB	11/29/2023	13:54:19	5.56	5.81	-0.16	2.92	0.53	0.25	191.2	1.026	0.07	0.28	1047	1.22	**0.051**	**93.8%**
KILN1_SPK_0556.LAB	11/29/2023	13:54:27	5.54	5.84	-0.10	3.25	0.04	0.24	191.2	1.026	0.08	0.31	1161	1.22	**0.050**	**104.9%**
KILN1_SPK_0557.LAB	11/29/2023	13:54:34	5.49	5.73	-0.14	3.07	0.53	0.24	191.2	1.027	0.07	0.26	1030	1.22	**0.050**	**99.6%**
KILN1_SPK_0558.LAB	11/29/2023	13:54:42	5.46	5.78	-0.15	2.89	0.27	0.24	191.2	1.027	0.10	0.26	912	1.22	**0.049**	**95.7%**
	Spike Average					**3.11**		**0.24**							**0.050**	**101.1%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN1_CTS_SYS_0560.LAB	11/29/2023	13:55:30	-0.01	0.00	0.02	0.00	98.70	0.00	191.2	1.027	0.06	0.15	1245	1.26	**99.6%**
KILN1_CTS_SYS_0561.LAB	11/29/2023	13:55:37	0.00	0.00	-0.04	0.15	98.97	0.00	191.3	1.027	0.05	0.19	949	1.26	**99.9%**
KILN1_CTS_SYS_0562.LAB	11/29/2023	13:55:45	-0.01	0.00	0.00	-0.27	98.01	0.01	191.2	1.026	0.07	0.16	901	1.26	**98.9%**
KILN1_CTS_SYS_0563.LAB	11/29/2023	13:55:53	0.01	0.00	-0.08	-0.06	98.74	-0.01	191.2	1.026	0.07	0.17	921	1.26	**99.6%**
KILN1_CTS_SYS_0564.LAB	11/29/2023	13:56:00	-0.02	0.00	-0.08	0.02	98.76	0.02	191.2	1.026	0.06	0.17	1119	1.26	**99.6%**
KILN1_CTS_SYS_0565.LAB	11/29/2023	13:56:08	-0.01	0.02	-0.08	0.38	98.96	0.00	191.2	1.026	0.06	0.16	1036	1.26	**99.8%**
KILN1_CTS_SYS_0566.LAB	11/29/2023	13:56:15	0.01	0.02	-0.07	0.04	98.81	0.00	191.1	1.026	0.06	0.18	1008	1.26	**99.7%**
KILN1_CTS_SYS_0567.LAB	11/29/2023	13:56:23	0.00	0.01	-0.06	0.33	98.70	0.01	191.1	1.026	0.05	0.18	1126	1.26	**99.6%**
		Average					**98.71**								**99.6%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_N2_SYS_0570.LAB	11/29/2023	13:57:41	0.00	0.01	-0.07	-0.08	0.13	0.01	191.24	1.02	0.05	0.15	1266	1.26
KILN1_N2_SYS_0571.LAB	11/29/2023	13:57:56	-0.01	0.00	0.02	-0.26	-0.10	0.00	191.22	1.02	0.05	0.16	1412	1.26
KILN1_N2_SYS_0572.LAB	11/29/2023	13:58:11	-0.01	0.01	-0.01	0.11	-0.05	-0.01	191.18	1.02	0.06	0.17	1193	1.26
KILN1_N2_SYS_0573.LAB	11/29/2023	13:58:27	-0.01	-0.01	0.00	-0.11	-0.06	0.00	191.22	1.02	0.05	0.17	1510	1.26
KILN1_N2_SYS_0574.LAB	11/29/2023	13:58:42	0.00	0.00	-0.02	0.02	-0.01	0.01	191.22	1.02	0.04	0.15	1239	1.26
KILN1_N2_SYS_0575.LAB	11/29/2023	13:58:57	-0.01	0.00	-0.09	0.15	-0.31	0.00	191.26	1.02	0.04	0.17	1478	1.26
KILN1_N2_SYS_0576.LAB	11/29/2023	13:59:12	0.00	0.01	-0.03	0.28	-0.04	0.01	191.22	1.02	0.06	0.15	1496	1.26
KILN1_N2_SYS_0577.LAB	11/29/2023	13:59:27	-0.01	-0.01	-0.02	-0.37	-0.13	0.00	191.25	1.02	0.06	0.17	1475	1.26
		Average			**-0.03**	**-0.03**								
		Std Dev			**0.04**	**0.22**								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_0681.LAB	11/29/2023	15:44:20	6.22	6.31	-0.12	0.73	0.59	0.00	191.4	1.026	0.06	0.24	2563	1.25
KILN1_0682.LAB	11/29/2023	15:45:21	6.36	6.51	-0.13	0.61	0.57	0.00	191.4	1.026	0.06	0.24	2568	1.25
KILN1_0683.LAB	11/29/2023	15:46:21	6.36	6.47	-0.11	0.63	0.55	0.00	191.4	1.027	0.06	0.24	2546	1.25
	Native Average					0.66		0.00						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN1_SPK_0706.LAB	11/29/2023	15:50:07	5.90	5.97	-0.15	2.77	0.57	0.23	191.4	1.026	0.07	0.28	872	1.25	**0.048**	**92.3%**
KILN1_SPK_0707.LAB	11/29/2023	15:50:15	5.86	5.97	-0.02	2.77	0.57	0.24	191.4	1.027	0.07	0.27	1109	1.25	**0.051**	**89.1%**
KILN1_SPK_0708.LAB	11/29/2023	15:50:23	5.87	5.90	-0.07	2.99	0.48	0.24	191.4	1.026	0.07	0.27	1334	1.25	**0.049**	**98.2%**
KILN1_SPK_0709.LAB	11/29/2023	15:50:30	5.87	5.96	-0.19	2.67	0.60	0.24	191.4	1.026	0.08	0.27	1041	1.25	**0.051**	**85.8%**
KILN1_SPK_0710.LAB	11/29/2023	15:50:37	5.86	5.94	-0.15	2.90	0.44	0.24	191.4	1.026	0.06	0.29	888	1.25	**0.049**	**95.0%**
KILN1_SPK_0711.LAB	11/29/2023	15:50:45	5.88	5.98	-0.05	3.12	0.38	0.23	191.4	1.026	0.08	0.29	1206	1.25	**0.048**	**103.8%**
KILN1_SPK_0712.LAB	11/29/2023	15:50:52	5.88	5.96	-0.11	2.67	0.37	0.24	191.4	1.026	0.07	0.29	1178	1.25	**0.050**	**86.5%**
KILN1_SPK_0713.LAB	11/29/2023	15:51:00	5.86	5.98	-0.19	3.10	0.61	0.24	191.5	1.025	0.07	0.28	1198	1.25	**0.049**	**101.6%**
	Spike Average					2.88		0.24							0.049	94.0%

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN1_CTS_SYS_0716.LAB	11/29/2023	15:51:54	-0.01	0.01	-0.10	-0.02	98.64	0.01	191.4	1.026	0.07	0.17	1054	1.25	**99.5%**
KILN1_CTS_SYS_0717.LAB	11/29/2023	15:52:02	0.00	0.00	-0.03	0.26	98.20	-0.01	191.4	1.026	0.08	0.18	1073	1.25	**99.1%**
KILN1_CTS_SYS_0718.LAB	11/29/2023	15:52:09	0.00	0.00	-0.04	0.09	99.00	0.01	191.5	1.026	0.06	0.18	861	1.25	**99.9%**
KILN1_CTS_SYS_0719.LAB	11/29/2023	15:52:16	-0.02	0.00	-0.03	0.16	99.19	0.01	191.4	1.025	0.05	0.18	1042	1.25	**100.1%**
KILN1_CTS_SYS_0720.LAB	11/29/2023	15:52:24	-0.01	-0.01	-0.06	0.33	98.52	0.00	191.4	1.026	0.07	0.18	799	1.26	**99.4%**
KILN1_CTS_SYS_0721.LAB	11/29/2023	15:52:31	-0.01	-0.01	0.02	0.21	98.50	-0.02	191.4	1.025	0.06	0.18	1067	1.25	**99.4%**
KILN1_CTS_SYS_0722.LAB	11/29/2023	15:52:39	-0.02	0.01	-0.03	0.28	99.27	0.01	191.4	1.025	0.07	0.22	746	1.25	**100.2%**
KILN1_CTS_SYS_0723.LAB	11/29/2023	15:52:47	-0.01	0.00	-0.08	-0.04	99.17	-0.01	191.4	1.025	0.05	0.19	936	1.25	**100.1%**
		Average					98.81								99.7%

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_N2_SYS_0725.LAB	11/29/2023	15:53:45	0.00	-0.01	-0.08	-0.11	0.23	-0.01	191.41	1.02	0.05	0.19	1581	1.25
KILN1_N2_SYS_0726.LAB	11/29/2023	15:53:59	-0.01	0.01	-0.02	-0.07	-0.19	0.01	191.40	1.02	0.05	0.17	1681	1.26
KILN1_N2_SYS_0727.LAB	11/29/2023	15:54:14	-0.01	-0.01	-0.04	-0.03	-0.02	-0.01	191.37	1.02	0.05	0.16	1814	1.25
KILN1_N2_SYS_0728.LAB	11/29/2023	15:54:30	-0.01	-0.01	0.00	-0.10	-0.03	0.00	191.39	1.02	0.05	0.15	1615	1.26
KILN1_N2_SYS_0729.LAB	11/29/2023	15:54:44	0.00	0.00	-0.01	-0.16	-0.07	0.00	191.37	1.02	0.04	0.17	1322	1.26
KILN1_N2_SYS_0730.LAB	11/29/2023	15:54:59	-0.02	0.00	-0.08	-0.16	-0.04	-0.01	191.37	1.02	0.06	0.17	1087	1.25
KILN1_N2_SYS_0731.LAB	11/29/2023	15:55:15	0.00	-0.01	-0.01	-0.20	0.66	0.01	191.37	1.02	0.07	0.20	1088	1.26
KILN1_N2_SYS_0732.LAB	11/29/2023	15:55:30	-0.01	0.03	0.05	-0.03	0.16	-0.01	191.39	1.02	0.10	0.32	692	1.26
		Average			-0.02	-0.11								
		Std Dev			0.04	0.06								

Ambient Air Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_AMB_0735.LAB	11/29/2023	16:05:10	0.65	0.04	-0.03	0.02	0.05	0.00	191.1	1.022	0.04	0.13	NaN	1.25
KILN1_AMB_0736.LAB	11/29/2023	16:06:10	0.66	0.04	-0.03	-0.06	0.13	0.00	191.2	1.022	0.03	0.13	2789	1.25
KILN1_AMB_0737.LAB	11/29/2023	16:07:10	0.66	0.04	-0.04	0.14	0.03	0.00	191.2	1.022	0.04	0.15	2264	1.25
	Ambient Average					**0.03**		**0.00**						

Ambient Air Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN1_AMB_SPK_0761.LAB	11/29/2023	16:10:40	0.62	0.04	0.02	2.12	0.04	0.18	191.4	1.022	0.07	0.20	833	1.25	**0.036**	**116.1%**
KILN1_AMB_SPK_0762.LAB	11/29/2023	16:10:48	0.62	0.05	0.00	1.70	0.21	0.18	191.4	1.022	0.05	0.19	822	1.25	**0.038**	**89.3%**
KILN1_AMB_SPK_0763.LAB	11/29/2023	16:10:55	0.60	0.06	-0.02	2.08	0.38	0.19	191.4	1.022	0.05	0.20	820	1.25	**0.039**	**106.0%**
KILN1_AMB_SPK_0764.LAB	11/29/2023	16:11:03	0.62	0.05	0.00	1.85	-0.07	0.19	191.4	1.023	0.05	0.21	1003	1.25	**0.038**	**96.5%**
KILN1_AMB_SPK_0765.LAB	11/29/2023	16:11:10	0.62	0.05	-0.01	1.71	-0.07	0.19	191.4	1.022	0.05	0.19	869	1.25	**0.039**	**88.1%**
KILN1_AMB_SPK_0766.LAB	11/29/2023	16:11:18	0.60	0.06	-0.11	1.56	-0.01	0.18	191.4	1.023	0.05	0.16	828	1.25	**0.036**	**85.6%**
KILN1_AMB_SPK_0767.LAB	11/29/2023	16:11:25	0.61	0.03	-0.08	2.01	-0.08	0.18	191.4	1.023	0.07	0.20	709	1.25	**0.037**	**107.0%**
KILN1_AMB_SPK_0768.LAB	11/29/2023	16:11:33	0.62	0.05	-0.08	1.93	0.15	0.18	191.3	1.022	0.07	0.20	822	1.25	**0.037**	**104.4%**
	Spike Average					**1.87**		**0.18**							**0.038**	**99.1%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN1_CTS_SYS_0770.LAB	11/29/2023	16:12:22	0.00	0.01	-0.06	0.26	98.86	0.00	191.4	1.021	0.07	0.18	973	1.25	**99.7%**
KILN1_CTS_SYS_0771.LAB	11/29/2023	16:12:30	-0.01	0.02	0.00	0.00	99.16	-0.01	191.4	1.022	0.06	0.18	1496	1.25	**100.0%**
KILN1_CTS_SYS_0772.LAB	11/29/2023	16:12:37	-0.01	0.00	0.02	-0.05	99.46	0.00	191.4	1.021	0.06	0.19	1021	1.25	**100.4%**
KILN1_CTS_SYS_0773.LAB	11/29/2023	16:12:45	0.00	-0.01	-0.07	0.03	98.40	0.00	191.4	1.022	0.05	0.19	1163	1.25	**99.3%**
KILN1_CTS_SYS_0774.LAB	11/29/2023	16:12:53	-0.01	-0.01	-0.05	0.03	99.84	0.00	191.4	1.021	0.07	0.16	1035	1.25	**100.7%**
KILN1_CTS_SYS_0775.LAB	11/29/2023	16:13:00	0.00	-0.02	-0.07	0.43	98.87	0.01	191.4	1.021	0.06	0.17	1224	1.25	**99.8%**
KILN1_CTS_SYS_0776.LAB	11/29/2023	16:13:07	-0.01	0.01	-0.06	0.38	99.31	0.01	191.4	1.022	0.06	0.18	1052	1.25	**100.2%**
KILN1_CTS_SYS_0777.LAB	11/29/2023	16:13:15	-0.02	-0.01	-0.05	0.05	99.20	0.01	191.4	1.021	0.06	0.17	899	1.25	**100.1%**
		Average					**99.14**								**100.0%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_N2_SYS_0779.LAB	11/29/2023	16:14:52	-0.02	0.01	0.01	-0.08	0.03	0.00	191.42	1.02	0.04	0.16	1105	1.25
KILN1_N2_SYS_0780.LAB	11/29/2023	16:15:07	-0.02	0.01	-0.03	-0.08	0.10	0.00	191.40	1.02	0.05	0.14	1462	1.25
KILN1_N2_SYS_0781.LAB	11/29/2023	16:15:22	-0.01	-0.01	-0.03	-0.32	-0.15	0.01	191.37	1.02	0.04	0.16	1392	1.25
KILN1_N2_SYS_0782.LAB	11/29/2023	16:15:37	-0.01	-0.01	-0.04	0.02	-0.25	0.00	191.37	1.02	0.04	0.16	1455	1.25
KILN1_N2_SYS_0783.LAB	11/29/2023	16:15:52	-0.01	0.00	0.02	0.02	0.23	0.00	191.37	1.02	0.04	0.14	1519	1.25
KILN1_N2_SYS_0784.LAB	11/29/2023	16:16:07	-0.01	0.00	-0.01	-0.07	-0.06	0.00	191.37	1.02	0.04	0.15	1366	1.25
KILN1_N2_SYS_0785.LAB	11/29/2023	16:16:22	-0.02	0.01	-0.03	-0.08	0.04	0.00	191.37	1.02	0.05	0.17	1359	1.26
KILN1_N2_SYS_0786.LAB	11/29/2023	16:16:37	0.00	0.00	-0.05	0.09	-0.06	-0.01	191.37	1.02	0.05	0.19	1224	1.25
		Average			**-0.02**	**-0.06**								
		Std Dev			**0.02**	**0.12**								

Nitrogen Direct to FTIR

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
N2_DIR_0787.LAB	11/29/2023	16:20:25	-0.01	0.00	-0.05	-0.09	0.03	0.00	191.00	0.99	0.03	0.13	NaN	1.26
N2_DIR_0788.LAB	11/29/2023	16:22:25	-0.02	0.00	-0.04	0.01	0.02	0.00	190.93	0.99	0.03	0.14	3401	1.25
N2_DIR_0789.LAB	11/29/2023	16:24:26	-0.01	0.00	-0.02	-0.06	0.02	0.00	190.91	0.99	0.04	0.14	4113	1.25

Nitrogen Direct to FTIR

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
N2_DIR_0021BKG.LAB	11/30/2023	8:15:25	0.00	0.00	0.00	0.00	0.00	0.00	191.0	0.986	0.00	0.00	2317	1.23
N2_DIR_0022.LAB	11/30/2023	8:15:46	0.00	0.00	-0.03	0.10	0.24	0.00	191.1	0.986	0.04	0.12	1691	1.23
N2_DIR_0023.LAB	11/30/2023	8:16:01	0.00	0.01	-0.02	-0.21	0.09	-0.01	191.0	0.986	0.04	0.12	1436	1.23
N2_DIR_0024.LAB	11/30/2023	8:16:16	0.00	0.00	-0.13	-0.02	-0.11	0.00	191.1	0.986	0.03	0.12	1242	1.23
N2_DIR_0025.LAB	11/30/2023	8:16:31	0.01	0.00	-0.02	0.22	-0.05	0.00	191.0	0.986	0.04	0.12	1270	1.23
N2_DIR_0026.LAB	11/30/2023	8:16:46	0.01	0.00	0.00	-0.05	-0.05	0.01	191.0	0.986	0.04	0.13	1633	1.23
N2_DIR_0027.LAB	11/30/2023	8:17:01	0.00	0.01	-0.01	0.05	-0.06	0.01	191.1	0.986	0.04	0.11	1639	1.23
N2_DIR_0028.LAB	11/30/2023	8:17:16	0.00	-0.01	-0.06	-0.19	-0.04	0.00	191.0	0.986	0.04	0.12	1245	1.23
N2_DIR_0029.LAB	11/30/2023	8:17:31	0.02	-0.01	-0.08	0.31	0.13	-0.01	191.0	0.986	0.03	0.13	1056	1.23
		Average			**-0.04**	**0.02**								

CTS, 99.97 ppm Ethylene Direct Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
CTS_DIR_0043.LAB	11/30/2023	8:27:33	0.01	-0.01	0.05	0.15	99.19	0.02	190.8	0.986	0.06	0.17	1132	1.23	**99.2%**
CTS_DIR_0044.LAB	11/30/2023	8:27:40	0.00	-0.01	-0.09	-0.02	99.04	0.00	190.8	0.986	0.06	0.18	1101	1.23	**99.1%**
CTS_DIR_0045.LAB	11/30/2023	8:27:48	0.00	0.01	-0.08	0.15	99.06	0.00	190.8	0.986	0.06	0.15	1016	1.23	**99.1%**
CTS_DIR_0046.LAB	11/30/2023	8:27:55	0.01	-0.01	0.00	-0.39	99.16	0.00	190.8	0.985	0.05	0.15	1119	1.23	**99.2%**
CTS_DIR_0047.LAB	11/30/2023	8:28:03	0.00	0.01	0.03	0.28	98.75	0.01	190.8	0.985	0.06	0.17	1112	1.23	**98.8%**
CTS_DIR_0048.LAB	11/30/2023	8:28:10	0.01	-0.01	-0.03	-0.34	99.02	0.01	190.8	0.986	0.05	0.19	1050	1.23	**99.0%**
CTS_DIR_0049.LAB	11/30/2023	8:28:18	0.01	0.00	0.06	0.27	99.03	0.01	190.8	0.986	0.06	0.16	1179	1.23	**99.1%**
CTS_DIR_0050.LAB	11/30/2023	8:28:26	0.02	-0.01	-0.02	-0.27	98.91	0.02	190.8	0.986	0.04	0.17	1055	1.23	**98.9%**
		Average					**99.02**								**99.0%**

49.10 ppm HCN/5.00 ppm SF6 Direct Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	HCN Recovery (%)
HCN_DIR_0084.LAB	11/30/2023	8:33:11	0.01	0.01	0.06	48.80	-1.02	4.84	190.9	0.985	0.06	0.31	1172	1.23	**99.4%**
HCN_DIR_0085.LAB	11/30/2023	8:33:18	0.01	-0.01	0.05	48.57	-1.01	4.83	190.9	0.985	0.05	0.29	1099	1.23	**98.9%**
HCN_DIR_0086.LAB	11/30/2023	8:33:26	0.00	-0.01	0.05	48.92	-1.01	4.81	190.9	0.985	0.05	0.32	1007	1.23	**99.6%**
HCN_DIR_0087.LAB	11/30/2023	8:33:33	-0.01	0.01	0.01	48.72	-1.29	4.82	190.9	0.985	0.05	0.31	718	1.23	**99.2%**
HCN_DIR_0088.LAB	11/30/2023	8:33:41	-0.01	-0.01	0.01	48.53	-0.83	4.82	190.9	0.985	0.05	0.32	988	1.23	**98.8%**
HCN_DIR_0089.LAB	11/30/2023	8:33:48	0.00	0.00	0.03	48.91	-0.98	4.82	190.9	0.985	0.06	0.29	919	1.23	**99.6%**
HCN_DIR_0090.LAB	11/30/2023	8:33:56	0.00	-0.01	-0.08	49.02	-0.99	4.82	190.9	0.985	0.07	0.29	1054	1.23	**99.8%**
HCN_DIR_0091.LAB	11/30/2023	8:34:03	0.00	-0.01	-0.04	48.93	-1.14	4.83	190.9	0.985	0.06	0.30	754	1.23	**99.7%**
		Average				**48.80**		**4.82**							**99.4%**

CTS, 99.97 ppm Ethylene System Purge and Response Time Test

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)	Response Time (sec)
CTS_RT_0092.LAB	11/30/2023	8:53:47	0.89	0.03	0.02	0.24	0.04	0.00	191.1	1.015	0.06	0.21	NaN	1.24	**0.0%**	**-**
CTS_RT_0093.LAB	11/30/2023	8:53:55	0.78	0.05	-0.02	1.52	14.51	0.07	191.0	1.015	0.06	0.21	908	1.24	**14.7%**	**8**
CTS_RT_0094.LAB	11/30/2023	8:54:02	0.04	0.02	0.00	0.04	100.17	0.03	191.0	1.015	0.06	0.16	949	1.24	**101.2%**	**16**
CTS_RT_0095.LAB	11/30/2023	8:54:10	0.01	0.00	0.03	-0.03	100.71	0.03	191.0	1.014	0.06	0.15	1030	1.24	**101.7%**	
CTS_RT_0096.LAB	11/30/2023	8:54:17	0.01	0.01	-0.11	-0.11	100.56	-0.01	191.0	1.015	0.06	0.15	947	1.24	**101.6%**	
CTS_RT_0097.LAB	11/30/2023	8:54:25	0.02	0.01	-0.04	-0.15	100.26	-0.01	191.0	1.015	0.07	0.15	971	1.24	**101.3%**	
CTS_RT_0098.LAB	11/30/2023	8:54:32	0.00	-0.01	-0.05	0.33	99.88	0.00	191.1	1.015	0.06	0.17	1207	1.24	**100.9%**	
CTS_RT_0099.LAB	11/30/2023	8:54:40	0.01	0.00	0.03	-0.45	100.07	0.02	191.0	1.014	0.06	0.17	1061	1.24	**101.1%**	
CTS_RT_0100.LAB	11/30/2023	8:54:47	0.01	0.00	-0.06	0.50	99.83	0.00	191.0	1.015	0.06	0.17	810	1.24	**100.8%**	
CTS_RT_0101.LAB	11/30/2023	8:54:55	0.01	-0.01	0.07	0.38	99.33	0.01	191.0	1.015	0.05	0.14	954	1.24	**100.3%**	
		Average					**100.10**								**101.1%**	

Nitrogen (Zero) System Purge and Response Time Test

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)	Zero Time (sec)
N2_RT_0103.LAB	11/30/2023	8:55:25	0.02	0.00	0.06	-0.19	99.23	0.02	191.1	1.014	0.05	0.17	NaN	1.24	**100.2%**	**-**
N2_RT_0104.LAB	11/30/2023	8:55:33	0.34	0.03	0.03	-0.11	49.38	-0.03	191.1	1.014	0.05	0.16	906	1.24	**49.9%**	**8**
N2_RT_0105.LAB	11/30/2023	8:55:40	0.06	0.00	-0.07	-0.10	6.79	0.00	191.1	1.014	0.04	0.16	837	1.24	**6.9%**	**16**
N2_RT_0106.LAB	11/30/2023	8:55:48	0.01	0.01	-0.08	-0.05	0.17	0.00	191.0	1.014	0.05	0.16	917	1.24	**0.2%**	**23**
N2_RT_0107.LAB	11/30/2023	8:55:55	0.00	0.00	0.03	0.01	0.02	0.02	191.0	1.014	0.05	0.13	1292	1.24	**0.0%**	
N2_RT_0108.LAB	11/30/2023	8:56:03	0.02	0.00	0.01	-0.35	0.17	-0.01	191.1	1.014	0.05	0.13	842	1.24	**0.2%**	
N2_RT_0109.LAB	11/30/2023	8:56:10	0.02	-0.03	-0.07	0.03	-0.20	0.00	191.1	1.014	0.06	0.17	1063	1.24	**-0.2%**	
N2_RT_0110.LAB	11/30/2023	8:56:18	0.01	0.01	-0.02	0.34	-0.06	0.00	191.1	1.015	0.04	0.17	1318	1.24	**-0.1%**	
N2_RT_0111.LAB	11/30/2023	8:56:25	0.02	0.01	0.00	-0.11	0.10	0.00	191.1	1.015	0.04	0.14	1246	1.24	**0.1%**	
N2_RT_0112.LAB	11/30/2023	8:56:33	0.00	0.00	0.02	0.36	0.24	-0.01	191.1	1.014	0.07	0.15	1161	1.24	**0.2%**	
N2_RT_0113.LAB	11/30/2023	8:56:40	0.01	-0.01	0.00	-0.29	0.02	0.01	191.1	1.015	0.03	0.16	916	1.24	**0.0%**	

Ambient Air Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_AMB_0114.LAB	11/30/2023	8:58:06	0.90	0.04	0.00	0.00	0.05	0.00	191.2	1.014	0.03	0.13	NaN	1.23
KILN2_AMB_0115.LAB	11/30/2023	8:59:06	0.90	0.05	-0.03	0.09	-0.04	0.00	191.3	1.014	0.03	0.15	2616	1.23
KILN2_AMB_0116.LAB	11/30/2023	9:00:06	0.91	0.05	-0.07	0.08	0.00	0.00	191.4	1.015	0.03	0.14	2826	1.23
	Ambient Average					**0.06**		**0.00**						

Ambient Air Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN2_AMB_SPK_0132.LAB	11/30/2023	9:05:04	0.89	0.04	-0.05	2.58	-0.03	0.23	191.5	1.014	0.05	0.20	867	1.23	**0.047**	**108.6%**
KILN2_AMB_SPK_0133.LAB	11/30/2023	9:05:11	0.88	0.05	0.05	2.75	-0.06	0.25	191.5	1.014	0.05	0.19	879	1.23	**0.051**	**106.9%**
KILN2_AMB_SPK_0134.LAB	11/30/2023	9:05:19	0.89	0.02	-0.07	2.72	0.03	0.23	191.5	1.014	0.06	0.20	1233	1.23	**0.048**	**112.6%**
KILN2_AMB_SPK_0135.LAB	11/30/2023	9:05:26	0.87	0.03	-0.07	2.68	-0.13	0.24	191.5	1.014	0.06	0.18	965	1.23	**0.051**	**106.2%**
KILN2_AMB_SPK_0136.LAB	11/30/2023	9:05:34	0.88	0.03	-0.06	2.71	-0.24	0.25	191.5	1.014	0.05	0.18	825	1.23	**0.053**	**103.5%**
KILN2_AMB_SPK_0137.LAB	11/30/2023	9:05:41	0.87	0.04	0.01	2.68	0.12	0.25	191.5	1.015	0.06	0.23	990	1.23	**0.051**	**105.4%**
KILN2_AMB_SPK_0138.LAB	11/30/2023	9:05:49	0.88	0.05	0.02	2.81	0.11	0.25	191.5	1.014	0.05	0.20	996	1.23	**0.051**	**110.8%**
KILN2_AMB_SPK_0139.LAB	11/30/2023	9:05:56	0.86	0.04	-0.07	2.33	0.21	0.23	191.5	1.014	0.06	0.23	808	1.23	**0.048**	**97.6%**
	Spike Average					**2.66**		**0.24**							**0.050**	**106.5%**

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_NAT_0141.LAB	11/30/2023	9:24:55	12.90	12.46	-0.06	4.14	4.05	-0.01	191.1	1.014	0.07	0.30	3128	1.23
KILN2_NAT_0142.LAB	11/30/2023	9:25:55	12.79	12.57	-0.05	4.56	4.13	-0.01	191.2	1.018	0.07	0.31	3302	1.23
KILN2_NAT_0143.LAB	11/30/2023	9:26:55	12.95	12.78	-0.02	4.47	4.59	-0.01	191.3	1.019	0.07	0.31	3120	1.23
	Native Average					4.39		-0.01						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN2_NAT_SPK_0169.LAB	11/30/2023	9:30:54	11.89	11.43	-0.07	8.55	3.89	0.41	191.4	1.019	0.08	0.35	1108	1.23	**0.087**	**103.5%**
KILN2_NAT_SPK_0170.LAB	11/30/2023	9:31:01	11.94	11.42	-0.05	8.24	3.60	0.42	191.4	1.018	0.09	0.33	1135	1.22	**0.089**	**98.6%**
KILN2_NAT_SPK_0171.LAB	11/30/2023	9:31:09	11.89	11.27	-0.08	8.36	3.30	0.42	191.4	1.018	0.09	0.33	1437	1.23	**0.089**	**100.0%**
KILN2_NAT_SPK_0172.LAB	11/30/2023	9:31:17	11.84	11.28	-0.07	8.26	3.70	0.41	191.4	1.018	0.10	0.31	1143	1.23	**0.087**	**99.9%**
KILN2_NAT_SPK_0173.LAB	11/30/2023	9:31:24	11.76	11.24	-0.01	8.27	3.39	0.42	191.4	1.018	0.09	0.33	999	1.22	**0.088**	**99.5%**
KILN2_NAT_SPK_0174.LAB	11/30/2023	9:31:32	11.63	11.20	0.01	8.27	3.38	0.42	191.4	1.018	0.08	0.35	1345	1.22	**0.089**	**98.9%**
KILN2_NAT_SPK_0175.LAB	11/30/2023	9:31:39	11.70	11.26	-0.06	8.51	3.33	0.42	191.4	1.018	0.10	0.35	1088	1.23	**0.089**	**101.8%**
KILN2_NAT_SPK_0176.LAB	11/30/2023	9:31:47	11.78	11.27	-0.05	8.33	3.53	0.43	191.4	1.018	0.08	0.32	987	1.22	**0.091**	**98.6%**
	Spike Average					8.35		0.42							0.089	100.1%

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN2_CTS_SYS_0177.LAB	11/30/2023	9:32:20	0.03	0.02	-0.01	0.02	98.38	0.02	191.4	1.020	0.05	0.15	NaN	1.23	**99.4%**
KILN2_CTS_SYS_0178.LAB	11/30/2023	9:32:28	0.02	0.00	-0.11	0.19	99.07	0.00	191.4	1.018	0.07	0.16	1264	1.23	**100.1%**
KILN2_CTS_SYS_0179.LAB	11/30/2023	9:32:35	-0.01	0.02	-0.03	-0.43	98.65	0.00	191.4	1.017	0.06	0.17	1121	1.23	**99.6%**
KILN2_CTS_SYS_0180.LAB	11/30/2023	9:32:43	0.02	0.02	-0.04	0.30	98.72	-0.01	191.4	1.017	0.05	0.15	1004	1.23	**99.7%**
KILN2_CTS_SYS_0181.LAB	11/30/2023	9:32:50	0.04	0.00	0.05	-0.02	98.73	-0.01	191.4	1.017	0.05	0.16	899	1.23	**99.7%**
KILN2_CTS_SYS_0182.LAB	11/30/2023	9:32:58	-0.01	-0.01	0.03	-0.50	98.20	0.01	191.4	1.017	0.07	0.15	1165	1.23	**99.2%**
KILN2_CTS_SYS_0183.LAB	11/30/2023	9:33:05	0.01	0.00	-0.01	-0.04	99.13	0.01	191.4	1.016	0.05	0.16	889	1.23	**100.1%**
KILN2_CTS_SYS_0184.LAB	11/30/2023	9:33:13	0.00	0.00	0.04	0.06	98.84	0.01	191.5	1.014	0.04	0.18	793	1.23	**99.8%**
		Average					98.72								99.7%

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_0190.LAB	11/30/2023	9:35:14	0.01	0.00	-0.01	-0.09	0.12	0.01	191.45	1.02	0.03	0.12	1174	1.23
KILN2_N2_SYS_0191.LAB	11/30/2023	9:35:29	0.01	0.00	-0.01	0.03	-0.28	0.00	191.47	1.01	0.04	0.11	1222	1.23
KILN2_N2_SYS_0192.LAB	11/30/2023	9:35:44	0.01	0.01	-0.07	-0.07	0.26	0.00	191.47	1.02	0.04	0.11	1530	1.23
KILN2_N2_SYS_0193.LAB	11/30/2023	9:35:59	0.00	0.02	-0.03	-0.09	0.01	0.00	191.48	1.02	0.04	0.11	1167	1.23
KILN2_N2_SYS_0194.LAB	11/30/2023	9:36:14	0.01	0.00	0.04	-0.05	0.05	0.00	191.47	1.02	0.05	0.11	1504	1.23
KILN2_N2_SYS_0195.LAB	11/30/2023	9:36:29	0.02	0.00	0.01	0.34	0.08	0.00	191.50	1.02	0.04	0.12	1805	1.23
KILN2_N2_SYS_0196.LAB	11/30/2023	9:36:44	0.01	0.00	-0.01	0.05	0.01	0.00	191.50	1.01	0.04	0.12	1251	1.23
KILN2_N2_SYS_128_0197.LAB	11/30/2023	9:39:13	0.01	0.00	-0.01	-0.04	0.01	0.00	191.45	1.01	0.02	0.07	NaN	1.23
		Average			-0.01	0.01								
		Std Dev			0.03	0.14								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_0301.LAB	11/30/2023	11:24:10	12.66	12.33	-0.07	4.65	4.26	-0.01	191.6	1.018	0.07	0.33	2552	1.24
KILN2_0302.LAB	11/30/2023	11:25:10	12.65	12.28	-0.04	4.57	4.12	-0.01	191.6	1.018	0.07	0.33	2717	1.24
KILN2_0303.LAB	11/30/2023	11:26:11	12.90	12.60	-0.06	4.73	4.37	-0.01	191.6	1.018	0.07	0.34	3102	1.24
	Native Average					4.65		-0.01						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN2_SPK_0331.LAB	11/30/2023	11:30:27	12.95	12.59	-0.10	8.72	4.75	0.40	191.6	1.017	0.10	0.37	1113	1.24	**0.085**	**103.6%**
KILN2_SPK_0332.LAB	11/30/2023	11:30:34	13.05	12.46	-0.10	8.41	4.84	0.42	191.5	1.017	0.09	0.38	889	1.24	**0.088**	**98.6%**
KILN2_SPK_0333.LAB	11/30/2023	11:30:42	12.97	12.42	-0.07	8.45	5.02	0.42	191.5	1.018	0.07	0.41	827	1.24	**0.088**	**98.8%**
KILN2_SPK_0334.LAB	11/30/2023	11:30:49	13.01	12.38	-0.04	8.45	5.07	0.41	191.6	1.017	0.07	0.38	1031	1.24	**0.086**	**100.2%**
KILN2_SPK_0335.LAB	11/30/2023	11:30:56	13.09	12.41	-0.10	8.55	4.72	0.40	191.6	1.017	0.08	0.38	1048	1.24	**0.084**	**102.3%**
KILN2_SPK_0336.LAB	11/30/2023	11:31:04	13.00	12.53	-0.05	8.80	5.12	0.42	191.5	1.018	0.08	0.34	984	1.24	**0.088**	**102.9%**
KILN2_SPK_0337.LAB	11/30/2023	11:31:11	12.98	12.72	-0.11	8.88	4.88	0.41	191.6	1.018	0.07	0.39	1119	1.24	**0.087**	**104.7%**
KILN2_SPK_0338.LAB	11/30/2023	11:31:19	12.99	13.17	0.00	8.34	4.90	0.43	191.5	1.019	0.09	0.38	1218	1.24	**0.091**	**96.2%**
	Spike Average					8.58		0.41							0.087	100.9%

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN2_CTS_SYS_0342.LAB	11/30/2023	11:32:23	0.03	0.01	0.07	-0.12	98.92	0.00	191.5	1.017	0.07	0.14	762	1.25	**99.9%**
KILN2_CTS_SYS_0343.LAB	11/30/2023	11:32:30	0.01	0.02	-0.02	-0.03	98.99	0.00	191.5	1.016	0.06	0.19	1055	1.25	**100.0%**
KILN2_CTS_SYS_0344.LAB	11/30/2023	11:32:38	0.01	0.01	0.00	0.36	98.40	0.00	191.5	1.017	0.06	0.18	840	1.25	**99.4%**
KILN2_CTS_SYS_0345.LAB	11/30/2023	11:32:45	0.02	-0.01	0.05	-0.15	99.25	0.01	191.6	1.016	0.05	0.21	1067	1.25	**100.2%**
KILN2_CTS_SYS_0346.LAB	11/30/2023	11:32:53	0.02	-0.02	-0.04	0.41	98.60	0.01	191.5	1.016	0.06	0.19	909	1.25	**99.6%**
KILN2_CTS_SYS_0347.LAB	11/30/2023	11:33:01	0.00	0.02	0.02	0.28	99.03	0.01	191.5	1.016	0.05	0.18	963	1.25	**100.0%**
KILN2_CTS_SYS_0348.LAB	11/30/2023	11:33:08	0.01	0.00	-0.04	-0.24	98.88	0.01	191.5	1.015	0.06	0.17	1455	1.25	**99.9%**
KILN2_CTS_SYS_0349.LAB	11/30/2023	11:33:15	0.02	0.01	-0.01	0.27	98.54	0.00	191.5	1.016	0.06	0.20	1075	1.25	**99.5%**
		Average					98.83								99.8%

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_0351.LAB	11/30/2023	11:34:19	0.02	0.01	0.01	-0.25	-0.10	0.00	191.48	1.02	0.05	0.14	1419	1.25
KILN2_N2_SYS_0352.LAB	11/30/2023	11:34:34	0.01	0.01	-0.04	-0.30	0.07	0.00	191.47	1.02	0.06	0.14	1185	1.25
KILN2_N2_SYS_0353.LAB	11/30/2023	11:34:49	0.01	0.01	-0.07	-0.20	0.07	0.00	191.47	1.01	0.05	0.15	1451	1.25
KILN2_N2_SYS_0354.LAB	11/30/2023	11:35:04	0.01	0.00	0.01	-0.17	0.00	0.00	191.47	1.02	0.05	0.15	1625	1.25
KILN2_N2_SYS_0355.LAB	11/30/2023	11:35:19	0.01	0.01	0.00	0.06	-0.23	0.00	191.47	1.02	0.05	0.14	1675	1.25
KILN2_N2_SYS_0356.LAB	11/30/2023	11:35:34	0.01	0.03	0.00	0.04	-0.12	0.00	191.47	1.02	0.05	0.14	1591	1.25
KILN2_N2_SYS_0357.LAB	11/30/2023	11:35:49	0.02	0.00	-0.07	-0.06	-0.15	0.00	191.47	1.01	0.05	0.14	1562	1.25
KILN2_N2_SYS_0358.LAB	11/30/2023	11:36:04	0.01	0.00	-0.03	0.05	-0.09	0.00	191.47	1.02	0.05	0.14	1256	1.25
		Average			-0.02	-0.11								
		Std Dev			0.04	0.15								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_0450.LAB	11/30/2023	13:11:38	14.64	13.98	-0.09	4.89	5.47	-0.01	191.6	1.017	0.08	0.37	3525	1.24
KILN2_0451.LAB	11/30/2023	13:12:38	14.57	14.03	-0.09	4.83	5.78	-0.01	191.6	1.015	0.07	0.35	2685	1.24
KILN2_0452.LAB	11/30/2023	13:13:38	14.56	14.09	-0.09	4.90	5.47	-0.01	191.6	1.014	0.09	0.36	2419	1.24
	Native Average					4.87		-0.01						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN2_SPK_0474.LAB	11/30/2023	13:16:50	13.35	12.63	-0.02	8.31	5.08	0.39	191.6	1.017	0.08	0.40	975	1.24	**0.083**	**97.7%**
KILN2_SPK_0475.LAB	11/30/2023	13:16:57	13.34	12.67	-0.08	8.12	4.60	0.38	191.6	1.017	0.09	0.41	811	1.24	**0.082**	**96.0%**
KILN2_SPK_0476.LAB	11/30/2023	13:17:04	13.41	12.75	-0.09	8.53	4.88	0.39	191.6	1.016	0.09	0.41	822	1.24	**0.083**	**100.2%**
KILN2_SPK_0477.LAB	11/30/2023	13:17:12	13.38	12.84	-0.03	8.45	5.04	0.38	191.6	1.017	0.07	0.39	1156	1.24	**0.080**	**100.5%**
KILN2_SPK_0478.LAB	11/30/2023	13:17:20	13.37	12.85	-0.07	8.23	5.14	0.38	191.6	1.016	0.08	0.38	1315	1.24	**0.082**	**97.2%**
KILN2_SPK_0479.LAB	11/30/2023	13:17:27	13.31	12.82	-0.06	8.44	4.93	0.39	191.6	1.016	0.09	0.37	1006	1.24	**0.084**	**98.4%**
KILN2_SPK_0480.LAB	11/30/2023	13:17:34	13.39	12.77	-0.08	8.53	5.44	0.38	191.6	1.016	0.08	0.39	794	1.24	**0.082**	**100.5%**
KILN2_SPK_0481.LAB	11/30/2023	13:17:42	13.34	12.75	-0.07	8.10	5.04	0.37	191.6	1.016	0.10	0.42	1032	1.24	**0.080**	**96.5%**
	Spike Average					8.34		0.38							0.082	98.4%

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN2_CTS_SYS_0487.LAB	11/30/2023	13:18:58	0.01	0.02	-0.07	0.00	98.82	0.01	191.5	1.015	0.06	0.16	858	1.25	**99.8%**
KILN2_CTS_SYS_0488.LAB	11/30/2023	13:19:06	0.01	0.01	-0.05	0.29	98.20	0.00	191.5	1.015	0.06	0.19	808	1.25	**99.2%**
KILN2_CTS_SYS_0489.LAB	11/30/2023	13:19:13	0.03	0.01	-0.09	0.00	98.69	0.01	191.5	1.015	0.05	0.17	886	1.25	**99.7%**
KILN2_CTS_SYS_0490.LAB	11/30/2023	13:19:21	0.01	0.00	-0.01	0.15	99.14	-0.01	191.5	1.014	0.05	0.16	916	1.25	**100.1%**
KILN2_CTS_SYS_0491.LAB	11/30/2023	13:19:28	0.01	0.00	-0.03	-0.28	98.81	0.01	191.6	1.015	0.04	0.19	796	1.25	**99.8%**
KILN2_CTS_SYS_0492.LAB	11/30/2023	13:19:36	0.02	0.00	-0.08	0.18	98.54	0.01	191.6	1.015	0.06	0.18	771	1.25	**99.5%**
KILN2_CTS_SYS_0493.LAB	11/30/2023	13:19:43	0.00	0.01	0.02	0.02	99.06	0.01	191.5	1.014	0.06	0.17	1159	1.25	**100.0%**
KILN2_CTS_SYS_0494.LAB	11/30/2023	13:19:51	0.00	0.00	-0.01	-0.09	98.47	0.00	191.5	1.014	0.05	0.15	782	1.25	**99.4%**
		Average					98.71								99.7%

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_0497.LAB	11/30/2023	13:21:08	0.01	0.00	-0.06	-0.13	-0.02	0.00	191.47	1.01	0.04	0.16	2156	1.25
KILN2_N2_SYS_0498.LAB	11/30/2023	13:21:23	0.00	0.00	-0.02	0.14	0.07	0.01	191.47	1.01	0.05	0.16	1429	1.25
KILN2_N2_SYS_0499.LAB	11/30/2023	13:21:38	0.00	0.01	0.00	-0.12	-0.02	0.00	191.47	1.01	0.05	0.15	1773	1.25
KILN2_N2_SYS_0500.LAB	11/30/2023	13:21:53	0.00	0.01	-0.01	0.04	-0.14	0.00	191.48	1.01	0.05	0.16	1693	1.25
KILN2_N2_SYS_0501.LAB	11/30/2023	13:22:08	0.02	0.00	-0.05	0.15	-0.01	0.00	191.47	1.01	0.05	0.17	1598	1.25
KILN2_N2_SYS_0502.LAB	11/30/2023	13:22:23	0.01	0.02	-0.01	-0.02	0.02	0.00	191.48	1.01	0.05	0.15	1246	1.25
KILN2_N2_SYS_0503.LAB	11/30/2023	13:22:38	0.02	0.02	0.01	-0.01	0.03	0.00	191.48	1.01	0.04	0.16	1592	1.25
KILN2_N2_SYS_0504.LAB	11/30/2023	13:22:53	0.00	0.00	0.02	-0.11	0.09	0.00	191.47	1.01	0.05	0.15	2123	1.25
		Average			-0.01	-0.01								
		Std Dev			0.03	0.11								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_0595.LAB	11/30/2023	14:54:46	13.82	12.18	-0.09	4.28	3.53	-0.01	191.5	1.014	0.08	0.38	3298	1.24
KILN2_0596.LAB	11/30/2023	14:55:45	13.81	12.04	-0.09	4.30	3.82	-0.01	191.5	1.014	0.08	0.37	3820	1.24
KILN2_0597.LAB	11/30/2023	14:56:46	13.90	11.99	-0.07	4.23	3.96	-0.01	191.5	1.014	0.08	0.37	2583	1.24
	Native Average					**4.27**		**-0.01**						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN2_SPK_0614.LAB	11/30/2023	14:59:33	12.73	11.32	-0.07	8.06	4.40	0.39	191.6	1.015	0.08	0.36	930	1.24	**0.082**	**101.8%**
KILN2_SPK_0615.LAB	11/30/2023	14:59:40	12.79	11.31	-0.10	7.73	3.82	0.36	191.5	1.014	0.08	0.39	1060	1.24	**0.078**	**100.1%**
KILN2_SPK_0616.LAB	11/30/2023	14:59:48	12.85	11.49	-0.08	7.97	3.89	0.39	191.5	1.014	0.08	0.36	890	1.24	**0.083**	**100.3%**
KILN2_SPK_0617.LAB	11/30/2023	14:59:55	12.84	11.59	-0.08	7.88	3.73	0.39	191.6	1.014	0.08	0.40	1144	1.24	**0.082**	**99.6%**
KILN2_SPK_0618.LAB	11/30/2023	15:00:03	12.84	11.66	-0.04	7.92	3.66	0.38	191.6	1.015	0.09	0.34	429	1.23	**0.081**	**100.4%**
KILN2_SPK_0619.LAB	11/30/2023	15:00:10	12.98	11.61	-0.04	8.02	3.79	0.37	191.6	1.015	0.09	0.39	452	1.23	**0.078**	**103.4%**
KILN2_SPK_0620.LAB	11/30/2023	15:00:18	12.82	11.54	-0.13	7.96	4.04	0.37	191.5	1.014	0.10	0.39	585	1.23	**0.080**	**101.9%**
KILN2_SPK_0621.LAB	11/30/2023	15:00:25	12.87	11.47	-0.04	7.46	3.72	0.38	191.6	1.014	0.06	0.37	621	1.23	**0.080**	**95.2%**
	Spike Average					**7.88**		**0.38**							**0.080**	**100.3%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN2_CTS_SYS_0627.LAB	11/30/2023	15:01:41	0.01	0.02	0.09	0.10	98.84	-0.02	191.6	1.013	0.05	0.20	1051	1.25	**99.8%**
KILN2_CTS_SYS_0628.LAB	11/30/2023	15:01:48	0.01	0.03	0.01	0.36	98.84	0.01	191.5	1.013	0.05	0.19	1116	1.25	**99.8%**
KILN2_CTS_SYS_0629.LAB	11/30/2023	15:01:55	0.01	0.01	-0.03	0.04	99.06	0.00	191.6	1.012	0.05	0.20	1244	1.25	**100.0%**
KILN2_CTS_SYS_0630.LAB	11/30/2023	15:02:03	0.00	-0.01	-0.05	-0.01	98.23	0.01	191.5	1.013	0.08	0.18	1258	1.25	**99.2%**
KILN2_CTS_SYS_0631.LAB	11/30/2023	15:02:10	0.02	0.00	0.05	-0.02	97.88	0.00	191.5	1.013	0.06	0.17	960	1.25	**98.8%**
KILN2_CTS_SYS_0632.LAB	11/30/2023	15:02:18	0.02	-0.02	-0.10	0.30	98.98	0.02	191.5	1.013	0.05	0.19	865	1.25	**100.0%**
KILN2_CTS_SYS_0633.LAB	11/30/2023	15:02:25	0.01	0.01	-0.03	0.74	98.49	0.01	191.5	1.012	0.06	0.18	927	1.25	**99.5%**
KILN2_CTS_SYS_0634.LAB	11/30/2023	15:02:33	0.01	0.00	-0.03	0.10	99.16	0.01	191.5	1.012	0.07	0.20	893	1.25	**100.1%**
		Average					**98.69**								**99.7%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_0639.LAB	11/30/2023	15:04:17	0.02	0.00	0.02	0.10	-0.19	0.01	191.52	1.01	0.06	0.16	1199	1.25
KILN2_N2_SYS_0640.LAB	11/30/2023	15:04:32	0.02	0.01	-0.04	-0.01	-0.19	0.00	191.50	1.01	0.05	0.18	1413	1.25
KILN2_N2_SYS_0641.LAB	11/30/2023	15:04:47	0.01	0.02	0.02	0.05	-0.09	-0.01	191.53	1.01	0.04	0.16	1531	1.25
KILN2_N2_SYS_0642.LAB	11/30/2023	15:05:02	0.01	0.02	0.04	-0.12	0.09	0.00	191.49	1.01	0.04	0.18	1546	1.25
KILN2_N2_SYS_0643.LAB	11/30/2023	15:05:17	0.01	0.00	0.07	-0.06	-0.02	-0.01	191.57	1.01	0.05	0.18	1180	1.25
KILN2_N2_SYS_0644.LAB	11/30/2023	15:05:32	0.01	0.01	0.00	-0.25	-0.04	0.01	191.58	1.01	0.04	0.17	1070	1.25
KILN2_N2_SYS_0645.LAB	11/30/2023	15:05:47	0.02	0.02	0.00	-0.02	0.03	0.00	191.56	1.01	0.04	0.18	1149	1.25
KILN2_N2_SYS_128_0646.LAB	11/30/2023	15:08:08	0.00	0.01	-0.01	-0.10	0.02	0.00	191.52	1.01	0.03	0.14	NaN	1.25
		Average			**0.01**	**-0.05**								
		Std Dev			**0.04**	**0.11**								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_0812.LAB	11/30/2023	18:07:11	12.30	10.65	-0.07	3.69	4.06	-0.01	191.6	1.015	0.07	0.36	2908	1.24
KILN2_0813.LAB	11/30/2023	18:08:11	12.19	10.63	-0.10	3.81	3.97	-0.01	191.6	1.015	0.07	0.36	3675	1.24
KILN2_0814.LAB	11/30/2023	18:09:12	12.91	10.38	-0.09	3.69	3.50	-0.01	191.6	1.015	0.07	0.36	2716	1.24
	Native Average					**3.73**		**-0.01**						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN2_SPK_0822.LAB	11/30/2023	18:12:17	13.31	9.56	-0.18	7.13	2.60	0.41	191.2	1.016	0.09	0.39	814	1.24	**0.087**	**93.1%**
KILN2_SPK_0823.LAB	11/30/2023	18:12:25	13.21	9.66	-0.05	7.12	2.62	0.42	191.2	1.015	0.08	0.36	932	1.24	**0.090**	**91.7%**
KILN2_SPK_0824.LAB	11/30/2023	18:12:32	13.17	9.64	-0.18	6.83	2.56	0.41	191.2	1.016	0.08	0.38	1039	1.24	**0.087**	**89.0%**
KILN2_SPK_0825.LAB	11/30/2023	18:12:40	13.17	9.63	-0.17	6.83	2.81	0.42	191.2	1.015	0.09	0.41	1064	1.24	**0.088**	**88.8%**
KILN2_SPK_0826.LAB	11/30/2023	18:12:47	13.31	9.59	-0.09	6.93	3.05	0.40	191.2	1.015	0.07	0.39	1147	1.24	**0.085**	**91.8%**
KILN2_SPK_0827.LAB	11/30/2023	18:12:55	13.32	9.59	-0.03	6.92	3.19	0.41	191.2	1.016	0.09	0.37	999	1.24	**0.087**	**90.7%**
KILN2_SPK_0828.LAB	11/30/2023	18:13:03	13.37	9.55	-0.17	7.12	2.88	0.42	191.2	1.016	0.08	0.38	901	1.24	**0.088**	**92.5%**
KILN2_SPK_0829.LAB	11/30/2023	18:13:10	13.55	9.37	0.04	7.18	3.12	0.42	191.2	1.015	0.07	0.42	1002	1.24	**0.088**	**93.1%**
	Spike Average					**7.01**		**0.41**							**0.087**	**91.3%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN2_CTS_SYS_0832.LAB	11/30/2023	18:18:08	0.00	0.00	-0.04	-0.15	99.47	0.02	191.1	1.015	0.07	0.21	1129	1.24	**100.5%**
KILN2_CTS_SYS_0833.LAB	11/30/2023	18:18:16	0.00	0.01	-0.05	-0.28	99.05	0.01	191.1	1.015	0.06	0.19	1216	1.24	**100.0%**
KILN2_CTS_SYS_0834.LAB	11/30/2023	18:18:23	0.00	0.00	-0.01	0.00	99.91	0.01	191.1	1.014	0.04	0.20	1200	1.24	**100.9%**
KILN2_CTS_SYS_0835.LAB	11/30/2023	18:18:31	0.00	0.01	0.00	0.49	99.30	0.01	191.1	1.015	0.04	0.19	1250	1.24	**100.3%**
KILN2_CTS_SYS_0836.LAB	11/30/2023	18:18:38	0.02	0.01	0.03	0.20	99.85	0.00	191.1	1.014	0.07	0.21	1009	1.24	**100.8%**
KILN2_CTS_SYS_0837.LAB	11/30/2023	18:18:46	0.02	0.03	0.07	-0.32	99.85	0.01	191.1	1.015	0.06	0.20	814	1.24	**100.8%**
KILN2_CTS_SYS_0838.LAB	11/30/2023	18:18:53	0.01	0.00	0.04	0.18	99.19	0.01	191.1	1.014	0.07	0.23	969	1.24	**100.2%**
KILN2_CTS_SYS_0839.LAB	11/30/2023	18:19:01	0.00	-0.01	0.05	-0.07	99.40	0.01	191.1	1.014	0.05	0.20	1116	1.24	**100.4%**
		Average					**99.50**								**100.5%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_0846.LAB	11/30/2023	18:21:18	0.01	0.01	-0.03	-0.11	0.12	0.00	191.23	1.01	0.04	0.18	1286	1.24
KILN2_N2_SYS_0847.LAB	11/30/2023	18:21:34	0.01	0.00	0.00	-0.30	-0.24	0.00	191.33	1.01	0.04	0.19	1248	1.24
KILN2_N2_SYS_0848.LAB	11/30/2023	18:21:48	0.01	0.01	-0.01	-0.24	-0.02	0.01	191.29	1.01	0.04	0.19	1413	1.24
KILN2_N2_SYS_0849.LAB	11/30/2023	18:22:04	0.02	0.00	-0.02	0.02	0.14	0.01	191.32	1.01	0.05	0.21	1493	1.24
KILN2_N2_SYS_0850.LAB	11/30/2023	18:22:18	0.01	0.00	-0.04	0.09	-0.03	0.00	191.32	1.01	0.04	0.19	1586	1.24
KILN2_N2_SYS_0851.LAB	11/30/2023	18:22:33	0.02	0.01	0.04	-0.10	-0.20	0.00	191.35	1.01	0.03	0.18	1206	1.24
KILN2_N2_SYS_0852.LAB	11/30/2023	18:22:48	0.01	0.01	0.00	-0.27	0.14	0.01	191.36	1.01	0.05	0.19	1281	1.24
KILN2_N2_SYS_0853.LAB	11/30/2023	18:23:03	0.01	0.01	-0.02	-0.08	0.15	0.00	191.37	1.01	0.04	0.16	1123	1.24
		Average			**-0.01**	**-0.12**								
		Std Dev			**0.02**	**0.14**								

Ambient Air Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_AMB_0854.LAB	11/30/2023	18:24:34	1.41	0.06	-0.09	-0.04	-0.02	0.00	191.4	1.012	0.04	0.21	NaN	1.24
KILN2_AMB_0855.LAB	11/30/2023	18:25:34	1.41	0.05	-0.02	0.10	-0.06	0.00	191.4	1.012	0.04	0.22	2466	1.24
KILN2_AMB_0856.LAB	11/30/2023	18:26:34	1.40	0.06	-0.08	0.05	-0.10	0.00	191.4	1.012	0.04	0.22	2847	1.24
	Ambient Average					**0.04**		**0.00**						

Ambient Air Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN2_AMB_SPK_0860.LAB	11/30/2023	18:27:24	1.28	0.06	-0.07	3.35	0.04	0.30	191.5	1.011	0.06	0.25	767	1.24	**0.062**	**108.7%**
KILN2_AMB_SPK_0861.LAB	11/30/2023	18:27:32	1.32	0.05	-0.11	3.64	0.00	0.32	191.5	1.012	0.06	0.26	1452	1.24	**0.065**	**113.3%**
KILN2_AMB_SPK_0862.LAB	11/30/2023	18:27:39	1.31	0.04	-0.19	3.16	-0.22	0.32	191.5	1.012	0.05	0.27	1107	1.24	**0.067**	**95.5%**
KILN2_AMB_SPK_0863.LAB	11/30/2023	18:27:47	1.31	0.03	-0.10	3.36	-0.08	0.33	191.5	1.011	0.07	0.27	932	1.24	**0.067**	**101.0%**
KILN2_AMB_SPK_0864.LAB	11/30/2023	18:27:54	1.29	0.05	-0.11	3.32	-0.44	0.32	191.5	1.011	0.06	0.27	904	1.24	**0.067**	**100.3%**
KILN2_AMB_SPK_0865.LAB	11/30/2023	18:28:02	1.32	0.05	-0.08	3.52	0.01	0.33	191.5	1.012	0.07	0.27	842	1.24	**0.068**	**105.3%**
KILN2_AMB_SPK_0866.LAB	11/30/2023	18:28:09	1.32	0.04	-0.03	3.57	0.22	0.32	191.5	1.011	0.05	0.25	823	1.24	**0.067**	**108.1%**
KILN2_AMB_SPK_0867.LAB	11/30/2023	18:28:17	1.30	0.04	-0.07	2.98	-0.19	0.31	191.5	1.012	0.06	0.26	1015	1.24	**0.064**	**93.7%**
	Spike Average					**3.36**		**0.32**							**0.066**	**103.2%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN2_CTS_SYS_0868.LAB	11/30/2023	18:28:51	0.03	0.01	0.10	0.15	98.97	0.00	191.5	1.011	0.04	0.19	NaN	1.24	**99.9%**
KILN2_CTS_SYS_0869.LAB	11/30/2023	18:28:59	0.01	0.02	-0.09	0.22	99.78	0.01	191.5	1.011	0.05	0.22	813	1.25	**100.8%**
KILN2_CTS_SYS_0870.LAB	11/30/2023	18:29:06	0.00	0.01	-0.02	0.11	99.08	0.00	191.5	1.011	0.05	0.21	963	1.24	**100.1%**
KILN2_CTS_SYS_0871.LAB	11/30/2023	18:29:14	0.01	0.01	-0.01	-0.04	99.32	0.00	191.5	1.011	0.05	0.20	968	1.24	**100.3%**
KILN2_CTS_SYS_0872.LAB	11/30/2023	18:29:21	0.02	0.01	-0.01	0.27	99.03	-0.01	191.5	1.011	0.06	0.17	935	1.24	**100.0%**
KILN2_CTS_SYS_0873.LAB	11/30/2023	18:29:29	0.02	-0.02	0.01	0.16	99.36	-0.01	191.5	1.011	0.05	0.21	892	1.24	**100.3%**
KILN2_CTS_SYS_0874.LAB	11/30/2023	18:29:36	0.03	-0.02	-0.04	0.16	99.50	0.00	191.5	1.011	0.05	0.21	973	1.24	**100.5%**
KILN2_CTS_SYS_0875.LAB	11/30/2023	18:29:44	0.01	0.02	-0.04	0.23	99.40	0.00	191.5	1.011	0.06	0.21	1176	1.24	**100.4%**
		Average					**99.31**								**100.3%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_0876.LAB	11/30/2023	18:30:33	0.00	0.01	-0.07	0.03	0.18	0.00	191.46	1.01	0.04	0.20	NaN	1.24
KILN2_N2_SYS_0877.LAB	11/30/2023	18:30:48	0.01	0.00	-0.10	-0.17	-0.06	0.00	191.47	1.01	0.05	0.18	1301	1.24
KILN2_N2_SYS_0878.LAB	11/30/2023	18:31:03	0.02	0.00	-0.04	-0.18	0.19	-0.01	191.47	1.01	0.06	0.19	1183	1.25
KILN2_N2_SYS_0879.LAB	11/30/2023	18:31:18	0.01	0.00	-0.04	0.17	0.06	-0.01	191.48	1.01	0.05	0.20	1506	1.24
KILN2_N2_SYS_0880.LAB	11/30/2023	18:31:33	0.01	0.01	-0.01	-0.16	-0.10	-0.01	191.48	1.01	0.05	0.19	1523	1.24
KILN2_N2_SYS_0881.LAB	11/30/2023	18:31:48	0.01	0.01	-0.08	-0.03	-0.05	-0.01	191.48	1.01	0.04	0.17	1079	1.24
KILN2_N2_SYS_0882.LAB	11/30/2023	18:32:04	0.02	0.00	-0.03	0.18	0.03	0.00	191.47	1.01	0.05	0.17	1186	1.24
KILN2_N2_SYS_0883.LAB	11/30/2023	18:32:18	0.01	0.00	0.00	-0.05	-0.12	-0.01	191.47	1.01	0.04	0.18	1399	1.24
		Average			**-0.05**	**-0.03**								
		Std Dev			**0.04**	**0.15**								

Nitrogen Direct to FTIR

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
N2_DIR_0884.LAB	11/30/2023	18:35:44	0.01	0.01	-0.03	0.01	0.00	0.00	191.14	0.98	0.03	0.17	NaN	1.25
N2_DIR_0885.LAB	11/30/2023	18:37:45	0.00	0.01	-0.01	-0.12	-0.07	0.00	191.08	0.98	0.03	0.17	4761	1.24
N2_DIR_0886.LAB	11/30/2023	18:39:45	0.01	0.01	-0.02	-0.08	0.03	0.00	191.06	0.98	0.02	0.16	3861	1.24

Nitrogen Direct to FTIR

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
N2_DIR_0890BKG.LAB	12/1/2023	9:31:16	0.00	0.00	0.00	0.00	0.00	0.00	190.8	0.986	0.00	0.00	2188	1.24
N2_DIR_0891.LAB	12/1/2023	9:31:37	-0.01	0.00	0.01	-0.18	0.00	0.01	190.8	0.986	0.04	0.11	1583	1.24
N2_DIR_0892.LAB	12/1/2023	9:31:52	0.00	0.01	-0.05	-0.09	0.13	0.00	190.8	0.986	0.04	0.11	1682	1.24
N2_DIR_0893.LAB	12/1/2023	9:32:07	0.00	0.00	-0.09	0.10	-0.11	-0.01	190.8	0.986	0.04	0.12	1449	1.24
N2_DIR_0894.LAB	12/1/2023	9:32:22	0.01	0.00	-0.05	-0.30	0.17	0.00	190.9	0.986	0.04	0.12	1385	1.24
N2_DIR_0895.LAB	12/1/2023	9:32:37	0.00	0.00	-0.02	0.07	-0.04	0.00	190.8	0.986	0.04	0.12	1948	1.24
N2_DIR_0896.LAB	12/1/2023	9:32:52	0.01	0.01	0.00	-0.08	0.08	0.00	190.8	0.986	0.04	0.10	1460	1.24
N2_DIR_0897.LAB	12/1/2023	9:33:07	0.00	-0.02	-0.07	0.06	0.00	0.00	190.8	0.986	0.05	0.14	1318	1.24
N2_DIR_0898.LAB	12/1/2023	9:33:27	0.00	-0.01	0.03	0.29	0.03	0.00	190.8	0.986	0.06	0.15	1299	1.09
		Average			**-0.03**	**-0.02**								

CTS, 99.97 ppm Ethylene Direct Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
CTS_DIR_0906.LAB	12/1/2023	9:35:25	0.01	0.02	-0.02	-0.18	99.23	0.01	190.9	0.986	0.06	0.16	1203	1.24	**99.3%**
CTS_DIR_0907.LAB	12/1/2023	9:35:33	0.00	0.00	0.04	-0.15	99.03	0.00	191.0	0.986	0.06	0.17	1052	1.24	**99.1%**
CTS_DIR_0908.LAB	12/1/2023	9:35:44	0.01	0.00	0.05	0.11	99.32	0.01	190.9	0.986	0.06	0.15	825	1.24	**99.4%**
CTS_DIR_0909.LAB	12/1/2023	9:35:51	0.02	0.00	-0.04	0.38	99.32	0.01	190.9	0.986	0.07	0.15	1117	1.24	**99.3%**
CTS_DIR_0910.LAB	12/1/2023	9:35:58	0.00	0.01	0.01	0.53	99.31	0.02	191.0	0.986	0.05	0.15	1361	1.24	**99.3%**
CTS_DIR_0911.LAB	12/1/2023	9:36:06	0.00	-0.03	-0.01	-0.11	99.68	0.01	191.0	0.986	0.05	0.16	992	1.23	**99.7%**
CTS_DIR_0912.LAB	12/1/2023	9:36:13	0.00	-0.01	-0.05	0.16	98.99	0.02	191.0	0.986	0.04	0.17	971	1.24	**99.0%**
CTS_DIR_0913.LAB	12/1/2023	9:36:21	-0.02	0.00	-0.12	0.22	100.02	0.00	190.9	0.986	0.06	0.15	1025	1.24	**100.0%**
		Average					**99.36**								**99.4%**

49.10 ppm HCN/5.00 ppm SF6 Direct Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	HCN Recovery (%)
HCN_DIR_0933.LAB	12/1/2023	9:39:37	0.00	-0.04	-0.01	48.77	-0.67	4.82	191.0	0.986	0.05	0.31	1689	1.24	**99.3%**
HCN_DIR_0934.LAB	12/1/2023	9:39:45	0.00	-0.03	-0.05	49.00	-1.18	4.82	191.0	0.986	0.06	0.32	1118	1.24	**99.8%**
HCN_DIR_0935.LAB	12/1/2023	9:39:52	0.01	0.00	-0.02	48.74	-0.82	4.83	191.0	0.986	0.05	0.27	1130	1.24	**99.3%**
HCN_DIR_0936.LAB	12/1/2023	9:39:59	0.01	-0.03	-0.01	49.24	-1.21	4.83	191.0	0.986	0.06	0.29	1542	1.24	**100.3%**
HCN_DIR_0937.LAB	12/1/2023	9:40:07	-0.02	0.00	-0.03	49.08	-1.13	4.85	191.1	0.986	0.06	0.29	1155	1.24	**100.0%**
HCN_DIR_0938.LAB	12/1/2023	9:40:14	0.01	-0.02	-0.01	49.37	-1.08	4.83	191.1	0.986	0.05	0.32	1305	1.24	**100.6%**
HCN_DIR_0939.LAB	12/1/2023	9:40:22	0.01	-0.01	-0.08	48.91	-0.82	4.83	191.1	0.986	0.05	0.28	1134	1.24	**99.6%**
HCN_DIR_0940.LAB	12/1/2023	9:40:29	0.01	-0.02	-0.02	48.80	-1.01	4.82	191.1	0.986	0.04	0.29	917	1.23	**99.4%**
		Average				**48.99**		**4.83**							**99.8%**

CTS, 99.97 ppm Ethylene System Purge and Response Time Test

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)	Response Time (sec)
CTS_RT1_0947.LAB	12/1/2023	9:43:44	2.10	0.02	-0.13	-0.10	1.54	-0.01	191.0	1.016	0.06	0.22	NaN	1.23	**1.6%**	**-**
CTS_RT1_0948.LAB	12/1/2023	9:43:51	1.22	0.04	-0.05	-0.15	31.44	-0.03	191.0	1.016	0.05	0.16	834	1.23	**31.6%**	**8**
CTS_RT1_0949.LAB	12/1/2023	9:43:59	0.06	-0.01	-0.04	0.15	97.43	0.01	191.0	1.016	0.05	0.15	1086	1.23	**98.1%**	**16**
CTS_RT1_0950.LAB	12/1/2023	9:44:06	0.06	-0.01	-0.10	0.23	97.33	0.01	191.0	1.015	0.05	0.17	994	1.23	**98.0%**	
CTS_RT1_0951.LAB	12/1/2023	9:44:14	0.05	-0.02	0.01	-0.04	98.12	0.01	191.0	1.015	0.05	0.14	1018	1.23	**98.7%**	
CTS_RT1_0952.LAB	12/1/2023	9:44:21	0.05	-0.02	0.02	0.01	97.46	0.02	191.0	1.015	0.04	0.16	949	1.23	**98.1%**	
CTS_RT1_0953.LAB	12/1/2023	9:44:29	0.04	-0.01	-0.12	-0.09	97.70	0.01	191.0	1.015	0.06	0.18	679	1.24	**98.3%**	
CTS_RT1_0954.LAB	12/1/2023	9:44:36	0.05	-0.01	0.13	0.07	97.86	0.00	191.0	1.014	0.05	0.15	814	1.23	**98.5%**	
CTS_RT1_0955.LAB	12/1/2023	9:44:44	0.05	0.01	0.02	-0.19	97.82	0.00	191.1	1.014	0.04	0.16	1010	1.23	**98.5%**	
CTS_RT1_0956.LAB	12/1/2023	9:44:51	0.03	0.00	-0.03	0.25	98.10	0.01	191.1	1.015	0.06	0.18	1026	1.23	**98.7%**	
		Average					**97.73**								**98.4%**	

Nitrogen (Zero) System Purge and Response Time Test

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)	Zero Time (sec)
N2_RT_0958.LAB	12/1/2023	9:45:27	0.01	0.01	0.00	-0.11	99.43	0.01	191.1	1.015	0.06	0.16	NaN	1.23	**100.1%**	**-**
N2_RT_0959.LAB	12/1/2023	9:45:34	0.42	0.02	0.01	-0.03	67.97	-0.01	191.1	1.015	0.05	0.16	893	1.23	**68.4%**	**8**
N2_RT_0960.LAB	12/1/2023	9:45:42	0.52	0.01	-0.05	0.18	8.02	-0.01	191.1	1.015	0.06	0.16	1074	1.23	**8.1%**	**16**
N2_RT_0961.LAB	12/1/2023	9:45:49	0.02	-0.02	-0.11	0.07	0.19	0.00	191.1	1.014	0.05	0.14	935	1.23	**0.2%**	**23**
N2_RT_0962.LAB	12/1/2023	9:45:56	0.00	-0.01	0.09	0.15	0.18	-0.01	191.1	1.015	0.07	0.15	1263	1.23	**0.2%**	
N2_RT_0963.LAB	12/1/2023	9:46:04	0.01	0.01	0.01	0.26	0.00	0.00	191.2	1.015	0.05	0.15	1031	1.23	**0.0%**	
N2_RT_0964.LAB	12/1/2023	9:46:12	0.00	-0.02	-0.02	0.11	0.24	0.00	191.1	1.015	0.05	0.17	878	1.23	**0.2%**	
N2_RT_0965.LAB	12/1/2023	9:46:19	0.00	-0.02	-0.04	0.12	0.25	0.00	191.1	1.016	0.04	0.15	1067	1.23	**0.2%**	
N2_RT_0966.LAB	12/1/2023	9:46:26	-0.01	-0.01	0.02	0.10	0.14	0.00	191.2	1.015	0.04	0.14	996	1.23	**0.1%**	
N2_RT_0967.LAB	12/1/2023	9:46:34	0.00	-0.01	0.03	0.22	-0.03	0.00	191.2	1.015	0.05	0.16	835	1.23	**0.0%**	
N2_RT_0968.LAB	12/1/2023	9:46:42	-0.01	-0.01	0.00	0.08	-0.14	0.01	191.2	1.015	0.06	0.15	861	1.23	**-0.1%**	
N2_RT_0969.LAB	12/1/2023	9:46:49	0.00	0.01	-0.05	-0.05	0.13	0.00	191.2	1.015	0.05	0.16	1003	1.23	**0.1%**	

Ambient Air Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_AMB_0972.LAB	12/1/2023	9:50:26	2.15	0.05	-0.05	0.05	0.07	0.00	191.3	1.015	0.04	0.18	996	1.23
KILN2_AMB_0973.LAB	12/1/2023	9:51:26	2.15	0.06	-0.09	0.19	0.04	0.00	191.4	1.014	0.04	0.18	2920	1.23
KILN2_AMB_0974.LAB	12/1/2023	9:52:26	2.17	0.08	-0.07	0.13	0.02	0.00	191.3	1.014	0.04	0.18	3358	1.23
	Ambient Average					**0.13**		**0.00**						

Ambient Air Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN2_AMB_SPK_0994.LAB	12/1/2023	10:00:04	2.02	0.03	-0.13	3.63	0.10	0.31	191.5	1.014	0.06	0.25	1200	1.23	**0.064**	**111.2%**
KILN2_AMB_SPK_0995.LAB	12/1/2023	10:00:11	2.05	0.04	-0.10	3.19	-0.31	0.33	191.4	1.014	0.06	0.23	915	1.22	**0.067**	**94.0%**
KILN2_AMB_SPK_0996.LAB	12/1/2023	10:00:19	2.05	0.05	-0.08	2.98	0.08	0.32	191.4	1.013	0.06	0.24	1066	1.22	**0.066**	**89.3%**
KILN2_AMB_SPK_0997.LAB	12/1/2023	10:00:26	2.04	0.06	-0.06	3.02	-0.14	0.31	191.4	1.013	0.06	0.24	1198	1.22	**0.064**	**92.6%**
KILN2_AMB_SPK_0998.LAB	12/1/2023	10:00:34	2.05	0.04	-0.08	3.52	-0.09	0.33	191.4	1.014	0.06	0.25	1164	1.23	**0.067**	**104.0%**
KILN2_AMB_SPK_0999.LAB	12/1/2023	10:00:41	2.03	0.04	-0.06	2.92	0.19	0.31	191.5	1.014	0.08	0.24	988	1.23	**0.063**	**91.5%**
KILN2_AMB_SPK_1000.LAB	12/1/2023	10:00:49	2.05	0.05	-0.11	3.42	0.11	0.30	191.4	1.014	0.07	0.20	844	1.22	**0.061**	**109.6%**
KILN2_AMB_SPK_1001.LAB	12/1/2023	10:00:56	2.02	0.03	-0.02	3.30	-0.06	0.30	191.4	1.014	0.06	0.23	729	1.23	**0.062**	**104.3%**
	Spike Average					**3.25**		**0.31**							**0.064**	**99.6%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN2_CTS_SYS_1007.LAB	12/1/2023	10:02:16	0.01	-0.01	0.04	0.39	98.67	0.01	191.4	1.013	0.05	0.16	910	1.23	**99.3%**
KILN2_CTS_SYS_1008.LAB	12/1/2023	10:02:23	-0.01	0.01	0.00	0.17	99.16	0.00	191.5	1.014	0.06	0.16	1016	1.23	**99.8%**
KILN2_CTS_SYS_1009.LAB	12/1/2023	10:02:31	0.01	0.01	-0.05	-0.08	98.51	0.00	191.5	1.014	0.04	0.16	912	1.23	**99.1%**
KILN2_CTS_SYS_1010.LAB	12/1/2023	10:02:38	0.01	-0.01	-0.08	0.11	99.04	0.00	191.5	1.014	0.05	0.16	887	1.23	**99.7%**
KILN2_CTS_SYS_1011.LAB	12/1/2023	10:02:46	0.03	0.01	-0.07	0.18	98.77	0.01	191.4	1.013	0.06	0.19	747	1.23	**99.4%**
KILN2_CTS_SYS_1012.LAB	12/1/2023	10:02:53	0.00	-0.01	-0.01	0.27	98.94	0.01	191.4	1.014	0.06	0.19	933	1.23	**99.6%**
KILN2_CTS_SYS_1013.LAB	12/1/2023	10:03:01	0.02	0.02	-0.03	0.20	98.93	0.01	191.4	1.015	0.05	0.17	1240	1.23	**99.6%**
KILN2_CTS_SYS_1014.LAB	12/1/2023	10:03:08	-0.01	0.00	0.05	0.58	99.24	0.01	191.4	1.014	0.07	0.17	951	1.23	**99.9%**
		Average					**98.91**								**99.5%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_1017.LAB	12/1/2023	10:04:29	0.01	-0.01	0.03	0.17	0.11	0.01	191.47	1.01	0.03	0.12	1223	1.23
KILN2_N2_SYS_1018.LAB	12/1/2023	10:04:44	0.00	0.00	0.05	0.20	-0.10	0.00	191.43	1.01	0.05	0.12	1631	1.23
KILN2_N2_SYS_1019.LAB	12/1/2023	10:04:59	0.00	0.01	0.00	0.21	0.14	0.00	191.45	1.01	0.04	0.14	1476	1.23
KILN2_N2_SYS_1020.LAB	12/1/2023	10:05:14	0.00	0.00	0.03	0.00	0.29	0.00	191.47	1.01	0.04	0.13	2364	1.23
KILN2_N2_SYS_1021.LAB	12/1/2023	10:05:29	0.01	0.00	0.00	0.38	-0.05	0.01	191.47	1.01	0.04	0.12	1313	1.23
KILN2_N2_SYS_1022.LAB	12/1/2023	10:05:44	0.00	0.01	-0.05	0.45	-0.07	0.01	191.41	1.01	0.03	0.14	1094	1.23
KILN2_N2_SYS_1023.LAB	12/1/2023	10:05:59	0.01	0.00	-0.01	0.19	0.13	0.00	191.37	1.01	0.04	0.12	1256	1.23
KILN2_N2_SYS_1024.LAB	12/1/2023	10:06:14	0.02	-0.02	-0.02	0.22	0.00	0.00	191.47	1.01	0.04	0.14	1708	1.23
		Average			**0.00**	**0.23**								
		Std Dev			**0.03**	**0.14**								

Nitrogen Direct to FTIR

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
N2_DIR_1027BKG.LAB	12/1/2023	10:09:52	0.00	0.00	0.00	0.00	0.00	0.00	191.1	0.987	0.00	0.00	1134	1.23
N2_DIR_1028.LAB	12/1/2023	10:10:06	0.00	0.00	-0.02	-0.15	0.02	-0.01	191.1	0.987	0.05	0.17	1619	1.23
N2_DIR_1029.LAB	12/1/2023	10:10:14	-0.01	0.02	-0.05	-0.09	0.05	0.01	191.1	0.987	0.07	0.16	958	1.23
N2_DIR_1030.LAB	12/1/2023	10:10:21	0.02	-0.03	-0.05	0.08	-0.06	0.00	191.1	0.987	0.05	0.16	788	1.23
N2_DIR_1031.LAB	12/1/2023	10:10:28	-0.01	-0.01	-0.02	0.48	-0.17	0.01	191.2	0.987	0.05	0.16	1164	1.23
N2_DIR_1032.LAB	12/1/2023	10:10:36	0.02	0.02	0.01	-0.13	0.11	0.00	191.0	0.987	0.06	0.16	1131	1.23
N2_DIR_1033.LAB	12/1/2023	10:10:43	0.00	0.00	0.00	0.27	0.07	0.00	191.1	0.987	0.06	0.16	923	1.23
N2_DIR_1034.LAB	12/1/2023	10:10:51	0.01	0.00	0.08	0.26	-0.03	-0.02	191.1	0.987	0.05	0.17	1025	1.23
N2_DIR_1035.LAB	12/1/2023	10:10:58	0.00	0.00	-0.04	-0.22	-0.17	-0.01	191.1	0.987	0.05	0.18	1149	1.23
		Average			**-0.01**	**0.06**								

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_1044.LAB	12/1/2023	10:13:41	0.01	-0.01	-0.08	0.09	-0.19	0.01	191.05	1.01	0.06	0.18	1027	1.23
KILN2_N2_SYS_1045.LAB	12/1/2023	10:13:48	0.01	0.00	-0.03	0.37	0.06	0.00	191.07	1.01	0.06	0.15	1206	1.23
KILN2_N2_SYS_1046.LAB	12/1/2023	10:13:56	-0.01	-0.01	-0.08	0.16	-0.38	-0.01	191.03	1.01	0.05	0.16	783	1.23
KILN2_N2_SYS_1047.LAB	12/1/2023	10:14:03	0.01	-0.03	0.03	-0.11	0.00	0.00	191.05	1.01	0.05	0.16	1077	1.23
KILN2_N2_SYS_1048.LAB	12/1/2023	10:14:11	0.00	-0.03	0.02	-0.31	0.05	0.00	191.07	1.01	0.04	0.18	1000	1.23
KILN2_N2_SYS_1049.LAB	12/1/2023	10:14:18	0.02	-0.01	-0.07	0.60	0.30	0.01	191.07	1.01	0.05	0.16	880	1.23
KILN2_N2_SYS_1050.LAB	12/1/2023	10:14:26	0.00	-0.02	0.03	-0.12	-0.02	0.01	191.03	1.01	0.05	0.15	794	1.23
KILN2_N2_SYS_128_1051.LAB	12/1/2023	10:16:45	0.00	-0.01	-0.01	-0.02	0.09	0.00	191.19	1.01	0.02	0.07	NaN	1.23
		Average			**-0.02**	**0.08**								
		Std Dev			**0.05**	**0.29**								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_NAT_1053.LAB	12/1/2023	10:25:39	13.96	10.90	-0.04	4.12	4.13	-0.01	191.1	1.015	0.07	0.32	2818	1.22
KILN2_NAT_1054.LAB	12/1/2023	10:26:39	13.94	10.82	-0.02	4.22	4.24	0.00	191.2	1.015	0.07	0.32	4383	1.22
KILN2_NAT_1055.LAB	12/1/2023	10:27:39	13.96	11.28	-0.04	4.22	4.01	-0.01	191.2	1.016	0.08	0.32	2755	1.22
	Native Average					**4.19**		**-0.01**						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN2_NAT_SPK_1064.LAB	12/1/2023	10:29:22	12.49	9.73	-0.07	8.00	3.42	0.45	191.3	1.018	0.07	0.34	964	1.22	**0.094**	**95.4%**
KILN2_NAT_SPK_1065.LAB	12/1/2023	10:29:29	12.51	9.68	-0.06	8.53	3.18	0.45	191.3	1.019	0.09	0.35	1220	1.22	**0.096**	**100.7%**
KILN2_NAT_SPK_1066.LAB	12/1/2023	10:29:37	12.39	9.74	-0.12	8.53	3.37	0.45	191.4	1.020	0.09	0.37	1025	1.22	**0.096**	**100.7%**
KILN2_NAT_SPK_1067.LAB	12/1/2023	10:29:44	12.42	9.70	-0.01	8.45	3.40	0.45	191.4	1.019	0.08	0.35	1080	1.22	**0.094**	**100.3%**
KILN2_NAT_SPK_1068.LAB	12/1/2023	10:29:52	12.50	9.56	-0.01	8.58	3.15	0.46	191.4	1.018	0.08	0.35	1046	1.22	**0.096**	**100.9%**
KILN2_NAT_SPK_1069.LAB	12/1/2023	10:29:59	12.43	9.55	-0.06	8.25	3.08	0.44	191.4	1.019	0.08	0.28	1017	1.22	**0.093**	**98.9%**
KILN2_NAT_SPK_1070.LAB	12/1/2023	10:30:07	12.44	9.60	-0.05	7.96	3.09	0.45	191.4	1.019	0.08	0.35	1362	1.22	**0.094**	**94.7%**
KILN2_NAT_SPK_1071.LAB	12/1/2023	10:30:14	12.44	9.64	-0.14	7.49	3.03	0.46	191.4	1.019	0.08	0.38	1022	1.22	**0.096**	**88.0%**
	Spike Average					**8.22**		**0.45**							**0.095**	**97.4%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN2_CTS_SYS_1072.LAB	12/1/2023	10:30:55	0.01	-0.01	0.08	0.08	98.87	0.00	191.5	1.019	0.06	0.15	NaN	1.23	**99.5%**
KILN2_CTS_SYS_1073.LAB	12/1/2023	10:31:02	0.01	-0.01	0.10	-0.04	98.85	0.00	191.4	1.019	0.05	0.14	976	1.23	**99.5%**
KILN2_CTS_SYS_1074.LAB	12/1/2023	10:31:10	0.02	0.00	-0.03	-0.05	98.87	0.01	191.5	1.018	0.06	0.16	955	1.23	**99.5%**
KILN2_CTS_SYS_1075.LAB	12/1/2023	10:31:17	0.00	-0.02	-0.01	0.03	99.18	0.00	191.4	1.017	0.04	0.18	899	1.23	**99.8%**
KILN2_CTS_SYS_1076.LAB	12/1/2023	10:31:25	0.00	0.00	0.03	-0.35	98.99	0.01	191.4	1.017	0.06	0.17	922	1.23	**99.6%**
KILN2_CTS_SYS_1077.LAB	12/1/2023	10:31:32	0.01	-0.01	0.11	-0.19	99.52	0.00	191.4	1.019	0.05	0.15	982	1.23	**100.2%**
KILN2_CTS_SYS_1078.LAB	12/1/2023	10:31:40	0.01	-0.03	-0.03	-0.16	99.63	0.01	191.4	1.017	0.06	0.18	1078	1.23	**100.3%**
KILN2_CTS_SYS_1079.LAB	12/1/2023	10:31:47	0.01	0.02	-0.04	0.06	98.87	0.00	191.4	1.017	0.06	0.18	916	1.23	**99.5%**
		Average					**99.10**								**99.7%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_1081.LAB	12/1/2023	10:32:45	0.01	-0.01	0.03	0.09	0.03	0.01	191.35	1.02	0.06	0.13	1315	1.23
KILN2_N2_SYS_1082.LAB	12/1/2023	10:33:01	0.01	0.00	-0.02	-0.03	-0.06	0.01	191.37	1.02	0.04	0.12	1156	1.23
KILN2_N2_SYS_1083.LAB	12/1/2023	10:33:16	-0.01	0.01	0.01	-0.07	0.13	0.00	191.37	1.02	0.04	0.12	1278	1.23
KILN2_N2_SYS_1084.LAB	12/1/2023	10:33:30	0.00	0.01	0.00	0.19	-0.02	0.00	191.39	1.02	0.03	0.13	1224	1.23
KILN2_N2_SYS_1085.LAB	12/1/2023	10:33:45	0.00	0.02	0.01	0.18	-0.06	0.00	191.37	1.02	0.05	0.13	1242	1.23
KILN2_N2_SYS_1086.LAB	12/1/2023	10:34:00	0.01	0.00	0.03	0.01	0.08	0.00	191.39	1.01	0.04	0.12	1432	1.23
KILN2_N2_SYS_1087.LAB	12/1/2023	10:34:16	0.01	-0.03	0.00	-0.07	0.26	0.00	191.44	1.01	0.04	0.13	1689	1.23
KILN2_N2_SYS_1088.LAB	12/1/2023	10:34:30	0.00	0.00	-0.07	0.14	0.16	0.00	191.39	1.01	0.04	0.12	1271	1.23
		Average			**0.00**	**0.05**								
		Std Dev			**0.03**	**0.11**								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_1150.LAB	12/1/2023	11:36:58	13.97	11.16	-0.05	4.15	4.25	-0.01	191.5	1.016	0.07	0.34	2744	1.22
KILN2_1151.LAB	12/1/2023	11:37:58	14.31	11.45	-0.02	4.04	4.09	-0.02	191.5	1.016	0.07	0.34	3199	1.22
KILN2_1152.LAB	12/1/2023	11:38:58	13.97	10.77	-0.04	4.20	3.86	-0.01	191.5	1.016	0.06	0.33	2834	1.22
	Native Average					**4.13**		**-0.01**						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN2_SPK_1169.LAB	12/1/2023	11:41:40	12.61	10.32	-0.03	7.98	3.08	0.41	191.5	1.015	0.08	0.42	1192	1.22	**0.087**	**99.4%**
KILN2_SPK_1170.LAB	12/1/2023	11:41:48	12.62	10.45	-0.07	8.37	3.52	0.42	191.5	1.015	0.07	0.39	925	1.22	**0.090**	**102.5%**
KILN2_SPK_1171.LAB	12/1/2023	11:41:55	12.65	10.27	0.00	8.03	3.33	0.42	191.5	1.014	0.09	0.40	985	1.22	**0.090**	**98.7%**
KILN2_SPK_1172.LAB	12/1/2023	11:42:03	12.60	9.96	-0.05	7.85	3.29	0.42	191.4	1.015	0.08	0.37	768	1.22	**0.089**	**96.6%**
KILN2_SPK_1173.LAB	12/1/2023	11:42:10	12.61	9.83	-0.09	7.86	3.53	0.41	191.5	1.015	0.08	0.34	961	1.22	**0.087**	**97.8%**
KILN2_SPK_1174.LAB	12/1/2023	11:42:18	12.82	9.90	0.01	7.53	3.91	0.41	191.5	1.015	0.09	0.37	995	1.22	**0.088**	**93.3%**
KILN2_SPK_1175.LAB	12/1/2023	11:42:25	12.90	10.11	-0.09	7.70	3.72	0.42	191.4	1.014	0.09	0.36	886	1.22	**0.089**	**95.0%**
KILN2_SPK_1176.LAB	12/1/2023	11:42:33	12.77	10.16	-0.06	7.49	3.65	0.41	191.5	1.015	0.10	0.35	973	1.22	**0.088**	**92.7%**
	Spike Average					**7.85**		**0.41**							**0.089**	**97.0%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN2_CTS_SYS_1179.LAB	12/1/2023	11:43:21	0.01	0.00	0.01	-0.35	99.05	0.00	191.5	1.016	0.05	0.16	876	1.23	**99.7%**
KILN2_CTS_SYS_1180.LAB	12/1/2023	11:43:28	0.01	0.01	-0.04	0.16	98.60	-0.01	191.5	1.015	0.05	0.16	899	1.23	**99.2%**
KILN2_CTS_SYS_1181.LAB	12/1/2023	11:43:36	0.01	-0.02	0.09	0.57	98.35	-0.01	191.5	1.015	0.06	0.18	915	1.23	**99.0%**
KILN2_CTS_SYS_1182.LAB	12/1/2023	11:43:43	0.01	-0.02	0.10	0.49	98.99	-0.02	191.5	1.015	0.05	0.16	891	1.23	**99.6%**
KILN2_CTS_SYS_1183.LAB	12/1/2023	11:43:51	-0.01	-0.02	0.03	0.13	99.00	0.00	191.4	1.015	0.05	0.18	937	1.23	**99.6%**
KILN2_CTS_SYS_1184.LAB	12/1/2023	11:43:58	0.00	-0.01	-0.01	0.27	98.78	-0.01	191.5	1.015	0.05	0.18	1297	1.23	**99.4%**
KILN2_CTS_SYS_1185.LAB	12/1/2023	11:44:06	0.01	-0.02	-0.04	-0.07	98.61	0.00	191.4	1.015	0.06	0.14	1162	1.23	**99.2%**
KILN2_CTS_SYS_1186.LAB	12/1/2023	11:44:14	0.00	0.01	-0.05	0.10	98.91	0.01	191.5	1.014	0.05	0.18	1986	1.23	**99.5%**
		Average					**98.79**								**99.4%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_1190.LAB	12/1/2023	11:45:48	0.00	0.00	-0.01	0.06	-0.01	0.00	191.41	1.01	0.04	0.14	1104	1.23
KILN2_N2_SYS_1191.LAB	12/1/2023	11:46:03	0.01	0.01	0.02	0.20	-0.06	-0.01	191.47	1.01	0.04	0.12	1124	1.23
KILN2_N2_SYS_1192.LAB	12/1/2023	11:46:18	-0.01	0.00	-0.01	-0.14	-0.08	0.00	191.47	1.01	0.04	0.14	1857	1.23
KILN2_N2_SYS_1193.LAB	12/1/2023	11:46:33	0.00	0.00	0.03	0.08	-0.18	0.00	191.47	1.01	0.04	0.13	2364	1.23
KILN2_N2_SYS_1194.LAB	12/1/2023	11:46:48	0.01	-0.01	-0.02	0.02	0.16	0.00	191.47	1.01	0.04	0.12	1116	1.23
KILN2_N2_SYS_1195.LAB	12/1/2023	11:47:03	0.01	0.00	-0.01	0.06	0.05	0.00	191.47	1.01	0.04	0.12	1181	1.23
KILN2_N2_SYS_1196.LAB	12/1/2023	11:47:18	0.01	0.00	0.01	-0.18	-0.17	0.00	191.47	1.01	0.04	0.14	1232	1.23
KILN2_N2_SYS_1197.LAB	12/1/2023	11:47:33	0.00	-0.01	-0.03	0.20	-0.05	0.00	191.47	1.01	0.04	0.11	1398	1.23
		Average			**0.00**	**0.04**								
		Std Dev			**0.02**	**0.14**								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_1289.LAB	12/1/2023	13:20:21	14.54	11.12	-0.09	3.84	4.02	-0.01	191.5	1.014	0.07	0.35	2846	1.21
KILN2_1290.LAB	12/1/2023	13:21:21	14.15	11.28	-0.05	3.84	3.85	-0.01	191.5	1.013	0.07	0.35	3263	1.21
KILN2_1291.LAB	12/1/2023	13:22:21	14.14	11.15	-0.08	3.76	3.82	-0.01	191.5	1.014	0.07	0.34	2522	1.21
	Native Average					**3.81**		**-0.01**						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN2_SPK_1313.LAB	12/1/2023	13:25:56	13.15	9.97	-0.04	7.20	3.27	0.38	191.5	1.014	0.08	0.36	823	1.21	**0.080**	**97.1%**
KILN2_SPK_1314.LAB	12/1/2023	13:26:04	13.14	9.91	-0.05	7.57	3.29	0.38	191.5	1.012	0.08	0.37	955	1.21	**0.079**	**102.4%**
KILN2_SPK_1315.LAB	12/1/2023	13:26:11	13.29	9.79	0.00	7.12	3.57	0.38	191.5	1.013	0.07	0.39	796	1.21	**0.079**	**96.2%**
KILN2_SPK_1316.LAB	12/1/2023	13:26:19	13.44	9.81	-0.02	7.58	3.19	0.40	191.5	1.012	0.07	0.42	1040	1.21	**0.082**	**100.6%**
KILN2_SPK_1317.LAB	12/1/2023	13:26:26	13.44	9.78	-0.05	7.23	3.34	0.39	191.5	1.014	0.08	0.40	1265	1.21	**0.081**	**96.7%**
KILN2_SPK_1318.LAB	12/1/2023	13:26:34	13.46	9.73	-0.06	7.51	3.01	0.37	191.5	1.013	0.09	0.38	1194	1.21	**0.077**	**102.9%**
KILN2_SPK_1319.LAB	12/1/2023	13:26:42	13.48	9.74	0.01	7.35	3.06	0.37	191.5	1.012	0.09	0.37	917	1.21	**0.076**	**101.5%**
KILN2_SPK_1320.LAB	12/1/2023	13:26:49	13.45	9.68	-0.03	6.68	3.11	0.38	191.5	1.014	0.08	0.38	903	1.21	**0.080**	**90.1%**
	Spike Average					**7.28**		**0.38**							**0.079**	**98.4%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN2_CTS_SYS_1325.LAB	12/1/2023	13:27:55	0.01	-0.01	-0.01	0.12	98.62	-0.01	191.5	1.012	0.05	0.20	1147	1.21	**99.2%**
KILN2_CTS_SYS_1326.LAB	12/1/2023	13:28:03	0.01	0.01	0.02	0.25	98.16	0.01	191.5	1.012	0.06	0.19	1046	1.21	**98.8%**
KILN2_CTS_SYS_1327.LAB	12/1/2023	13:28:11	0.00	0.00	-0.03	0.04	98.84	0.01	191.5	1.012	0.06	0.19	868	1.21	**99.5%**
KILN2_CTS_SYS_1328.LAB	12/1/2023	13:28:18	0.01	-0.02	-0.04	0.14	98.95	0.00	191.5	1.011	0.08	0.19	914	1.21	**99.6%**
KILN2_CTS_SYS_1329.LAB	12/1/2023	13:28:25	0.01	-0.01	-0.09	0.05	98.81	0.03	191.5	1.012	0.06	0.18	1003	1.21	**99.4%**
KILN2_CTS_SYS_1330.LAB	12/1/2023	13:28:33	0.01	0.00	-0.01	0.07	98.52	0.01	191.5	1.012	0.06	0.22	1091	1.21	**99.2%**
KILN2_CTS_SYS_1331.LAB	12/1/2023	13:28:41	0.00	0.00	0.04	0.05	98.29	0.00	191.5	1.012	0.05	0.18	1033	1.21	**98.9%**
KILN2_CTS_SYS_1332.LAB	12/1/2023	13:28:48	0.00	0.02	0.02	0.13	98.89	0.02	191.5	1.011	0.06	0.17	800	1.22	**99.5%**
		Average					**98.64**								**99.3%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_1339.LAB	12/1/2023	13:31:07	-0.01	0.03	0.02	0.13	-0.12	0.00	191.39	1.01	0.04	0.15	1234	1.21
KILN2_N2_SYS_1340.LAB	12/1/2023	13:31:22	-0.01	0.00	0.04	-0.03	0.14	0.00	191.43	1.01	0.04	0.14	1392	1.21
KILN2_N2_SYS_1341.LAB	12/1/2023	13:31:37	0.00	-0.01	0.00	0.00	0.04	-0.01	191.40	1.01	0.05	0.14	1561	1.21
KILN2_N2_SYS_1342.LAB	12/1/2023	13:31:52	-0.01	0.01	0.03	-0.09	-0.08	0.00	191.42	1.01	0.04	0.14	1119	1.22
KILN2_N2_SYS_1343.LAB	12/1/2023	13:32:07	-0.01	-0.01	0.05	0.09	0.00	-0.01	191.41	1.01	0.04	0.14	1347	1.21
KILN2_N2_SYS_1344.LAB	12/1/2023	13:32:22	-0.01	-0.01	-0.02	0.07	-0.08	0.00	191.40	1.01	0.04	0.15	1204	1.21
KILN2_N2_SYS_1345.LAB	12/1/2023	13:32:37	0.00	-0.01	-0.02	-0.02	0.00	0.00	191.39	1.01	0.03	0.15	1372	1.21
KILN2_N2_SYS_1346.LAB	12/1/2023	13:32:52	0.01	0.00	-0.06	0.24	0.15	0.00	191.39	1.01	0.05	0.17	1242	1.21
		Average			**0.01**	**0.05**								
		Std Dev			**0.04**	**0.11**								

Ambient Air Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_AMB_1347.LAB	12/1/2023	13:38:49	2.14	0.07	-0.04	-0.02	0.01	0.00	191.1	1.010	0.04	0.20	NaN	1.21
KILN2_AMB_1348.LAB	12/1/2023	13:39:49	2.10	0.07	-0.04	0.07	-0.01	0.00	191.1	1.010	0.04	0.19	3147	1.21
KILN2_AMB_1349.LAB	12/1/2023	13:40:49	2.10	0.08	-0.08	0.07	0.03	0.00	191.2	1.010	0.05	0.20	3025	1.21
	Ambient Average					**0.04**		**0.00**						

Ambient Air Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN2_AMB_SPK_1365.LAB	12/1/2023	13:43:16	2.11	0.05	-0.05	2.77	0.01	0.26	191.4	1.011	0.06	0.26	910	1.21	**0.055**	**101.0%**
KILN2_AMB_SPK_1366.LAB	12/1/2023	13:43:24	1.96	0.10	-0.09	2.85	-0.08	0.25	191.4	1.010	0.08	0.27	841	1.21	**0.052**	**110.1%**
KILN2_AMB_SPK_1367.LAB	12/1/2023	13:43:31	1.95	0.06	-0.04	2.92	-0.39	0.26	191.4	1.011	0.06	0.25	1033	1.21	**0.055**	**107.0%**
KILN2_AMB_SPK_1368.LAB	12/1/2023	13:43:39	1.98	0.06	-0.13	2.77	-0.06	0.25	191.4	1.010	0.07	0.22	1019	1.21	**0.051**	**108.6%**
KILN2_AMB_SPK_1369.LAB	12/1/2023	13:43:46	1.94	0.09	-0.06	2.73	-0.21	0.25	191.4	1.010	0.06	0.26	911	1.21	**0.051**	**106.8%**
KILN2_AMB_SPK_1370.LAB	12/1/2023	13:43:54	1.97	0.07	-0.04	3.24	-0.13	0.26	191.4	1.010	0.05	0.23	1208	1.21	**0.054**	**121.1%**
KILN2_AMB_SPK_1371.LAB	12/1/2023	13:44:02	1.98	0.05	-0.02	3.25	-0.09	0.26	191.4	1.010	0.06	0.26	1090	1.21	**0.053**	**123.2%**
KILN2_AMB_SPK_1372.LAB	12/1/2023	13:44:09	2.00	0.05	-0.04	2.38	-0.14	0.25	191.4	1.011	0.07	0.25	1096	1.21	**0.052**	**92.5%**
	Spike Average					**2.86**		**0.25**							**0.053**	**108.8%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN2_CTS_SYS_1378.LAB	12/1/2023	13:45:53	0.00	0.00	0.01	0.02	98.43	-0.01	191.4	1.010	0.06	0.17	732	1.21	**99.1%**
KILN2_CTS_SYS_1379.LAB	12/1/2023	13:46:00	0.00	-0.01	0.05	-0.03	98.81	0.01	191.4	1.010	0.06	0.19	1079	1.21	**99.4%**
KILN2_CTS_SYS_1380.LAB	12/1/2023	13:46:07	0.00	-0.01	-0.02	0.50	99.24	0.00	191.4	1.010	0.06	0.20	957	1.21	**99.9%**
KILN2_CTS_SYS_1381.LAB	12/1/2023	13:46:15	0.01	-0.02	0.02	0.06	99.57	0.00	191.3	1.009	0.05	0.22	920	1.21	**100.2%**
KILN2_CTS_SYS_1382.LAB	12/1/2023	13:46:22	0.00	-0.02	0.11	-0.15	99.23	-0.01	191.3	1.009	0.06	0.18	1097	1.21	**99.9%**
KILN2_CTS_SYS_1383.LAB	12/1/2023	13:46:30	0.02	-0.02	-0.08	0.09	98.55	-0.01	191.4	1.010	0.05	0.17	965	1.21	**99.2%**
KILN2_CTS_SYS_1384.LAB	12/1/2023	13:46:38	-0.01	0.00	0.04	0.05	98.62	-0.02	191.4	1.010	0.04	0.20	1100	1.21	**99.3%**
KILN2_CTS_SYS_1385.LAB	12/1/2023	13:46:45	0.01	0.00	-0.01	0.18	98.56	-0.02	191.4	1.010	0.07	0.16	744	1.21	**99.2%**
		Average					**98.88**								**99.5%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_1391.LAB	12/1/2023	13:48:56	-0.01	-0.01	0.01	0.01	0.15	0.01	191.42	1.01	0.04	0.13	1449	1.21
KILN2_N2_SYS_1392.LAB	12/1/2023	13:49:12	0.00	-0.02	-0.02	0.24	-0.02	0.00	191.38	1.01	0.05	0.17	1255	1.21
KILN2_N2_SYS_1393.LAB	12/1/2023	13:49:26	0.00	-0.01	-0.07	0.00	0.23	0.00	191.38	1.01	0.05	0.16	1570	1.21
KILN2_N2_SYS_1394.LAB	12/1/2023	13:49:42	0.00	0.02	-0.02	-0.09	-0.03	-0.01	191.37	1.01	0.04	0.14	1760	1.21
KILN2_N2_SYS_1395.LAB	12/1/2023	13:49:56	-0.01	-0.01	0.02	-0.07	-0.22	-0.01	191.38	1.01	0.04	0.16	1394	1.21
KILN2_N2_SYS_1396.LAB	12/1/2023	13:50:12	0.00	-0.01	-0.02	-0.04	-0.06	0.01	191.44	1.01	0.03	0.16	1851	1.21
KILN2_N2_SYS_1397.LAB	12/1/2023	13:50:26	0.00	0.00	-0.01	-0.04	-0.22	-0.01	191.41	1.01	0.04	0.14	1566	1.21
KILN2_N2_SYS_1398.LAB	12/1/2023	13:50:41	0.00	-0.01	-0.02	0.29	-0.06	-0.01	191.39	1.01	0.04	0.15	1435	1.21
		Average			**-0.02**	**0.04**								
		Std Dev			**0.03**	**0.14**								

Nitrogen Direct to FTIR

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
N2_DIR_1401.LAB	12/1/2023	13:58:30	0.00	-0.01	-0.04	0.04	-0.06	0.00	191.06	0.98	0.03	0.12	3388	1.21
N2_DIR_1402.LAB	12/1/2023	14:00:30	0.00	-0.01	-0.02	0.05	-0.07	0.00	191.00	0.98	0.03	0.12	3002	1.21
N2_DIR_1403.LAB	12/1/2023	14:02:31	-0.01	-0.01	-0.01	0.03	0.00	-0.01	190.98	0.98	0.03	0.13	3836	1.21

APPENDIX

FTIR Detection Limit Data

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_N2_SYS_0224.LAB	11/29/2023	9:13:36	0.01	0.00	0.04	0.0	-0.07	-0.01	191.47	1.03	0.06	0.14	1197	1.22
KILN1_N2_SYS_0225.LAB	11/29/2023	9:13:51	-0.01	0.01	0.01	0.1	-0.11	-0.01	191.46	1.03	0.05	0.14	1083	1.22
KILN1_N2_SYS_0226.LAB	11/29/2023	9:14:06	0.00	0.01	-0.09	0.0	-0.02	0.01	191.46	1.03	0.06	0.16	1093	1.22
KILN1_N2_SYS_0227.LAB	11/29/2023	9:14:21	0.00	0.02	-0.02	0.1	0.14	0.00	191.44	1.03	0.05	0.15	2101	1.22
KILN1_N2_SYS_0228.LAB	11/29/2023	9:14:36	-0.01	0.01	-0.02	0.1	-0.19	0.00	191.44	1.03	0.05	0.15	1014	1.22
KILN1_N2_SYS_0229.LAB	11/29/2023	9:14:51	0.00	0.00	0.00	0.0	-0.05	-0.01	191.45	1.03	0.06	0.15	901	1.22
KILN1_N2_SYS_0230.LAB	11/29/2023	9:15:06	0.00	0.00	0.05	0.3	0.00	0.00	191.47	1.03	0.05	0.13	1105	1.22
KILN1_N2_SYS_128_0231.LAB	11/29/2023	9:17:35	0.00	0.01	-0.05	0.0	0.02	0.00	191.45	1.03	0.04	0.10	NaN	1.22

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_N2_SYS_0384.LAB	11/29/2023	11:17:34	-0.01	0.01	-0.01	-0.1	-0.07	0.01	191.47	1.03	0.04	0.16	1351	1.25
KILN1_N2_SYS_0385.LAB	11/29/2023	11:17:50	-0.02	-0.01	-0.10	0.2	0.20	0.00	191.45	1.03	0.04	0.16	1759	1.25
KILN1_N2_SYS_0386.LAB	11/29/2023	11:18:05	-0.02	0.00	-0.04	-0.1	0.30	0.00	191.40	1.03	0.05	0.17	1720	1.25
KILN1_N2_SYS_0387.LAB	11/29/2023	11:18:20	-0.01	-0.01	-0.04	0.0	0.23	0.00	191.45	1.03	0.04	0.16	1240	1.25
KILN1_N2_SYS_0388.LAB	11/29/2023	11:18:35	0.00	0.01	0.00	-0.1	-0.11	0.01	191.47	1.03	0.04	0.13	1150	1.25
KILN1_N2_SYS_0389.LAB	11/29/2023	11:18:50	0.00	0.00	-0.04	0.1	-0.07	0.00	191.46	1.03	0.04	0.15	1282	1.25
KILN1_N2_SYS_0390.LAB	11/29/2023	11:19:05	-0.02	0.02	-0.08	-0.2	0.16	0.01	191.47	1.03	0.04	0.15	1710	1.25
KILN1_N2_SYS_0391.LAB	11/29/2023	11:19:20	-0.02	0.01	-0.02	-0.2	-0.12	0.00	191.42	1.03	0.05	0.16	1824	1.25

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_N2_SYS_0570.LAB	11/29/2023	13:57:41	0.00	0.01	-0.07	-0.1	0.13	0.01	191.24	1.02	0.05	0.15	1266	1.26
KILN1_N2_SYS_0571.LAB	11/29/2023	13:57:56	-0.01	0.00	0.02	-0.3	-0.10	0.00	191.22	1.02	0.05	0.16	1412	1.26
KILN1_N2_SYS_0572.LAB	11/29/2023	13:58:11	-0.01	0.01	-0.01	0.1	-0.05	-0.01	191.18	1.02	0.06	0.17	1193	1.26
KILN1_N2_SYS_0573.LAB	11/29/2023	13:58:27	-0.01	-0.01	0.00	-0.1	-0.06	0.00	191.22	1.02	0.05	0.17	1510	1.26
KILN1_N2_SYS_0574.LAB	11/29/2023	13:58:42	0.00	0.00	-0.02	0.0	-0.01	0.01	191.22	1.02	0.04	0.15	1239	1.26
KILN1_N2_SYS_0575.LAB	11/29/2023	13:58:57	-0.01	0.00	-0.09	0.2	-0.31	0.00	191.26	1.02	0.04	0.17	1478	1.26
KILN1_N2_SYS_0576.LAB	11/29/2023	13:59:12	0.00	0.01	-0.03	0.3	-0.04	0.01	191.22	1.02	0.06	0.15	1496	1.26
KILN1_N2_SYS_0577.LAB	11/29/2023	13:59:27	-0.01	-0.01	-0.02	-0.4	-0.13	0.00	191.25	1.02	0.06	0.17	1475	1.26

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_N2_SYS_0725.LAB	11/29/2023	15:53:45	0.00	-0.01	-0.08	-0.1	0.23	-0.01	191.41	1.02	0.05	0.19	1581	1.25
KILN1_N2_SYS_0726.LAB	11/29/2023	15:53:59	-0.01	0.01	-0.02	-0.1	-0.19	0.01	191.40	1.02	0.05	0.17	1681	1.26
KILN1_N2_SYS_0727.LAB	11/29/2023	15:54:14	-0.01	-0.01	-0.04	0.0	-0.02	-0.01	191.37	1.02	0.05	0.16	1814	1.25
KILN1_N2_SYS_0728.LAB	11/29/2023	15:54:30	-0.01	-0.01	0.00	-0.1	-0.03	0.00	191.39	1.02	0.05	0.15	1615	1.26
KILN1_N2_SYS_0729.LAB	11/29/2023	15:54:44	0.00	0.00	-0.01	-0.2	-0.07	0.00	191.37	1.02	0.04	0.17	1322	1.26
KILN1_N2_SYS_0730.LAB	11/29/2023	15:54:59	-0.02	0.00	-0.08	-0.2	-0.04	-0.01	191.37	1.02	0.06	0.17	1087	1.25
KILN1_N2_SYS_0731.LAB	11/29/2023	15:55:15	0.00	-0.01	-0.01	-0.2	0.66	0.01	191.37	1.02	0.07	0.20	1088	1.26
KILN1_N2_SYS_0732.LAB	11/29/2023	15:55:30	-0.01	0.03	0.05	0.0	0.16	-0.01	191.39	1.02	0.10	0.32	692	1.26

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_N2_SYS_0779.LAB	11/29/2023	16:14:52	-0.02	0.01	0.01	-0.1	0.03	0.00	191.42	1.02	0.04	0.16	1105	1.25
KILN1_N2_SYS_0780.LAB	11/29/2023	16:15:07	-0.02	0.01	-0.03	-0.1	0.10	0.00	191.40	1.02	0.05	0.14	1462	1.25
KILN1_N2_SYS_0781.LAB	11/29/2023	16:15:22	-0.01	-0.01	-0.03	-0.3	-0.15	0.01	191.37	1.02	0.04	0.16	1392	1.25
KILN1_N2_SYS_0782.LAB	11/29/2023	16:15:37	-0.01	-0.01	-0.04	0.0	-0.25	0.00	191.37	1.02	0.04	0.16	1455	1.25
KILN1_N2_SYS_0783.LAB	11/29/2023	16:15:52	-0.01	0.00	0.02	0.0	0.23	0.00	191.37	1.02	0.04	0.14	1519	1.25
KILN1_N2_SYS_0784.LAB	11/29/2023	16:16:07	-0.01	0.00	-0.01	-0.1	-0.06	0.00	191.37	1.02	0.04	0.15	1366	1.25
KILN1_N2_SYS_0785.LAB	11/29/2023	16:16:22	-0.02	0.01	-0.03	-0.1	0.04	0.00	191.37	1.02	0.05	0.17	1359	1.26
KILN1_N2_SYS_0786.LAB	11/29/2023	16:16:37	0.00	0.00	-0.05	0.1	-0.06	-0.01	191.37	1.02	0.05	0.19	1224	1.25
		Average			**-0.02**	**0.0**								
		Std Dev			**0.04**	**0.1**								
		3 Sigma			**0.11**	**0.4**								

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_0190.LAB	11/30/2023	9:35:14	0.01	0.00	-0.01	-0.1	0.12	0.01	191.45	1.02	0.03	0.12	1174	1.23
KILN2_N2_SYS_0191.LAB	11/30/2023	9:35:29	0.01	0.00	-0.01	0.0	-0.28	0.00	191.47	1.01	0.04	0.11	1222	1.23
KILN2_N2_SYS_0192.LAB	11/30/2023	9:35:44	0.01	0.01	-0.07	-0.1	0.26	0.00	191.47	1.02	0.04	0.11	1530	1.23
KILN2_N2_SYS_0193.LAB	11/30/2023	9:35:59	0.00	0.02	-0.03	-0.1	0.01	0.00	191.48	1.02	0.04	0.11	1167	1.23
KILN2_N2_SYS_0194.LAB	11/30/2023	9:36:14	0.01	0.00	0.04	0.0	0.05	0.00	191.47	1.02	0.05	0.11	1504	1.23
KILN2_N2_SYS_0195.LAB	11/30/2023	9:36:29	0.02	0.00	0.01	0.3	0.08	0.00	191.50	1.02	0.04	0.12	1805	1.23
KILN2_N2_SYS_0196.LAB	11/30/2023	9:36:44	0.01	0.00	-0.01	0.1	0.01	0.00	191.50	1.01	0.04	0.12	1251	1.23
KILN2_N2_SYS_128_0197.LAB	11/30/2023	9:39:13	0.01	0.00	-0.01	0.0	0.01	0.00	191.45	1.01	0.02	0.07	NaN	1.23

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_0497.LAB	11/30/2023	13:21:08	0.01	0.00	-0.06	-0.1	-0.02	0.00	191.47	1.01	0.04	0.16	2156	1.25
KILN2_N2_SYS_0498.LAB	11/30/2023	13:21:23	0.00	0.00	-0.02	0.1	0.07	0.01	191.47	1.01	0.05	0.16	1429	1.25
KILN2_N2_SYS_0499.LAB	11/30/2023	13:21:38	0.00	0.01	0.00	-0.1	-0.02	0.00	191.47	1.01	0.05	0.15	1773	1.25
KILN2_N2_SYS_0500.LAB	11/30/2023	13:21:53	0.00	0.01	-0.01	0.0	-0.14	0.00	191.48	1.01	0.05	0.16	1693	1.25
KILN2_N2_SYS_0501.LAB	11/30/2023	13:22:08	0.02	0.00	-0.05	0.1	-0.01	0.00	191.47	1.01	0.05	0.17	1598	1.25
KILN2_N2_SYS_0502.LAB	11/30/2023	13:22:23	0.01	0.02	-0.01	0.0	0.02	0.00	191.48	1.01	0.05	0.15	1246	1.25
KILN2_N2_SYS_0503.LAB	11/30/2023	13:22:38	0.02	0.02	0.01	0.0	0.03	0.00	191.48	1.01	0.04	0.16	1592	1.25
KILN2_N2_SYS_0504.LAB	11/30/2023	13:22:53	0.00	0.00	0.02	-0.1	0.09	0.00	191.47	1.01	0.05	0.15	2123	1.25

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_0639.LAB	11/30/2023	15:04:17	0.02	0.00	0.02	0.1	-0.19	0.01	191.52	1.01	0.06	0.16	1199	1.25
KILN2_N2_SYS_0640.LAB	11/30/2023	15:04:32	0.02	0.01	-0.04	0.0	-0.19	0.00	191.50	1.01	0.05	0.18	1413	1.25
KILN2_N2_SYS_0641.LAB	11/30/2023	15:04:47	0.01	0.02	0.02	0.0	-0.09	-0.01	191.53	1.01	0.04	0.16	1531	1.25
KILN2_N2_SYS_0642.LAB	11/30/2023	15:05:02	0.01	0.02	0.04	-0.1	0.09	0.00	191.49	1.01	0.04	0.18	1546	1.25
KILN2_N2_SYS_0643.LAB	11/30/2023	15:05:17	0.01	0.00	0.07	-0.1	-0.02	-0.01	191.57	1.01	0.05	0.18	1180	1.25
KILN2_N2_SYS_0644.LAB	11/30/2023	15:05:32	0.01	0.01	0.00	-0.3	-0.04	0.01	191.58	1.01	0.04	0.17	1070	1.25
KILN2_N2_SYS_0645.LAB	11/30/2023	15:05:47	0.02	0.02	0.00	0.0	0.03	0.00	191.56	1.01	0.04	0.18	1149	1.25
KILN2_N2_SYS_128_0646.LAB	11/30/2023	15:08:08	0.00	0.01	-0.01	-0.1	0.02	0.00	191.52	1.01	0.03	0.14	NaN	1.25

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_0846.LAB	11/30/2023	18:21:18	0.01	0.01	-0.03	-0.1	0.12	0.00	191.23	1.01	0.04	0.18	1286	1.24
KILN2_N2_SYS_0847.LAB	11/30/2023	18:21:34	0.01	0.00	0.00	-0.3	-0.24	0.00	191.33	1.01	0.04	0.19	1248	1.24
KILN2_N2_SYS_0848.LAB	11/30/2023	18:21:48	0.01	0.01	-0.01	-0.2	-0.02	0.01	191.29	1.01	0.04	0.19	1413	1.24
KILN2_N2_SYS_0849.LAB	11/30/2023	18:22:04	0.02	0.00	-0.02	0.0	0.14	0.01	191.32	1.01	0.05	0.21	1493	1.24
KILN2_N2_SYS_0850.LAB	11/30/2023	18:22:18	0.01	0.00	-0.04	0.1	-0.03	0.00	191.32	1.01	0.04	0.19	1586	1.24
KILN2_N2_SYS_0851.LAB	11/30/2023	18:22:33	0.02	0.01	0.04	-0.1	-0.20	0.00	191.35	1.01	0.03	0.18	1206	1.24
KILN2_N2_SYS_0852.LAB	11/30/2023	18:22:48	0.01	0.01	0.00	-0.3	0.14	0.01	191.36	1.01	0.05	0.19	1281	1.24
KILN2_N2_SYS_0853.LAB	11/30/2023	18:23:03	0.01	0.01	-0.02	-0.1	0.15	0.00	191.37	1.01	0.04	0.16	1123	1.24

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_0876.LAB	11/30/2023	18:30:33	0.00	0.01	-0.07	0.0	0.18	0.00	191.46	1.01	0.04	0.20	NaN	1.24
KILN2_N2_SYS_0877.LAB	11/30/2023	18:30:48	0.01	0.00	-0.10	-0.2	-0.06	0.00	191.47	1.01	0.05	0.18	1301	1.24
KILN2_N2_SYS_0878.LAB	11/30/2023	18:31:03	0.02	0.00	-0.04	-0.2	0.19	-0.01	191.47	1.01	0.06	0.19	1183	1.25
KILN2_N2_SYS_0879.LAB	11/30/2023	18:31:18	0.01	0.00	-0.04	0.2	0.06	-0.01	191.48	1.01	0.05	0.20	1506	1.24
KILN2_N2_SYS_0880.LAB	11/30/2023	18:31:33	0.01	0.01	-0.01	-0.2	-0.10	-0.01	191.48	1.01	0.05	0.19	1523	1.24
KILN2_N2_SYS_0881.LAB	11/30/2023	18:31:48	0.01	0.01	-0.08	0.0	-0.05	-0.01	191.48	1.01	0.04	0.17	1079	1.24
KILN2_N2_SYS_0882.LAB	11/30/2023	18:32:04	0.02	0.00	-0.03	0.2	0.03	0.00	191.47	1.01	0.05	0.17	1186	1.24
KILN2_N2_SYS_0883.LAB	11/30/2023	18:32:18	0.01	0.00	0.00	0.0	-0.12	-0.01	191.47	1.01	0.04	0.18	1399	1.24

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_1017.LAB	12/1/2023	10:04:29	0.01	-0.01	0.03	0.2	0.11	0.01	191.47	1.01	0.03	0.12	1223	1.23
KILN2_N2_SYS_1018.LAB	12/1/2023	10:04:44	0.00	0.00	0.05	0.2	-0.10	0.00	191.43	1.01	0.05	0.12	1631	1.23
KILN2_N2_SYS_1019.LAB	12/1/2023	10:04:59	0.00	0.01	0.00	0.2	0.14	0.00	191.45	1.01	0.04	0.14	1476	1.23
KILN2_N2_SYS_1020.LAB	12/1/2023	10:05:14	0.00	0.00	0.03	0.0	0.29	0.00	191.47	1.01	0.04	0.13	2364	1.23
KILN2_N2_SYS_1021.LAB	12/1/2023	10:05:29	0.01	0.00	0.00	0.4	-0.05	0.01	191.47	1.01	0.04	0.12	1313	1.23
KILN2_N2_SYS_1022.LAB	12/1/2023	10:05:44	0.00	0.01	-0.05	0.5	-0.07	0.01	191.41	1.01	0.03	0.14	1094	1.23
KILN2_N2_SYS_1023.LAB	12/1/2023	10:05:59	0.01	0.00	-0.01	0.2	0.13	0.00	191.37	1.01	0.04	0.12	1256	1.23
KILN2_N2_SYS_1024.LAB	12/1/2023	10:06:14	0.02	-0.02	-0.02	0.2	0.00	0.00	191.47	1.01	0.04	0.14	1708	1.23

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_1081.LAB	12/1/2023	10:32:45	0.01	-0.01	0.03	0.1	0.03	0.01	191.35	1.02	0.06	0.13	1315	1.23
KILN2_N2_SYS_1082.LAB	12/1/2023	10:33:01	0.01	0.00	-0.02	0.0	-0.06	0.01	191.37	1.02	0.04	0.12	1156	1.23
KILN2_N2_SYS_1083.LAB	12/1/2023	10:33:16	-0.01	0.01	0.01	-0.1	0.13	0.00	191.37	1.02	0.04	0.12	1278	1.23
KILN2_N2_SYS_1084.LAB	12/1/2023	10:33:30	0.00	0.01	0.00	0.2	-0.02	0.00	191.39	1.02	0.03	0.13	1224	1.23
KILN2_N2_SYS_1085.LAB	12/1/2023	10:33:45	0.00	0.02	0.01	0.2	-0.06	0.00	191.37	1.02	0.05	0.13	1242	1.23
KILN2_N2_SYS_1086.LAB	12/1/2023	10:34:00	0.01	0.00	0.03	0.0	0.08	0.00	191.39	1.01	0.04	0.12	1432	1.23
KILN2_N2_SYS_1087.LAB	12/1/2023	10:34:16	0.01	-0.03	0.00	-0.1	0.26	0.00	191.44	1.01	0.04	0.13	1689	1.23
KILN2_N2_SYS_1088.LAB	12/1/2023	10:34:30	0.00	0.00	-0.07	0.1	0.16	0.00	191.39	1.01	0.04	0.12	1271	1.23

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_1190.LAB	12/1/2023	11:45:48	0.00	0.00	-0.01	0.1	-0.01	0.00	191.41	1.01	0.04	0.14	1104	1.23
KILN2_N2_SYS_1191.LAB	12/1/2023	11:46:03	0.01	0.01	0.02	0.2	-0.06	-0.01	191.47	1.01	0.04	0.12	1124	1.23
KILN2_N2_SYS_1192.LAB	12/1/2023	11:46:18	-0.01	0.00	-0.01	-0.1	-0.08	0.00	191.47	1.01	0.04	0.14	1857	1.23
KILN2_N2_SYS_1193.LAB	12/1/2023	11:46:33	0.00	0.00	0.03	0.1	-0.18	0.00	191.47	1.01	0.04	0.13	2364	1.23
KILN2_N2_SYS_1194.LAB	12/1/2023	11:46:48	0.01	-0.01	-0.02	0.0	0.16	0.00	191.47	1.01	0.04	0.12	1116	1.23
KILN2_N2_SYS_1195.LAB	12/1/2023	11:47:03	0.01	0.00	-0.01	0.1	0.05	0.00	191.47	1.01	0.04	0.12	1181	1.23
KILN2_N2_SYS_1196.LAB	12/1/2023	11:47:18	0.01	0.00	0.01	-0.2	-0.17	0.00	191.47	1.01	0.04	0.14	1232	1.23
KILN2_N2_SYS_1197.LAB	12/1/2023	11:47:33	0.00	-0.01	-0.03	0.2	-0.05	0.00	191.47	1.01	0.04	0.11	1398	1.23

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_1339.LAB	12/1/2023	13:31:07	-0.01	0.03	0.02	0.1	-0.12	0.00	191.39	1.01	0.04	0.15	1234	1.21
KILN2_N2_SYS_1340.LAB	12/1/2023	13:31:22	-0.01	0.00	0.04	0.0	0.14	0.00	191.43	1.01	0.04	0.14	1392	1.21
KILN2_N2_SYS_1341.LAB	12/1/2023	13:31:37	0.00	-0.01	0.00	0.0	0.04	-0.01	191.40	1.01	0.05	0.14	1561	1.21
KILN2_N2_SYS_1342.LAB	12/1/2023	13:31:52	-0.01	0.01	0.03	-0.1	-0.08	0.00	191.42	1.01	0.04	0.14	1119	1.22
KILN2_N2_SYS_1343.LAB	12/1/2023	13:32:07	-0.01	-0.01	0.05	0.1	0.00	-0.01	191.41	1.01	0.04	0.14	1347	1.21
KILN2_N2_SYS_1344.LAB	12/1/2023	13:32:22	-0.01	-0.01	-0.02	0.1	-0.08	0.00	191.40	1.01	0.04	0.15	1204	1.21
KILN2_N2_SYS_1345.LAB	12/1/2023	13:32:37	0.00	-0.01	-0.02	0.0	0.00	0.00	191.39	1.01	0.03	0.15	1372	1.21
KILN2_N2_SYS_1346.LAB	12/1/2023	13:32:52	0.01	0.00	-0.06	0.2	0.15	0.00	191.39	1.01	0.05	0.17	1242	1.21

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN2_N2_SYS_1391.LAB	12/1/2023	13:48:56	-0.01	-0.01	0.01	0.0	0.15	0.01	191.42	1.01	0.04	0.13	1449	1.21
KILN2_N2_SYS_1392.LAB	12/1/2023	13:49:12	0.00	-0.02	-0.02	0.2	-0.02	0.00	191.38	1.01	0.05	0.17	1255	1.21
KILN2_N2_SYS_1393.LAB	12/1/2023	13:49:26	0.00	-0.01	-0.07	0.0	0.23	0.00	191.38	1.01	0.05	0.16	1570	1.21
KILN2_N2_SYS_1394.LAB	12/1/2023	13:49:42	0.00	0.02	-0.02	-0.1	-0.03	-0.01	191.37	1.01	0.04	0.14	1760	1.21
KILN2_N2_SYS_1395.LAB	12/1/2023	13:49:56	-0.01	-0.01	0.02	-0.1	-0.22	-0.01	191.38	1.01	0.04	0.16	1394	1.21
KILN2_N2_SYS_1396.LAB	12/1/2023	13:50:12	0.00	-0.01	-0.02	0.0	-0.06	0.01	191.44	1.01	0.03	0.16	1851	1.21
KILN2_N2_SYS_1397.LAB	12/1/2023	13:50:26	0.00	0.00	-0.01	0.0	-0.22	-0.01	191.41	1.01	0.04	0.14	1566	1.21
KILN2_N2_SYS_1398.LAB	12/1/2023	13:50:41	0.00	-0.01	-0.02	0.3	-0.06	-0.01	191.39	1.01	0.04	0.15	1435	1.21
		Average			**-0.01**	**0.0**								
		Std Dev			**0.03**	**0.1**								
		3 Sigma			**0.10**	**0.4**								

APPENDIX

Gas Certificates

Airgas Specialty Gases
Airgas USA LLC
6141 Easton Road
Plumsteadville, PA 18949
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED STANDARD-SPEC

Customer:	MONTROSE ENVIRONMENTAL		
Part Number:	X03NI99C15AC0W8	Reference Number:	160-402845896-1
Cylinder Number:	CC768259	Cylinder Volume:	144.4 CF
Laboratory:	124 - Plumsteadville - PA	Cylinder Pressure:	2015 PSIG
Analysis Date:	Sep 11, 2023	Valve Outlet:	350SS
Lot Number:	160-402845896-1		

Expiration Date: Mar 11, 2024

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
SULFUR HEXAFLUORIDE	5.000 PPM	5.000 PPM	+/- 5%
HYDROGEN CYANIDE	50.00 PPM	49.10 PPM	+/- 5%
NITROGEN	Balance		

Signature on file

Approved for Release

Airgas Specialty Gases
Airgas USA LLC
24075 US Hwy 6
Stryker, OH 43557
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: PRIMARY STANDARD

Part Number:	X02NI99P15AD524	Reference Number:	141-402834792-1
Cylinder Number:	EB0158986	Cylinder Volume:	140.0 CF
Laboratory:	124 - Stryker (SAP) - OH	Cylinder Pressure:	2015 PSIG
Analysis Date:	Sep 05, 2023	Valve Outlet:	350
Lot Number:	141-402834792-1		

Expiration Date: Sep 05, 2031

Primary Standard Gas Mixtures are traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
ETHYLENE	100.0 PPM	99.97 PPM	+/- 1%
NITROGEN	Balance		

Signature on file

Approved for Release

CEMEX
Brooksville, FL
Kiln 1
USEPA Method 320
FTIR Emissions Testing
June 5th, 2024
PROJ-031486

By

Shane Douglas
Field Technician / Chemist

June 10th, 2024

2625 Denison Drive · Mount Pleasant, MI 48858 · (989) 772-5088 · Fax (989) 772-5870

CEMEX
Brooksville, FL
Kiln 1
USEPA Method 320
FTIR Emissions Testing
June 5th, 2024
PROJ-031486

Scope

Montrose Air Quality Services (MAQS, Mt. Pleasant, MI) was contracted by CEMEX (Brooksville, FL) to conduct emissions testing on Kiln 1. Preliminary testing was performed on June 4th, 2024 and formal testing was performed June 5th, 2024 to determine concentrations of gaseous hydrogen cyanide (HCN), carbon dioxide (CO_2), hydrogen fluoride (HF), and moisture (H_2O) from Kiln 1 while operating without the inline raw mill.

US EPA Method 320 was performed to quantify the concentration levels of gaseous hydrogen cyanide, carbon dioxide, hydrogen fluoride, and moisture. Amanda Nilles (MAQS) performed data collection, Shane Douglas (MAQS) data validation and report generation, and Phillip Kauppi (MAQS) reviewed the report.

Procedures

FTIR Instrumental Configuration

FTIR data were collected using an MKS MultiGas 2030 FTIR spectrometer. The FTIR was equipped with a temperature-controlled, 5.11-meter multipass gas cell maintained at 191°C. All data were collected at 0.5 cm-1 resolution. Each FTIR spectrum was derived from the coaddition of 64 scans, with a new data point generated approximately every 60 seconds.

Sample gas continuously passed through the FTIR gas cell via heated head sampling pump. Total sample flow was approximately ten liters per minute. Gas flow and sampling system pressure were monitored using a rotameter and pressure transducer. See Table 1 below for sampling system details.

Table 1 – FTIR Sampling System Parameters

Source	MKS Serial #	Sampling Line	Probe Assembly	Particulate Filter Media	Operating Temperatures
Kiln 1	017708265	100' 3/8" dia., heated Teflon	Heated 4', 3/8" dia. SS	0.01µ heated borosilicate glass fiber	191°C

FTIR QA/QC Methodology

QA/QC procedures followed US EPA Method 320. See Tables 2 and 3 below for QA/QC procedure details and list of calibration gas standards. All calibration gases were introduced to the analyzer and sampling system using instrument grade stainless steel rotameters. All QA/QC procedures were within the acceptance criteria allowance of the EPA methodology. See the Kiln 1 – FTIR QA/QC Data Appendix for numerical results.

Table 2 – FTIR QA/QC Procedures

QAQC Specification	Purpose	Calibration Gas	Delivery	Frequency	Acceptance Criteria	Result
M320: Zero	Verify that the FTIR is free of contaminants & zero the FTIR	Nitrogen (zero)	Direct to FTIR	pre/post test	< MDL or Noise	**Pass**
M320: Calibration Transfer Standard (CTS) Direct	Verify FTIR stability, confirm optical path length	Ethylene	Direct to FTIR	pre/post test	+/- 5% cert. value	**Pass**
M320: Analyte Direct	Verify FTIR calibration	HCN, SF_6	Direct to FTIR	pretest	+/- 5% cert. value	**Pass**
M320: CTS Response	Verify system stability, recovery, RT	Ethylene	Sampling System	pre/post run	+/- 5% of Direct Measurement	**Pass**
M320: Zero Response	Verify system is free of contaminants, system bias	Ethylene	Sampling System	pre/post run	Bias correct data	**Pass**
M320: Analyte Spike	Verify system ability to deliver and quantify analyte of interest in the presence of other effluent gases	HCN, SF_6	Dynamic Addition to Sampling System, 1:10 effluent	pre/post run	+/- 20% theoretical recovery	**Pass**
SNR	Signal to Noise Ratio	-	Sampling System	Test runs	>2500	**Pass**
SBeam at 2500 cm-1	Signal intensity at 2500 wavenumber	-	All	All	>0.9	**Pass**
Calculated Residual	The calculated residual is used to determine the interference within the analysis band for a given compound	-	All	Test runs	< 0.4 ppm for HCN and HF	**Pass**

Table 3 – Calibration Gas Standards

Components	Concentration (ppm)	Vendor	Cylinder #	Standard Type
Ethylene	99.97	Airgas	EB0158986	Primary +/- 1%
HCN, SF_6	49.3, 5.00	Airgas	CC768248	Certified +/- 5%, 5%
Nitrogen	zero gas	Airgas	n/a	UHP Grade

FTIR QA/QC Calculations

Method 320: Analyte Spiking

Hydrogen cyanide spiking was performed at the source prior to and after each run to verify the ability of the sampling systems to quantitatively deliver a sample containing hydrogen cyanide from the base of the probe to the FTIR. The spike target dilution ratio was 1:10 or less, or to add

3-4 ppm to the native sample, whichever results in a greater spiked concentration. Spike recovery results are within ±20% or ±0.5ppm, whichever is least restrictive.

Analyte spiking assures the ability of the FTIR to quantify hydrogen cyanide in the presence of effluent gas.

As part of the spiking procedure, samples from the source were measured before and after each spike to determine hydrogen cyanide concentrations to be used in the spike recovery calculations. The analyte spiking gas contained a low concentration of sulfur hexafluoride (SF_6). The determined SF_6 concentration in the spiked sample was used to calculate the dilution factor of the spike and thus used to calculate the concentration of the spiked hydrogen cyanide.

$$DF = \frac{SF6(spk) - SF6(nat)}{SF6(Direct)}$$

$$CS = DF * Spike(dir) + Unspike(1 - DF) \quad \text{(Sec. 9.3.1 (2) USEPA Method 320)}$$

DF = Dilution factor of the spike gas
$SF_{6(dir)}$ = SF_6 concentration measured directly in undiluted spike gas
$SF_{6(spk)}$ = Diluted SF_6 concentration measured in a spiked sample
$SF_{6(nat)}$ = Native SF_6 concentration measured in unspiked samples
$Spike_{dir}$ = Concentration of the analyte in the spike standard measure by the FTIR directly
CS = Expected concentration of the spiked samples
Unspike = Native concentration of analytes in unspiked samples

A total of six HCN spikes were performed on Kiln 1 with the raw mill off with an average recovery of 97.0%. See the FTIR QAQC appendix for all spiking results.

FTIR Post Collection Data Validation

As part of the data validation procedure, reference spectra are manually fit to that of the sample spectra and a concentration is determined. The reference spectra are scaled to match the peak amplitude of the sample, thus providing a scale factor. The scale factor multiplied by the reference spectra concentration is used to determine the concentration value for the sample spectra. Sample pressure and temperature corrections are then applied to compute the final sample concentration. The manually calculated results are then compared with the software-generated results. The data is then validated if the two concentrations are within ± 20% agreement. If there is a difference greater than ± 20% the spectra are reviewed for possible spectral interferences or any other probable causes leading to misquantified data.

FTIR Detection Limit

The detection limit for each analyte was calculated using the determined target results from nitrogen spectra collected through the sampling system. The minimum detectable concentration of each analyte was calculated as three times the standard deviation of the noise in the FTIR system. This minimum concentration can be detected with a probability of 99.7 %. See Table 4 below for determined minimum detectable concentrations. The FTIR Detection Limit Data appendix contains all results used for the detection limit calculation.

Table 4 - FTIR Detection Limits

Analyte	Detection Limit (ppmv wet)	Detection Limit (%)
Hydrogen Cyanide	0.4	-
Hydrogen Fluoride	0.1	-
Moisture	-	0.1
Carbon Dioxide	-	0.1

Results and Discussion

Three, sixty-minute test runs were performed on Kiln 1 with the Mill Off on June 5th, 2024.

Analyte spiking was performed to confirm the ability of the measurement system to deliver and quantify hydrogen cyanide. See the FTIR QA/QC Data and Run Results Appendix for all concentration results. See Tables 5 below for a summary of the test run results.

Table 5 – Kiln 1 Mill Off Test Summary

Test Run Detail	Calculation	H2O (%)	CO2 (%)	HF (ppmv wet)	HCN (ppmv wet)
Kiln 1 - Mill Off Test Run 1 6/5/2024 8:00 - 9:00	Minimum	5.11	5.33	-0.08 (<0.1)	1.07
	Maximum	5.79	6.60	-0.02 (<0.1)	1.31
	Average	5.45	5.99	-0.04 (<0.1)	1.18
	Std Dev	0.12	0.28	0.01	0.06
	3 Sigma	0.35	0.85	0.03	0.18
Kiln 1 - Mill Off Test Run 2 6/5/2024 9:25 - 10:25	Minimum	4.71	5.38	-0.07 (<0.1)	1.11
	Maximum	5.60	6.64	-0.03 (<0.1)	1.35
	Average	5.17	6.02	-0.0 (<0.1)	1.24
	Std Dev	0.21	0.35	0.01	0.05
	3 Sigma	0.64	1.04	0.03	0.15
Kiln 1 - Mill Off Test Run 3 6/5/2024 10:50 - 11:50	Minimum	4.72	5.56	-0.08 (<0.1)	1.17
	Maximum	5.23	6.61	-0.03 (<0.1)	1.41
	Average	5.05	5.99	-0.05 (<0.1)	1.27
	Std Dev	0.12	0.23	0.01	0.05
	3 Sigma	0.35	0.68	0.03	0.15

The following Appendices include:

- FTIR Test Run Data
- FTIR QA/QC Data
- FTIR Detection Limit Data
- Gas Certificates

Shane Douglas Date: June 10th, 2024

Shane Douglas
FTIR Technician / Chemist
CEMEX_BrooksvileFL_2024June_PROJ-031486_txt

APPENDIX

FTIR Test Run Data

Kiln 1 - Mill Off Test Run 1

Spectrum	Date	Time	H2O (%v)	CO2 (%v wet)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_MILLOFF_R1_0498.LAB	6/5/2024	8:00:40	5.36	6.21	-0.04	1.16	192.2	1.01	0.05	0.24	3616	1.13
KILN1_MILLOFF_R1_0499.LAB	6/5/2024	8:01:40	5.79	6.01	-0.04	1.18	192.2	1.01	0.05	0.23	4000	1.13
KILN1_MILLOFF_R1_0500.LAB	6/5/2024	8:02:40	5.66	5.81	-0.04	1.11	191.9	1.01	0.05	0.23	5264	1.13
KILN1_MILLOFF_R1_0501.LAB	6/5/2024	8:03:40	5.49	5.65	-0.04	1.08	191.6	1.01	0.05	0.24	4340	1.13
KILN1_MILLOFF_R1_0502.LAB	6/5/2024	8:04:40	5.45	5.70	-0.04	1.12	191.5	1.01	0.05	0.23	5202	1.13
KILN1_MILLOFF_R1_0503.LAB	6/5/2024	8:05:40	5.44	5.75	-0.04	1.10	191.4	1.01	0.05	0.23	3818	1.13
KILN1_MILLOFF_R1_0504.LAB	6/5/2024	8:06:40	5.41	5.76	-0.04	1.11	191.7	1.01	0.05	0.24	3961	1.13
KILN1_MILLOFF_R1_0505.LAB	6/5/2024	8:07:40	5.43	5.80	-0.04	1.15	192.0	1.01	0.05	0.24	4630	1.13
KILN1_MILLOFF_R1_0506.LAB	6/5/2024	8:08:40	5.42	5.75	-0.04	1.22	192.2	1.01	0.05	0.24	4051	1.13
KILN1_MILLOFF_R1_0507.LAB	6/5/2024	8:09:40	5.40	5.67	-0.04	1.16	192.0	1.01	0.05	0.23	5056	1.13
KILN1_MILLOFF_R1_0508.LAB	6/5/2024	8:10:40	5.43	5.71	-0.03	1.07	191.7	1.01	0.05	0.23	3772	1.13
KILN1_MILLOFF_R1_0509.LAB	6/5/2024	8:11:40	5.44	5.80	-0.04	1.09	191.5	1.01	0.05	0.24	3400	1.13
KILN1_MILLOFF_R1_0510.LAB	6/5/2024	8:12:40	5.44	6.02	-0.05	1.10	191.4	1.01	0.04	0.23	4658	1.13
KILN1_MILLOFF_R1_0511.LAB	6/5/2024	8:13:40	5.47	6.14	-0.04	1.17	191.4	1.01	0.04	0.23	4529	1.13
KILN1_MILLOFF_R1_0512.LAB	6/5/2024	8:14:40	5.48	5.94	-0.04	1.18	191.9	1.01	0.05	0.23	5564	1.13
KILN1_MILLOFF_R1_0513.LAB	6/5/2024	8:15:40	5.43	5.53	-0.02	1.19	192.2	1.01	0.05	0.24	4104	1.13
KILN1_MILLOFF_R1_0514.LAB	6/5/2024	8:16:40	5.40	5.33	-0.04	1.13	192.1	1.01	0.05	0.24	3526	1.13
KILN1_MILLOFF_R1_0515.LAB	6/5/2024	8:17:40	5.50	5.97	-0.04	1.11	191.8	1.01	0.05	0.23	3272	1.13
KILN1_MILLOFF_R1_0516.LAB	6/5/2024	8:18:40	5.53	6.27	-0.04	1.11	191.6	1.01	0.05	0.24	4488	1.13
KILN1_MILLOFF_R1_0517.LAB	6/5/2024	8:19:40	5.54	6.30	-0.04	1.20	191.4	1.01	0.05	0.23	4604	1.13
KILN1_MILLOFF_R1_0518.LAB	6/5/2024	8:20:40	5.47	6.22	-0.04	1.15	191.4	1.01	0.05	0.23	6209	1.13
KILN1_MILLOFF_R1_0519.LAB	6/5/2024	8:21:40	5.43	5.91	-0.03	1.15	191.8	1.01	0.05	0.23	3893	1.13
KILN1_MILLOFF_R1_0520.LAB	6/5/2024	8:22:40	5.50	6.00	-0.06	1.19	192.1	1.01	0.05	0.24	5115	1.13
KILN1_MILLOFF_R1_0521.LAB	6/5/2024	8:23:41	5.49	5.98	-0.06	1.14	192.3	1.01	0.05	0.24	5723	1.12
KILN1_MILLOFF_R1_0522.LAB	6/5/2024	8:24:40	5.47	5.85	-0.05	1.07	192.1	1.01	0.05	0.24	3353	1.13
KILN1_MILLOFF_R1_0523.LAB	6/5/2024	8:25:41	5.44	5.85	-0.05	1.19	191.8	1.01	0.05	0.24	3388	1.13
KILN1_MILLOFF_R1_0524.LAB	6/5/2024	8:26:40	5.44	5.73	-0.05	1.13	191.6	1.01	0.05	0.24	4179	1.13
KILN1_MILLOFF_R1_0525.LAB	6/5/2024	8:27:40	5.50	6.06	-0.04	1.23	191.4	1.01	0.05	0.24	3915	1.13
KILN1_MILLOFF_R1_0526.LAB	6/5/2024	8:28:41	5.53	6.32	-0.03	1.22	191.4	1.01	0.05	0.24	5079	1.13
KILN1_MILLOFF_R1_0527.LAB	6/5/2024	8:29:40	5.47	6.14	-0.05	1.21	191.7	1.01	0.05	0.24	4598	1.13
KILN1_MILLOFF_R1_0528.LAB	6/5/2024	8:30:41	5.39	5.54	-0.05	1.15	192.0	1.01	0.05	0.24	4182	1.12
KILN1_MILLOFF_R1_0529.LAB	6/5/2024	8:31:40	5.42	5.62	-0.04	1.16	192.3	1.01	0.05	0.24	3606	1.12
KILN1_MILLOFF_R1_0530.LAB	6/5/2024	8:32:40	5.47	5.86	-0.04	1.16	192.2	1.01	0.05	0.25	7300	1.12
KILN1_MILLOFF_R1_0531.LAB	6/5/2024	8:33:40	5.47	5.87	-0.05	1.22	191.7	1.01	0.05	0.24	4711	1.12
KILN1_MILLOFF_R1_0532.LAB	6/5/2024	8:34:40	5.53	6.20	-0.04	1.24	191.5	1.01	0.05	0.23	4279	1.13
KILN1_MILLOFF_R1_0533.LAB	6/5/2024	8:35:40	5.43	6.44	-0.04	1.20	191.4	1.01	0.05	0.24	4495	1.13
KILN1_MILLOFF_R1_0534.LAB	6/5/2024	8:36:40	5.11	6.32	-0.04	1.22	191.6	1.01	0.05	0.23	4871	1.12
KILN1_MILLOFF_R1_0535.LAB	6/5/2024	8:37:40	5.22	6.09	-0.04	1.24	192.0	1.01	0.05	0.24	5470	1.12
KILN1_MILLOFF_R1_0536.LAB	6/5/2024	8:38:40	5.50	5.86	-0.07	1.26	192.2	1.01	0.05	0.24	3941	1.12
KILN1_MILLOFF_R1_0537.LAB	6/5/2024	8:39:40	5.61	5.67	-0.05	1.10	192.2	1.01	0.05	0.24	4490	1.12
KILN1_MILLOFF_R1_0538.LAB	6/5/2024	8:40:41	5.62	5.77	-0.05	1.23	191.7	1.01	0.05	0.23	4630	1.12
KILN1_MILLOFF_R1_0539.LAB	6/5/2024	8:41:41	5.50	6.22	-0.04	1.16	191.6	1.01	0.05	0.23	6487	1.13
KILN1_MILLOFF_R1_0540.LAB	6/5/2024	8:42:41	5.37	6.55	-0.04	1.26	191.4	1.01	0.05	0.24	4506	1.13
KILN1_MILLOFF_R1_0541.LAB	6/5/2024	8:43:41	5.30	6.41	-0.04	1.28	191.6	1.01	0.05	0.24	5378	1.12
KILN1_MILLOFF_R1_0542.LAB	6/5/2024	8:44:41	5.34	5.97	-0.05	1.16	192.0	1.01	0.05	0.24	3900	1.12
KILN1_MILLOFF_R1_0543.LAB	6/5/2024	8:45:41	5.48	5.59	-0.05	1.25	192.2	1.01	0.05	0.24	5512	1.12
KILN1_MILLOFF_R1_0544.LAB	6/5/2024	8:46:41	5.52	5.68	-0.06	1.20	192.3	1.01	0.05	0.24	5175	1.12
KILN1_MILLOFF_R1_0545.LAB	6/5/2024	8:47:41	5.36	5.95	-0.03	1.19	191.9	1.01	0.05	0.24	4376	1.12
KILN1_MILLOFF_R1_0546.LAB	6/5/2024	8:48:41	5.25	6.08	-0.04	1.22	191.6	1.01	0.05	0.24	4216	1.12
KILN1_MILLOFF_R1_0547.LAB	6/5/2024	8:49:41	5.29	6.30	-0.04	1.28	191.4	1.01	0.05	0.24	4992	1.12
KILN1_MILLOFF_R1_0548.LAB	6/5/2024	8:50:41	5.43	6.54	-0.05	1.14	191.4	1.01	0.05	0.24	4312	1.12
KILN1_MILLOFF_R1_0549.LAB	6/5/2024	8:51:41	5.55	6.34	-0.05	1.22	191.8	1.01	0.05	0.24	4913	1.12
KILN1_MILLOFF_R1_0550.LAB	6/5/2024	8:52:41	5.67	6.11	-0.05	1.25	192.1	1.01	0.05	0.24	5095	1.12
KILN1_MILLOFF_R1_0551.LAB	6/5/2024	8:53:41	5.62	6.01	-0.03	1.26	192.2	1.01	0.05	0.24	3766	1.12
KILN1_MILLOFF_R1_0552.LAB	6/5/2024	8:54:41	5.44	5.88	-0.03	1.31	192.0	1.01	0.05	0.25	5790	1.12
KILN1_MILLOFF_R1_0553.LAB	6/5/2024	8:55:41	5.25	5.91	-0.06	1.23	191.7	1.01	0.05	0.24	5004	1.12
KILN1_MILLOFF_R1_0554.LAB	6/5/2024	8:56:41	5.18	6.14	-0.03	1.21	191.6	1.01	0.05	0.24	4301	1.12
KILN1_MILLOFF_R1_0555.LAB	6/5/2024	8:57:41	5.24	6.20	-0.05	1.18	191.4	1.01	0.05	0.24	4752	1.12
KILN1_MILLOFF_R1_0556.LAB	6/5/2024	8:58:41	5.42	6.25	-0.08	1.27	191.4	1.01	0.05	0.24	3471	1.12
KILN1_MILLOFF_R1_0557.LAB	6/5/2024	8:59:41	5.56	6.60	-0.04	1.25	191.8	1.01	0.05	0.25	4369	1.12
KILN1_MILLOFF_R1_0558.LAB	6/5/2024	9:00:41	5.52	6.48	-0.04	1.22	192.1	1.01	0.05	0.24	6081	1.12
Kiln 1 - Mill Off Test Run 1 6/5/2024 8:00 - 9:00		**Minimum**	**5.11**	**5.33**	**-0.08**	**1.07**	**191.4**	**1.01**	**0.04**	**0.23**	**3272**	**1.12**
		Maximum	**5.79**	**6.60**	**-0.02**	**1.31**	**192.3**	**1.01**	**0.05**	**0.25**	**7300**	**1.13**
		Average	**5.45**	**5.99**	**-0.04**	**1.18**	**191.8**	**1.01**	**0.05**	**0.24**	**4585**	**1.13**
		Std Dev	**0.12**	**0.28**	**0.01**	**0.06**						
		3 Sigma	**0.35**	**0.85**	**0.03**	**0.18**						

Kiln 1 - Mill Off Test Run 2

Spectrum	Date	Time	H2O (%v)	CO2 (%v wet)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_MILLOFF_R2_0621.LAB	6/5/2024	9:25:08	5.48	6.25	-0.05	1.24	192.1	1.01	0.05	0.25	3525	1.12
KILN1_MILLOFF_R2_0622.LAB	6/5/2024	9:26:08	5.50	6.04	-0.03	1.26	191.9	1.01	0.05	0.24	3648	1.12
KILN1_MILLOFF_R2_0623.LAB	6/5/2024	9:27:08	5.33	5.85	-0.04	1.20	191.7	1.01	0.05	0.24	4128	1.12
KILN1_MILLOFF_R2_0624.LAB	6/5/2024	9:28:08	5.08	5.68	-0.03	1.11	191.5	1.01	0.05	0.24	3948	1.12
KILN1_MILLOFF_R2_0625.LAB	6/5/2024	9:29:08	5.02	5.78	-0.05	1.21	191.4	1.01	0.05	0.24	3778	1.12
KILN1_MILLOFF_R2_0626.LAB	6/5/2024	9:30:08	5.07	6.33	-0.03	1.23	191.4	1.01	0.05	0.24	5054	1.12
KILN1_MILLOFF_R2_0627.LAB	6/5/2024	9:31:09	5.14	6.49	-0.07	1.21	191.8	1.01	0.05	0.24	4776	1.12
KILN1_MILLOFF_R2_0628.LAB	6/5/2024	9:32:08	5.38	6.38	-0.05	1.27	192.1	1.01	0.05	0.25	4855	1.12
KILN1_MILLOFF_R2_0629.LAB	6/5/2024	9:33:09	5.50	6.06	-0.06	1.17	192.2	1.01	0.05	0.25	4438	1.12
KILN1_MILLOFF_R2_0630.LAB	6/5/2024	9:34:08	5.41	5.64	-0.05	1.21	192.2	1.01	0.05	0.25	3781	1.12
KILN1_MILLOFF_R2_0631.LAB	6/5/2024	9:35:09	5.16	5.41	-0.04	1.23	191.8	1.01	0.05	0.24	3551	1.12
KILN1_MILLOFF_R2_0632.LAB	6/5/2024	9:36:09	5.05	5.63	-0.05	1.19	191.4	1.01	0.05	0.24	4032	1.12
KILN1_MILLOFF_R2_0633.LAB	6/5/2024	9:37:08	5.08	6.11	-0.05	1.18	191.3	1.01	0.05	0.24	4719	1.12
KILN1_MILLOFF_R2_0634.LAB	6/5/2024	9:38:08	5.19	6.38	-0.06	1.29	191.3	1.01	0.05	0.24	4613	1.12
KILN1_MILLOFF_R2_0635.LAB	6/5/2024	9:39:08	5.42	6.50	-0.06	1.24	191.6	1.01	0.05	0.24	3941	1.12
KILN1_MILLOFF_R2_0636.LAB	6/5/2024	9:40:09	5.60	6.64	-0.03	1.20	191.8	1.01	0.05	0.25	3879	1.12
KILN1_MILLOFF_R2_0637.LAB	6/5/2024	9:41:08	5.56	6.41	-0.05	1.23	191.9	1.01	0.05	0.25	4576	1.12
KILN1_MILLOFF_R2_0638.LAB	6/5/2024	9:42:09	5.33	6.02	-0.06	1.20	192.0	1.01	0.05	0.24	3980	1.12
KILN1_MILLOFF_R2_0639.LAB	6/5/2024	9:43:09	5.09	5.64	-0.04	1.16	191.6	1.01	0.05	0.24	5427	1.12
KILN1_MILLOFF_R2_0640.LAB	6/5/2024	9:44:09	4.95	5.60	-0.05	1.19	191.4	1.01	0.05	0.24	6685	1.12
KILN1_MILLOFF_R2_0641.LAB	6/5/2024	9:45:09	5.07	6.11	-0.07	1.28	191.4	1.01	0.04	0.24	5181	1.12
KILN1_MILLOFF_R2_0642.LAB	6/5/2024	9:46:09	5.22	6.35	-0.04	1.30	191.3	1.01	0.05	0.24	4410	1.12
KILN1_MILLOFF_R2_0643.LAB	6/5/2024	9:47:09	5.37	6.29	-0.03	1.25	191.6	1.01	0.05	0.25	3860	1.12
KILN1_MILLOFF_R2_0644.LAB	6/5/2024	9:48:09	5.35	6.17	-0.03	1.19	191.8	1.01	0.05	0.25	5689	1.12
KILN1_MILLOFF_R2_0645.LAB	6/5/2024	9:49:09	5.22	6.04	-0.06	1.29	191.9	1.01	0.05	0.25	6316	1.12
KILN1_MILLOFF_R2_0646.LAB	6/5/2024	9:50:09	5.01	5.73	-0.03	1.21	191.8	1.01	0.05	0.24	4422	1.12
KILN1_MILLOFF_R2_0647.LAB	6/5/2024	9:51:09	4.82	5.42	-0.06	1.25	191.6	1.01	0.05	0.24	4130	1.12
KILN1_MILLOFF_R2_0648.LAB	6/5/2024	9:52:09	4.85	5.75	-0.06	1.32	191.4	1.01	0.05	0.24	5424	1.12
KILN1_MILLOFF_R2_0649.LAB	6/5/2024	9:53:09	4.98	6.25	-0.05	1.35	191.4	1.01	0.05	0.24	5666	1.12
KILN1_MILLOFF_R2_0650.LAB	6/5/2024	9:54:09	5.15	6.32	-0.05	1.34	191.7	1.01	0.05	0.25	4996	1.12
KILN1_MILLOFF_R2_0651.LAB	6/5/2024	9:55:09	5.31	6.43	-0.03	1.29	191.9	1.01	0.05	0.24	5038	1.12
KILN1_MILLOFF_R2_0652.LAB	6/5/2024	9:56:09	5.41	6.43	-0.04	1.27	192.0	1.01	0.05	0.25	3929	1.12
KILN1_MILLOFF_R2_0653.LAB	6/5/2024	9:57:09	5.31	6.13	-0.04	1.31	192.0	1.01	0.05	0.25	3516	1.12
KILN1_MILLOFF_R2_0654.LAB	6/5/2024	9:58:09	5.13	5.79	-0.07	1.30	192.0	1.01	0.05	0.25	4018	1.12
KILN1_MILLOFF_R2_0655.LAB	6/5/2024	9:59:09	4.93	5.57	-0.05	1.20	191.7	1.01	0.05	0.24	3840	1.12
KILN1_MILLOFF_R2_0656.LAB	6/5/2024	10:00:09	4.96	6.05	-0.05	1.27	191.5	1.01	0.05	0.24	4960	1.12
KILN1_MILLOFF_R2_0657.LAB	6/5/2024	10:01:09	5.05	6.43	-0.03	1.24	191.4	1.01	0.05	0.24	5246	1.12
KILN1_MILLOFF_R2_0658.LAB	6/5/2024	10:02:09	5.14	6.30	-0.05	1.21	191.4	1.01	0.05	0.24	4319	1.12
KILN1_MILLOFF_R2_0659.LAB	6/5/2024	10:03:09	5.27	5.85	-0.06	1.19	191.6	1.01	0.05	0.25	4674	1.12
KILN1_MILLOFF_R2_0660.LAB	6/5/2024	10:04:09	5.23	5.57	-0.06	1.16	191.8	1.01	0.05	0.25	5137	1.12
KILN1_MILLOFF_R2_0661.LAB	6/5/2024	10:05:09	5.06	5.42	-0.04	1.20	191.9	1.01	0.05	0.25	4974	1.12
KILN1_MILLOFF_R2_0662.LAB	6/5/2024	10:06:09	4.85	5.49	-0.06	1.26	191.9	1.01	0.05	0.25	4305	1.12
KILN1_MILLOFF_R2_0663.LAB	6/5/2024	10:07:09	4.78	5.92	-0.05	1.30	191.9	1.01	0.05	0.25	4360	1.12
KILN1_MILLOFF_R2_0664.LAB	6/5/2024	10:08:09	4.95	6.11	-0.05	1.25	191.9	1.01	0.05	0.24	4124	1.12
KILN1_MILLOFF_R2_0665.LAB	6/5/2024	10:09:09	5.22	6.54	-0.04	1.31	191.7	1.01	0.05	0.24	5260	1.12
KILN1_MILLOFF_R2_0666.LAB	6/5/2024	10:10:09	5.37	6.46	-0.05	1.24	191.5	1.01	0.05	0.24	5669	1.12
KILN1_MILLOFF_R2_0667.LAB	6/5/2024	10:11:09	5.44	6.24	-0.05	1.24	191.4	1.01	0.05	0.24	5457	1.12
KILN1_MILLOFF_R2_0668.LAB	6/5/2024	10:12:09	5.30	5.97	-0.04	1.20	191.4	1.01	0.05	0.25	4557	1.12
KILN1_MILLOFF_R2_0669.LAB	6/5/2024	10:13:09	5.06	5.80	-0.06	1.21	191.6	1.01	0.05	0.24	4759	1.12
KILN1_MILLOFF_R2_0670.LAB	6/5/2024	10:14:09	4.81	5.64	-0.07	1.22	191.8	1.01	0.05	0.24	3317	1.12
KILN1_MILLOFF_R2_0671.LAB	6/5/2024	10:15:10	4.71	5.72	-0.06	1.24	191.9	1.01	0.05	0.24	4184	1.12
KILN1_MILLOFF_R2_0672.LAB	6/5/2024	10:16:09	4.91	6.07	-0.05	1.30	191.9	1.01	0.05	0.25	4101	1.12
KILN1_MILLOFF_R2_0673.LAB	6/5/2024	10:17:09	5.15	6.20	-0.05	1.31	191.9	1.01	0.05	0.25	4423	1.12
KILN1_MILLOFF_R2_0674.LAB	6/5/2024	10:18:09	5.38	6.17	-0.05	1.25	191.7	1.01	0.05	0.25	4968	1.12
KILN1_MILLOFF_R2_0675.LAB	6/5/2024	10:19:09	5.45	6.25	-0.05	1.28	191.5	1.01	0.05	0.25	3722	1.12
KILN1_MILLOFF_R2_0676.LAB	6/5/2024	10:20:09	5.37	6.49	-0.06	1.25	191.4	1.01	0.05	0.24	4285	1.12
KILN1_MILLOFF_R2_0677.LAB	6/5/2024	10:21:09	5.19	6.41	-0.04	1.28	191.4	1.01	0.05	0.25	6355	1.12
KILN1_MILLOFF_R2_0678.LAB	6/5/2024	10:22:10	5.07	5.98	-0.04	1.18	191.7	1.01	0.05	0.24	4742	1.12
KILN1_MILLOFF_R2_0679.LAB	6/5/2024	10:23:09	4.97	5.48	-0.05	1.20	191.9	1.01	0.05	0.24	4108	1.12
KILN1_MILLOFF_R2_0680.LAB	6/5/2024	10:24:10	5.01	5.38	-0.05	1.18	191.9	1.01	0.05	0.25	5285	1.12
KILN1_MILLOFF_R2_0681.LAB	6/5/2024	10:25:10	5.11	5.85	-0.04	1.26	191.9	1.01	0.05	0.24	4974	1.12
Kiln 1 - Mill Off Test Run 2 6/5/2024 9:25 - 10:25		**Minimum**	**4.71**	**5.38**	**-0.07**	**1.11**	**191.3**	**1.01**	**0.04**	**0.24**	**3317**	**1.12**
		Maximum	**5.60**	**6.64**	**-0.03**	**1.35**	**192.2**	**1.01**	**0.05**	**0.25**	**6685**	**1.12**
		Average	**5.17**	**6.02**	**-0.05**	**1.24**	**191.7**	**1.01**	**0.05**	**0.24**	**4591**	**1.12**
		Std Dev	**0.21**	**0.35**	**0.01**	**0.05**						
		3 Sigma	**0.64**	**1.04**	**0.03**	**0.15**						

Kiln 1 - Mill Off Test Run 3

Spectrum	Date	Time	H2O (%v)	CO2 (%v wet)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_MILLOFF_R3_0736.LAB	6/5/2024	10:50:20	5.23	6.02	-0.04	1.21	191.4	1.01	0.05	0.25	4904	1.13
KILN1_MILLOFF_R3_0737.LAB	6/5/2024	10:51:20	5.20	5.89	-0.03	1.32	191.6	1.01	0.05	0.25	4983	1.13
KILN1_MILLOFF_R3_0738.LAB	6/5/2024	10:52:20	5.17	5.86	-0.05	1.32	191.8	1.01	0.05	0.25	4455	1.12
KILN1_MILLOFF_R3_0739.LAB	6/5/2024	10:53:20	5.13	5.84	-0.04	1.31	191.8	1.01	0.05	0.25	4104	1.12
KILN1_MILLOFF_R3_0740.LAB	6/5/2024	10:54:20	5.07	5.88	-0.04	1.18	191.9	1.01	0.05	0.24	4372	1.12
KILN1_MILLOFF_R3_0741.LAB	6/5/2024	10:55:20	5.10	6.16	-0.05	1.33	191.9	1.01	0.05	0.25	6087	1.12
KILN1_MILLOFF_R3_0742.LAB	6/5/2024	10:56:20	5.15	6.34	-0.05	1.27	191.9	1.01	0.05	0.25	3642	1.12
KILN1_MILLOFF_R3_0743.LAB	6/5/2024	10:57:20	5.15	6.18	-0.05	1.29	191.9	1.01	0.05	0.25	3858	1.12
KILN1_MILLOFF_R3_0744.LAB	6/5/2024	10:58:20	5.13	5.88	-0.06	1.25	191.9	1.01	0.05	0.25	4502	1.12
KILN1_MILLOFF_R3_0745.LAB	6/5/2024	10:59:20	5.12	5.63	-0.05	1.31	191.9	1.01	0.05	0.26	3964	1.12
KILN1_MILLOFF_R3_0746.LAB	6/5/2024	11:00:20	5.12	5.70	-0.05	1.32	191.9	1.01	0.05	0.25	5491	1.12
KILN1_MILLOFF_R3_0747.LAB	6/5/2024	11:01:20	5.06	6.04	-0.04	1.27	191.9	1.01	0.05	0.25	6073	1.13
KILN1_MILLOFF_R3_0748.LAB	6/5/2024	11:02:20	5.06	6.24	-0.06	1.41	191.9	1.01	0.05	0.24	6491	1.13
KILN1_MILLOFF_R3_0749.LAB	6/5/2024	11:03:20	5.12	6.12	-0.04	1.26	191.8	1.01	0.05	0.24	5303	1.13
KILN1_MILLOFF_R3_0750.LAB	6/5/2024	11:04:20	5.17	5.94	-0.06	1.32	191.9	1.01	0.05	0.25	5396	1.13
KILN1_MILLOFF_R3_0751.LAB	6/5/2024	11:05:20	5.15	5.63	-0.05	1.32	191.9	1.01	0.05	0.25	4155	1.13
KILN1_MILLOFF_R3_0752.LAB	6/5/2024	11:06:20	5.08	5.56	-0.06	1.25	191.7	1.01	0.04	0.25	4967	1.13
KILN1_MILLOFF_R3_0753.LAB	6/5/2024	11:07:20	4.97	5.91	-0.05	1.34	191.5	1.01	0.05	0.25	4574	1.13
KILN1_MILLOFF_R3_0754.LAB	6/5/2024	11:08:20	4.93	6.13	-0.05	1.37	191.4	1.01	0.05	0.25	4355	1.13
KILN1_MILLOFF_R3_0755.LAB	6/5/2024	11:09:20	4.92	6.11	-0.04	1.31	191.4	1.01	0.05	0.24	4198	1.13
KILN1_MILLOFF_R3_0756.LAB	6/5/2024	11:10:20	5.01	6.34	-0.03	1.25	191.4	1.01	0.05	0.25	4063	1.13
KILN1_MILLOFF_R3_0757.LAB	6/5/2024	11:11:20	5.15	6.44	-0.06	1.26	191.7	1.01	0.05	0.24	3734	1.13
KILN1_MILLOFF_R3_0758.LAB	6/5/2024	11:12:20	5.19	6.17	-0.03	1.24	191.9	1.01	0.05	0.25	3987	1.13
KILN1_MILLOFF_R3_0759.LAB	6/5/2024	11:13:20	5.21	5.97	-0.06	1.18	192.0	1.01	0.05	0.26	3677	1.13
KILN1_MILLOFF_R3_0760.LAB	6/5/2024	11:14:20	5.11	5.94	-0.04	1.32	192.0	1.01	0.04	0.25	3648	1.13
KILN1_MILLOFF_R3_0761.LAB	6/5/2024	11:15:20	4.88	5.74	-0.05	1.33	192.0	1.01	0.05	0.25	3628	1.13
KILN1_MILLOFF_R3_0762.LAB	6/5/2024	11:16:20	4.76	5.97	-0.06	1.24	191.9	1.01	0.05	0.25	4921	1.13
KILN1_MILLOFF_R3_0763.LAB	6/5/2024	11:17:20	4.72	6.08	-0.06	1.32	191.7	1.01	0.04	0.25	5627	1.13
KILN1_MILLOFF_R3_0764.LAB	6/5/2024	11:18:20	4.89	6.00	-0.06	1.26	191.5	1.01	0.05	0.24	3828	1.13
KILN1_MILLOFF_R3_0765.LAB	6/5/2024	11:19:20	5.16	5.86	-0.04	1.25	191.4	1.01	0.05	0.25	4694	1.13
KILN1_MILLOFF_R3_0766.LAB	6/5/2024	11:20:21	5.17	5.74	-0.05	1.28	191.4	1.01	0.05	0.25	4761	1.13
KILN1_MILLOFF_R3_0767.LAB	6/5/2024	11:21:21	5.16	5.88	-0.04	1.25	191.5	1.01	0.05	0.25	5338	1.13
KILN1_MILLOFF_R3_0768.LAB	6/5/2024	11:22:20	5.08	6.07	-0.05	1.31	191.8	1.01	0.05	0.25	3295	1.13
KILN1_MILLOFF_R3_0769.LAB	6/5/2024	11:23:20	5.01	6.16	-0.06	1.21	191.9	1.01	0.05	0.25	3992	1.13
KILN1_MILLOFF_R3_0770.LAB	6/5/2024	11:24:20	5.01	6.02	-0.05	1.29	191.9	1.01	0.04	0.25	4123	1.13
KILN1_MILLOFF_R3_0771.LAB	6/5/2024	11:25:20	4.98	5.81	-0.04	1.34	191.9	1.01	0.05	0.25	3820	1.12
KILN1_MILLOFF_R3_0772.LAB	6/5/2024	11:26:20	5.01	5.82	-0.05	1.31	191.9	1.01	0.05	0.25	4579	1.13
KILN1_MILLOFF_R3_0773.LAB	6/5/2024	11:27:21	5.02	5.97	-0.06	1.26	191.9	1.01	0.05	0.25	5030	1.12
KILN1_MILLOFF_R3_0774.LAB	6/5/2024	11:28:20	4.97	5.86	-0.05	1.35	191.9	1.01	0.04	0.25	3708	1.13
KILN1_MILLOFF_R3_0775.LAB	6/5/2024	11:29:20	4.99	5.96	-0.05	1.29	191.9	1.01	0.05	0.25	6051	1.13
KILN1_MILLOFF_R3_0776.LAB	6/5/2024	11:30:21	5.04	5.75	-0.04	1.17	191.9	1.01	0.05	0.24	4644	1.13
KILN1_MILLOFF_R3_0777.LAB	6/5/2024	11:31:21	5.15	5.85	-0.04	1.29	191.9	1.01	0.05	0.25	3088	1.13
KILN1_MILLOFF_R3_0778.LAB	6/5/2024	11:32:20	5.08	5.93	-0.04	1.23	191.9	1.01	0.05	0.24	5001	1.13
KILN1_MILLOFF_R3_0779.LAB	6/5/2024	11:33:21	5.07	5.87	-0.04	1.23	191.9	1.01	0.04	0.25	3367	1.13
KILN1_MILLOFF_R3_0780.LAB	6/5/2024	11:34:21	5.00	5.76	-0.05	1.26	191.8	1.01	0.05	0.25	3747	1.13
KILN1_MILLOFF_R3_0781.LAB	6/5/2024	11:35:21	5.03	6.06	-0.06	1.30	191.9	1.01	0.05	0.25	3354	1.13
KILN1_MILLOFF_R3_0782.LAB	6/5/2024	11:36:21	5.04	6.41	-0.06	1.33	191.9	1.01	0.05	0.25	3264	1.13
KILN1_MILLOFF_R3_0783.LAB	6/5/2024	11:37:21	5.12	6.61	-0.05	1.28	191.9	1.01	0.05	0.25	4296	1.13
KILN1_MILLOFF_R3_0784.LAB	6/5/2024	11:38:21	5.18	6.49	-0.06	1.25	191.9	1.01	0.04	0.25	3393	1.13
KILN1_MILLOFF_R3_0785.LAB	6/5/2024	11:39:21	5.14	6.10	-0.06	1.19	191.9	1.01	0.05	0.25	3928	1.13
KILN1_MILLOFF_R3_0786.LAB	6/5/2024	11:40:21	5.05	5.62	-0.06	1.22	191.9	1.01	0.05	0.25	4022	1.13
KILN1_MILLOFF_R3_0787.LAB	6/5/2024	11:41:21	4.87	5.66	-0.04	1.24	191.9	1.01	0.05	0.25	5300	1.13
KILN1_MILLOFF_R3_0788.LAB	6/5/2024	11:42:21	4.81	5.92	-0.05	1.23	191.9	1.01	0.04	0.25	4364	1.13
KILN1_MILLOFF_R3_0789.LAB	6/5/2024	11:43:21	4.81	6.08	-0.05	1.29	191.9	1.01	0.05	0.24	5306	1.13
KILN1_MILLOFF_R3_0790.LAB	6/5/2024	11:44:21	4.88	5.83	-0.05	1.21	191.9	1.01	0.05	0.24	5043	1.13
KILN1_MILLOFF_R3_0791.LAB	6/5/2024	11:45:21	5.04	5.78	-0.08	1.25	191.6	1.01	0.05	0.25	4373	1.13
KILN1_MILLOFF_R3_0792.LAB	6/5/2024	11:46:21	5.14	6.07	-0.05	1.26	191.3	1.01	0.04	0.25	3953	1.13
KILN1_MILLOFF_R3_0793.LAB	6/5/2024	11:47:21	5.12	6.30	-0.06	1.31	191.3	1.01	0.05	0.25	3259	1.13
KILN1_MILLOFF_R3_0794.LAB	6/5/2024	11:48:21	5.06	6.39	-0.05	1.23	191.5	1.01	0.05	0.25	3098	1.13
KILN1_MILLOFF_R3_0795.LAB	6/5/2024	11:49:21	4.95	6.09	-0.05	1.27	191.7	1.01	0.04	0.25	4672	1.13
KILN1_MILLOFF_R3_0796.LAB	6/5/2024	11:50:21	4.92	6.02	-0.07	1.23	191.8	1.01	0.05	0.25	4725	1.13
Kiln 1 - Mill Off Test Run 3 6/5/2024 10:50 - 11:50		**Minimum**	**4.72**	**5.56**	**-0.08**	**1.17**	**191.3**	**1.01**	**0.04**	**0.24**	**3088**	**1.12**
		Maximum	**5.23**	**6.61**	**-0.03**	**1.41**	**192.0**	**1.01**	**0.05**	**0.26**	**6491**	**1.13**
		Average	**5.05**	**5.99**	**-0.05**	**1.27**	**191.8**	**1.01**	**0.05**	**0.25**	**4403**	**1.13**
		Std Dev	**0.12**	**0.23**	**0.01**	**0.05**						
		3 Sigma	**0.35**	**0.68**	**0.03**	**0.15**						

APPENDIX

FTIR QA/QC Data

Nitrogen Direct to FTIR

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
N2_DIR_0012BKG.LAB	6/4/2024	11:26:02	0.00	0.00	0.00	0.00	0.00	0.00	191.8	0.992	0.00	0.00	1894	1.15
N2_DIR_0013.LAB	6/4/2024	11:26:15	0.00	0.01	0.05	-0.19	0.02	0.01	191.8	0.992	0.03	0.09	1731	1.15
N2_DIR_0014.LAB	6/4/2024	11:26:23	0.00	-0.01	-0.03	0.07	-0.01	0.00	191.8	0.992	0.03	0.10	1335	1.15
N2_DIR_0015.LAB	6/4/2024	11:26:30	0.00	-0.01	-0.02	0.04	0.09	0.00	191.8	0.992	0.03	0.08	1544	1.15
N2_DIR_0016.LAB	6/4/2024	11:26:38	-0.01	0.00	0.02	0.28	0.05	0.00	191.8	0.992	0.03	0.08	1882	1.15
N2_DIR_0017.LAB	6/4/2024	11:26:45	0.00	0.00	0.05	-0.11	0.15	0.00	191.8	0.992	0.03	0.09	1651	1.15
N2_DIR_0018.LAB	6/4/2024	11:26:53	0.00	0.00	-0.01	0.09	-0.18	0.00	191.8	0.992	0.03	0.09	1471	1.15
N2_DIR_0019.LAB	6/4/2024	11:27:00	0.01	0.01	-0.05	0.08	0.07	0.01	191.8	0.992	0.02	0.08	1351	1.15
N2_DIR_0020.LAB	6/4/2024	11:27:08	-0.01	-0.01	-0.08	-0.10	0.07	0.00	191.8	0.992	0.04	0.08	1791	1.15
		Average			**-0.01**	**0.02**								

CTS, 99.97 ppm Ethylene Direct Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
CTS_DIR_0023.LAB	6/4/2024	11:28:23	0.02	0.01	-0.01	0.12	97.35	-0.03	191.9	0.992	0.03	0.08	1416	1.15	**97.4%**
CTS_DIR_0024.LAB	6/4/2024	11:28:31	0.03	0.00	-0.02	-0.29	98.00	-0.02	191.9	0.992	0.02	0.09	1452	1.15	**98.0%**
CTS_DIR_0025.LAB	6/4/2024	11:28:38	0.02	0.00	-0.04	-0.26	97.91	-0.03	191.9	0.992	0.03	0.10	1182	1.15	**97.9%**
CTS_DIR_0026.LAB	6/4/2024	11:28:46	0.02	0.00	-0.03	-0.06	97.94	-0.01	191.9	0.992	0.03	0.10	1612	1.15	**98.0%**
CTS_DIR_0027.LAB	6/4/2024	11:28:53	0.02	-0.01	-0.02	-0.20	97.89	-0.02	191.9	0.992	0.03	0.10	2233	1.15	**97.9%**
CTS_DIR_0028.LAB	6/4/2024	11:29:01	0.02	0.01	-0.04	-0.14	97.93	-0.03	191.8	0.992	0.03	0.10	1619	1.15	**98.0%**
CTS_DIR_0029.LAB	6/4/2024	11:29:08	0.02	0.02	-0.06	-0.18	97.62	-0.03	191.9	0.992	0.03	0.09	1777	1.15	**97.6%**
CTS_DIR_0030.LAB	6/4/2024	11:29:16	0.02	0.02	-0.04	-0.25	97.97	-0.03	191.9	0.992	0.02	0.11	1879	1.15	**98.0%**
		Average					**97.83**								**97.9%**

49.30 ppm HCN/5.00 ppm SF6 Direct Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	HCN Recovery (%)
HCN_DIR_0076.LAB	6/4/2024	11:46:33	0.00	0.00	0.04	49.53	-0.14	4.86	191.3	0.991	0.03	0.23	1698	1.15	**100.5%**
HCN_DIR_0077.LAB	6/4/2024	11:46:40	-0.01	0.01	-0.06	49.73	-0.19	4.85	191.3	0.991	0.03	0.22	2437	1.15	**100.9%**
HCN_DIR_0078.LAB	6/4/2024	11:46:48	-0.01	-0.02	-0.02	49.62	-0.21	4.86	191.3	0.992	0.03	0.20	1862	1.15	**100.7%**
HCN_DIR_0079.LAB	6/4/2024	11:46:56	0.00	-0.01	-0.01	49.44	-0.27	4.86	191.3	0.992	0.03	0.21	1567	1.15	**100.3%**
HCN_DIR_0080.LAB	6/4/2024	11:47:03	0.01	0.01	-0.03	49.52	-0.17	4.86	191.3	0.992	0.02	0.23	1618	1.15	**100.4%**
HCN_DIR_0081.LAB	6/4/2024	11:47:11	0.01	0.00	0.01	49.52	-0.16	4.87	191.3	0.991	0.03	0.22	1872	1.15	**100.4%**
HCN_DIR_0082.LAB	6/4/2024	11:47:18	0.00	0.00	-0.02	49.40	-0.08	4.86	191.3	0.991	0.02	0.23	2167	1.15	**100.2%**
HCN_DIR_0083.LAB	6/4/2024	11:47:25	0.00	0.00	0.04	49.63	-0.29	4.85	191.3	0.992	0.03	0.22	1532	1.15	**100.7%**
		Average				**49.55**		**4.86**							**100.5%**

CTS, 99.97 ppm Ethylene System Purge and Response Time Test

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)	Response Time (sec)
CTS_RT_0084.LAB	6/4/2024	11:58:47	1.99	0.05	0.12	0.16	-0.42	-0.02	191.6	1.009	0.04	0.17	NaN	1.14	**-0.4%**	**-**
CTS_RT_0085.LAB	6/4/2024	11:58:54	2.01	0.06	0.05	0.30	0.37	0.04	191.6	1.015	0.04	0.16	1067	1.14	**0.4%**	**8**
CTS_RT_0086.LAB	6/4/2024	11:59:02	0.91	0.03	0.08	5.48	52.90	0.39	191.6	1.009	0.03	0.14	1116	1.14	**54.1%**	**15**
CTS_RT_0087.LAB	6/4/2024	11:59:09	0.09	0.00	0.02	0.36	98.74	-0.01	191.6	1.015	0.02	0.11	1468	1.14	**100.9%**	**23**
CTS_RT_0088.LAB	6/4/2024	11:59:17	0.09	0.00	0.01	0.24	100.50	-0.02	191.6	1.006	0.03	0.12	1273	1.14	**102.7%**	
CTS_RT_0089.LAB	6/4/2024	11:59:24	0.01	0.01	0.01	0.09	99.49	-0.04	191.6	1.011	0.03	0.11	1381	1.14	**101.7%**	
CTS_RT_0090.LAB	6/4/2024	11:59:32	0.04	0.01	0.01	0.33	100.12	-0.01	191.6	1.008	0.03	0.12	1478	1.14	**102.3%**	
CTS_RT_0091.LAB	6/4/2024	11:59:40	0.02	0.00	-0.02	-0.20	98.24	-0.03	191.7	1.014	0.02	0.11	1108	1.13	**100.4%**	
CTS_RT_0092.LAB	6/4/2024	11:59:47	0.03	-0.03	-0.05	0.13	98.94	-0.04	191.6	1.009	0.02	0.09	957	1.13	**101.1%**	
CTS_RT_0093.LAB	6/4/2024	11:59:55	0.01	0.00	0.01	0.11	99.23	-0.04	191.6	1.005	0.03	0.11	1000	1.14	**101.4%**	
CTS_RT_0094.LAB	6/4/2024	12:00:02	0.03	0.01	0.01	0.06	99.30	0.00	191.6	1.011	0.02	0.11	1008	1.14	**101.5%**	
		Average					**99.32**								**101.5%**	

Nitrogen (Zero) System Purge and Response Time Test

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)	Zero Time (sec)
N2_RT_0095.LAB	6/4/2024	12:00:25	0.01	0.02	-0.02	0.04	100.65	0.01	191.7	1.016	0.03	0.11	NaN	1.13	**102.9%**	**-**
N2_RT_0096.LAB	6/4/2024	12:00:32	0.01	0.02	-0.04	0.18	99.96	-0.03	191.6	1.008	0.03	0.10	1165	1.13	**102.2%**	**8**
N2_RT_0097.LAB	6/4/2024	12:00:40	2.43	3.01	0.16	1.55	24.26	0.00	191.6	1.013	0.04	0.20	920	1.14	**24.8%**	**16**
N2_RT_0098.LAB	6/4/2024	12:00:47	0.93	0.97	0.04	0.21	0.55	0.00	191.6	1.009	0.03	0.13	1308	1.14	**0.6%**	**23**
N2_RT_0099.LAB	6/4/2024	12:00:55	0.95	0.95	0.05	0.20	0.11	-0.02	191.6	1.007	0.02	0.13	1469	1.14	**0.1%**	
N2_RT_0100.LAB	6/4/2024	12:01:02	0.95	0.94	0.05	0.09	0.11	0.02	191.6	1.019	0.03	0.12	1180	1.14	**0.1%**	
N2_RT_0101.LAB	6/4/2024	12:01:10	0.63	0.55	0.05	0.06	0.38	0.00	191.6	1.009	0.03	0.11	1248	1.14	**0.4%**	
N2_RT_0102.LAB	6/4/2024	12:01:17	0.06	0.00	-0.01	0.02	0.03	-0.01	191.6	1.011	0.02	0.10	1237	1.13	**0.0%**	
N2_RT_0103.LAB	6/4/2024	12:01:25	0.05	0.01	0.01	0.10	-0.12	-0.02	191.6	1.007	0.03	0.10	1220	1.13	**-0.1%**	
N2_RT_0104.LAB	6/4/2024	12:01:32	0.02	0.01	0.01	0.00	0.14	-0.02	191.5	1.011	0.03	0.10	1333	1.13	**0.1%**	
N2_RT_0105.LAB	6/4/2024	12:01:40	0.02	-0.01	-0.02	-0.07	0.58	0.00	191.6	1.012	0.03	0.10	1263	1.13	**0.6%**	
N2_RT_0106.LAB	6/4/2024	12:01:47	0.01	0.01	0.02	-0.04	0.22	0.01	191.5	1.006	0.03	0.10	1941	1.13	**0.2%**	

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_NAT_0115.LAB	6/4/2024	12:11:56	7.37	5.93	-0.04	1.53	0.66	0.01	191.6	1.010	0.06	0.26	3834	1.14
KILN1_NAT_0116.LAB	6/4/2024	12:12:56	7.50	6.05	-0.04	1.53	0.63	0.00	191.6	1.009	0.06	0.26	4175	1.14
KILN1_NAT_0117.LAB	6/4/2024	12:13:56	7.36	5.96	-0.04	1.55	0.55	0.01	191.6	1.010	0.06	0.26	4150	1.14
	Native Average					**1.54**		**0.00**						

Kiln 1 Analyte Spike, Using 49.30 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN1_NAT_SPK_0139.LAB	6/4/2024	12:17:34	6.61	5.87	-0.05	4.55	0.42	0.33	191.6	1.006	0.06	0.26	1707	1.13	**0.068**	**95.2%**
KILN1_NAT_SPK_0140.LAB	6/4/2024	12:17:42	6.57	5.85	-0.04	4.60	0.73	0.34	191.5	1.007	0.06	0.26	1267	1.14	**0.069**	**95.0%**
KILN1_NAT_SPK_0141.LAB	6/4/2024	12:17:49	6.51	5.83	-0.07	4.61	0.58	0.34	191.6	1.015	0.06	0.25	1788	1.14	**0.069**	**94.8%**
KILN1_NAT_SPK_0142.LAB	6/4/2024	12:17:57	6.55	5.88	-0.05	4.43	0.43	0.34	191.6	1.010	0.05	0.27	2420	1.13	**0.068**	**92.2%**
KILN1_NAT_SPK_0143.LAB	6/4/2024	12:18:04	6.58	5.89	-0.08	4.65	0.65	0.34	191.5	1.007	0.07	0.26	1895	1.13	**0.069**	**95.7%**
KILN1_NAT_SPK_0144.LAB	6/4/2024	12:18:12	6.53	5.84	-0.09	4.28	0.23	0.34	191.6	1.016	0.05	0.27	1481	1.13	**0.068**	**88.7%**
KILN1_NAT_SPK_0145.LAB	6/4/2024	12:18:19	6.55	5.84	-0.05	4.49	0.45	0.34	191.6	1.016	0.06	0.27	1759	1.14	**0.070**	**92.0%**
KILN1_NAT_SPK_0146.LAB	6/4/2024	12:18:27	6.61	5.86	0.00	4.63	0.69	0.33	191.6	1.010	0.06	0.27	1669	1.14	**0.067**	**97.7%**
	Spike Average					**4.53**		**0.34**							**0.068**	**93.9%**

Kiln 1 Mill Off Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_MILLOFF_0217.LAB	6/4/2024	13:32:30	3.47	6.30	-0.04	1.26	0.63	0.00	191.6	1.010	0.04	0.21	4028	1.12
KILN1_MILLOFF_0218.LAB	6/4/2024	13:33:30	3.42	6.65	-0.03	1.38	0.65	0.00	191.6	1.008	0.04	0.20	3546	1.12
KILN1_MILLOFF_0219.LAB	6/4/2024	13:34:30	3.44	6.95	-0.04	1.42	0.74	0.00	191.7	1.009	0.04	0.20	5326	1.12
	Native Average					**1.36**		**0.00**						

Kiln 1 Analyte Spike, Using 49.30 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN1_MILLOFF_SPK_0233.LAB	6/4/2024	13:37:49	3.06	6.08	-0.06	4.96	0.44	0.37	191.6	1.005	0.06	0.23	1253	1.12	**0.076**	**98.7%**
KILN1_MILLOFF_SPK_0234.LAB	6/4/2024	13:37:57	3.03	6.05	-0.03	4.81	0.07	0.37	191.7	1.009	0.05	0.22	1465	1.12	**0.076**	**95.8%**
KILN1_MILLOFF_SPK_0235.LAB	6/4/2024	13:38:04	3.04	6.06	-0.01	4.88	0.51	0.38	191.7	1.010	0.05	0.23	1180	1.12	**0.078**	**95.1%**
KILN1_MILLOFF_SPK_0236.LAB	6/4/2024	13:38:12	3.05	6.03	0.02	4.92	0.35	0.36	191.6	1.008	0.04	0.23	1489	1.12	**0.073**	**100.6%**
KILN1_MILLOFF_SPK_0237.LAB	6/4/2024	13:38:19	3.07	6.01	-0.06	4.94	0.61	0.36	191.7	1.004	0.04	0.24	1454	1.12	**0.074**	**100.2%**
KILN1_MILLOFF_SPK_0238.LAB	6/4/2024	13:38:27	3.13	6.00	-0.03	5.08	0.86	0.36	191.6	1.004	0.05	0.23	1490	1.12	**0.074**	**103.0%**
KILN1_MILLOFF_SPK_0239.LAB	6/4/2024	13:38:34	3.23	5.92	-0.03	5.02	0.39	0.36	191.6	1.008	0.04	0.23	1390	1.12	**0.074**	**101.5%**
KILN1_MILLOFF_SPK_0240.LAB	6/4/2024	13:38:42	3.35	5.90	-0.02	4.79	0.56	0.37	191.7	1.006	0.05	0.24	1117	1.12	**0.075**	**96.4%**
	Spike Average					**4.93**		**0.37**							**0.075**	**98.9%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
CTS_SYS_0341.LAB	6/4/2024	15:24:56	-0.02	0.00	-0.01	0.31	98.11	-0.03	191.7	1.015	0.03	0.13	NaN	1.10	**100.3%**
CTS_SYS_0342.LAB	6/4/2024	15:25:03	0.00	-0.02	0.01	0.45	99.08	-0.03	191.6	1.007	0.03	0.13	1159	1.10	**101.3%**
CTS_SYS_0343.LAB	6/4/2024	15:25:11	-0.03	0.00	0.04	0.27	99.34	-0.02	191.7	1.009	0.04	0.12	1401	1.10	**101.5%**
CTS_SYS_0344.LAB	6/4/2024	15:25:18	0.00	-0.01	-0.03	0.18	99.26	-0.02	191.6	1.004	0.03	0.13	1420	1.10	**101.5%**
CTS_SYS_0345.LAB	6/4/2024	15:25:26	-0.01	0.02	-0.02	0.18	99.46	-0.03	191.7	1.002	0.03	0.12	1453	1.10	**101.7%**
CTS_SYS_0346.LAB	6/4/2024	15:25:33	-0.02	-0.01	0.01	-0.21	99.11	-0.03	191.7	1.009	0.03	0.13	1218	1.10	**101.3%**
CTS_SYS_0347.LAB	6/4/2024	15:25:41	-0.01	-0.01	-0.01	-0.24	98.83	-0.04	191.6	1.009	0.03	0.13	1460	1.10	**101.0%**
CTS_SYS_0348.LAB	6/4/2024	15:25:48	-0.02	0.00	0.00	0.05	99.07	-0.01	191.7	1.002	0.03	0.13	1578	1.10	**101.3%**
		Average					**99.03**								**101.2%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
N2_SYS_0351.LAB	6/4/2024	15:26:51	-0.01	-0.01	0.00	0.23	0.31	0.00	191.61	1.01	0.03	0.14	979	1.10
N2_SYS_0352.LAB	6/4/2024	15:26:59	-0.03	0.00	0.00	0.00	0.39	-0.01	191.57	1.02	0.02	0.11	1524	1.10
N2_SYS_0353.LAB	6/4/2024	15:27:07	-0.02	0.01	0.00	-0.03	0.00	-0.01	191.54	1.01	0.03	0.10	1765	1.10
N2_SYS_0354.LAB	6/4/2024	15:27:14	-0.02	0.01	-0.01	0.00	0.10	0.01	191.58	1.01	0.03	0.12	1541	1.10
N2_SYS_0355.LAB	6/4/2024	15:27:22	-0.02	0.01	0.00	-0.05	-0.02	0.01	191.52	1.01	0.02	0.11	1302	1.10
N2_SYS_0356.LAB	6/4/2024	15:27:29	-0.01	0.00	-0.01	0.12	0.23	0.01	191.55	1.01	0.03	0.13	1768	1.10
N2_SYS_0357.LAB	6/4/2024	15:27:36	-0.02	0.01	0.00	0.24	0.43	0.00	191.46	1.01	0.03	0.12	1615	1.10
N2_SYS_0358.LAB	6/4/2024	15:27:44	-0.03	0.00	0.02	0.30	0.21	-0.01	191.52	1.01	0.04	0.11	1085	1.10
		Average			**0.00**	**0.10**								
		Std Dev			**0.01**	**0.14**								

Nitrogen Direct to FTIR

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
N2_DIR_0359.LAB	6/4/2024	15:31:37	-0.03	0.00	0.01	0.09	0.05	0.00	191.64	0.99	0.01	0.09	NaN	1.10
N2_DIR_0360.LAB	6/4/2024	15:33:37	-0.03	0.00	0.03	0.16	0.00	0.00	191.64	0.99	0.01	0.08	6624	1.10
N2_DIR_0361.LAB	6/4/2024	15:35:37	-0.03	0.00	0.03	0.09	0.06	0.00	191.72	0.99	0.01	0.09	5639	1.10

Nitrogen Direct to FTIR

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
N2_DIR_0368BKG.LAB	6/5/2024	7:15:59	0.00	0.00	0.00	0.00	0.00	0.00	192.2	0.990	0.00	0.00	2538	1.14
N2_DIR_0369.LAB	6/5/2024	7:16:12	0.00	-0.01	-0.02	-0.02	0.11	0.00	192.0	0.990	0.02	0.10	1710	1.14
N2_DIR_0370.LAB	6/5/2024	7:16:20	0.01	0.00	-0.02	0.13	0.18	0.00	191.9	0.990	0.03	0.10	1523	1.14
N2_DIR_0371.LAB	6/5/2024	7:16:27	0.01	0.00	0.00	-0.13	0.04	0.00	191.9	0.990	0.03	0.09	1726	1.14
N2_DIR_0372.LAB	6/5/2024	7:16:35	0.00	0.00	0.02	-0.07	-0.05	0.00	191.9	0.990	0.02	0.10	1600	1.14
N2_DIR_0373.LAB	6/5/2024	7:16:42	-0.01	0.01	0.02	-0.03	0.01	0.01	191.8	0.990	0.03	0.09	1495	1.14
N2_DIR_0374.LAB	6/5/2024	7:16:50	-0.01	0.00	0.02	-0.20	-0.13	0.00	191.8	0.990	0.03	0.09	1612	1.14
N2_DIR_0375.LAB	6/5/2024	7:16:57	0.00	0.00	0.00	-0.07	0.03	0.01	191.8	0.990	0.03	0.10	1366	1.14
N2_DIR_0376.LAB	6/5/2024	7:17:05	0.00	0.00	0.02	-0.07	0.11	0.00	191.8	0.990	0.03	0.09	1702	1.14
		Average			**0.01**	**-0.06**								

CTS, 99.97 ppm Ethylene Direct Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
CTS_DIR_0378.LAB	6/5/2024	7:18:05	0.01	0.00	-0.02	0.39	98.13	-0.02	191.6	0.990	0.02	0.10	1732	1.14	**98.2%**
CTS_DIR_0379.LAB	6/5/2024	7:18:13	0.00	-0.01	0.02	0.64	98.14	-0.01	191.7	0.990	0.03	0.09	1416	1.14	**98.2%**
CTS_DIR_0380.LAB	6/5/2024	7:18:20	0.00	-0.01	0.06	0.63	98.22	-0.02	191.6	0.990	0.04	0.10	1291	1.14	**98.2%**
CTS_DIR_0381.LAB	6/5/2024	7:18:28	0.00	0.00	-0.01	0.56	98.23	-0.02	191.6	0.990	0.03	0.10	1364	1.14	**98.3%**
CTS_DIR_0382.LAB	6/5/2024	7:18:35	0.00	0.00	-0.05	0.23	98.33	-0.02	191.6	0.990	0.03	0.09	1138	1.14	**98.4%**
CTS_DIR_0383.LAB	6/5/2024	7:18:43	0.00	0.00	-0.07	0.47	97.92	-0.02	191.6	0.990	0.02	0.09	1794	1.14	**97.9%**
CTS_DIR_0384.LAB	6/5/2024	7:18:50	0.00	0.00	-0.02	0.58	98.33	-0.01	191.6	0.990	0.03	0.09	1830	1.14	**98.4%**
CTS_DIR_0385.LAB	6/5/2024	7:18:58	0.01	0.01	0.02	0.41	98.32	-0.01	191.6	0.991	0.02	0.10	1212	1.14	**98.3%**
		Average					**98.20**								**98.2%**

49.30 ppm HCN/5.00 ppm SF6 Direct Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	HCN Recovery (%)
HCN_DIR_0426.LAB	6/5/2024	7:27:52	0.00	-0.01	-0.03	49.70	-0.02	4.86	191.5	0.990	0.03	0.18	2284	1.13	**100.8%**
HCN_DIR_0427.LAB	6/5/2024	7:27:59	0.00	0.00	0.03	49.77	0.08	4.87	191.5	0.990	0.02	0.19	1758	1.13	**101.0%**
HCN_DIR_0428.LAB	6/5/2024	7:28:07	0.00	0.01	0.00	49.27	0.00	4.88	191.4	0.990	0.03	0.18	1489	1.13	**99.9%**
HCN_DIR_0429.LAB	6/5/2024	7:28:15	0.00	0.01	-0.01	49.82	0.01	4.87	191.4	0.990	0.02	0.20	1440	1.13	**101.1%**
HCN_DIR_0430.LAB	6/5/2024	7:28:22	0.00	0.00	0.02	49.87	0.00	4.89	191.4	0.990	0.02	0.18	1644	1.13	**101.2%**
HCN_DIR_0431.LAB	6/5/2024	7:28:29	0.00	0.00	0.05	50.23	-0.33	4.87	191.4	0.990	0.03	0.18	1947	1.13	**101.9%**
HCN_DIR_0432.LAB	6/5/2024	7:28:37	0.01	-0.01	-0.02	50.72	0.21	4.84	191.4	0.990	0.03	0.19	1497	1.13	**102.9%**
HCN_DIR_0433.LAB	6/5/2024	7:28:44	-0.01	-0.01	-0.01	51.53	0.43	4.82	191.4	0.989	0.03	0.18	1624	1.13	**104.5%**
		Average				**50.11**		**4.86**							**101.7%**

CTS, 99.97 ppm Ethylene System Purge and Response Time Test

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)	Response Time (sec)
CTS_RT_0434.LAB	6/5/2024	7:31:46	7.57	5.83	-0.04	1.35	0.68	0.01	192.1	1.009	0.07	0.27	NaN	1.14	**0.7%**	**-**
CTS_RT_0435.LAB	6/5/2024	7:31:54	6.68	5.06	-0.10	1.59	0.27	0.04	192.0	1.009	0.05	0.25	1393	1.14	**0.3%**	**8**
CTS_RT_0436.LAB	6/5/2024	7:32:01	0.23	0.09	0.04	4.74	86.55	0.29	192.0	1.013	0.03	0.12	675	1.13	**88.1%**	**15**
CTS_RT_0437.LAB	6/5/2024	7:32:09	0.03	0.02	0.05	0.22	98.96	-0.02	192.0	1.013	0.03	0.09	1569	1.13	**100.8%**	**23**
CTS_RT_0438.LAB	6/5/2024	7:32:16	0.01	0.01	0.05	-0.11	100.32	-0.02	191.9	1.003	0.03	0.10	1230	1.13	**102.2%**	
CTS_RT_0439.LAB	6/5/2024	7:32:24	0.02	-0.02	0.03	-0.12	99.11	-0.03	191.8	1.007	0.03	0.11	1008	1.13	**100.9%**	
CTS_RT_0440.LAB	6/5/2024	7:32:31	0.00	0.00	0.03	0.29	99.37	-0.02	191.8	1.005	0.03	0.11	1511	1.13	**101.2%**	
CTS_RT_0441.LAB	6/5/2024	7:32:39	0.00	0.00	-0.03	0.05	99.42	-0.03	191.8	1.009	0.03	0.10	1216	1.13	**101.2%**	
CTS_RT_0442.LAB	6/5/2024	7:32:46	0.05	0.01	0.01	0.28	99.29	-0.03	191.7	1.021	0.03	0.11	1272	1.12	**101.1%**	
CTS_RT_0443.LAB	6/5/2024	7:32:54	0.01	0.00	0.03	0.20	99.67	-0.06	191.7	1.008	0.03	0.10	1268	1.13	**101.5%**	
CTS_RT_0444.LAB	6/5/2024	7:33:02	-0.01	0.00	-0.02	0.03	99.84	0.00	191.7	1.006	0.03	0.10	1421	1.13	**101.7%**	
		Average					**99.50**								**101.3%**	

Nitrogen (Zero) System Purge and Response Time Test

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)	Zero Time (sec)
N2_RT_0445.LAB	6/5/2024	7:33:26	0.02	0.01	0.05	0.19	99.96	-0.04	191.6	1.009	0.03	0.11	NaN	1.13	**101.8%**	**-**
N2_RT_0446.LAB	6/5/2024	7:33:33	2.30	2.12	0.04	1.03	51.96	-0.01	191.6	1.006	0.04	0.14	1232	1.13	**52.9%**	**8**
N2_RT_0447.LAB	6/5/2024	7:33:41	1.92	1.56	0.03	0.53	12.32	-0.01	191.6	1.010	0.03	0.18	1351	1.13	**12.6%**	**16**
N2_RT_0448.LAB	6/5/2024	7:33:48	0.03	0.01	0.00	-0.12	0.32	0.01	191.6	1.005	0.03	0.10	1383	1.13	**0.3%**	**23**
N2_RT_0449.LAB	6/5/2024	7:33:56	0.02	-0.01	-0.01	0.11	0.59	-0.01	191.5	1.005	0.04	0.09	1125	1.12	**0.6%**	
N2_RT_0450.LAB	6/5/2024	7:34:03	0.00	0.00	-0.01	-0.05	0.56	0.00	191.5	1.009	0.04	0.12	1263	1.13	**0.6%**	
N2_RT_0451.LAB	6/5/2024	7:34:11	0.02	0.01	0.00	0.33	-0.02	-0.01	191.5	1.001	0.03	0.10	1606	1.13	**0.0%**	
N2_RT_0452.LAB	6/5/2024	7:34:18	0.01	0.01	0.02	0.01	-0.43	-0.01	191.4	1.006	0.03	0.09	1532	1.12	**-0.4%**	
N2_RT_0453.LAB	6/5/2024	7:34:26	0.00	0.01	-0.01	0.08	0.11	-0.01	191.4	1.009	0.03	0.09	1150	1.12	**0.1%**	
N2_RT_0454.LAB	6/5/2024	7:34:33	0.01	-0.01	0.00	-0.01	-0.10	0.00	191.4	1.012	0.03	0.10	1063	1.13	**-0.1%**	
N2_RT_0455.LAB	6/5/2024	7:34:41	0.03	-0.01	-0.01	0.38	1.03	0.00	191.4	1.005	0.03	0.10	1540	1.13	**1.0%**	
N2_RT_0456.LAB	6/5/2024	7:34:48	-0.01	0.00	0.03	-0.10	0.21	0.00	191.4	1.008	0.03	0.10	1303	1.12	**0.2%**	

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_NAT_0457.LAB	6/5/2024	7:36:30	7.62	6.18	-0.04	1.25	0.69	0.01	191.7	1.007	0.06	0.24	NaN	1.14
KILN1_NAT_0458.LAB	6/5/2024	7:37:30	7.60	6.18	-0.05	1.26	0.57	0.01	192.0	1.008	0.06	0.24	4459	1.14
KILN1_NAT_0459.LAB	6/5/2024	7:38:29	7.68	5.93	-0.06	1.30	0.71	0.01	192.1	1.008	0.06	0.24	5011	1.13
	Native Average					**1.27**		**0.01**						

Kiln 1 Analyte Spike, Using 49.30 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN1_NAT_SPK_0484.LAB	6/5/2024	7:42:04	7.21	5.48	-0.13	4.75	0.37	0.39	191.5	1.009	0.06	0.24	1903	1.13	**0.079**	**92.7%**
KILN1_NAT_SPK_0485.LAB	6/5/2024	7:42:11	7.23	5.54	-0.10	4.80	0.86	0.40	191.5	1.006	0.06	0.25	2000	1.13	**0.081**	**92.3%**
KILN1_NAT_SPK_0486.LAB	6/5/2024	7:42:19	7.31	5.58	-0.08	4.88	0.37	0.41	191.4	1.003	0.07	0.26	2323	1.13	**0.083**	**92.0%**
KILN1_NAT_SPK_0487.LAB	6/5/2024	7:42:26	7.27	5.51	-0.04	4.92	0.50	0.39	191.4	1.008	0.06	0.25	1771	1.13	**0.078**	**96.9%**
KILN1_NAT_SPK_0488.LAB	6/5/2024	7:42:34	7.25	5.51	-0.03	4.78	0.67	0.38	191.4	1.009	0.06	0.26	2072	1.13	**0.076**	**95.8%**
KILN1_NAT_SPK_0489.LAB	6/5/2024	7:42:42	7.26	5.53	-0.10	4.98	0.63	0.39	191.5	1.001	0.07	0.24	1730	1.13	**0.079**	**97.1%**
KILN1_NAT_SPK_0490.LAB	6/5/2024	7:42:49	7.18	5.45	-0.07	4.73	0.75	0.38	191.5	1.013	0.06	0.27	1376	1.13	**0.075**	**95.4%**
KILN1_NAT_SPK_0491.LAB	6/5/2024	7:42:57	7.21	5.44	-0.09	4.61	0.53	0.39	191.5	1.005	0.07	0.26	1481	1.13	**0.079**	**90.0%**
	Spike Average					**4.81**		**0.39**							**0.079**	**94.0%**

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_MILLOFF_R1_0557.LAB	6/5/2024	8:59:41	5.56	6.60	-0.04	1.25	0.56	0.01	191.8	1.011	0.05	0.25	4369	1.12
KILN1_MILLOFF_R1_0558.LAB	6/5/2024	9:00:41	5.52	6.48	-0.04	1.22	0.62	0.00	192.1	1.012	0.05	0.24	6081	1.12
KILN1_MILLOFF_R1_0559.LAB	6/5/2024	9:01:41	5.46	6.29	-0.05	1.11	0.47	0.01	192.2	1.008	0.05	0.24	4075	1.12
	Native Average					**1.19**		**0.01**						

Kiln 1 Analyte Spike, Using 49.30 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN1_MILLOFF_SPK_0584.LAB	6/5/2024	9:05:36	4.87	5.56	-0.07	5.31	0.35	0.41	191.4	1.012	0.05	0.26	1546	1.12	**0.084**	**100.5%**
KILN1_MILLOFF_SPK_0585.LAB	6/5/2024	9:05:43	4.93	5.61	-0.02	5.49	0.48	0.41	191.4	1.006	0.07	0.26	1376	1.12	**0.084**	**103.6%**
KILN1_MILLOFF_SPK_0586.LAB	6/5/2024	9:05:50	4.96	5.59	-0.08	5.10	0.53	0.41	191.4	1.003	0.05	0.27	1176	1.12	**0.082**	**97.8%**
KILN1_MILLOFF_SPK_0587.LAB	6/5/2024	9:05:58	4.92	5.55	-0.03	5.09	0.38	0.39	191.4	1.009	0.05	0.27	1449	1.12	**0.079**	**100.2%**
KILN1_MILLOFF_SPK_0588.LAB	6/5/2024	9:06:06	4.92	5.52	-0.04	5.18	0.63	0.39	191.4	1.015	0.05	0.25	1793	1.12	**0.079**	**102.3%**
KILN1_MILLOFF_SPK_0589.LAB	6/5/2024	9:06:13	4.95	5.57	-0.05	5.04	0.48	0.39	191.3	1.007	0.05	0.27	2000	1.12	**0.080**	**99.0%**
KILN1_MILLOFF_SPK_0590.LAB	6/5/2024	9:06:20	4.97	5.56	-0.02	5.19	0.66	0.40	191.4	1.006	0.05	0.26	1557	1.12	**0.080**	**101.5%**
KILN1_MILLOFF_SPK_0591.LAB	6/5/2024	9:06:28	4.89	5.51	-0.05	4.92	0.45	0.42	191.4	1.019	0.06	0.26	1529	1.12	**0.085**	**91.6%**
	Spike Average					**5.17**		**0.40**							**0.082**	**99.6%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN1_MILLOFF_CTS_SYS_0593.LAB	6/5/2024	9:09:22	0.02	-0.01	-0.03	0.36	99.19	-0.02	192.2	1.012	0.02	0.13	1357	1.11	**101.0%**
KILN1_MILLOFF_CTS_SYS_0594.LAB	6/5/2024	9:09:29	0.02	-0.01	0.07	0.26	99.29	-0.02	192.2	1.005	0.03	0.13	1381	1.11	**101.1%**
KILN1_MILLOFF_CTS_SYS_0595.LAB	6/5/2024	9:09:37	0.03	0.01	-0.03	0.05	98.94	-0.02	192.2	1.010	0.04	0.11	1264	1.11	**100.7%**
KILN1_MILLOFF_CTS_SYS_0596.LAB	6/5/2024	9:09:45	0.02	0.00	-0.06	0.23	99.31	-0.01	192.2	1.012	0.03	0.13	1474	1.11	**101.1%**
KILN1_MILLOFF_CTS_SYS_0597.LAB	6/5/2024	9:09:52	0.01	0.00	-0.04	0.26	99.24	-0.02	192.2	1.007	0.03	0.12	1318	1.11	**101.1%**
KILN1_MILLOFF_CTS_SYS_0598.LAB	6/5/2024	9:09:59	0.02	0.01	-0.05	0.30	99.14	-0.03	192.2	1.012	0.02	0.14	1158	1.11	**101.0%**
KILN1_MILLOFF_CTS_SYS_0599.LAB	6/5/2024	9:10:07	0.01	0.02	-0.01	0.08	98.69	-0.02	192.2	1.011	0.03	0.13	1032	1.11	**100.5%**
KILN1_MILLOFF_CTS_SYS_0600.LAB	6/5/2024	9:10:14	0.01	0.02	0.03	0.15	99.49	-0.01	192.3	1.014	0.03	0.13	1651	1.11	**101.3%**
		Average					**99.16**								**101.0%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_MILLOFF_N2_SYS_0602.LAB	6/5/2024	9:11:27	0.01	0.00	0.01	-0.03	-0.28	-0.02	191.74	1.01	0.03	0.12	1127	1.11
KILN1_MILLOFF_N2_SYS_0603.LAB	6/5/2024	9:11:35	0.00	0.01	-0.01	-0.01	-0.14	0.00	191.70	1.01	0.03	0.12	1259	1.11
KILN1_MILLOFF_N2_SYS_0604.LAB	6/5/2024	9:11:42	0.03	0.01	0.04	-0.21	0.09	0.01	191.63	1.01	0.03	0.13	1406	1.11
KILN1_MILLOFF_N2_SYS_0605.LAB	6/5/2024	9:11:50	0.02	0.01	0.06	-0.05	-0.17	-0.02	191.63	1.01	0.02	0.12	1278	1.11
KILN1_MILLOFF_N2_SYS_0606.LAB	6/5/2024	9:11:57	0.02	0.01	-0.01	0.16	0.04	0.00	191.64	1.01	0.03	0.12	1192	1.11
KILN1_MILLOFF_N2_SYS_0607.LAB	6/5/2024	9:12:05	0.00	0.00	-0.01	0.08	0.04	0.00	191.55	1.01	0.03	0.13	1292	1.11
KILN1_MILLOFF_N2_SYS_0608.LAB	6/5/2024	9:12:12	0.00	0.00	-0.01	0.11	0.16	0.00	191.57	1.01	0.04	0.12	1500	1.11
KILN1_MILLOFF_N2_SYS_0609.LAB	6/5/2024	9:12:20	0.00	0.02	0.09	-0.06	-0.03	-0.02	191.55	1.01	0.02	0.12	1766	1.11
		Average			**0.02**	**0.00**								
		Std Dev			**0.04**	**0.12**								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_MILLOFF_R2_0680.LAB	6/5/2024	10:24:10	5.01	5.38	-0.05	1.18	0.54	0.01	191.9	1.011	0.05	0.25	5285	1.12
KILN1_MILLOFF_R2_0681.LAB	6/5/2024	10:25:10	5.11	5.85	-0.04	1.26	0.67	0.00	191.9	1.011	0.05	0.24	4974	1.12
KILN1_MILLOFF_R2_0682.LAB	6/5/2024	10:26:10	5.16	6.17	-0.04	1.32	0.60	0.01	191.9	1.010	0.05	0.25	3935	1.12
	Native Average					**1.26**		**0.01**						

Kiln 1 Analyte Spike, Using 49.30 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN1_MILLOFF_SPK_0701.LAB	6/5/2024	10:29:51	4.82	5.06	-0.04	4.74	0.62	0.38	191.9	1.005	0.05	0.27	1493	1.12	**0.077**	**94.4%**
KILN1_MILLOFF_SPK_0702.LAB	6/5/2024	10:29:59	4.79	4.99	-0.10	4.92	0.44	0.37	191.9	1.008	0.06	0.27	1162	1.12	**0.075**	**99.6%**
KILN1_MILLOFF_SPK_0703.LAB	6/5/2024	10:30:06	4.72	4.89	-0.06	4.99	0.63	0.36	191.9	1.020	0.05	0.25	1609	1.12	**0.073**	**103.3%**
KILN1_MILLOFF_SPK_0704.LAB	6/5/2024	10:30:14	4.74	4.91	-0.06	4.62	0.50	0.37	191.9	1.015	0.06	0.27	1548	1.12	**0.074**	**94.7%**
KILN1_MILLOFF_SPK_0705.LAB	6/5/2024	10:30:21	4.76	4.94	-0.05	5.11	0.39	0.39	191.9	1.008	0.06	0.27	1212	1.12	**0.079**	**100.0%**
KILN1_MILLOFF_SPK_0706.LAB	6/5/2024	10:30:29	4.72	4.88	0.03	4.73	0.67	0.38	191.9	1.015	0.05	0.27	1531	1.12	**0.076**	**94.9%**
KILN1_MILLOFF_SPK_0707.LAB	6/5/2024	10:30:36	4.73	4.93	-0.05	4.64	0.52	0.38	191.9	1.011	0.05	0.26	1624	1.12	**0.078**	**91.9%**
KILN1_MILLOFF_SPK_0708.LAB	6/5/2024	10:30:44	4.77	5.00	-0.06	4.71	0.46	0.37	191.9	1.007	0.06	0.25	1640	1.12	**0.075**	**95.7%**
	Spike Average					**4.81**		**0.37**							**0.076**	**96.8%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN1_MILLOFF_CTS_SYS_0709.LAB	6/5/2024	10:33:07	0.00	0.01	0.02	0.21	99.24	-0.02	191.9	1.011	0.04	0.15	NaN	1.11	**101.1%**
KILN1_MILLOFF_CTS_SYS_0710.LAB	6/5/2024	10:33:15	0.03	0.02	0.02	-0.01	99.22	-0.03	191.9	1.010	0.03	0.13	1241	1.11	**101.0%**
KILN1_MILLOFF_CTS_SYS_0711.LAB	6/5/2024	10:33:22	0.01	0.00	-0.02	0.38	98.75	-0.04	191.9	1.011	0.04	0.13	1654	1.11	**100.6%**
KILN1_MILLOFF_CTS_SYS_0712.LAB	6/5/2024	10:33:29	0.03	0.01	0.00	0.03	99.12	-0.01	191.9	1.011	0.03	0.16	1524	1.11	**100.9%**
KILN1_MILLOFF_CTS_SYS_0713.LAB	6/5/2024	10:33:37	0.03	0.00	-0.03	0.42	98.60	-0.02	191.9	1.012	0.03	0.15	1346	1.11	**100.4%**
KILN1_MILLOFF_CTS_SYS_0714.LAB	6/5/2024	10:33:44	0.02	0.02	0.02	0.18	99.46	-0.02	191.9	1.012	0.03	0.15	1570	1.11	**101.3%**
KILN1_MILLOFF_CTS_SYS_0715.LAB	6/5/2024	10:33:52	0.01	0.01	0.01	0.21	100.16	-0.02	191.8	1.004	0.02	0.13	1122	1.11	**102.0%**
KILN1_MILLOFF_CTS_SYS_0716.LAB	6/5/2024	10:34:00	0.00	0.00	-0.01	0.39	98.06	-0.02	191.8	1.015	0.03	0.16	1172	1.11	**99.9%**
		Average					**99.07**								**100.9%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_MILLOFF_N2_SYS_0718.LAB	6/5/2024	10:35:03	0.02	0.00	0.01	-0.08	-0.26	0.00	191.49	1.01	0.03	0.15	1778	1.11
KILN1_MILLOFF_N2_SYS_0719.LAB	6/5/2024	10:35:11	0.00	0.02	-0.01	0.21	0.26	0.00	191.48	1.01	0.02	0.13	1707	1.11
KILN1_MILLOFF_N2_SYS_0720.LAB	6/5/2024	10:35:18	0.03	0.01	-0.02	0.13	0.12	0.00	191.45	1.01	0.03	0.12	1427	1.11
KILN1_MILLOFF_N2_SYS_0721.LAB	6/5/2024	10:35:26	0.03	0.00	0.04	0.07	0.44	0.01	191.48	1.01	0.03	0.14	1372	1.12
KILN1_MILLOFF_N2_SYS_0722.LAB	6/5/2024	10:35:33	0.01	0.01	0.02	0.03	0.26	-0.01	191.38	1.01	0.02	0.13	1275	1.11
KILN1_MILLOFF_N2_SYS_0723.LAB	6/5/2024	10:35:41	0.01	0.01	-0.02	0.00	0.28	0.00	191.42	1.02	0.03	0.15	1324	1.11
KILN1_MILLOFF_N2_SYS_0724.LAB	6/5/2024	10:35:48	0.00	0.01	-0.03	0.05	0.15	0.00	191.44	1.01	0.03	0.13	1308	1.11
KILN1_MILLOFF_N2_SYS_0725.LAB	6/5/2024	10:35:56	0.01	0.01	0.01	0.10	-0.26	-0.01	191.44	1.01	0.03	0.15	1688	1.11
		Average			**0.00**	**0.07**								
		Std Dev			**0.02**	**0.09**								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_MILLOFF_R3_0795.LAB	6/5/2024	11:49:21	4.95	6.09	-0.05	1.27	0.61	0.01	191.7	1.010	0.04	0.25	4672	1.13
KILN1_MILLOFF_R3_0796.LAB	6/5/2024	11:50:21	4.92	6.02	-0.07	1.23	0.61	0.01	191.8	1.011	0.05	0.25	4725	1.13
KILN1_MILLOFF_R3_0797.LAB	6/5/2024	11:51:21	4.99	6.11	-0.04	1.27	0.65	0.01	191.9	1.011	0.05	0.25	3836	1.13
	Native Average					**1.26**		**0.01**						

Kiln 1 Analyte Spike, Using 49.30 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN1_MILLOFF_SPK_0820.LAB	6/5/2024	11:54:35	4.61	5.41	-0.04	5.15	0.30	0.41	192.0	1.005	0.05	0.26	1488	1.13	**0.083**	**96.8%**
KILN1_MILLOFF_SPK_0821.LAB	6/5/2024	11:54:43	4.58	5.41	-0.02	5.13	0.38	0.41	192.0	1.009	0.05	0.26	1486	1.13	**0.084**	**96.2%**
KILN1_MILLOFF_SPK_0822.LAB	6/5/2024	11:54:51	4.58	5.44	0.00	5.22	0.39	0.41	192.0	1.007	0.06	0.27	2071	1.13	**0.082**	**99.1%**
KILN1_MILLOFF_SPK_0823.LAB	6/5/2024	11:54:58	4.55	5.42	-0.05	5.36	0.37	0.41	192.0	1.008	0.05	0.26	2409	1.13	**0.082**	**101.8%**
KILN1_MILLOFF_SPK_0824.LAB	6/5/2024	11:55:06	4.55	5.40	-0.03	5.30	0.36	0.42	192.0	1.011	0.05	0.27	1546	1.13	**0.085**	**98.2%**
KILN1_MILLOFF_SPK_0825.LAB	6/5/2024	11:55:13	4.50	5.32	-0.01	5.32	0.76	0.41	192.0	1.010	0.05	0.27	1560	1.13	**0.084**	**99.4%**
KILN1_MILLOFF_SPK_0826.LAB	6/5/2024	11:55:21	4.51	5.32	-0.05	5.23	0.62	0.42	192.0	1.008	0.05	0.27	1351	1.13	**0.084**	**97.2%**
KILN1_MILLOFF_SPK_0827.LAB	6/5/2024	11:55:28	4.50	5.31	-0.01	5.56	0.62	0.43	192.0	1.007	0.05	0.28	1541	1.13	**0.087**	**100.9%**
	Spike Average					**5.28**		**0.41**							**0.084**	**98.7%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN1_MILLOFF_CTS_SYS_0829.LAB	6/5/2024	11:57:40	0.01	0.01	-0.03	0.38	99.44	-0.02	191.9	1.008	0.03	0.15	1532	1.12	**101.3%**
KILN1_MILLOFF_CTS_SYS_0830.LAB	6/5/2024	11:57:47	0.01	0.01	-0.03	0.29	99.55	-0.02	191.9	1.005	0.03	0.14	1386	1.12	**101.4%**
KILN1_MILLOFF_CTS_SYS_0831.LAB	6/5/2024	11:57:54	0.02	0.01	-0.03	0.35	99.04	-0.03	192.0	1.012	0.03	0.14	1069	1.12	**100.9%**
KILN1_MILLOFF_CTS_SYS_0832.LAB	6/5/2024	11:58:02	0.01	0.00	-0.04	0.33	99.31	-0.03	191.9	1.011	0.03	0.13	1254	1.12	**101.1%**
KILN1_MILLOFF_CTS_SYS_0833.LAB	6/5/2024	11:58:10	0.00	0.01	0.01	0.14	99.38	-0.02	191.9	1.011	0.03	0.13	1580	1.12	**101.2%**
KILN1_MILLOFF_CTS_SYS_0834.LAB	6/5/2024	11:58:17	-0.01	0.00	-0.03	0.19	98.65	-0.01	191.9	1.013	0.03	0.14	1394	1.12	**100.5%**
KILN1_MILLOFF_CTS_SYS_0835.LAB	6/5/2024	11:58:25	0.02	0.02	-0.06	0.20	99.73	-0.02	191.9	1.005	0.03	0.14	1442	1.12	**101.6%**
KILN1_MILLOFF_CTS_SYS_0836.LAB	6/5/2024	11:58:32	0.01	0.01	-0.07	0.23	99.16	-0.03	191.9	1.012	0.03	0.14	1739	1.12	**101.0%**
		Average					**99.28**								**101.1%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_MILLOFF_N2_SYS_0838.LAB	6/5/2024	11:59:52	0.01	0.00	0.06	0.07	0.24	-0.01	191.92	1.01	0.03	0.16	1443	1.12
KILN1_MILLOFF_N2_SYS_0839.LAB	6/5/2024	11:59:59	0.00	0.00	-0.01	-0.03	0.19	0.01	191.92	1.01	0.03	0.12	1496	1.12
KILN1_MILLOFF_N2_SYS_0840.LAB	6/5/2024	12:00:07	0.02	0.01	-0.01	0.24	0.00	0.00	191.89	1.02	0.03	0.14	1466	1.12
KILN1_MILLOFF_N2_SYS_0841.LAB	6/5/2024	12:00:14	0.01	0.00	0.00	0.17	0.22	0.00	191.89	1.01	0.03	0.16	1106	1.12
KILN1_MILLOFF_N2_SYS_0842.LAB	6/5/2024	12:00:22	0.01	0.01	0.06	-0.32	0.14	-0.02	191.86	1.00	0.02	0.14	1267	1.12
KILN1_MILLOFF_N2_SYS_0843.LAB	6/5/2024	12:00:30	0.01	0.00	0.04	-0.02	-0.11	0.01	191.93	1.01	0.03	0.15	1459	1.12
KILN1_MILLOFF_N2_SYS_0844.LAB	6/5/2024	12:00:37	0.02	0.00	0.00	0.15	0.23	0.01	191.95	1.01	0.03	0.14	1071	1.12
KILN1_MILLOFF_N2_SYS_0845.LAB	6/5/2024	12:00:45	0.02	0.00	-0.02	-0.05	0.11	0.01	191.95	1.01	0.03	0.13	1158	1.12
		Average			**0.02**	**0.02**								
		Std Dev			**0.03**	**0.18**								

Ambienet Air System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
AMB_0872.LAB	6/5/2024	12:36:41	2.31	0.05	-0.01	0.22	0.10	0.00	191.89	1.01	0.03	0.20	NaN	1.13
AMB_0873.LAB	6/5/2024	12:37:41	2.26	0.05	-0.03	0.16	0.01	0.00	191.88	1.01	0.03	0.21	5290	1.13
AMB_0874.LAB	6/5/2024	12:38:41	2.27	0.05	0.00	0.14	-0.03	0.00	191.80	1.01	0.03	0.20	4668	1.13
AMB_128_0875.LAB	6/5/2024	12:41:31	2.25	0.05	-0.03	0.12	0.10	0.00	191.57	1.01	0.03	0.20	NaN	1.13
AMB_128_0876.LAB	6/5/2024	12:43:31	2.27	0.05	-0.02	0.19	0.09	0.00	191.61	1.01	0.03	0.20	6311	1.13

Nitrogen Direct to FTIR

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
N2_DIR_0878.LAB	6/5/2024	12:49:52	0.01	0.00	0.00	0.10	0.06	0.00	191.95	0.99	0.01	0.12	4081	1.12
N2_DIR_0879.LAB	6/5/2024	12:51:52	0.00	0.01	-0.01	0.04	0.06	0.00	191.99	0.99	0.01	0.12	5057	1.12
N2_DIR_0880.LAB	6/5/2024	12:53:52	0.01	0.00	0.00	0.04	0.06	0.00	192.03	0.99	0.01	0.12	6260	1.12

APPENDIX

FTIR Detection Limit Data

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
N2_SYS_0351.LAB	6/4/2024	15:26:51	-0.01	-0.01	0.00	0.23	0.31	0.00	191.61	1.01	0.03	0.14	979	1.10
N2_SYS_0352.LAB	6/4/2024	15:26:59	-0.03	0.00	0.00	0.00	0.39	-0.01	191.57	1.02	0.02	0.11	1524	1.10
N2_SYS_0353.LAB	6/4/2024	15:27:07	-0.02	0.01	0.00	-0.03	0.00	-0.01	191.54	1.01	0.03	0.10	1765	1.10
N2_SYS_0354.LAB	6/4/2024	15:27:14	-0.02	0.01	-0.01	0.00	0.10	0.01	191.58	1.01	0.03	0.12	1541	1.10
N2_SYS_0355.LAB	6/4/2024	15:27:22	-0.02	0.01	0.00	-0.05	-0.02	0.01	191.52	1.01	0.02	0.11	1302	1.10
N2_SYS_0356.LAB	6/4/2024	15:27:29	-0.01	0.00	-0.01	0.12	0.23	0.01	191.55	1.01	0.03	0.13	1768	1.10
N2_SYS_0357.LAB	6/4/2024	15:27:36	-0.02	0.01	0.00	0.24	0.43	0.00	191.46	1.01	0.03	0.12	1615	1.10
N2_SYS_0358.LAB	6/4/2024	15:27:44	-0.03	0.00	0.02	0.30	0.21	-0.01	191.52	1.01	0.04	0.11	1085	1.10

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_MILLOFF_N2_SYS_0602.LAB	6/5/2024	9:11:27	0.01	0.00	0.01	-0.03	-0.28	-0.02	191.74	1.01	0.03	0.12	1127	1.11
KILN1_MILLOFF_N2_SYS_0603.LAB	6/5/2024	9:11:35	0.00	0.01	-0.01	-0.01	-0.14	0.00	191.70	1.01	0.03	0.12	1259	1.11
KILN1_MILLOFF_N2_SYS_0604.LAB	6/5/2024	9:11:42	0.03	0.01	0.04	-0.21	0.09	0.01	191.63	1.01	0.03	0.13	1406	1.11
KILN1_MILLOFF_N2_SYS_0605.LAB	6/5/2024	9:11:50	0.02	0.01	0.06	-0.05	-0.17	-0.02	191.63	1.01	0.02	0.12	1278	1.11
KILN1_MILLOFF_N2_SYS_0606.LAB	6/5/2024	9:11:57	0.02	0.01	-0.01	0.16	0.04	0.00	191.64	1.01	0.03	0.12	1192	1.11
KILN1_MILLOFF_N2_SYS_0607.LAB	6/5/2024	9:12:05	0.00	0.00	-0.01	0.08	0.04	0.00	191.55	1.01	0.03	0.13	1292	1.11
KILN1_MILLOFF_N2_SYS_0608.LAB	6/5/2024	9:12:12	0.00	0.00	-0.01	0.11	0.16	0.00	191.57	1.01	0.04	0.12	1500	1.11
KILN1_MILLOFF_N2_SYS_0609.LAB	6/5/2024	9:12:20	0.00	0.02	0.09	-0.06	-0.03	-0.02	191.55	1.01	0.02	0.12	1766	1.11

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_MILLOFF_N2_SYS_0718.LAB	6/5/2024	10:35:03	0.02	0.00	0.01	-0.08	-0.26	0.00	191.49	1.01	0.03	0.15	1778	1.11
KILN1_MILLOFF_N2_SYS_0719.LAB	6/5/2024	10:35:11	0.00	0.02	-0.01	0.21	0.26	0.00	191.48	1.01	0.02	0.13	1707	1.11
KILN1_MILLOFF_N2_SYS_0720.LAB	6/5/2024	10:35:18	0.03	0.01	-0.02	0.13	0.12	0.00	191.45	1.01	0.03	0.12	1427	1.11
KILN1_MILLOFF_N2_SYS_0721.LAB	6/5/2024	10:35:26	0.03	0.00	0.04	0.07	0.44	0.01	191.48	1.01	0.03	0.14	1372	1.12
KILN1_MILLOFF_N2_SYS_0722.LAB	6/5/2024	10:35:33	0.01	0.01	0.02	0.03	0.26	-0.01	191.38	1.01	0.02	0.13	1275	1.11
KILN1_MILLOFF_N2_SYS_0723.LAB	6/5/2024	10:35:41	0.01	0.01	-0.02	0.00	0.28	0.00	191.42	1.02	0.03	0.15	1324	1.11
KILN1_MILLOFF_N2_SYS_0724.LAB	6/5/2024	10:35:48	0.00	0.01	-0.03	0.05	0.15	0.00	191.44	1.01	0.03	0.13	1308	1.11
KILN1_MILLOFF_N2_SYS_0725.LAB	6/5/2024	10:35:56	0.01	0.01	0.01	0.10	-0.26	-0.01	191.44	1.01	0.03	0.15	1688	1.11

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN1_MILLOFF_N2_SYS_0838.LAB	6/5/2024	11:59:52	0.01	0.00	0.06	0.07	0.24	-0.01	191.92	1.01	0.03	0.16	1443	1.12
KILN1_MILLOFF_N2_SYS_0839.LAB	6/5/2024	11:59:59	0.00	0.00	-0.01	-0.03	0.19	0.01	191.92	1.01	0.03	0.12	1496	1.12
KILN1_MILLOFF_N2_SYS_0840.LAB	6/5/2024	12:00:07	0.02	0.01	-0.01	0.24	0.00	0.00	191.89	1.02	0.03	0.14	1466	1.12
KILN1_MILLOFF_N2_SYS_0841.LAB	6/5/2024	12:00:14	0.01	0.00	0.00	0.17	0.22	0.00	191.89	1.01	0.03	0.16	1106	1.12
KILN1_MILLOFF_N2_SYS_0842.LAB	6/5/2024	12:00:22	0.01	0.01	0.06	-0.32	0.14	-0.02	191.86	1.00	0.02	0.14	1267	1.12
KILN1_MILLOFF_N2_SYS_0843.LAB	6/5/2024	12:00:30	0.01	0.00	0.04	-0.02	-0.11	0.01	191.93	1.01	0.03	0.15	1459	1.12
KILN1_MILLOFF_N2_SYS_0844.LAB	6/5/2024	12:00:37	0.02	0.00	0.00	0.15	0.23	0.01	191.95	1.01	0.03	0.14	1071	1.12
KILN1_MILLOFF_N2_SYS_0845.LAB	6/5/2024	12:00:45	0.02	0.00	-0.02	-0.05	0.11	0.01	191.95	1.01	0.03	0.13	1158	1.12
		Average			**0.01**	**0.05**								
		Std Dev			**0.03**	**0.13**								
		3 Sigma			**0.08**	**0.40**								

APPENDIX

Gas Certificates

Airgas Specialty Gases
Airgas USA LLC
24075 US Hwy 6
Stryker, OH 43557
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: PRIMARY STANDARD

Part Number:	X02NI99P15AD524	Reference Number:	141-402834792-1
Cylinder Number:	EB0158986	Cylinder Volume:	140.0 CF
Laboratory:	124 - Stryker (SAP) - OH	Cylinder Pressure:	2015 PSIG
Analysis Date:	Sep 05, 2023	Valve Outlet:	350
Lot Number:	141-402834792-1		

Expiration Date: Sep 05, 2031

Primary Standard Gas Mixtures are traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
ETHYLENE	100.0 PPM	99.97 PPM	+/- 1%
NITROGEN	Balance		

Signature on file

Approved for Release

Airgas Specialty Gases
Airgas USA LLC
6141 Easton Road
Plumsteadville, PA 18949
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED STANDARD-SPEC

Customer:	MONTROSE ENVIRONMENTAL		
Part Number:	X03NI99C15AC0W8	Reference Number:	160-402845896-1
Cylinder Number:	CC768248	Cylinder Volume:	144.4 CF
Laboratory:	124 - Plumsteadville - PA	Cylinder Pressure:	2015 PSIG
Analysis Date:	Sep 11, 2023	Valve Outlet:	350SS
Lot Number:	160-402845896-1		

Expiration Date: Sep 11, 2024

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
SULFUR HEXAFLUORIDE	5.000 PPM	5.000 PPM	+/- 5%
HYDROGEN CYANIDE	50.00 PPM	49.30 PPM	+/- 5%
NITROGEN	Balance		

Signature on file

Approved for Release

CEMEX
Miami, FL
Kiln 1 Mill On & Mill Off
USEPA Method 320
FTIR Emissions Testing
December 5th – 6th, 2023
PROJ-031494

Scope

Montrose Air Quality Services (MAQS, Mt. Pleasant, MI) was contracted by CEMEX (Miami, FL) to conduct emissions testing on Kiln 1. Testing was performed December 5th – 6th, 2023 to determine concentrations of gaseous hydrogen cyanide (HCN), carbon dioxide (CO_2), hydrogen fluoride (HF), and moisture (H_2O) from Kiln 1 while operating with and without the inline raw mill.

US EPA Method 320 was performed to quantify the concentration levels of gaseous hydrogen cyanide, carbon dioxide, hydrogen fluoride, and moisture. Amanda Nilles (MAQS) performed data collection. James Carey data validation and report generation. Phillip Kauppi (MAQS) reviewed the report.

Procedures

FTIR Instrumental Configuration

FTIR data were collected using an MKS MultiGas 2030 FTIR spectrometer. The FTIR was equipped with a temperature-controlled, 5.11-meter multipass gas cell maintained at 191°C. All data were collected at 0.5 cm-1 resolution. Each FTIR spectrum was derived from the coaddition of 64 scans, with a new data point generated approximately every 60 seconds.

Sample gas continuously passed through the FTIR gas cell via heated head sampling pump. Total sample flow was approximately ten liters per minute. Gas flow and sampling system pressure were monitored using a rotameter and pressure transducer. See Table 1 below for sampling system details.

Table 1 – FTIR Sampling System Parameters

Source	MKS Serial #	Sampling Line	Probe Assembly	Particulate Filter Media	Operating Temperatures
Kiln 1	001738345	100’ 3/8” dia., heated Teflon	Heated 8’, 3/8” dia. SS	0.01µ heated borosilicate glass fiber	191°C

FTIR QA/QC Methodology

QA/QC procedures followed US EPA Method 320. See Tables 2 and 3 below for QA/QC procedure details and list of calibration gas standards. All calibration gases were introduced to the analyzer and sampling system using instrument grade stainless steel rotameters. All QA/QC procedures were within the acceptance criteria allowance of the EPA methodology. See the Kiln 1 – FTIR QA/QC Data Appendix for numerical results.

Table 2 – FTIR QA/QC Procedures

QAQC Specification	Purpose	Calibration Gas	Delivery	Frequency	Acceptance Criteria	Result
M320: Zero	Verify that the FTIR is free of contaminants & zero the FTIR	Nitrogen (zero)	Direct to FTIR	pre/post test	< MDL or Noise	**Pass**
M320: Calibration Transfer Standard (CTS) Direct	Verify FTIR stability, confirm optical path length	Ethylene	Direct to FTIR	pre/post test	+/- 5% cert. value	**Pass**
M320: Analyte Direct	Verify FTIR calibration	HCN, SF_6	Direct to FTIR	pretest	+/- 5% cert. value	**Pass**
M320: CTS Response	Verify system stability, recovery, RT	Ethylene	Sampling System	pre/post run	+/- 5% of Direct Measurement	**Pass**
M320: Zero Response	Verify system is free of contaminants, system bias	Ethylene	Sampling System	pre/post run	Bias correct data	**Pass**
M320: Analyte Spike	Verify system ability to deliver and quantify analyte of interest in the presence of other effluent gases	HCN, SF_6	Dynamic Addition to Sampling System, 1:10 effluent	pre/post run	+/- 20% theoretical recovery	**Pass**
SNR	Signal to Noise Ratio	-	Sampling System	Test runs	>2500	**Pass**
SBeam at 2500 cm-1	Signal intensity at 2500 wavenumber	-	All	All	>0.9	**Pass**
Calculated Residual	The calculated residual is used to determine the interference within the analysis band for a given compound	-	All	Test runs	0.2 – 0.3 ppm for HCN and HF	**Pass**

Table 3 – Calibration Gas Standards

Components	Concentration (ppm)	Vendor	Cylinder #	Standard Type
Ethylene	99.97	Airgas	EB0158986	Primary +/- 1%
HCN, SF_6	49.1, 5.00	Airgas	CC768259	Certified +/- 5%, 5%
Nitrogen	zero gas	Airgas	n/a	UHP Grade

FTIR QA/QC Calculations

Method 320: Analyte Spiking

Hydrogen cyanide spiking was performed in ambient air and at the source prior to and after each run to verify the ability of the sampling systems to quantitatively deliver a sample containing hydrogen cyanide from the base of the probe to the FTIR. The spike target dilution ratio was

1:10 or less, or to add 3-4 ppm to the native sample, whichever results in a greater spiked concentration. Spike recovery results are within ±20% or ±0.5ppm, whichever is least restrictive. Analyte spiking assures the ability of the FTIR to quantify hydrogen cyanide in the presence of effluent gas.

As part of the spiking procedure, samples from the source were measured before and after each spike to determine hydrogen cyanide concentrations to be used in the spike recovery calculations. The analyte spiking gas contained a low concentration of sulfur hexafluoride (SF_6). The determined SF_6 concentration in the spiked sample was used to calculate the dilution factor of the spike and thus used to calculate the concentration of the spiked hydrogen cyanide.

$$DF = \frac{SF6(spk) - SF6(nat)}{SF6(Direct)}$$

$$CS = DF * Spike(dir) + Unspike(1 - DF) \quad \text{(Sec. 9.3.1 (2) USEPA Method 320)}$$

DF = Dilution factor of the spike gas
$SF_{6(dir)}$ = SF_6 concentration measured directly in undiluted spike gas
$SF_{6(spk)}$ = Diluted SF_6 concentration measured in a spiked sample
$SF_{6(nat)}$ = Native SF_6 concentration measured in unspiked samples
$Spike_{dir}$ = Concentration of the analyte in the spike standard measure by the FTIR directly
CS = Expected concentration of the spiked samples
Unspike = Native concentration of analytes in unspiked samples

A total of thirteen HCN spikes were performed during the test program. Nine HCN spikes were performed on stack gas with an average recovery of 97.1%. Four HCN spike were performed on ambient air with an average recovery of 99.2%. See the FTIR QAQC appendix for all spiking results.

FTIR Post Collection Data Validation

As part of the data validation procedure, reference spectra are manually fit to that of the sample spectra and a concentration is determined. The reference spectra are scaled to match the peak amplitude of the sample, thus providing a scale factor. The scale factor multiplied by the reference spectra concentration is used to determine the concentration value for the sample spectra. Sample pressure and temperature corrections are then applied to compute the final sample concentration. The manually calculated results are then compared with the software-generated results. The data is then validated if the two concentrations are within ± 20% agreement. If there is a difference greater than ± 20% the spectra are reviewed for possible spectral interferences or any other probable causes leading to misquantified data.

FTIR Detection Limit

The detection limit for each analyte was calculated using the determined target results from nitrogen spectra collected through the sampling system. The minimum detectable concentration of each analyte was calculated as three times the standard deviation of the noise in the FTIR system. This minimum concentration can be detected with a probability of 99.7 %. See Table 4 below for determined minimum detectable concentrations. The FTIR Detection Limit Data appendix contains all results used for the detection limit calculation.

Table 4 - FTIR Detection Limits

Analyte	Detection Limit (ppmv wet)	Detection Limit (%)
Hydrogen Cyanide	0.4	-
Hydrogen Fluoride	0.1	-
Moisture	-	0.1
Carbon Dioxide	-	0.1

Results and Discussion

Six, sixty-minute test runs were performed on Kiln 1. Three test runs were performed on December 5th, 2023 on Kiln 1 Mill On. One test run was performed December 5th, 2023 and two test runs on December 6th, 2023 on Kiln 1 Mill Off.

Analyte spiking was performed to confirm the ability of the measurement system to deliver and quantify hydrogen cyanide. See the FTIR QA/QC Data and Run Results Appendix for all concentration results. See Tables 5 and 6 below for a summary of test run results.

Table 5 – Kiln 1 Mill On Test Summary

Test Run Detail	Calculation	CO2 (%)	H2O (%)	HF (ppmv wet)	HCN (ppmv wet)
Kiln 1 - Raw Mill On Test Run 1 12/05/2023 08:30 - 09:30	Minimum	10.05	12.33	-0.10 (< 0.1)	1.90
	Maximum	10.57	13.98	-0.02 (< 0.1)	2.37
	Average	10.34	13.01	-0.06 (< 0.1)	2.10
	Std Dev	0.10	0.38	0.02	0.10
	3 Sigma	0.31	1.15	0.06	0.29
Kiln 1 - Raw Mill On Test Run 2 12/05/2023 10:10 - 11:10	Minimum	9.86	12.43	-0.11 (< 0.1)	1.80
	Maximum	10.87	14.86	-0.02 (< 0.1)	2.30
	Average	10.42	13.57	-0.06 (< 0.1)	2.06
	Std Dev	0.22	0.77	0.02	0.11
	3 Sigma	0.67	2.32	0.06	0.34
Kiln 1 - Raw Mill On Test Run 3 12/05/2023 12:00 - 13:00	Minimum	10.05	12.99	-0.12 (< 0.1)	1.82
	Maximum	10.60	14.69	-0.03 (< 0.1)	2.27
	Average	10.39	13.73	-0.07 (< 0.1)	2.01
	Std Dev	0.11	0.40	0.02	0.10
	3 Sigma	0.32	1.21	0.06	0.29

Table 6 – Kiln 1 Mill Off Test Summary

Test Run Detail	Calculation	CO2 (%)	H2O (%)	HF (ppmv wet)	HCN (ppmv wet)
Kiln 1 - Raw Mill Off Test Run 1 12/05/2023 14:40 - 15:40	Minimum	10.94	8.89	-0.15 (< 0.1)	2.22
	Maximum	11.31	9.24	-0.07 (< 0.1)	2.65
	Average	11.12	9.08	-0.12 (< 0.1)	2.46
	Std Dev	0.09	0.08	0.02	0.10
	3 Sigma	0.27	0.23	0.06	0.29
Kiln 1 - Raw Mill Off Test Run 2 12/06/2023 08:20 - 09:20	Minimum	13.00	10.19	-0.09 (< 0.1)	2.52
	Maximum	13.49	11.62	0.02 (< 0.1)	2.96
	Average	13.22	11.02	-0.03 (< 0.1)	2.73
	Std Dev	0.10	0.31	0.02	0.10
	3 Sigma	0.30	0.93	0.06	0.30
Kiln 1 - Raw Mill Off Test Run 3 12/06/2023 10:10 - 11:10	Minimum	12.64	10.58	-0.09 (< 0.1)	2.49
	Maximum	13.34	11.99	0.01 (< 0.1)	2.80
	Average	13.09	11.35	-0.04 (< 0.1)	2.63
	Std Dev	0.13	0.27	0.02	0.08
	3 Sigma	0.40	0.80	0.06	0.24

The following Appendices include:

- Kiln 1 - FTIR Test Run Data
- Kiln 1 - FTIR QA/QC Data
- Kiln 1 – FTIR Detection Limit Data
- Gas Certificates

James Carey

Date: January 11th, 2024

James Carey
FTIR Technician / Biologist
CEMEX_MiamiFL_2023Dec_PROJ-031494_txt

APPENDIX

Kiln 1 – FTIR Test Run Data

Kiln 1 - Raw Mill On Test Run 1

Spectrum	Date	Time	H2O (%)	CO2 (%)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_0235.LAB	12/5/2023	8:30:30	12.55	10.05	-0.03	2.22	191.4	1.016	0.08	0.28	3369	1.22
KILN_0236.LAB	12/5/2023	8:31:30	12.64	10.12	-0.07	2.03	191.4	1.016	0.08	0.28	2812	1.22
KILN_0237.LAB	12/5/2023	8:32:30	12.62	10.25	-0.06	1.98	191.4	1.016	0.08	0.29	2397	1.22
KILN_0238.LAB	12/5/2023	8:33:30	12.75	10.27	-0.08	2.12	191.4	1.016	0.09	0.26	2733	1.22
KILN_0239.LAB	12/5/2023	8:34:30	12.72	10.23	-0.05	2.11	191.4	1.017	0.08	0.27	2755	1.22
KILN_0240.LAB	12/5/2023	8:35:30	12.33	10.26	-0.08	2.12	191.4	1.017	0.09	0.27	2499	1.22
KILN_0241.LAB	12/5/2023	8:36:30	12.51	10.37	-0.08	2.28	191.4	1.016	0.08	0.28	3951	1.22
KILN_0242.LAB	12/5/2023	8:37:30	12.86	10.18	-0.02	1.97	191.4	1.017	0.08	0.26	2872	1.22
KILN_0243.LAB	12/5/2023	8:38:30	12.89	10.17	-0.07	2.02	191.4	1.016	0.08	0.29	2709	1.22
KILN_0244.LAB	12/5/2023	8:39:30	12.98	10.32	-0.05	2.12	191.4	1.017	0.08	0.28	2506	1.22
KILN_0245.LAB	12/5/2023	8:40:31	13.14	10.25	-0.08	2.05	191.4	1.017	0.09	0.28	2008	1.22
KILN_0246.LAB	12/5/2023	8:41:31	13.21	10.18	-0.06	2.12	191.3	1.017	0.09	0.28	3016	1.22
KILN_0247.LAB	12/5/2023	8:42:31	13.09	10.40	-0.08	2.19	191.3	1.016	0.08	0.28	2997	1.22
KILN_0248.LAB	12/5/2023	8:43:31	13.00	10.34	-0.07	2.00	191.3	1.016	0.08	0.28	2731	1.22
KILN_0249.LAB	12/5/2023	8:44:31	12.90	10.33	-0.05	2.10	191.3	1.016	0.09	0.27	2395	1.22
KILN_0250.LAB	12/5/2023	8:45:31	12.90	10.28	-0.04	2.18	191.3	1.016	0.09	0.29	2618	1.21
KILN_0251.LAB	12/5/2023	8:46:31	12.62	10.41	-0.06	2.16	191.4	1.016	0.08	0.26	2674	1.21
KILN_0252.LAB	12/5/2023	8:47:31	12.51	10.41	-0.07	2.15	191.4	1.016	0.09	0.28	3725	1.21
KILN_0253.LAB	12/5/2023	8:48:31	12.66	10.57	-0.07	2.05	191.4	1.016	0.08	0.28	3157	1.21
KILN_0254.LAB	12/5/2023	8:49:31	12.78	10.51	-0.07	2.37	191.4	1.016	0.08	0.29	3093	1.21
KILN_0255.LAB	12/5/2023	8:50:32	13.00	10.40	-0.03	2.10	191.3	1.016	0.09	0.29	2665	1.21
KILN_0256.LAB	12/5/2023	8:51:31	13.16	10.26	-0.09	1.97	191.4	1.016	0.08	0.28	3115	1.21
KILN_0257.LAB	12/5/2023	8:52:31	13.37	10.23	-0.05	2.11	191.4	1.016	0.09	0.29	2614	1.21
KILN_0258.LAB	12/5/2023	8:53:31	13.52	10.42	-0.04	2.05	191.4	1.016	0.09	0.29	3818	1.21
KILN_0259.LAB	12/5/2023	8:54:32	13.98	10.28	-0.03	2.16	191.4	1.016	0.09	0.29	3179	1.21
KILN_0260.LAB	12/5/2023	8:55:32	13.90	10.18	-0.05	2.13	191.4	1.017	0.08	0.29	3221	1.21
KILN_0261.LAB	12/5/2023	8:56:32	13.66	10.22	-0.06	1.94	191.4	1.017	0.09	0.29	2372	1.21
KILN_0262.LAB	12/5/2023	8:57:32	13.57	10.22	-0.07	2.11	191.4	1.016	0.09	0.28	3125	1.21
KILN_0263.LAB	12/5/2023	8:58:32	13.28	10.43	-0.04	1.90	191.3	1.016	0.09	0.28	3024	1.22
KILN_0264.LAB	12/5/2023	8:59:32	12.82	10.33	-0.07	2.01	191.3	1.016	0.08	0.28	2811	1.22
KILN_0265.LAB	12/5/2023	9:00:32	12.76	10.37	-0.06	2.00	191.3	1.015	0.08	0.29	3123	1.21
KILN_0266.LAB	12/5/2023	9:01:32	12.42	10.37	-0.08	2.05	191.3	1.016	0.09	0.29	2467	1.21
KILN_0267.LAB	12/5/2023	9:02:32	12.34	10.35	-0.05	2.11	191.4	1.016	0.08	0.29	2696	1.21
KILN_0268.LAB	12/5/2023	9:03:33	12.47	10.50	-0.07	2.19	191.4	1.016	0.08	0.29	2464	1.21
KILN_0269.LAB	12/5/2023	9:04:33	12.53	10.41	-0.08	2.11	191.4	1.016	0.09	0.29	3087	1.21
KILN_0270.LAB	12/5/2023	9:05:32	12.60	10.49	-0.09	1.99	191.3	1.016	0.09	0.30	3292	1.21
KILN_0271.LAB	12/5/2023	9:06:32	12.77	10.42	-0.09	2.20	191.4	1.016	0.09	0.30	2506	1.21
KILN_0272.LAB	12/5/2023	9:07:33	12.99	10.42	-0.04	2.09	191.3	1.016	0.08	0.31	3594	1.21
KILN_0273.LAB	12/5/2023	9:08:33	12.85	10.39	-0.05	2.25	191.3	1.016	0.09	0.31	4116	1.21
KILN_0274.LAB	12/5/2023	9:09:33	12.87	10.41	-0.09	2.04	191.3	1.016	0.09	0.31	3474	1.21
KILN_0275.LAB	12/5/2023	9:10:33	12.83	10.31	-0.08	1.95	191.3	1.016	0.08	0.32	3242	1.21
KILN_0276.LAB	12/5/2023	9:11:33	12.91	10.23	-0.10	2.22	191.3	1.016	0.09	0.30	4062	1.21
KILN_0277.LAB	12/5/2023	9:12:33	12.74	10.43	-0.05	2.17	191.3	1.016	0.09	0.29	3343	1.21
KILN_0278.LAB	12/5/2023	9:13:33	12.87	10.40	-0.06	2.20	191.4	1.016	0.09	0.31	3496	1.21
KILN_0279.LAB	12/5/2023	9:14:33	12.86	10.46	-0.08	2.37	191.4	1.016	0.09	0.30	2998	1.21
KILN_0280.LAB	12/5/2023	9:15:33	12.94	10.53	-0.05	2.12	191.3	1.017	0.09	0.31	3734	1.21
KILN_0281.LAB	12/5/2023	9:16:33	13.39	10.36	-0.09	1.96	191.3	1.016	0.09	0.31	3170	1.21
KILN_0282.LAB	12/5/2023	9:17:34	13.67	10.35	-0.07	2.10	191.3	1.016	0.09	0.32	2395	1.21
KILN_0283.LAB	12/5/2023	9:18:34	13.65	10.32	-0.06	2.10	191.4	1.016	0.09	0.30	2432	1.21
KILN_0284.LAB	12/5/2023	9:19:33	13.29	10.35	-0.06	2.08	191.3	1.016	0.10	0.31	3443	1.21
KILN_0285.LAB	12/5/2023	9:20:34	13.28	10.33	-0.04	2.03	191.3	1.016	0.10	0.33	2630	1.21
KILN_0286.LAB	12/5/2023	9:21:34	13.44	10.25	-0.08	2.17	191.3	1.016	0.09	0.29	2319	1.21
KILN_0287.LAB	12/5/2023	9:22:34	13.51	10.43	-0.03	1.99	191.3	1.016	0.09	0.31	2093	1.21
KILN_0288.LAB	12/5/2023	9:23:34	13.30	10.31	-0.04	2.20	191.4	1.015	0.09	0.30	2480	1.21
KILN_0289.LAB	12/5/2023	9:24:34	13.26	10.31	-0.09	2.08	191.4	1.016	0.09	0.29	3512	1.21
KILN_0290.LAB	12/5/2023	9:25:34	13.41	10.26	-0.02	2.16	191.3	1.014	0.08	0.29	2314	1.21
KILN_0291.LAB	12/5/2023	9:26:34	13.05	10.42	-0.05	2.00	191.4	1.015	0.08	0.29	2607	1.21
KILN_0292.LAB	12/5/2023	9:27:35	13.13	10.29	-0.06	2.17	191.3	1.015	0.08	0.30	3337	1.21
KILN_0293.LAB	12/5/2023	9:28:34	13.11	10.41	-0.07	2.17	191.3	1.016	0.09	0.28	3542	1.21
KILN_0294.LAB	12/5/2023	9:29:34	13.16	10.40	-0.04	1.99	191.4	1.016	0.08	0.30	2774	1.21

Spectrum	Date	Time	H2O (%)	CO2 (%)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_0295.LAB	12/5/2023	9:30:34	13.19	10.31	-0.05	2.05	191.4	1.016	0.09	0.29	2693	1.21
Kiln 1 - Raw Mill On Test Run 1 12/05/2023 08:30 - 09:30		**Minimum**	**12.33**	**10.05**	**-0.10**	**1.90**	**191.3**	**1.014**	**0.08**	**0.26**	**2008**	**1.21**
		Maximum	**13.98**	**10.57**	**-0.02**	**2.37**	**191.4**	**1.017**	**0.10**	**0.33**	**4116**	**1.22**
		Average	**13.01**	**10.34**	**-0.06**	**2.10**	**191.4**	**1.016**	**0.09**	**0.29**	**2957**	**1.21**
		Std Dev	**0.38**	**0.10**	**0.02**	**0.10**						
		3 Sigma	**1.15**	**0.31**	**0.06**	**0.29**						

Kiln 1 - Raw Mill On Test Run 2

Spectrum	Date	Time	H2O (%)	CO2 (%)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_0375.LAB	12/5/2023	10:10:11	13.92	10.60	-0.07	2.04	191.4	1.016	0.08	0.29	2527	1.21
KILN_0376.LAB	12/5/2023	10:11:11	13.97	10.61	-0.05	2.20	191.4	1.015	0.09	0.31	2222	1.21
KILN_0377.LAB	12/5/2023	10:12:11	14.19	10.47	-0.03	2.04	191.4	1.016	0.09	0.29	2891	1.21
KILN_0378.LAB	12/5/2023	10:13:11	14.30	10.57	-0.02	2.08	191.4	1.016	0.09	0.30	3020	1.21
KILN_0379.LAB	12/5/2023	10:14:11	14.52	10.40	-0.05	2.13	191.4	1.016	0.09	0.28	2440	1.21
KILN_0380.LAB	12/5/2023	10:15:11	14.53	10.37	-0.08	2.26	191.4	1.016	0.09	0.30	3085	1.21
KILN_0381.LAB	12/5/2023	10:16:11	14.74	10.34	-0.07	2.11	191.4	1.016	0.09	0.30	2705	1.21
KILN_0382.LAB	12/5/2023	10:17:11	14.75	10.10	-0.07	1.91	191.4	1.016	0.09	0.29	2648	1.21
KILN_0383.LAB	12/5/2023	10:18:12	14.72	9.96	-0.08	2.12	191.4	1.016	0.09	0.31	2326	1.21
KILN_0384.LAB	12/5/2023	10:19:11	14.64	9.86	-0.10	2.03	191.4	1.016	0.09	0.29	3144	1.21
KILN_0385.LAB	12/5/2023	10:20:12	14.49	10.02	-0.08	2.11	191.4	1.016	0.09	0.31	3535	1.21
KILN_0386.LAB	12/5/2023	10:21:12	14.22	10.13	-0.09	1.92	191.4	1.016	0.08	0.31	2961	1.21
KILN_0387.LAB	12/5/2023	10:22:12	14.23	10.08	-0.03	1.93	191.4	1.015	0.09	0.33	3125	1.21
KILN_0388.LAB	12/5/2023	10:23:12	13.91	9.99	-0.08	1.83	191.4	1.016	0.08	0.31	3857	1.21
KILN_0389.LAB	12/5/2023	10:24:12	13.31	10.21	-0.06	1.93	191.5	1.016	0.09	0.31	3219	1.21
KILN_0390.LAB	12/5/2023	10:25:12	13.15	10.50	-0.05	1.80	191.4	1.016	0.10	0.30	2463	1.21
KILN_0391.LAB	12/5/2023	10:26:12	12.85	10.39	-0.08	1.92	191.4	1.016	0.09	0.31	2723	1.21
KILN_0392.LAB	12/5/2023	10:27:12	12.74	10.24	-0.06	1.99	191.5	1.016	0.09	0.31	2308	1.21
KILN_0393.LAB	12/5/2023	10:28:12	12.46	10.28	-0.09	2.03	191.5	1.016	0.09	0.31	2649	1.21
KILN_0394.LAB	12/5/2023	10:29:12	12.52	10.39	-0.06	2.11	191.4	1.016	0.09	0.30	2232	1.21
KILN_0395.LAB	12/5/2023	10:30:13	12.43	10.48	-0.05	2.21	191.4	1.015	0.08	0.29	3235	1.21
KILN_0396.LAB	12/5/2023	10:31:12	12.71	10.48	-0.06	2.03	191.4	1.016	0.09	0.31	3143	1.21
KILN_0397.LAB	12/5/2023	10:32:12	13.10	10.51	-0.05	1.98	191.5	1.016	0.09	0.30	3188	1.21
KILN_0398.LAB	12/5/2023	10:33:13	13.41	10.32	-0.07	1.86	191.4	1.017	0.09	0.30	2685	1.21
KILN_0399.LAB	12/5/2023	10:34:13	13.81	10.46	-0.04	1.94	191.4	1.016	0.08	0.31	2395	1.21
KILN_0400.LAB	12/5/2023	10:35:13	13.91	10.26	-0.03	1.97	191.4	1.016	0.09	0.30	2852	1.21
KILN_0401.LAB	12/5/2023	10:36:13	13.94	10.44	-0.04	1.93	191.5	1.016	0.09	0.30	3626	1.21
KILN_0402.LAB	12/5/2023	10:37:13	14.23	10.24	-0.05	2.00	191.5	1.016	0.09	0.31	3440	1.21
KILN_0403.LAB	12/5/2023	10:38:13	14.50	10.36	-0.05	2.05	191.5	1.016	0.08	0.29	2787	1.21
KILN_0404.LAB	12/5/2023	10:39:13	14.56	10.40	-0.05	1.99	191.5	1.016	0.10	0.30	3657	1.21
KILN_0405.LAB	12/5/2023	10:40:13	14.72	10.34	-0.06	2.19	191.5	1.016	0.09	0.30	3358	1.21
KILN_0406.LAB	12/5/2023	10:41:13	14.86	10.19	-0.10	2.22	191.5	1.016	0.09	0.31	4210	1.21
KILN_0407.LAB	12/5/2023	10:42:13	14.74	10.14	-0.06	1.99	191.5	1.016	0.09	0.31	3668	1.21
KILN_0408.LAB	12/5/2023	10:43:13	14.56	10.22	-0.09	2.00	191.5	1.016	0.09	0.30	2673	1.21
KILN_0409.LAB	12/5/2023	10:44:13	14.39	10.28	-0.08	2.13	191.5	1.016	0.09	0.30	2850	1.21
KILN_0410.LAB	12/5/2023	10:45:13	13.87	10.35	-0.05	1.86	191.4	1.016	0.09	0.30	2885	1.21
KILN_0411.LAB	12/5/2023	10:46:14	13.76	10.43	-0.08	1.94	191.4	1.016	0.08	0.29	3185	1.21
KILN_0412.LAB	12/5/2023	10:47:14	13.62	10.21	-0.06	1.94	191.4	1.016	0.08	0.30	2928	1.21
KILN_0413.LAB	12/5/2023	10:48:14	13.34	10.23	-0.03	2.02	191.4	1.016	0.08	0.30	2161	1.21
KILN_0414.LAB	12/5/2023	10:49:14	13.32	10.37	-0.04	2.04	191.4	1.016	0.09	0.30	2668	1.21
KILN_0415.LAB	12/5/2023	10:50:14	13.02	10.50	-0.10	2.07	191.4	1.016	0.09	0.29	3245	1.21
KILN_0416.LAB	12/5/2023	10:51:14	12.81	10.53	-0.10	2.04	191.4	1.016	0.09	0.29	3075	1.21
KILN_0417.LAB	12/5/2023	10:52:14	12.84	10.45	-0.04	2.19	191.4	1.016	0.08	0.30	2448	1.21
KILN_0418.LAB	12/5/2023	10:53:14	12.75	10.70	-0.03	2.00	191.5	1.015	0.09	0.30	2014	1.21
KILN_0419.LAB	12/5/2023	10:54:14	12.77	10.56	-0.06	2.15	191.4	1.015	0.08	0.29	2286	1.21
KILN_0420.LAB	12/5/2023	10:55:14	12.78	10.64	-0.08	2.18	191.4	1.016	0.10	0.29	2633	1.21
KILN_0421.LAB	12/5/2023	10:56:14	12.63	10.46	-0.06	2.10	191.4	1.016	0.09	0.30	2542	1.21
KILN_0422.LAB	12/5/2023	10:57:14	12.66	10.52	-0.08	2.09	191.4	1.016	0.10	0.32	2595	1.21
KILN_0423.LAB	12/5/2023	10:58:14	12.80	10.65	-0.07	2.09	191.4	1.016	0.09	0.30	2802	1.21
KILN_0424.LAB	12/5/2023	10:59:15	12.84	10.74	-0.05	2.09	191.4	1.015	0.09	0.30	2444	1.21
KILN_0425.LAB	12/5/2023	11:00:15	12.87	10.71	-0.11	2.17	191.4	1.016	0.09	0.32	2430	1.21
KILN_0426.LAB	12/5/2023	11:01:15	12.79	10.67	-0.08	2.22	191.5	1.016	0.10	0.31	2577	1.21
KILN_0427.LAB	12/5/2023	11:02:15	12.83	10.87	-0.06	1.94	191.4	1.016	0.09	0.30	2647	1.21

Spectrum	Date	Time	H2O (%)	CO2 (%)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_0428.LAB	12/5/2023	11:03:15	12.91	10.76	-0.05	2.10	191.4	1.016	0.09	0.31	2108	1.21
KILN_0429.LAB	12/5/2023	11:04:15	12.88	10.67	-0.08	2.29	191.4	1.015	0.08	0.31	2461	1.21
KILN_0430.LAB	12/5/2023	11:05:15	12.90	10.62	-0.03	2.30	191.4	1.015	0.09	0.31	2344	1.21
KILN_0431.LAB	12/5/2023	11:06:15	12.83	10.85	-0.07	2.10	191.4	1.016	0.09	0.30	2842	1.21
KILN_0432.LAB	12/5/2023	11:07:15	12.94	10.58	-0.08	2.10	191.4	1.016	0.08	0.31	3706	1.21
KILN_0433.LAB	12/5/2023	11:08:15	13.07	10.66	-0.06	2.13	191.4	1.015	0.09	0.30	4002	1.21
KILN_0434.LAB	12/5/2023	11:09:15	13.61	10.62	-0.06	2.17	191.4	1.015	0.10	0.30	4963	1.21
KILN_0435.LAB	12/5/2023	11:10:16	14.22	10.47	-0.03	2.15	191.4	1.015	0.10	0.31	3787	1.21
Kiln 1 - Raw Mill On Test Run 2 12/05/2023 10:10 - 11:10		**Minimum**	**12.43**	**9.86**	**-0.11**	**1.80**	**191.4**	**1.015**	**0.08**	**0.28**	**2014**	**1.21**
		Maximum	**14.86**	**10.87**	**-0.02**	**2.30**	**191.5**	**1.017**	**0.10**	**0.33**	**4963**	**1.21**
		Average	**13.57**	**10.42**	**-0.06**	**2.06**	**191.4**	**1.016**	**0.09**	**0.30**	**2912**	**1.21**
		Std Dev	**0.77**	**0.22**	**0.02**	**0.11**						
		3 Sigma	**2.32**	**0.67**	**0.06**	**0.34**						

Kiln 1 - Raw Mill On Test Run 3

Spectrum	Date	Time	H2O (%)	CO2 (%)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_0541.LAB	12/5/2023	12:00:36	13.25	10.51	-0.05	2.11	191.3	1.015	0.08	0.31	3489	1.21
KILN_0542.LAB	12/5/2023	12:01:36	13.54	10.49	-0.05	2.08	191.3	1.015	0.08	0.30	4347	1.21
KILN_0543.LAB	12/5/2023	12:02:36	13.47	10.46	-0.09	2.04	191.4	1.015	0.08	0.30	2749	1.21
KILN_0544.LAB	12/5/2023	12:03:36	13.51	10.53	-0.06	2.08	191.4	1.015	0.09	0.30	2837	1.21
KILN_0545.LAB	12/5/2023	12:04:36	13.89	10.45	-0.05	2.02	191.4	1.015	0.09	0.30	2468	1.21
KILN_0546.LAB	12/5/2023	12:05:36	14.00	10.41	-0.07	2.02	191.4	1.015	0.09	0.30	2501	1.21
KILN_0547.LAB	12/5/2023	12:06:36	14.18	10.37	-0.08	1.97	191.4	1.015	0.08	0.31	3653	1.21
KILN_0548.LAB	12/5/2023	12:07:36	14.03	10.47	-0.07	1.99	191.3	1.015	0.09	0.32	2491	1.21
KILN_0549.LAB	12/5/2023	12:08:36	13.77	10.38	-0.07	2.09	191.4	1.014	0.09	0.31	2228	1.21
KILN_0550.LAB	12/5/2023	12:09:36	13.38	10.25	-0.09	2.07	191.4	1.015	0.09	0.32	2526	1.21
KILN_0551.LAB	12/5/2023	12:10:36	13.37	10.53	-0.07	2.05	191.4	1.015	0.10	0.32	2625	1.21
KILN_0552.LAB	12/5/2023	12:11:37	13.46	10.48	-0.12	1.96	191.4	1.015	0.09	0.33	2623	1.21
KILN_0553.LAB	12/5/2023	12:12:37	13.47	10.44	-0.10	1.85	191.4	1.015	0.09	0.32	2453	1.21
KILN_0554.LAB	12/5/2023	12:13:37	13.37	10.40	-0.05	2.24	191.4	1.015	0.09	0.31	2691	1.21
KILN_0555.LAB	12/5/2023	12:14:37	13.33	10.57	-0.04	2.10	191.4	1.015	0.09	0.31	2866	1.21
KILN_0556.LAB	12/5/2023	12:15:37	13.48	10.31	-0.07	2.15	191.4	1.014	0.09	0.29	2431	1.21
KILN_0557.LAB	12/5/2023	12:16:37	14.02	10.40	-0.03	2.07	191.4	1.014	0.09	0.31	2349	1.21
KILN_0558.LAB	12/5/2023	12:17:37	14.02	10.24	-0.06	1.90	191.4	1.015	0.08	0.30	3773	1.21
KILN_0559.LAB	12/5/2023	12:18:37	14.07	10.38	-0.05	2.04	191.4	1.015	0.09	0.31	2306	1.21
KILN_0560.LAB	12/5/2023	12:19:37	14.12	10.35	-0.07	1.96	191.4	1.015	0.09	0.29	2201	1.21
KILN_0561.LAB	12/5/2023	12:20:37	14.00	10.20	-0.05	1.95	191.4	1.014	0.08	0.30	2359	1.21
KILN_0562.LAB	12/5/2023	12:21:38	13.83	10.33	-0.09	1.97	191.4	1.014	0.09	0.29	3275	1.21
KILN_0563.LAB	12/5/2023	12:22:37	13.89	10.36	-0.10	2.04	191.4	1.015	0.09	0.32	2936	1.21
KILN_0564.LAB	12/5/2023	12:23:37	13.69	10.38	-0.04	1.92	191.4	1.015	0.09	0.30	3118	1.21
KILN_0565.LAB	12/5/2023	12:24:38	13.71	10.32	-0.07	1.96	191.4	1.015	0.09	0.32	4897	1.21
KILN_0566.LAB	12/5/2023	12:25:38	13.62	10.24	-0.10	1.90	191.4	1.015	0.09	0.33	2755	1.21
KILN_0567.LAB	12/5/2023	12:26:38	13.57	10.52	-0.06	1.87	191.4	1.014	0.09	0.32	2597	1.21
KILN_0568.LAB	12/5/2023	12:27:38	13.53	10.38	-0.10	1.87	191.4	1.014	0.09	0.33	3032	1.21
KILN_0569.LAB	12/5/2023	12:28:38	13.63	10.41	-0.08	1.93	191.4	1.015	0.09	0.32	2868	1.21
KILN_0570.LAB	12/5/2023	12:29:38	13.58	10.44	-0.06	1.82	191.4	1.015	0.09	0.34	2570	1.21
KILN_0571.LAB	12/5/2023	12:30:38	13.34	10.42	-0.08	2.01	191.4	1.014	0.09	0.32	2790	1.21
KILN_0572.LAB	12/5/2023	12:31:38	13.23	10.32	-0.10	1.95	191.4	1.014	0.09	0.30	2915	1.21
KILN_0573.LAB	12/5/2023	12:32:38	13.14	10.44	-0.07	2.06	191.4	1.014	0.08	0.31	2799	1.21
KILN_0574.LAB	12/5/2023	12:33:38	13.26	10.60	-0.10	2.27	191.4	1.014	0.08	0.29	2259	1.21
KILN_0575.LAB	12/5/2023	12:34:38	12.99	10.38	-0.08	2.00	191.4	1.015	0.09	0.29	2880	1.21
KILN_0576.LAB	12/5/2023	12:35:38	13.03	10.40	-0.07	2.06	191.4	1.015	0.08	0.29	3309	1.21
KILN_0577.LAB	12/5/2023	12:36:38	13.40	10.44	-0.08	2.10	191.4	1.015	0.09	0.31	2835	1.21
KILN_0578.LAB	12/5/2023	12:37:39	13.50	10.44	-0.09	1.96	191.4	1.015	0.09	0.31	2221	1.21
KILN_0579.LAB	12/5/2023	12:38:39	13.49	10.51	-0.07	2.10	191.4	1.014	0.09	0.30	2542	1.21
KILN_0580.LAB	12/5/2023	12:39:39	13.44	10.41	-0.06	1.99	191.4	1.014	0.09	0.31	2812	1.21
KILN_0581.LAB	12/5/2023	12:40:39	13.41	10.48	-0.08	1.90	191.4	1.014	0.09	0.31	4064	1.21
KILN_0582.LAB	12/5/2023	12:41:39	13.49	10.41	-0.06	2.04	191.4	1.014	0.09	0.31	4227	1.21
KILN_0583.LAB	12/5/2023	12:42:39	13.60	10.47	-0.07	1.90	191.4	1.014	0.09	0.32	3685	1.21
KILN_0584.LAB	12/5/2023	12:43:39	13.56	10.23	-0.09	1.94	191.4	1.014	0.09	0.30	2563	1.21
KILN_0585.LAB	12/5/2023	12:44:39	13.51	10.42	-0.08	1.96	191.4	1.014	0.10	0.33	2462	1.21
KILN_0586.LAB	12/5/2023	12:45:40	13.65	10.36	-0.05	2.03	191.4	1.014	0.10	0.33	2388	1.21

Spectrum	Date	Time	H2O (%)	CO2 (%)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_0587.LAB	12/5/2023	12:46:39	14.08	10.36	-0.08	1.88	191.4	1.013	0.09	0.32	2534	1.21
KILN_0588.LAB	12/5/2023	12:47:39	14.14	10.47	-0.06	1.93	191.4	1.015	0.09	0.32	3204	1.21
KILN_0589.LAB	12/5/2023	12:48:39	14.20	10.48	-0.05	2.04	191.4	1.014	0.09	0.34	3220	1.21
KILN_0590.LAB	12/5/2023	12:49:39	14.35	10.41	-0.05	2.02	191.3	1.014	0.09	0.33	3169	1.21
KILN_0591.LAB	12/5/2023	12:50:40	14.29	10.36	-0.04	1.99	191.4	1.014	0.09	0.33	3214	1.21
KILN_0592.LAB	12/5/2023	12:51:40	13.98	10.25	-0.04	2.05	191.4	1.014	0.09	0.30	2906	1.21
KILN_0593.LAB	12/5/2023	12:52:40	14.25	10.29	-0.04	1.84	191.4	1.014	0.09	0.31	3077	1.21
KILN_0594.LAB	12/5/2023	12:56:34	14.31	10.31	-0.04	1.94	190.7	1.013	0.09	0.31	NaN	1.21
KILN_0595.LAB	12/5/2023	12:57:34	14.38	10.05	-0.04	1.90	190.9	1.014	0.09	0.31	2405	1.21
KILN_0596.LAB	12/5/2023	12:58:34	14.69	10.24	-0.08	2.13	191.0	1.014	0.08	0.31	2805	1.21
KILN_0597.LAB	12/5/2023	12:59:34	14.59	10.16	-0.10	2.22	191.1	1.014	0.09	0.31	2401	1.21
KILN_0598.LAB	12/5/2023	13:00:34	14.53	10.23	-0.09	2.08	191.1	1.014	0.10	0.32	3171	1.21
Kiln 1 - Raw Mill On Test Run 3 12/05/2023 12:00 - 13:00		**Minimum**	**12.99**	**10.05**	**-0.12**	**1.82**	**190.7**	**1.013**	**0.08**	**0.29**	**2201**	**1.21**
		Maximum	**14.69**	**10.60**	**-0.03**	**2.27**	**191.4**	**1.015**	**0.10**	**0.34**	**4897**	**1.21**
		Average	**13.73**	**10.39**	**-0.07**	**2.01**	**191.3**	**1.014**	**0.09**	**0.31**	**2893**	**1.21**
		Std Dev	**0.40**	**0.11**	**0.02**	**0.10**						
		3 Sigma	**1.21**	**0.32**	**0.06**	**0.29**						

Kiln 1 - Raw Mill Off Test Run 1

Spectrum	Date	Time	H2O (%)	CO2 (%)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_0696.LAB	12/5/2023	14:40:43	8.98	11.15	-0.15	2.62	191.4	1.010	0.08	0.28	2252	1.20
KILN_0697.LAB	12/5/2023	14:41:43	9.04	11.31	-0.14	2.60	191.4	1.010	0.08	0.28	3225	1.20
KILN_0698.LAB	12/5/2023	14:42:43	8.90	11.17	-0.09	2.52	191.4	1.011	0.08	0.29	2345	1.20
KILN_0699.LAB	12/5/2023	14:43:43	8.89	11.18	-0.14	2.61	191.4	1.011	0.08	0.29	2374	1.20
KILN_0700.LAB	12/5/2023	14:44:43	8.98	11.08	-0.15	2.46	191.4	1.011	0.08	0.30	3022	1.20
KILN_0701.LAB	12/5/2023	14:45:43	8.94	11.15	-0.13	2.57	191.4	1.011	0.08	0.28	2327	1.20
KILN_0702.LAB	12/5/2023	14:46:43	8.92	10.99	-0.10	2.43	191.4	1.012	0.09	0.30	2248	1.20
KILN_0703.LAB	12/5/2023	14:47:43	8.99	11.25	-0.14	2.40	191.4	1.012	0.08	0.28	3104	1.20
KILN_0704.LAB	12/5/2023	14:48:43	9.11	11.23	-0.12	2.56	191.4	1.013	0.09	0.30	2303	1.20
KILN_0705.LAB	12/5/2023	14:49:43	9.16	11.12	-0.13	2.49	191.4	1.013	0.09	0.30	2565	1.20
KILN_0706.LAB	12/5/2023	14:50:43	9.24	11.20	-0.14	2.49	191.4	1.013	0.09	0.30	2693	1.20
KILN_0707.LAB	12/5/2023	14:51:44	9.14	11.01	-0.10	2.54	191.4	1.013	0.09	0.31	3049	1.20
KILN_0708.LAB	12/5/2023	14:52:44	9.18	11.19	-0.13	2.51	191.4	1.013	0.09	0.29	3405	1.20
KILN_0709.LAB	12/5/2023	14:53:44	9.17	11.30	-0.13	2.49	191.4	1.013	0.09	0.31	2514	1.20
KILN_0710.LAB	12/5/2023	14:54:44	9.05	11.02	-0.15	2.56	191.4	1.013	0.09	0.29	3594	1.20
KILN_0711.LAB	12/5/2023	14:55:44	9.16	11.12	-0.15	2.37	191.4	1.012	0.08	0.29	3569	1.20
KILN_0712.LAB	12/5/2023	14:56:44	9.18	11.13	-0.11	2.52	191.5	1.012	0.08	0.30	3471	1.20
KILN_0713.LAB	12/5/2023	14:57:44	9.15	11.13	-0.13	2.62	191.4	1.012	0.09	0.30	3173	1.20
KILN_0714.LAB	12/5/2023	14:58:44	9.12	11.04	-0.10	2.51	191.4	1.012	0.09	0.30	2816	1.20
KILN_0715.LAB	12/5/2023	14:59:44	9.17	11.10	-0.10	2.44	191.4	1.012	0.10	0.29	3243	1.20
KILN_0716.LAB	12/5/2023	15:00:44	9.10	11.04	-0.10	2.46	191.4	1.012	0.09	0.30	3345	1.20
KILN_0717.LAB	12/5/2023	15:01:44	9.07	11.03	-0.13	2.46	191.4	1.012	0.09	0.29	3630	1.20
KILN_0718.LAB	12/5/2023	15:02:44	9.15	11.14	-0.08	2.58	191.4	1.012	0.08	0.29	2789	1.20
KILN_0719.LAB	12/5/2023	15:03:44	9.02	10.94	-0.13	2.43	191.4	1.012	0.08	0.29	2455	1.20
KILN_0720.LAB	12/5/2023	15:04:45	9.00	11.19	-0.15	2.42	191.5	1.012	0.08	0.27	2646	1.17
KILN_0721.LAB	12/5/2023	15:05:45	9.10	11.11	-0.11	2.43	191.5	1.013	0.09	0.27	2247	1.19
KILN_0722.LAB	12/5/2023	15:06:45	9.06	11.09	-0.10	2.43	191.5	1.012	0.09	0.30	2248	1.20
KILN_0723.LAB	12/5/2023	15:07:45	9.09	11.13	-0.13	2.39	191.5	1.012	0.08	0.28	2808	1.20
KILN_0724.LAB	12/5/2023	15:08:45	9.17	11.07	-0.12	2.28	191.5	1.012	0.09	0.30	3185	1.20
KILN_0725.LAB	12/5/2023	15:09:45	9.14	11.16	-0.10	2.37	191.5	1.013	0.09	0.29	2711	1.21
KILN_0726.LAB	12/5/2023	15:10:45	9.13	11.15	-0.15	2.40	191.4	1.013	0.09	0.30	3039	1.21
KILN_0727.LAB	12/5/2023	15:11:45	9.16	11.23	-0.12	2.46	191.4	1.013	0.08	0.29	2340	1.21
KILN_0728.LAB	12/5/2023	15:12:45	9.10	11.07	-0.09	2.37	191.4	1.013	0.09	0.28	2428	1.21
KILN_0729.LAB	12/5/2023	15:13:45	9.07	11.11	-0.11	2.31	191.4	1.012	0.08	0.29	2666	1.21
KILN_0730.LAB	12/5/2023	15:14:45	9.06	10.97	-0.10	2.49	191.4	1.012	0.08	0.29	3254	1.21
KILN_0731.LAB	12/5/2023	15:15:46	9.06	11.21	-0.13	2.62	191.4	1.012	0.09	0.28	3883	1.21
KILN_0732.LAB	12/5/2023	15:16:45	9.09	11.03	-0.12	2.56	191.4	1.012	0.08	0.29	2991	1.21
KILN_0733.LAB	12/5/2023	15:17:46	9.17	11.10	-0.09	2.45	191.4	1.012	0.08	0.30	2434	1.21
KILN_0734.LAB	12/5/2023	15:18:46	9.17	11.13	-0.13	2.28	191.4	1.012	0.09	0.28	3277	1.21
KILN_0735.LAB	12/5/2023	15:19:46	9.15	11.06	-0.07	2.54	191.4	1.012	0.08	0.29	3302	1.21
KILN_0736.LAB	12/5/2023	15:20:46	9.18	11.25	-0.14	2.28	191.4	1.012	0.09	0.28	3326	1.21
KILN_0737.LAB	12/5/2023	15:21:46	9.12	11.09	-0.12	2.45	191.4	1.012	0.09	0.27	3611	1.21

Spectrum	Date	Time	H2O (%)	CO2 (%)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_0738.LAB	12/5/2023	15:22:46	9.12	11.14	-0.12	2.39	191.4	1.012	0.08	0.28	2615	1.21
KILN_0739.LAB	12/5/2023	15:23:46	9.20	11.22	-0.12	2.43	191.4	1.013	0.08	0.28	2266	1.21
KILN_0740.LAB	12/5/2023	15:24:46	9.12	11.16	-0.13	2.56	191.4	1.013	0.09	0.29	2939	1.21
KILN_0741.LAB	12/5/2023	15:25:46	8.99	11.02	-0.12	2.32	191.4	1.012	0.08	0.28	3878	1.21
KILN_0742.LAB	12/5/2023	15:26:46	9.08	11.05	-0.14	2.49	191.4	1.012	0.08	0.29	3287	1.21
KILN_0743.LAB	12/5/2023	15:27:46	9.04	11.04	-0.12	2.52	191.4	1.012	0.08	0.30	3105	1.21
KILN_0744.LAB	12/5/2023	15:28:46	9.04	11.06	-0.09	2.51	191.4	1.012	0.08	0.30	3097	1.21
KILN_0745.LAB	12/5/2023	15:29:46	9.11	11.19	-0.13	2.29	191.4	1.013	0.08	0.28	2579	1.21
KILN_0746.LAB	12/5/2023	15:30:47	9.08	11.20	-0.13	2.50	191.4	1.012	0.08	0.28	2813	1.21
KILN_0747.LAB	12/5/2023	15:31:47	9.03	11.03	-0.11	2.30	191.4	1.013	0.08	0.28	3217	1.21
KILN_0748.LAB	12/5/2023	15:32:47	9.10	11.10	-0.08	2.37	191.4	1.012	0.08	0.28	2660	1.21
KILN_0749.LAB	12/5/2023	15:33:47	9.04	10.98	-0.10	2.48	191.4	1.013	0.09	0.28	2649	1.21
KILN_0750.LAB	12/5/2023	15:34:47	9.01	10.98	-0.10	2.65	191.4	1.012	0.08	0.28	2607	1.21
KILN_0751.LAB	12/5/2023	15:35:47	9.08	11.25	-0.12	2.22	191.4	1.013	0.08	0.27	3059	1.21
KILN_0752.LAB	12/5/2023	15:36:47	9.01	11.27	-0.12	2.42	191.4	1.012	0.08	0.29	2763	1.21
KILN_0753.LAB	12/5/2023	15:37:47	9.03	11.25	-0.12	2.41	191.4	1.012	0.08	0.28	2606	1.21
KILN_0754.LAB	12/5/2023	15:38:47	9.10	11.20	-0.09	2.38	191.4	1.012	0.08	0.27	3019	1.21
KILN_0755.LAB	12/5/2023	15:39:48	9.05	11.19	-0.12	2.42	191.4	1.012	0.08	0.26	2909	1.21
KILN_0756.LAB	12/5/2023	15:40:47	8.95	10.94	-0.08	2.46	191.4	1.012	0.09	0.27	2728	1.21
Kiln 1 - Raw Mill Off Test Run 1 12/05/2023 14:40 - 15:40		**Minimum**	**8.89**	**10.94**	**-0.15**	**2.22**	**191.4**	**1.010**	**0.08**	**0.26**	**2247**	**1.17**
		Maximum	**9.24**	**11.31**	**-0.07**	**2.65**	**191.5**	**1.013**	**0.10**	**0.31**	**3883**	**1.21**
		Average	**9.08**	**11.12**	**-0.12**	**2.46**	**191.4**	**1.012**	**0.08**	**0.29**	**2897**	**1.20**
		Std Dev	**0.08**	**0.09**	**0.02**	**0.10**						
		3 Sigma	**0.23**	**0.27**	**0.06**	**0.29**						

Kiln 1 - Raw Mill Off Test Run 2

Spectrum	Date	Time	H2O (%)	CO2 (%)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_1079.LAB	12/6/2023	8:20:42	11.36	13.13	-0.07	2.57	191.4	1.016	0.08	0.24	2666	1.19
KILN_1080.LAB	12/6/2023	8:21:42	11.31	13.27	-0.02	2.66	191.4	1.016	0.08	0.23	2643	1.19
KILN_1081.LAB	12/6/2023	8:22:42	11.26	13.24	-0.06	2.78	191.4	1.016	0.08	0.24	2833	1.19
KILN_1082.LAB	12/6/2023	8:23:43	11.02	13.09	-0.04	2.85	191.4	1.017	0.08	0.24	3025	1.19
KILN_1083.LAB	12/6/2023	8:24:43	10.85	13.30	-0.07	2.73	191.4	1.016	0.08	0.25	3010	1.19
KILN_1084.LAB	12/6/2023	8:25:43	10.95	13.36	-0.03	2.71	191.4	1.016	0.09	0.25	2775	1.19
KILN_1085.LAB	12/6/2023	8:26:43	11.11	13.31	0.00	2.68	191.4	1.016	0.08	0.24	2628	1.19
KILN_1086.LAB	12/6/2023	8:27:43	11.02	13.32	-0.07	2.75	191.4	1.016	0.08	0.26	2935	1.19
KILN_1087.LAB	12/6/2023	8:28:43	10.97	13.12	-0.02	2.76	191.4	1.016	0.08	0.26	3222	1.20
KILN_1088.LAB	12/6/2023	8:29:43	11.02	13.19	-0.05	2.68	191.4	1.016	0.08	0.25	2934	1.20
KILN_1089.LAB	12/6/2023	8:30:43	10.91	13.32	-0.04	2.75	191.4	1.016	0.08	0.23	2818	1.20
KILN_1090.LAB	12/6/2023	8:31:43	10.52	13.32	-0.03	2.91	191.4	1.016	0.07	0.25	3077	1.20
KILN_1091.LAB	12/6/2023	8:32:44	10.64	13.49	-0.02	2.96	191.4	1.016	0.07	0.22	2755	1.20
KILN_1092.LAB	12/6/2023	8:33:43	10.84	13.46	0.00	2.68	191.4	1.016	0.07	0.22	2718	1.20
KILN_1093.LAB	12/6/2023	8:34:43	11.11	13.18	-0.03	2.96	191.4	1.016	0.07	0.22	2479	1.20
KILN_1094.LAB	12/6/2023	8:35:44	11.06	13.25	-0.03	2.78	191.4	1.017	0.07	0.21	4189	1.20
KILN_1095.LAB	12/6/2023	8:36:44	10.91	13.16	-0.02	2.85	191.4	1.016	0.08	0.22	2681	1.20
KILN_1096.LAB	12/6/2023	8:37:44	10.95	13.23	-0.02	2.86	191.3	1.016	0.07	0.23	2650	1.20
KILN_1097.LAB	12/6/2023	8:38:44	10.88	13.28	-0.02	2.67	191.3	1.016	0.08	0.24	2307	1.20
KILN_1098.LAB	12/6/2023	8:39:44	10.57	13.25	-0.04	2.80	191.4	1.016	0.08	0.22	2313	1.20
KILN_1099.LAB	12/6/2023	8:40:44	10.72	13.27	-0.02	2.79	191.4	1.016	0.08	0.23	2689	1.20
KILN_1100.LAB	12/6/2023	8:41:44	10.68	13.10	-0.03	2.77	191.4	1.016	0.08	0.23	2643	1.20
KILN_1101.LAB	12/6/2023	8:42:44	10.60	13.20	-0.03	2.93	191.4	1.017	0.08	0.24	2852	1.20
KILN_1102.LAB	12/6/2023	8:43:44	10.54	13.29	-0.05	2.72	191.4	1.017	0.08	0.23	3036	1.20
KILN_1103.LAB	12/6/2023	8:44:44	10.44	13.24	-0.04	2.78	191.4	1.016	0.08	0.23	2999	1.20
KILN_1104.LAB	12/6/2023	8:45:44	10.19	13.32	-0.07	2.77	191.4	1.016	0.09	0.25	2560	1.20
KILN_1105.LAB	12/6/2023	8:46:45	10.39	13.30	-0.05	2.83	191.4	1.016	0.08	0.24	3987	1.20
KILN_1106.LAB	12/6/2023	8:47:44	10.51	13.34	0.02	2.62	191.4	1.016	0.08	0.26	2770	1.20
KILN_1107.LAB	12/6/2023	8:48:45	10.73	13.34	-0.04	2.78	191.4	1.016	0.08	0.25	3417	1.20
KILN_1108.LAB	12/6/2023	8:49:45	11.09	13.18	-0.06	2.85	191.4	1.017	0.08	0.25	2726	1.20
KILN_1109.LAB	12/6/2023	8:50:45	10.85	13.26	-0.04	2.68	191.3	1.016	0.08	0.24	2826	1.20
KILN_1110.LAB	12/6/2023	8:51:45	11.07	13.35	-0.02	2.73	191.4	1.016	0.08	0.25	2701	1.20
KILN_1111.LAB	12/6/2023	8:52:45	11.51	13.19	-0.02	2.59	191.4	1.016	0.09	0.27	2662	1.20
KILN_1112.LAB	12/6/2023	8:53:45	11.43	13.25	-0.03	2.69	191.3	1.017	0.08	0.25	2889	1.20
KILN_1113.LAB	12/6/2023	8:54:45	11.42	13.00	0.01	2.67	191.4	1.017	0.08	0.24	2887	1.20

Spectrum	Date	Time	H2O (%)	CO2 (%)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_1114.LAB	12/6/2023	8:55:45	11.62	13.07	0.00	2.75	191.3	1.017	0.07	0.23	2289	1.20
KILN_1115.LAB	12/6/2023	8:56:45	11.36	13.06	-0.01	2.59	191.4	1.017	0.08	0.22	3216	1.20
KILN_1116.LAB	12/6/2023	8:57:45	11.47	13.16	-0.05	2.61	191.4	1.017	0.08	0.21	2731	1.20
KILN_1117.LAB	12/6/2023	8:58:45	11.35	13.02	-0.01	2.59	191.4	1.017	0.08	0.23	2809	1.20
KILN_1118.LAB	12/6/2023	8:59:45	11.19	13.01	-0.04	2.72	191.4	1.017	0.08	0.24	2804	1.20
KILN_1119.LAB	12/6/2023	9:00:46	11.30	13.22	-0.02	2.70	191.4	1.017	0.08	0.23	2326	1.20
KILN_1120.LAB	12/6/2023	9:01:46	11.48	13.23	0.00	2.84	191.3	1.016	0.08	0.23	3938	1.20
KILN_1121.LAB	12/6/2023	9:02:46	11.04	13.16	-0.04	2.84	191.3	1.016	0.08	0.22	3183	1.20
KILN_1122.LAB	12/6/2023	9:03:46	11.02	13.17	-0.05	2.70	191.4	1.016	0.09	0.24	3264	1.20
KILN_1123.LAB	12/6/2023	9:04:46	10.98	13.23	-0.05	2.76	191.3	1.017	0.08	0.23	3098	1.20
KILN_1124.LAB	12/6/2023	9:05:46	11.10	13.30	-0.02	2.57	191.4	1.017	0.08	0.24	3100	1.20
KILN_1125.LAB	12/6/2023	9:06:46	11.26	13.17	-0.03	2.62	191.4	1.017	0.08	0.25	2432	1.20
KILN_1126.LAB	12/6/2023	9:07:46	11.40	13.15	-0.01	2.90	191.3	1.016	0.08	0.23	3173	1.20
KILN_1127.LAB	12/6/2023	9:08:46	11.01	13.16	-0.07	2.62	191.4	1.016	0.09	0.23	3442	1.20
KILN_1128.LAB	12/6/2023	9:09:47	11.16	13.15	-0.03	2.73	191.4	1.017	0.08	0.25	2675	1.20
KILN_1129.LAB	12/6/2023	9:10:46	11.46	13.15	-0.01	2.71	191.4	1.016	0.08	0.23	2735	1.20
KILN_1130.LAB	12/6/2023	9:11:46	11.43	13.23	-0.02	2.74	191.4	1.017	0.08	0.24	2938	1.20
KILN_1131.LAB	12/6/2023	9:12:47	11.01	13.17	-0.03	2.52	191.4	1.016	0.08	0.25	3331	1.20
KILN_1132.LAB	12/6/2023	9:13:47	11.01	13.30	-0.06	2.66	191.4	1.016	0.09	0.24	2703	1.20
KILN_1133.LAB	12/6/2023	9:14:47	11.09	13.40	-0.03	2.68	191.4	1.016	0.08	0.26	2519	1.20
KILN_1134.LAB	12/6/2023	9:15:47	11.11	13.20	-0.05	2.70	191.4	1.016	0.08	0.24	2292	1.20
KILN_1135.LAB	12/6/2023	9:16:47	11.03	13.20	-0.05	2.66	191.4	1.017	0.08	0.24	2065	1.20
KILN_1136.LAB	12/6/2023	9:17:47	10.78	13.12	-0.09	2.72	191.4	1.017	0.09	0.27	2346	1.20
KILN_1137.LAB	12/6/2023	9:18:47	10.97	13.17	-0.05	2.67	191.4	1.017	0.09	0.26	2967	1.20
KILN_1138.LAB	12/6/2023	9:19:47	11.24	13.28	-0.03	2.72	191.3	1.016	0.08	0.27	3250	1.20
KILN_1139.LAB	12/6/2023	9:20:47	11.02	13.15	-0.02	2.65	191.3	1.017	0.08	0.26	3328	1.20
Kiln 1 - Raw Mill Off Test Run 2 12/06/2023 08:20 - 09:20		**Minimum**	**10.19**	**13.00**	**-0.09**	**2.52**	**191.3**	**1.016**	**0.07**	**0.21**	**2065**	**1.19**
		Maximum	**11.62**	**13.49**	**0.02**	**2.96**	**191.4**	**1.017**	**0.09**	**0.27**	**4189**	**1.20**
		Average	**11.02**	**13.22**	**-0.03**	**2.73**	**191.4**	**1.016**	**0.08**	**0.24**	**2873**	**1.20**
		Std Dev	**0.31**	**0.10**	**0.02**	**0.10**						
		3 Sigma	**0.93**	**0.30**	**0.06**	**0.30**						

Kiln 1 - Raw Mill Off Test Run 3

Spectrum	Date	Time	H2O (%)	CO2 (%)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_1232.LAB	12/6/2023	10:10:10	11.46	13.10	-0.02	2.55	191.5	1.017	0.08	0.24	2750	1.21
KILN_1233.LAB	12/6/2023	10:11:10	11.27	13.03	-0.01	2.78	191.5	1.017	0.09	0.24	2846	1.21
KILN_1234.LAB	12/6/2023	10:12:11	11.05	13.04	0.01	2.59	191.4	1.017	0.08	0.23	2693	1.21
KILN_1235.LAB	12/6/2023	10:13:10	10.98	13.12	-0.04	2.64	191.4	1.017	0.08	0.25	3050	1.21
KILN_1236.LAB	12/6/2023	10:14:11	10.90	13.13	-0.04	2.63	191.4	1.017	0.08	0.23	2941	1.21
KILN_1237.LAB	12/6/2023	10:15:11	10.58	13.18	-0.02	2.69	191.4	1.017	0.08	0.24	3202	1.21
KILN_1238.LAB	12/6/2023	10:16:11	11.18	12.91	-0.04	2.64	191.4	1.017	0.08	0.25	3328	1.21
KILN_1239.LAB	12/6/2023	10:17:11	11.42	12.93	-0.01	2.61	191.4	1.017	0.08	0.24	3229	1.21
KILN_1240.LAB	12/6/2023	10:18:11	11.37	13.15	-0.04	2.74	191.5	1.017	0.08	0.23	2872	1.21
KILN_1241.LAB	12/6/2023	10:19:11	11.21	13.06	-0.07	2.58	191.5	1.017	0.09	0.24	3189	1.21
KILN_1242.LAB	12/6/2023	10:20:14	11.37	13.10	-0.04	2.70	191.5	1.017	0.08	0.25	1861	1.09
KILN_1243.LAB	12/6/2023	10:21:14	11.20	13.13	-0.01	2.66	191.4	1.017	0.09	0.26	1792	1.20
KILN_1244.LAB	12/6/2023	10:22:14	11.02	13.19	-0.04	2.80	191.4	1.017	0.08	0.24	3163	1.19
KILN_1245.LAB	12/6/2023	10:23:14	11.25	13.14	-0.09	2.77	191.4	1.016	0.09	0.26	2591	1.20
KILN_1246.LAB	12/6/2023	10:24:14	10.99	12.99	-0.03	2.63	191.4	1.016	0.09	0.25	4463	1.20
KILN_1247.LAB	12/6/2023	10:25:14	11.14	13.23	-0.07	2.49	191.4	1.016	0.08	0.24	2269	1.21
KILN_1248.LAB	12/6/2023	10:26:14	11.39	13.24	-0.06	2.51	191.4	1.017	0.08	0.24	2458	1.21
KILN_1249.LAB	12/6/2023	10:27:14	11.48	13.06	-0.04	2.65	191.4	1.017	0.08	0.23	3525	1.21
KILN_1250.LAB	12/6/2023	10:28:14	11.63	13.09	-0.04	2.58	191.4	1.016	0.07	0.23	2979	1.21
KILN_1251.LAB	12/6/2023	10:29:14	11.72	12.96	-0.01	2.67	191.4	1.016	0.07	0.23	2710	1.21
KILN_1252.LAB	12/6/2023	10:30:14	11.51	12.91	-0.03	2.72	191.4	1.017	0.07	0.23	3147	1.21
KILN_1253.LAB	12/6/2023	10:31:15	11.38	13.13	-0.02	2.67	191.4	1.016	0.08	0.22	2865	1.21
KILN_1254.LAB	12/6/2023	10:32:15	11.48	13.05	-0.03	2.56	191.4	1.017	0.08	0.21	2886	1.21
KILN_1255.LAB	12/6/2023	10:33:15	11.42	13.03	-0.04	2.66	191.4	1.016	0.07	0.22	3128	1.21
KILN_1256.LAB	12/6/2023	10:34:15	11.41	13.16	-0.06	2.53	191.4	1.017	0.07	0.24	2780	1.21
KILN_1257.LAB	12/6/2023	10:35:15	11.40	13.12	0.00	2.56	191.4	1.016	0.07	0.23	2878	1.21
KILN_1258.LAB	12/6/2023	10:36:15	11.29	13.13	-0.04	2.51	191.4	1.016	0.08	0.22	3000	1.21
KILN_1259.LAB	12/6/2023	10:37:15	11.35	12.98	-0.01	2.55	191.4	1.017	0.08	0.23	3685	1.21

Spectrum	Date	Time	H2O (%)	CO2 (%)	HF (ppmv wet)	HCN (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_1260.LAB	12/6/2023	10:38:15	11.26	13.23	-0.06	2.71	191.3	1.017	0.07	0.22	3080	1.21
KILN_1261.LAB	12/6/2023	10:39:15	10.94	12.77	-0.06	2.53	191.4	1.017	0.08	0.23	4130	1.21
KILN_1262.LAB	12/6/2023	10:40:16	11.08	12.94	-0.06	2.58	191.4	1.016	0.09	0.23	3998	1.21
KILN_1263.LAB	12/6/2023	10:41:16	11.30	13.13	-0.02	2.59	191.4	1.017	0.08	0.24	3241	1.21
KILN_1264.LAB	12/6/2023	10:42:15	11.12	12.95	-0.02	2.71	191.4	1.017	0.08	0.24	3281	1.21
KILN_1265.LAB	12/6/2023	10:43:15	11.18	13.06	-0.03	2.65	191.4	1.017	0.08	0.23	3181	1.21
KILN_1266.LAB	12/6/2023	10:44:16	11.33	12.96	-0.04	2.50	191.4	1.016	0.08	0.22	2754	1.21
KILN_1267.LAB	12/6/2023	10:45:16	11.39	12.89	0.00	2.64	191.4	1.016	0.07	0.22	3084	1.21
KILN_1268.LAB	12/6/2023	10:46:16	11.44	13.13	-0.03	2.60	191.4	1.016	0.07	0.22	3760	1.21
KILN_1269.LAB	12/6/2023	10:47:16	11.83	12.98	-0.01	2.64	191.4	1.016	0.08	0.24	3211	1.21
KILN_1270.LAB	12/6/2023	10:48:16	11.71	13.22	-0.06	2.73	191.4	1.017	0.07	0.24	4062	1.21
KILN_1271.LAB	12/6/2023	10:49:16	11.56	12.90	-0.01	2.68	191.4	1.017	0.08	0.23	3269	1.21
KILN_1272.LAB	12/6/2023	10:50:16	11.76	13.14	-0.04	2.58	191.4	1.017	0.08	0.22	2887	1.21
KILN_1273.LAB	12/6/2023	10:51:16	11.69	13.25	-0.03	2.63	191.4	1.017	0.07	0.24	2987	1.21
KILN_1274.LAB	12/6/2023	10:52:16	11.59	13.08	-0.06	2.49	191.4	1.016	0.07	0.22	2848	1.21
KILN_1275.LAB	12/6/2023	10:53:16	11.67	13.34	-0.01	2.71	191.4	1.016	0.08	0.23	2530	1.21
KILN_1276.LAB	12/6/2023	10:54:16	11.34	12.64	-0.07	2.63	191.4	1.016	0.08	0.23	3173	1.21
KILN_1277.LAB	12/6/2023	10:55:16	11.35	13.25	-0.05	2.72	191.4	1.016	0.09	0.24	2494	1.21
KILN_1278.LAB	12/6/2023	10:56:17	11.34	13.22	-0.06	2.54	191.4	1.017	0.09	0.24	2083	1.21
KILN_1279.LAB	12/6/2023	10:57:17	11.04	13.15	-0.05	2.72	191.4	1.016	0.09	0.24	2365	1.21
KILN_1280.LAB	12/6/2023	10:58:17	11.17	13.05	-0.05	2.57	191.4	1.016	0.08	0.24	2312	1.21
KILN_1281.LAB	12/6/2023	10:59:17	11.32	13.13	-0.08	2.63	191.4	1.016	0.08	0.25	2465	1.21
KILN_1282.LAB	12/6/2023	11:00:17	11.11	13.27	-0.03	2.59	191.4	1.017	0.08	0.23	2450	1.21
KILN_1283.LAB	12/6/2023	11:01:17	11.14	13.11	-0.02	2.68	191.4	1.017	0.08	0.24	2457	1.21
KILN_1284.LAB	12/6/2023	11:02:17	11.35	13.22	-0.06	2.74	191.4	1.016	0.08	0.23	3808	1.21
KILN_1285.LAB	12/6/2023	11:03:17	11.15	13.09	-0.04	2.56	191.4	1.016	0.08	0.25	2918	1.21
KILN_1286.LAB	12/6/2023	11:04:17	11.13	12.96	-0.02	2.56	191.4	1.017	0.09	0.25	2919	1.21
KILN_1287.LAB	12/6/2023	11:05:17	11.67	13.09	-0.08	2.54	191.4	1.016	0.09	0.26	3373	1.21
KILN_1288.LAB	12/6/2023	11:06:18	11.38	13.23	-0.06	2.63	191.4	1.016	0.09	0.27	2851	1.21
KILN_1289.LAB	12/6/2023	11:07:17	11.60	13.19	0.00	2.74	191.4	1.016	0.08	0.23	4880	1.21
KILN_1290.LAB	12/6/2023	11:08:18	11.85	13.34	-0.02	2.72	191.4	1.016	0.09	0.26	3023	1.21
KILN_1291.LAB	12/6/2023	11:09:17	11.82	13.16	-0.02	2.61	191.3	1.016	0.08	0.25	2909	1.21
KILN_1292.LAB	12/6/2023	11:10:18	11.99	13.29	-0.02	2.50	191.3	1.016	0.08	0.23	4031	1.21
Kiln 1 - Raw Mill Off Test Run 3 12/06/2023 10:10 - 11:10		**Minimum**	**10.58**	**12.64**	**-0.09**	**2.49**	**191.3**	**1.016**	**0.07**	**0.21**	**1792**	**1.09**
		Maximum	**11.99**	**13.34**	**0.01**	**2.80**	**191.5**	**1.017**	**0.09**	**0.27**	**4880**	**1.21**
		Average	**11.35**	**13.09**	**-0.04**	**2.63**	**191.4**	**1.017**	**0.08**	**0.24**	**3034**	**1.21**
		Std Dev	**0.27**	**0.13**	**0.02**	**0.08**						
		3 Sigma	**0.80**	**0.40**	**0.06**	**0.24**						

APPENDIX

Kiln 1 – FTIR QA/QC Data

Nitrogen Direct to FTIR

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
N2_DIR_0014BKG.LAB	12/5/2023	6:41:18	0.00	0.00	0.00	0.00	0.00	0.00	191.2	0.988	0.00	0.00	2243	1.23
N2_DIR_0015.LAB	12/5/2023	6:41:54	0.00	0.00	-0.01	-0.06	-0.18	0.00	191.2	0.988	0.03	0.11	1857	1.23
N2_DIR_0016.LAB	12/5/2023	6:42:24	0.01	0.01	-0.02	0.10	-0.08	0.00	191.2	0.988	0.03	0.09	1467	1.23
N2_DIR_0017.LAB	12/5/2023	6:42:54	-0.01	0.01	0.01	0.05	-0.04	0.00	191.2	0.988	0.04	0.10	1604	1.23
N2_DIR_0018.LAB	12/5/2023	6:43:24	0.00	0.00	-0.01	0.06	0.03	0.00	191.1	0.988	0.03	0.10	2662	1.23
N2_DIR_0019.LAB	12/5/2023	6:43:54	0.00	-0.01	-0.01	0.13	-0.01	0.01	191.1	0.988	0.03	0.10	1638	1.23
N2_DIR_0020.LAB	12/5/2023	6:44:24	0.00	0.01	0.00	0.02	0.03	0.01	191.1	0.988	0.02	0.10	2277	1.23
N2_DIR_0021.LAB	12/5/2023	6:44:54	0.00	0.01	-0.01	0.02	-0.08	0.00	191.1	0.988	0.03	0.10	1920	1.23
N2_DIR_0022.LAB	12/5/2023	6:45:25	0.00	0.00	-0.04	-0.03	0.17	0.00	191.1	0.988	0.02	0.10	1784	1.23
		Average			**-0.01**	**0.04**								

CTS, 99.97 ppm Ethylene Direct Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
CTS_DIR_0024.LAB	12/5/2023	6:46:26	0.01	0.01	-0.01	0.13	98.74	0.00	191.2	0.988	0.05	0.16	939	1.23	**98.8%**
CTS_DIR_0025.LAB	12/5/2023	6:46:34	0.00	0.01	-0.02	0.37	98.69	0.00	191.1	0.988	0.05	0.18	906	1.23	**98.7%**
CTS_DIR_0026.LAB	12/5/2023	6:46:41	0.01	0.00	-0.06	-0.24	98.88	0.01	191.1	0.988	0.06	0.18	941	1.23	**98.9%**
CTS_DIR_0027.LAB	12/5/2023	6:46:49	0.01	-0.01	0.00	0.00	98.72	0.00	191.1	0.988	0.04	0.19	812	1.23	**98.7%**
CTS_DIR_0028.LAB	12/5/2023	6:46:57	0.00	0.02	-0.08	0.13	99.14	0.00	191.1	0.988	0.06	0.20	874	1.23	**99.2%**
CTS_DIR_0029.LAB	12/5/2023	6:47:04	-0.01	0.01	-0.09	-0.20	98.91	0.00	191.1	0.988	0.05	0.18	995	1.23	**98.9%**
CTS_DIR_0030.LAB	12/5/2023	6:47:11	0.01	0.02	0.01	0.04	99.11	0.01	191.1	0.988	0.05	0.17	1385	1.23	**99.1%**
CTS_DIR_0031.LAB	12/5/2023	6:47:19	-0.01	0.02	-0.07	0.00	98.72	-0.01	191.1	0.988	0.06	0.18	999	1.23	**98.8%**
		Average					**98.86**								**98.9%**

49.10 ppm HCN/5.00 ppm SF6 Direct Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	HCN Recovery (%)
HCN_DIR_0051.LAB	12/5/2023	6:50:36	0.00	-0.03	0.01	48.35	-0.85	4.82	191.1	0.988	0.05	0.29	941	1.23	**98.5%**
HCN_DIR_0052.LAB	12/5/2023	6:50:44	-0.01	0.01	-0.05	48.59	-1.11	4.82	191.1	0.988	0.05	0.29	1131	1.23	**99.0%**
HCN_DIR_0053.LAB	12/5/2023	6:50:51	-0.02	-0.01	-0.10	48.77	-1.17	4.81	191.1	0.988	0.06	0.27	1332	1.23	**99.3%**
HCN_DIR_0054.LAB	12/5/2023	6:50:59	-0.01	-0.01	-0.09	48.50	-0.87	4.81	191.1	0.988	0.05	0.30	1111	1.23	**98.8%**
HCN_DIR_0055.LAB	12/5/2023	6:51:06	0.00	-0.02	-0.04	48.98	-1.23	4.83	191.1	0.988	0.06	0.27	910	1.23	**99.8%**
HCN_DIR_0056.LAB	12/5/2023	6:51:14	0.00	-0.01	0.01	48.64	-0.90	4.81	191.1	0.988	0.08	0.32	1075	1.23	**99.1%**
HCN_DIR_0057.LAB	12/5/2023	6:51:21	0.02	-0.02	-0.04	48.74	-0.80	4.81	191.1	0.988	0.06	0.27	1003	1.23	**99.3%**
HCN_DIR_0058.LAB	12/5/2023	6:51:29	0.00	0.02	-0.10	48.68	-0.95	4.82	191.1	0.988	0.06	0.28	1434	1.23	**99.1%**
		Average				**48.66**		**4.81**							**99.1%**

CTS, 99.97 ppm Ethylene System Purge and Response Time Test

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)	Response Time (sec)
CTS_RT_0059.LAB	12/5/2023	6:55:04	1.75	0.07	-0.07	0.28	0.01	0.01	191.1	1.012	0.06	0.23	NaN	1.23	**0.0%**	**-**
CTS_RT_0060.LAB	12/5/2023	6:55:12	1.76	0.07	-0.03	0.32	0.35	0.01	191.1	1.012	0.05	0.24	1030	1.23	**0.4%**	**8**
CTS_RT_0061.LAB	12/5/2023	6:55:19	1.29	0.07	-0.07	2.25	55.77	0.13	191.0	1.012	0.05	0.24	835	1.23	**56.4%**	**15**
CTS_RT_0062.LAB	12/5/2023	6:55:27	0.61	0.00	-0.08	0.60	99.01	0.01	191.0	1.012	0.07	0.19	1014	1.23	**100.1%**	**23**
CTS_RT_0063.LAB	12/5/2023	6:55:34	0.32	0.03	0.09	0.16	99.83	0.01	191.1	1.013	0.06	0.20	882	1.23	**101.0%**	
CTS_RT_0064.LAB	12/5/2023	6:55:42	0.24	0.00	-0.09	0.11	99.60	0.00	191.1	1.012	0.06	0.20	1224	1.23	**100.7%**	
CTS_RT_0065.LAB	12/5/2023	6:55:50	0.19	0.00	-0.05	0.19	99.71	0.00	191.1	1.012	0.04	0.18	1039	1.23	**100.9%**	
CTS_RT_0066.LAB	12/5/2023	6:55:57	0.13	0.00	-0.06	0.08	99.61	0.00	191.1	1.013	0.06	0.20	1275	1.23	**100.8%**	
CTS_RT_0067.LAB	12/5/2023	6:56:04	0.09	0.01	-0.04	0.10	99.28	0.01	191.1	1.013	0.04	0.18	1186	1.23	**100.4%**	
CTS_RT_0068.LAB	12/5/2023	6:56:12	0.05	-0.01	-0.11	-0.42	99.88	0.01	191.1	1.012	0.05	0.20	1032	1.23	**101.0%**	
CTS_RT_0069.LAB	12/5/2023	6:56:20	0.02	-0.01	-0.09	0.12	100.17	0.01	191.1	1.012	0.04	0.21	958	1.23	**101.3%**	
CTS_RT_0070.LAB	12/5/2023	6:56:27	0.03	0.01	-0.02	0.61	99.59	0.01	191.1	1.013	0.05	0.17	1003	1.23	**100.7%**	
		Average					**99.56**								**95.2%**	

Nitrogen (Zero) System Purge and Response Time Test

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)	Zero Time (sec)
N2_RT_0071.LAB	12/5/2023	6:56:54	0.02	-0.01	0.03	0.08	99.94	0.00	191.1	1.012	0.06	0.17	NaN	1.23	**101.1%**	**-**
N2_RT_0072.LAB	12/5/2023	6:57:02	0.02	0.01	-0.02	-0.22	99.52	-0.01	191.1	1.012	0.04	0.18	931	1.23	**100.7%**	**8**
N2_RT_0073.LAB	12/5/2023	6:57:09	0.40	0.01	-0.08	0.23	17.16	-0.01	191.1	1.012	0.04	0.18	1059	1.23	**17.4%**	**15**
N2_RT_0074.LAB	12/5/2023	6:57:16	0.01	0.01	0.01	-0.06	0.10	0.00	191.2	1.013	0.05	0.16	929	1.23	**0.1%**	**23**
N2_RT_0075.LAB	12/5/2023	6:57:24	0.01	0.01	-0.01	0.11	0.15	0.01	191.2	1.013	0.06	0.23	727	1.23	**0.2%**	
N2_RT_0076.LAB	12/5/2023	6:57:31	0.03	0.01	0.07	0.26	0.28	0.00	191.2	1.013	0.05	0.20	988	1.23	**0.3%**	
N2_RT_0077.LAB	12/5/2023	6:57:39	0.01	0.02	0.00	-0.37	0.21	0.00	191.2	1.012	0.05	0.18	841	1.23	**0.2%**	
N2_RT_0078.LAB	12/5/2023	6:57:46	0.00	0.00	-0.04	-0.14	0.07	0.00	191.2	1.012	0.06	0.17	1020	1.23	**0.1%**	
N2_RT_0079.LAB	12/5/2023	6:57:54	0.00	-0.01	0.02	0.17	0.10	0.00	191.1	1.013	0.06	0.21	868	1.23	**0.1%**	
N2_RT_0080.LAB	12/5/2023	6:58:01	0.02	0.01	-0.06	0.35	0.25	0.01	191.2	1.013	0.05	0.16	839	1.23	**0.3%**	
N2_RT_0081.LAB	12/5/2023	6:58:09	0.00	0.00	0.03	-0.05	-0.08	0.00	191.2	1.012	0.06	0.21	928	1.23	**-0.1%**	
N2_RT_0082.LAB	12/5/2023	6:58:16	0.01	0.00	-0.08	-0.02	-0.01	0.00	191.2	1.013	0.05	0.22	839	1.23	**0.0%**	

Ambient Air Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_AMB_0085.LAB	12/5/2023	7:01:59	1.77	0.06	-0.10	0.36	0.17	0.00	191.3	1.012	0.04	0.20	3302	1.22
KILN_AMB_0086.LAB	12/5/2023	7:02:59	1.78	0.05	-0.06	0.27	0.10	0.00	191.4	1.012	0.05	0.18	2710	1.22
KILN_AMB_0087.LAB	12/5/2023	7:03:59	1.78	0.06	-0.04	0.30	0.14	0.00	191.5	1.012	0.05	0.18	3858	1.22
	Ambient Average					**0.31**		**0.00**						

Ambient Air Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN_AMB_SPK_0105.LAB	12/5/2023	7:06:33	1.67	0.04	-0.06	3.18	0.13	0.31	191.5	1.012	0.07	0.28	881	1.22	**0.063**	**94.0%**
KILN_AMB_SPK_0106.LAB	12/5/2023	7:06:40	1.67	0.06	0.00	3.86	0.22	0.32	191.4	1.013	0.07	0.27	1634	1.22	**0.065**	**111.4%**
KILN_AMB_SPK_0107.LAB	12/5/2023	7:06:48	1.68	0.06	-0.02	3.05	0.28	0.32	191.4	1.012	0.07	0.27	1070	1.22	**0.065**	**87.7%**
KILN_AMB_SPK_0108.LAB	12/5/2023	7:06:55	1.67	0.05	-0.02	3.54	0.02	0.31	191.4	1.013	0.05	0.30	1062	1.22	**0.065**	**103.0%**
KILN_AMB_SPK_0109.LAB	12/5/2023	7:07:03	1.64	0.06	0.00	2.98	0.16	0.32	191.4	1.013	0.06	0.25	871	1.22	**0.067**	**83.9%**
KILN_AMB_SPK_0110.LAB	12/5/2023	7:07:11	1.66	0.06	-0.02	3.04	-0.08	0.33	191.4	1.012	0.07	0.25	841	1.22	**0.068**	**84.7%**
KILN_AMB_SPK_0111.LAB	12/5/2023	7:07:18	1.66	0.04	-0.13	3.42	-0.07	0.32	191.4	1.012	0.06	0.24	892	1.22	**0.066**	**97.3%**
KILN_AMB_SPK_0112.LAB	12/5/2023	7:07:25	1.67	0.05	-0.10	3.37	0.06	0.31	191.4	1.012	0.06	0.25	1067	1.22	**0.064**	**99.6%**
	Spike Average					**3.31**		**0.32**							**0.065**	**95.2%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN_CTS_SYS_0113.LAB	12/5/2023	7:08:14	0.01	0.01	-0.05	-0.17	98.95	0.01	191.4	1.012	0.05	0.17	NaN	1.22	**100.1%**
KILN_CTS_SYS_0114.LAB	12/5/2023	7:08:22	0.02	0.00	0.00	0.47	99.40	-0.01	191.4	1.012	0.04	0.20	817	1.22	**100.5%**
KILN_CTS_SYS_0115.LAB	12/5/2023	7:08:29	0.01	0.01	0.07	-0.11	98.81	0.00	191.3	1.012	0.04	0.19	992	1.22	**99.9%**
KILN_CTS_SYS_0116.LAB	12/5/2023	7:08:37	0.02	0.01	0.00	0.10	99.00	0.00	191.3	1.013	0.05	0.15	998	1.22	**100.1%**
KILN_CTS_SYS_0117.LAB	12/5/2023	7:08:44	0.01	0.00	0.01	0.49	99.74	0.00	191.4	1.012	0.06	0.14	948	1.22	**100.9%**
KILN_CTS_SYS_0118.LAB	12/5/2023	7:08:52	0.02	0.00	-0.03	0.08	99.53	0.00	191.4	1.012	0.05	0.20	965	1.22	**100.7%**
KILN_CTS_SYS_0119.LAB	12/5/2023	7:08:59	0.01	-0.02	-0.06	0.33	99.39	0.01	191.4	1.012	0.05	0.19	747	1.22	**100.5%**
KILN_CTS_SYS_0120.LAB	12/5/2023	7:09:07	0.00	0.00	-0.04	0.22	99.23	-0.01	191.3	1.012	0.06	0.22	1119	1.22	**100.4%**
		Average					**99.26**								**100.4%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_N2_SYS_0122.LAB	12/5/2023	7:10:21	0.01	0.00	-0.01	-0.14	0.21	0.00	191.43	1.01	0.04	0.15	1660	1.22
KILN_N2_SYS_0123.LAB	12/5/2023	7:10:36	0.02	0.01	-0.02	0.01	0.07	0.00	191.47	1.01	0.05	0.15	1633	1.22
KILN_N2_SYS_0124.LAB	12/5/2023	7:10:51	0.01	0.02	-0.03	-0.09	0.12	0.00	191.45	1.01	0.04	0.15	1195	1.22
KILN_N2_SYS_0125.LAB	12/5/2023	7:11:06	0.01	0.01	0.00	0.03	0.11	0.00	191.46	1.01	0.05	0.13	1184	1.22
KILN_N2_SYS_0126.LAB	12/5/2023	7:11:21	0.01	0.01	-0.03	0.18	0.29	0.00	191.46	1.01	0.04	0.16	1301	1.22
KILN_N2_SYS_0127.LAB	12/5/2023	7:11:36	0.00	-0.01	-0.04	0.15	0.06	0.00	191.47	1.01	0.05	0.13	1279	1.22
KILN_N2_SYS_0128.LAB	12/5/2023	7:11:51	0.00	0.00	0.02	-0.20	0.11	0.01	191.47	1.01	0.05	0.14	1506	1.22
KILN_N2_SYS_128_0129.LAB	12/5/2023	7:14:09	0.01	0.00	-0.02	0.03	0.17	0.00	191.45	1.01	0.03	0.12	NaN	1.22
		Average			**-0.02**	**0.00**								
		Std Dev			**0.02**	**0.13**								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_NAT_0134.LAB	12/5/2023	7:25:03	8.72	10.21	-0.06	2.45	1.23	0.00	191.2	1.012	0.08	0.28	NaN	1.22
KILN_NAT_0135.LAB	12/5/2023	7:26:04	8.61	10.05	-0.08	2.55	1.11	0.00	191.2	1.012	0.08	0.27	2671	1.22
KILN_NAT_0136.LAB	12/5/2023	7:27:04	8.66	10.16	-0.13	2.48	1.19	0.00	191.2	1.013	0.08	0.26	2446	1.22
	Native Average					**2.49**		**0.00**						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN_NAT_SPK_0152.LAB	12/5/2023	7:29:23	7.84	9.33	-0.10	6.29	0.91	0.43	191.4	1.014	0.11	0.38	854	1.22	**0.089**	**95.1%**
KILN_NAT_SPK_0153.LAB	12/5/2023	7:29:30	7.88	9.35	-0.10	6.53	0.88	0.41	191.3	1.015	0.10	0.34	1204	1.22	**0.085**	**101.7%**
KILN_NAT_SPK_0154.LAB	12/5/2023	7:29:38	7.88	9.32	-0.13	6.52	0.80	0.43	191.3	1.013	0.09	0.33	1245	1.22	**0.089**	**99.0%**
KILN_NAT_SPK_0155.LAB	12/5/2023	7:29:45	7.85	9.30	-0.07	6.67	0.80	0.42	191.3	1.014	0.09	0.37	1116	1.22	**0.086**	**102.9%**
KILN_NAT_SPK_0156.LAB	12/5/2023	7:29:53	7.87	9.29	-0.19	6.46	0.74	0.43	191.3	1.014	0.09	0.34	858	1.22	**0.088**	**98.4%**
KILN_NAT_SPK_0157.LAB	12/5/2023	7:30:00	7.90	9.33	-0.10	6.34	0.85	0.43	191.3	1.014	0.10	0.32	1294	1.22	**0.088**	**96.6%**
KILN_NAT_SPK_0158.LAB	12/5/2023	7:30:08	7.93	9.36	-0.06	6.11	1.18	0.42	191.3	1.016	0.08	0.33	964	1.21	**0.087**	**93.7%**
KILN_NAT_SPK_0159.LAB	12/5/2023	7:30:15	7.93	9.42	-0.07	6.58	0.95	0.42	191.4	1.014	0.09	0.32	1149	1.22	**0.087**	**101.2%**
	Spike Average					**6.44**		**0.42**							**0.087**	**98.6%**

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_0295.LAB	12/5/2023	9:30:34	13.19	10.31	-0.05	2.05	1.09	0.00	191.4	1.016	0.09	0.29	2693	1.21
KILN_0296.LAB	12/5/2023	9:31:34	13.11	10.36	-0.04	2.09	1.07	0.00	191.4	1.017	0.09	0.31	2955	1.21
KILN_0297.LAB	12/5/2023	9:32:35	12.86	10.40	-0.03	2.12	1.05	0.00	191.4	1.016	0.08	0.28	2960	1.21
	Native Average					**2.09**		**0.00**						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN_SPK_0322.LAB	12/5/2023	9:36:31	12.38	9.55	0.02	5.60	1.14	0.37	191.4	1.015	0.09	0.34	917	1.21	**0.077**	**98.5%**
KILN_SPK_0323.LAB	12/5/2023	9:36:39	12.40	9.58	-0.02	5.17	0.99	0.38	191.4	1.016	0.10	0.37	834	1.21	**0.079**	**89.5%**
KILN_SPK_0324.LAB	12/5/2023	9:36:46	12.53	9.69	0.04	5.58	1.11	0.38	191.4	1.015	0.08	0.32	1055	1.21	**0.079**	**96.5%**
KILN_SPK_0325.LAB	12/5/2023	9:36:54	12.57	9.71	-0.04	5.68	1.06	0.37	191.4	1.016	0.09	0.39	1326	1.21	**0.077**	**99.8%**
KILN_SPK_0326.LAB	12/5/2023	9:37:01	12.48	9.74	-0.08	5.47	0.91	0.38	191.4	1.016	0.10	0.37	1312	1.21	**0.078**	**95.6%**
KILN_SPK_0327.LAB	12/5/2023	9:37:09	12.48	9.72	-0.07	5.58	1.00	0.38	191.4	1.016	0.09	0.33	1319	1.21	**0.079**	**96.7%**
KILN_SPK_0328.LAB	12/5/2023	9:37:16	12.44	9.73	-0.07	5.89	0.98	0.36	191.4	1.016	0.09	0.34	1467	1.21	**0.075**	**105.1%**
KILN_SPK_0329.LAB	12/5/2023	9:37:24	12.45	9.74	-0.12	5.03	0.94	0.37	191.4	1.016	0.11	0.31	1172	1.21	**0.078**	**88.1%**
	Spike Average					**5.50**		**0.37**							**0.078**	**96.2%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN_CTS_SYS_0331.LAB	12/5/2023	9:38:12	-0.02	0.00	-0.09	-0.06	98.59	0.00	191.4	1.017	0.05	0.21	995	1.22	**99.7%**
KILN_CTS_SYS_0332.LAB	12/5/2023	9:38:19	0.00	0.01	-0.01	-0.39	99.00	0.00	191.4	1.017	0.05	0.23	892	1.22	**100.1%**
KILN_CTS_SYS_0333.LAB	12/5/2023	9:38:27	-0.01	0.00	0.04	0.25	99.32	0.00	191.4	1.015	0.05	0.26	804	1.22	**100.5%**
KILN_CTS_SYS_0334.LAB	12/5/2023	9:38:34	-0.01	-0.01	-0.04	-0.01	99.14	0.01	191.4	1.016	0.07	0.20	959	1.22	**100.3%**
KILN_CTS_SYS_0335.LAB	12/5/2023	9:38:42	-0.01	-0.01	0.05	0.04	99.28	0.02	191.4	1.016	0.06	0.20	735	1.22	**100.4%**
KILN_CTS_SYS_0336.LAB	12/5/2023	9:38:49	-0.01	0.00	-0.01	0.21	99.21	0.01	191.4	1.015	0.05	0.23	1040	1.22	**100.3%**
KILN_CTS_SYS_0337.LAB	12/5/2023	9:38:57	-0.02	-0.01	-0.02	0.53	99.66	-0.01	191.4	1.015	0.06	0.22	1031	1.22	**100.8%**
KILN_CTS_SYS_0338.LAB	12/5/2023	9:39:04	-0.03	-0.01	-0.05	-0.03	99.07	0.00	191.4	1.015	0.04	0.24	1164	1.22	**100.2%**
		Average					**99.16**								**100.3%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_N2_SYS_0340.LAB	12/5/2023	9:40:17	-0.02	-0.01	-0.06	-0.16	-0.12	0.00	191.37	1.01	0.04	0.20	1008	1.22
KILN_N2_SYS_0341.LAB	12/5/2023	9:40:32	-0.02	0.01	-0.02	-0.30	-0.06	0.00	191.37	1.01	0.04	0.19	1139	1.22
KILN_N2_SYS_0342.LAB	12/5/2023	9:40:47	-0.02	0.00	-0.02	-0.07	-0.17	0.00	191.41	1.01	0.05	0.18	1150	1.22
KILN_N2_SYS_0343.LAB	12/5/2023	9:41:02	-0.02	-0.01	0.06	-0.17	0.00	0.01	191.37	1.01	0.04	0.19	1449	1.22
KILN_N2_SYS_0344.LAB	12/5/2023	9:41:17	-0.03	0.00	-0.01	-0.02	0.18	0.00	191.36	1.01	0.04	0.20	1415	1.22
KILN_N2_SYS_0345.LAB	12/5/2023	9:41:32	-0.03	-0.01	-0.05	-0.30	0.00	0.00	191.35	1.01	0.03	0.20	1427	1.22
KILN_N2_SYS_0346.LAB	12/5/2023	9:41:47	-0.02	0.00	0.05	-0.20	-0.03	0.00	191.37	1.01	0.05	0.18	1179	1.22
KILN_N2_SYS_0347.LAB	12/5/2023	9:42:02	-0.02	-0.01	0.05	0.09	0.02	0.01	191.37	1.01	0.04	0.23	1746	1.22
		Average			**0.00**	**-0.14**								
		Std Dev			**0.05**	**0.14**								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_0435.LAB	12/5/2023	11:10:16	14.22	10.47	-0.03	2.15	1.17	0.00	191.4	1.015	0.10	0.31	3787	1.21
KILN_0436.LAB	12/5/2023	11:11:15	14.41	10.48	-0.10	2.22	1.09	0.00	191.5	1.016	0.09	0.30	3674	1.21
KILN_0437.LAB	12/5/2023	11:12:16	14.52	10.46	-0.05	1.95	1.17	0.00	191.4	1.015	0.09	0.29	3290	1.21
	Native Average					**2.11**		**0.00**						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN_SPK_0465.LAB	12/5/2023	11:16:05	13.44	9.94	-0.10	5.41	1.02	0.35	191.4	1.015	0.10	0.36	1162	1.21	**0.073**	**98.6%**
KILN_SPK_0466.LAB	12/5/2023	11:16:12	13.39	9.89	-0.04	5.26	0.95	0.35	191.4	1.014	0.11	0.33	1205	1.21	**0.072**	**96.3%**
KILN_SPK_0467.LAB	12/5/2023	11:16:20	13.39	9.82	-0.04	5.29	0.88	0.34	191.4	1.016	0.10	0.36	1385	1.21	**0.071**	**98.0%**
KILN_SPK_0468.LAB	12/5/2023	11:16:27	13.39	9.76	-0.02	5.08	0.77	0.34	191.4	1.016	0.08	0.39	1025	1.21	**0.072**	**93.4%**
KILN_SPK_0469.LAB	12/5/2023	11:16:35	13.44	9.73	0.02	4.93	0.95	0.34	191.4	1.015	0.10	0.36	1058	1.21	**0.071**	**91.3%**
KILN_SPK_0470.LAB	12/5/2023	11:16:42	13.43	9.76	-0.10	5.08	1.06	0.37	191.4	1.015	0.09	0.34	916	1.21	**0.076**	**90.0%**
KILN_SPK_0471.LAB	12/5/2023	11:16:50	13.40	9.79	-0.10	4.60	0.84	0.36	191.4	1.015	0.11	0.36	980	1.21	**0.074**	**82.7%**
KILN_SPK_0472.LAB	12/5/2023	11:16:57	13.41	9.78	-0.05	5.29	0.73	0.36	191.4	1.016	0.10	0.33	NaN	1.21	**0.074**	**95.0%**
	Spike Average					**5.12**		**0.35**							**0.073**	**93.1%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN_CTS_SYS_0475.LAB	12/5/2023	11:17:48	-0.01	0.00	-0.01	0.10	98.26	-0.01	191.4	1.016	0.05	0.24	1156	1.22	**99.4%**
KILN_CTS_SYS_0476.LAB	12/5/2023	11:17:55	-0.03	0.02	-0.08	0.21	98.93	0.00	191.4	1.017	0.06	0.22	842	1.22	**100.1%**
KILN_CTS_SYS_0477.LAB	12/5/2023	11:18:03	0.00	0.01	0.00	0.18	98.21	0.00	191.4	1.016	0.06	0.24	924	1.22	**99.3%**
KILN_CTS_SYS_0478.LAB	12/5/2023	11:18:10	-0.03	-0.02	0.00	0.34	99.19	0.00	191.4	1.015	0.05	0.23	1136	1.22	**100.3%**
KILN_CTS_SYS_0479.LAB	12/5/2023	11:18:18	-0.01	0.00	-0.01	0.13	98.90	0.02	191.4	1.015	0.05	0.22	1072	1.22	**100.0%**
KILN_CTS_SYS_0480.LAB	12/5/2023	11:18:25	-0.02	0.00	-0.02	0.23	98.94	0.00	191.4	1.016	0.06	0.27	850	1.22	**100.1%**
KILN_CTS_SYS_0481.LAB	12/5/2023	11:18:33	-0.02	-0.01	-0.03	0.22	98.88	0.00	191.4	1.015	0.04	0.25	811	1.22	**100.0%**
KILN_CTS_SYS_0482.LAB	12/5/2023	11:18:40	-0.03	0.01	0.07	0.01	98.52	-0.01	191.4	1.015	0.06	0.23	844	1.22	**99.7%**
		Average					**98.73**								**99.9%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_N2_SYS_0498.LAB	12/5/2023	11:23:27	-0.02	-0.01	0.01	0.08	-0.09	0.01	191.38	1.01	0.04	0.18	1479	1.22
KILN_N2_SYS_0499.LAB	12/5/2023	11:23:42	-0.03	0.00	0.04	0.04	-0.02	0.00	191.39	1.01	0.04	0.22	1510	1.22
KILN_N2_SYS_0500.LAB	12/5/2023	11:23:57	-0.02	-0.01	-0.02	-0.10	-0.14	0.00	191.42	1.01	0.03	0.21	1337	1.22
KILN_N2_SYS_0501.LAB	12/5/2023	11:24:12	-0.02	-0.02	-0.01	-0.18	-0.01	0.00	191.37	1.01	0.05	0.21	1362	1.22
KILN_N2_SYS_0502.LAB	12/5/2023	11:24:27	-0.03	-0.01	0.03	-0.01	0.05	0.00	191.37	1.01	0.03	0.22	1509	1.22
KILN_N2_SYS_0503.LAB	12/5/2023	11:24:42	-0.03	0.00	-0.02	0.00	-0.15	-0.01	191.37	1.01	0.05	0.20	1333	1.22
KILN_N2_SYS_0504.LAB	12/5/2023	11:24:57	-0.03	-0.01	-0.06	-0.01	-0.06	0.00	191.37	1.01	0.04	0.23	1466	1.22
KILN_N2_SYS_0505.LAB	12/5/2023	11:25:12	-0.01	0.00	0.02	-0.04	0.07	0.00	191.44	1.01	0.04	0.23	1479	1.22
		Average			**0.00**	**-0.03**								
		Std Dev			**0.03**	**0.08**								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_0599.LAB	12/5/2023	13:01:34	14.59	10.25	-0.10	2.04	1.03	0.00	191.1	1.013	0.09	0.31	2456	1.21
KILN_0600.LAB	12/5/2023	13:02:35	14.65	10.23	-0.10	2.12	0.93	-0.01	191.2	1.014	0.10	0.33	2371	1.21
KILN_0601.LAB	12/5/2023	13:03:35	14.71	10.35	-0.09	2.26	0.99	0.00	191.2	1.014	0.09	0.30	2669	1.21
	Native Average					**2.14**		**0.00**						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN_SPK_0617.LAB	12/5/2023	13:06:28	13.54	9.60	-0.06	5.25	0.53	0.37	191.3	1.013	0.12	0.32	1205	1.21	**0.077**	**91.7%**
KILN_SPK_0618.LAB	12/5/2023	13:06:35	13.53	9.52	-0.09	5.32	0.96	0.37	191.3	1.014	0.10	0.38	994	1.21	**0.078**	**91.8%**
KILN_SPK_0619.LAB	12/5/2023	13:06:42	13.56	9.51	-0.15	5.73	0.78	0.39	191.3	1.013	0.10	0.36	889	1.21	**0.081**	**96.8%**
KILN_SPK_0620.LAB	12/5/2023	13:06:50	13.64	9.52	-0.08	5.22	0.96	0.38	191.3	1.014	0.08	0.39	1108	1.21	**0.079**	**89.4%**
KILN_SPK_0621.LAB	12/5/2023	13:06:57	13.64	9.49	-0.09	5.24	0.81	0.39	191.3	1.014	0.09	0.40	1109	1.21	**0.081**	**88.7%**
KILN_SPK_0622.LAB	12/5/2023	13:07:05	13.65	9.49	-0.14	5.32	0.78	0.37	191.3	1.014	0.10	0.38	1072	1.21	**0.078**	**92.1%**
KILN_SPK_0623.LAB	12/5/2023	13:07:12	13.52	9.49	-0.01	5.56	0.82	0.37	191.3	1.015	0.09	0.34	1428	1.21	**0.078**	**96.0%**
KILN_SPK_0624.LAB	12/5/2023	13:07:20	13.53	9.46	-0.18	5.99	1.13	0.39	191.3	1.013	0.10	0.35	1197	1.21	**0.081**	**100.9%**
	Spike Average					**5.45**		**0.38**							**0.079**	**93.4%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN_CTS_SYS_0626.LAB	12/5/2023	13:08:05	0.00	0.01	-0.01	-0.01	97.98	0.01	191.3	1.014	0.06	0.20	1087	1.22	**99.1%**
KILN_CTS_SYS_0627.LAB	12/5/2023	13:08:12	-0.02	0.00	-0.05	0.00	99.02	0.01	191.3	1.014	0.05	0.20	840	1.22	**100.2%**
KILN_CTS_SYS_0628.LAB	12/5/2023	13:08:20	-0.01	0.02	0.02	0.13	98.02	0.01	191.3	1.014	0.04	0.23	739	1.22	**99.1%**
KILN_CTS_SYS_0629.LAB	12/5/2023	13:08:27	-0.01	0.00	-0.05	-0.01	98.89	-0.01	191.3	1.013	0.06	0.25	977	1.22	**100.0%**
KILN_CTS_SYS_0630.LAB	12/5/2023	13:08:35	-0.01	0.01	-0.01	-0.13	98.68	0.00	191.3	1.012	0.06	0.26	840	1.22	**99.8%**
KILN_CTS_SYS_0631.LAB	12/5/2023	13:08:42	-0.01	-0.02	0.07	0.37	98.17	0.00	191.3	1.013	0.05	0.21	971	1.22	**99.3%**
KILN_CTS_SYS_0632.LAB	12/5/2023	13:08:50	-0.03	0.02	-0.05	0.36	98.51	0.00	191.3	1.013	0.05	0.25	702	1.22	**99.6%**
KILN_CTS_SYS_0633.LAB	12/5/2023	13:08:57	0.00	0.00	0.00	-0.04	99.73	0.00	191.3	1.013	0.07	0.28	1183	1.22	**100.9%**
		Average					**98.62**								**99.8%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_N2_SYS_0634.LAB	12/5/2023	13:09:51	-0.02	0.00	-0.02	-0.09	-0.06	0.00	191.27	1.01	0.03	0.22	NaN	1.22
KILN_N2_SYS_0635.LAB	12/5/2023	13:10:06	-0.02	0.00	0.08	-0.35	-0.02	0.00	191.27	1.01	0.04	0.24	1512	1.22
KILN_N2_SYS_0636.LAB	12/5/2023	13:10:21	-0.02	0.00	-0.03	0.14	-0.01	0.00	191.27	1.01	0.03	0.23	1395	1.22
KILN_N2_SYS_0637.LAB	12/5/2023	13:10:36	-0.02	0.01	-0.05	0.03	0.01	0.00	191.27	1.01	0.04	0.21	1313	1.22
KILN_N2_SYS_0638.LAB	12/5/2023	13:10:51	-0.03	0.00	-0.03	-0.24	-0.12	0.01	191.27	1.01	0.04	0.22	1363	1.22
KILN_N2_SYS_0639.LAB	12/5/2023	13:11:06	-0.03	0.02	0.00	-0.28	0.15	0.00	191.27	1.01	0.05	0.22	1504	1.22
KILN_N2_SYS_0640.LAB	12/5/2023	13:11:21	-0.02	0.01	0.04	-0.01	-0.01	0.00	191.27	1.01	0.04	0.25	1598	1.22
KILN_N2_SYS_0641.LAB	12/5/2023	13:11:37	-0.03	-0.02	-0.03	-0.18	0.10	0.00	191.27	1.01	0.04	0.23	1265	1.22
		Average			**-0.01**	**-0.12**								
		Std Dev			**0.04**	**0.17**								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_0644.LAB	12/5/2023	14:27:22	9.22	11.41	-0.13	2.60	1.12	0.00	191.4	1.012	0.08	0.27	NaN	1.21
KILN_0645.LAB	12/5/2023	14:28:22	9.18	11.40	-0.08	2.38	1.08	0.00	191.4	1.013	0.08	0.26	2210	1.21
KILN_0646.LAB	12/5/2023	14:29:22	9.22	11.48	-0.07	2.50	1.01	-0.01	191.4	1.013	0.07	0.28	2479	1.21
	Native Average					**2.49**		**0.00**						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN_SPK_0666.LAB	12/5/2023	14:32:15	8.60	10.82	-0.23	5.66	1.14	0.35	191.4	1.013	0.08	0.31	783	1.20	**0.073**	**96.9%**
KILN_SPK_0667.LAB	12/5/2023	14:32:23	8.59	10.79	-0.08	6.00	0.92	0.34	191.4	1.013	0.09	0.31	1043	1.21	**0.070**	**104.7%**
KILN_SPK_0668.LAB	12/5/2023	14:32:30	8.52	10.71	0.10	6.08	1.24	0.33	191.3	1.012	0.09	0.36	728	1.21	**0.069**	**107.4%**
KILN_SPK_0669.LAB	12/5/2023	14:32:38	8.51	10.66	-0.13	5.82	0.95	0.34	191.4	1.011	0.09	0.32	799	1.21	**0.071**	**100.5%**
KILN_SPK_0670.LAB	12/5/2023	14:32:45	8.50	10.60	-0.26	5.42	1.09	0.34	191.4	1.012	0.09	0.32	822	1.21	**0.070**	**94.5%**
KILN_SPK_0671.LAB	12/5/2023	14:32:53	8.49	10.61	-0.09	5.45	0.94	0.33	191.3	1.012	0.09	0.32	1120	1.21	**0.069**	**95.8%**
KILN_SPK_0672.LAB	12/5/2023	14:33:00	8.54	10.64	-0.16	5.64	1.11	0.34	191.3	1.012	0.10	0.32	1005	1.21	**0.070**	**98.2%**
KILN_SPK_0673.LAB	12/5/2023	14:33:08	8.49	10.67	-0.19	5.43	1.01	0.34	191.3	1.014	0.10	0.34	979	1.21	**0.070**	**94.7%**
	Spike Average					**5.69**		**0.34**							**0.070**	**99.1%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN_CTS_SYS_0676.LAB	12/5/2023	14:33:59	-0.03	-0.01	0.00	0.28	98.49	-0.01	191.3	1.012	0.05	0.25	776	1.21	**99.6%**
KILN_CTS_SYS_0677.LAB	12/5/2023	14:34:06	-0.01	0.02	0.07	0.14	98.89	0.01	191.4	1.013	0.05	0.24	884	1.21	**100.0%**
KILN_CTS_SYS_0678.LAB	12/5/2023	14:34:14	-0.04	0.03	-0.05	-0.18	98.68	-0.01	191.4	1.012	0.05	0.28	780	1.21	**99.8%**
KILN_CTS_SYS_0679.LAB	12/5/2023	14:34:21	-0.02	0.00	0.03	0.16	98.64	-0.02	191.4	1.013	0.05	0.27	868	1.21	**99.8%**
KILN_CTS_SYS_0680.LAB	12/5/2023	14:34:29	-0.02	0.02	-0.02	0.22	98.59	-0.01	191.4	1.012	0.05	0.26	1154	1.21	**99.7%**
KILN_CTS_SYS_0681.LAB	12/5/2023	14:34:36	-0.04	-0.01	0.01	0.35	98.97	0.00	191.4	1.012	0.05	0.20	1116	1.21	**100.1%**
KILN_CTS_SYS_0682.LAB	12/5/2023	14:34:44	-0.04	0.00	-0.08	-0.04	98.21	-0.01	191.4	1.011	0.05	0.27	1132	1.21	**99.3%**
KILN_CTS_SYS_0683.LAB	12/5/2023	14:34:51	-0.01	0.00	0.02	0.38	98.42	-0.01	191.4	1.012	0.07	0.22	853	1.21	**99.6%**
		Average					**98.61**								**99.7%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_N2_SYS_0686.LAB	12/5/2023	14:36:18	-0.03	0.00	0.06	-0.20	0.13	-0.01	191.37	1.01	0.04	0.22	1560	1.21
KILN_N2_SYS_0687.LAB	12/5/2023	14:36:34	-0.04	0.01	0.06	-0.36	-0.08	0.00	191.37	1.01	0.05	0.22	1424	1.21
KILN_N2_SYS_0688.LAB	12/5/2023	14:36:49	-0.02	0.00	-0.01	-0.17	0.13	0.00	191.37	1.01	0.05	0.27	1538	1.21
KILN_N2_SYS_0689.LAB	12/5/2023	14:37:04	-0.04	-0.01	-0.05	0.04	-0.22	0.00	191.37	1.01	0.04	0.20	1234	1.21
KILN_N2_SYS_0690.LAB	12/5/2023	14:37:18	-0.02	-0.01	-0.02	-0.12	-0.09	0.01	191.32	1.01	0.05	0.23	1244	1.21
KILN_N2_SYS_0691.LAB	12/5/2023	14:37:34	-0.02	0.01	0.00	-0.07	-0.18	0.01	191.37	1.01	0.04	0.22	1682	1.21
KILN_N2_SYS_0692.LAB	12/5/2023	14:37:49	-0.03	-0.01	0.03	-0.22	-0.16	0.00	191.37	1.01	0.05	0.22	1317	1.21
KILN_N2_SYS_0693.LAB	12/5/2023	14:38:04	-0.04	-0.01	0.01	-0.23	0.08	0.00	191.37	1.01	0.04	0.22	1262	1.21
		Average			**0.01**	**-0.17**								
		Std Dev			**0.04**	**0.12**								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_0755.LAB	12/5/2023	15:39:48	9.05	11.19	-0.12	2.42	1.02	0.00	191.4	1.012	0.08	0.26	2909	1.21
KILN_0756.LAB	12/5/2023	15:40:47	8.95	10.94	-0.08	2.46	1.12	0.00	191.4	1.012	0.09	0.27	2728	1.21
KILN_0757.LAB	12/5/2023	15:41:47	9.24	11.56	-0.11	2.47	1.11	0.01	191.4	1.012	0.08	0.27	3161	1.21
	Native Average					**2.45**		**0.00**						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN_SPK_0771.LAB	12/5/2023	15:43:50	8.47	10.62	-0.15	6.07	0.75	0.40	191.4	1.012	0.08	0.29	908	1.21	**0.083**	**96.9%**
KILN_SPK_0772.LAB	12/5/2023	15:43:57	8.49	10.59	0.00	6.11	1.16	0.41	191.4	1.012	0.09	0.32	1087	1.21	**0.084**	**96.7%**
KILN_SPK_0773.LAB	12/5/2023	15:44:05	8.51	10.49	-0.09	6.50	0.80	0.41	191.4	1.012	0.09	0.34	1008	1.21	**0.085**	**101.8%**
KILN_SPK_0774.LAB	12/5/2023	15:44:12	8.49	10.41	-0.08	6.50	0.78	0.41	191.4	1.012	0.09	0.29	867	1.21	**0.084**	**102.4%**
KILN_SPK_0775.LAB	12/5/2023	15:44:20	8.55	10.38	-0.15	6.25	0.77	0.40	191.4	1.012	0.09	0.32	1124	1.21	**0.083**	**99.6%**
KILN_SPK_0776.LAB	12/5/2023	15:44:27	8.51	10.49	-0.20	6.57	1.27	0.42	191.4	1.012	0.09	0.32	985	1.21	**0.086**	**102.2%**
KILN_SPK_0777.LAB	12/5/2023	15:44:35	8.56	10.60	0.00	6.19	0.89	0.41	191.4	1.012	0.08	0.37	989	1.21	**0.084**	**97.5%**
KILN_SPK_0778.LAB	12/5/2023	15:44:42	8.48	10.65	-0.11	5.82	0.75	0.41	191.4	1.011	0.08	0.32	1070	1.21	**0.085**	**91.2%**
	Spike Average					**6.25**		**0.41**							**0.084**	**98.5%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN_CTS_SYS_0781.LAB	12/5/2023	15:45:33	-0.01	0.01	-0.05	0.06	99.18	0.00	191.4	1.012	0.06	0.23	820	1.21	**100.3%**
KILN_CTS_SYS_0782.LAB	12/5/2023	15:45:40	-0.02	-0.01	-0.02	0.35	99.10	-0.01	191.4	1.012	0.06	0.28	852	1.21	**100.2%**
KILN_CTS_SYS_0783.LAB	12/5/2023	15:45:47	-0.04	-0.01	-0.10	0.67	98.75	-0.01	191.4	1.012	0.04	0.22	1106	1.21	**99.9%**
KILN_CTS_SYS_0784.LAB	12/5/2023	15:45:55	-0.02	-0.02	0.02	0.08	98.91	0.00	191.4	1.012	0.06	0.26	958	1.21	**100.0%**
KILN_CTS_SYS_0785.LAB	12/5/2023	15:46:02	-0.04	0.03	0.03	-0.12	98.46	0.00	191.4	1.011	0.07	0.27	822	1.21	**99.6%**
KILN_CTS_SYS_0786.LAB	12/5/2023	15:46:10	-0.02	-0.01	-0.05	0.33	98.88	0.00	191.4	1.011	0.05	0.27	792	1.21	**100.0%**
KILN_CTS_SYS_0787.LAB	12/5/2023	15:46:17	-0.05	-0.02	0.06	0.49	99.11	0.00	191.4	1.011	0.06	0.27	999	1.21	**100.3%**
KILN_CTS_SYS_0788.LAB	12/5/2023	15:46:25	-0.01	0.01	0.00	-0.04	99.04	0.01	191.4	1.012	0.05	0.23	971	1.21	**100.2%**
		Average					**98.93**								**100.1%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_N2_SYS_0802.LAB	12/5/2023	15:50:28	-0.04	0.01	0.04	0.00	-0.31	0.00	191.43	1.01	0.04	0.25	1602	1.21
KILN_N2_SYS_0803.LAB	12/5/2023	15:50:43	-0.02	0.00	0.02	-0.26	0.04	0.01	191.42	1.01	0.05	0.25	1366	1.21
KILN_N2_SYS_0804.LAB	12/5/2023	15:50:58	-0.04	0.00	0.05	0.05	-0.03	0.00	191.41	1.01	0.04	0.22	1292	1.21
KILN_N2_SYS_0805.LAB	12/5/2023	15:51:13	-0.04	0.00	0.00	-0.03	-0.22	0.00	191.41	1.01	0.04	0.23	1300	1.21
KILN_N2_SYS_0806.LAB	12/5/2023	15:51:28	-0.03	0.01	-0.02	0.07	-0.28	-0.01	191.44	1.01	0.05	0.23	1559	1.21
KILN_N2_SYS_0807.LAB	12/5/2023	15:51:43	-0.02	0.02	-0.01	0.08	-0.12	0.00	191.40	1.01	0.04	0.24	1306	1.21
KILN_N2_SYS_0808.LAB	12/5/2023	15:51:58	-0.04	0.00	0.01	-0.05	-0.06	0.00	191.43	1.01	0.04	0.22	1190	1.21
KILN_N2_SYS_0809.LAB	12/5/2023	15:52:13	-0.03	-0.01	-0.01	-0.15	-0.09	-0.01	191.43	1.01	0.05	0.24	1195	1.21
		Average			**0.01**	**-0.04**								
		Std Dev			**0.02**	**0.12**								

Ambient Air Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_AMB_0814.LAB	12/5/2023	15:57:06	1.34	0.04	-0.03	0.08	-0.13	0.00	191.3	1.009	0.04	0.18	NaN	1.21
KILN_AMB_0815.LAB	12/5/2023	15:58:06	1.37	0.04	-0.02	0.12	-0.15	0.00	191.3	1.009	0.04	0.18	2968	1.21
KILN_AMB_0816.LAB	12/5/2023	15:59:07	1.33	0.05	-0.05	0.19	-0.01	0.00	191.3	1.010	0.05	0.17	2721	1.21
	Ambient Average					**0.13**		**0.00**						

Ambient Air Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN_AMB_SPK_0831.LAB	12/5/2023	16:01:27	1.20	0.03	-0.03	3.09	0.14	0.30	191.3	1.010	0.06	0.24	953	1.21	**0.062**	**98.3%**
KILN_AMB_SPK_0832.LAB	12/5/2023	16:01:35	1.22	0.02	0.04	3.21	-0.35	0.29	191.3	1.010	0.07	0.28	1018	1.21	**0.059**	**106.6%**
KILN_AMB_SPK_0833.LAB	12/5/2023	16:01:43	1.22	0.02	-0.02	2.79	-0.10	0.30	191.3	1.009	0.06	0.22	867	1.21	**0.061**	**89.6%**
KILN_AMB_SPK_0834.LAB	12/5/2023	16:01:50	1.25	0.04	-0.03	2.75	-0.10	0.30	191.3	1.009	0.07	0.25	917	1.21	**0.061**	**88.4%**
KILN_AMB_SPK_0835.LAB	12/5/2023	16:01:57	1.26	0.05	-0.09	3.40	-0.38	0.31	191.3	1.009	0.06	0.22	1090	1.21	**0.063**	**106.2%**
KILN_AMB_SPK_0836.LAB	12/5/2023	16:02:05	1.25	0.05	-0.14	3.55	-0.17	0.28	191.3	1.009	0.06	0.26	1215	1.21	**0.059**	**118.7%**
KILN_AMB_SPK_0837.LAB	12/5/2023	16:02:12	1.20	0.05	-0.06	2.92	-0.10	0.30	191.3	1.010	0.07	0.27	775	1.21	**0.062**	**93.2%**
KILN_AMB_SPK_0838.LAB	12/5/2023	16:02:20	1.20	0.03	-0.03	2.85	-0.18	0.29	191.3	1.010	0.06	0.28	1098	1.21	**0.061**	**92.3%**
	Spike Average					**3.07**		**0.30**							**0.061**	**99.1%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN_CTS_SYS_0839.LAB	12/5/2023	16:03:00	-0.03	0.00	0.01	0.59	98.82	-0.01	191.3	1.009	0.06	0.28	NaN	1.21	**100.0%**
KILN_CTS_SYS_0840.LAB	12/5/2023	16:03:08	-0.02	-0.01	-0.06	-0.15	99.37	0.00	191.3	1.009	0.06	0.26	917	1.21	**100.5%**
KILN_CTS_SYS_0841.LAB	12/5/2023	16:03:15	-0.03	-0.03	0.02	0.24	99.13	-0.01	191.3	1.009	0.05	0.26	1042	1.21	**100.3%**
KILN_CTS_SYS_0842.LAB	12/5/2023	16:03:23	-0.03	0.00	-0.04	0.48	98.46	0.01	191.3	1.009	0.06	0.26	895	1.21	**99.6%**
KILN_CTS_SYS_0843.LAB	12/5/2023	16:03:30	-0.01	-0.01	-0.05	0.44	98.53	0.01	191.3	1.009	0.06	0.28	1036	1.21	**99.7%**
KILN_CTS_SYS_0844.LAB	12/5/2023	16:03:38	-0.03	-0.01	0.11	0.51	98.84	0.01	191.3	1.009	0.07	0.29	741	1.21	**100.0%**
KILN_CTS_SYS_0845.LAB	12/5/2023	16:03:45	-0.02	0.00	-0.08	0.28	99.43	0.00	191.3	1.009	0.05	0.27	1118	1.21	**100.6%**
KILN_CTS_SYS_0846.LAB	12/5/2023	16:03:53	-0.03	-0.02	-0.05	0.06	99.04	0.00	191.3	1.010	0.05	0.24	1480	1.21	**100.2%**
		Average					**98.95**								**100.1%**

Nitrogen Direct to FTIR

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
N2_DIR_0858.LAB	12/5/2023	16:10:24	-0.05	0.00	0.00	-0.06	-0.13	0.00	191.0	0.985	0.02	0.22	NaN	1.21
N2_DIR_0859.LAB	12/5/2023	16:12:24	-0.04	0.00	0.01	-0.04	-0.14	0.00	191.0	0.985	0.02	0.22	3812	1.21
N2_DIR_0860.LAB	12/5/2023	16:14:24	-0.05	-0.01	-0.01	-0.18	-0.13	0.00	190.9	0.985	0.02	0.23	3799	1.21

Nitrogen Direct to FTIR

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
N2_DIR_0863BKG.LAB	12/6/2023	6:51:44	0.00	0.00	0.00	0.00	0.00	0.00	191.1	0.987	0.00	0.00	1836	1.22
N2_DIR_0864.LAB	12/6/2023	6:52:05	0.01	-0.01	-0.05	-0.04	0.01	-0.01	191.1	0.987	0.03	0.13	1380	1.22
N2_DIR_0865.LAB	12/6/2023	6:52:20	-0.01	-0.01	-0.01	-0.20	0.10	0.00	191.1	0.987	0.04	0.12	1173	1.22
N2_DIR_0866.LAB	12/6/2023	6:52:36	0.00	0.00	0.03	-0.14	-0.09	0.00	191.1	0.987	0.04	0.14	1267	1.22
N2_DIR_0867.LAB	12/6/2023	6:52:50	0.01	0.00	0.01	0.10	0.03	0.00	191.1	0.987	0.04	0.11	1202	1.22
N2_DIR_0868.LAB	12/6/2023	6:53:05	0.01	0.00	0.04	-0.18	0.19	0.00	191.1	0.987	0.04	0.13	1428	1.22
N2_DIR_0869.LAB	12/6/2023	6:53:21	0.01	0.01	0.08	-0.46	0.03	-0.01	191.0	0.987	0.04	0.11	1697	1.22
N2_DIR_0870.LAB	12/6/2023	6:53:35	0.00	0.02	0.02	-0.05	0.06	-0.01	191.0	0.987	0.04	0.11	1719	1.22
N2_DIR_0871.LAB	12/6/2023	6:53:51	-0.01	0.01	0.00	-0.21	0.08	0.00	191.0	0.987	0.03	0.11	1322	1.22
		Average			**0.01**	**-0.13**								

CTS, 99.97 ppm Ethylene Direct Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
CTS_DIR_0876.LAB	12/6/2023	6:55:33	0.02	-0.01	0.02	-0.08	99.31	0.01	191.1	0.987	0.05	0.19	NaN	1.22	**99.3%**
CTS_DIR_0877.LAB	12/6/2023	6:55:41	0.00	-0.01	0.03	-0.19	98.29	0.01	191.1	0.987	0.05	0.19	1173	1.22	**98.3%**
CTS_DIR_0878.LAB	12/6/2023	6:55:48	0.01	-0.02	0.06	0.46	99.43	-0.01	191.1	0.987	0.05	0.17	985	1.21	**99.5%**
CTS_DIR_0879.LAB	12/6/2023	6:55:56	0.01	-0.01	0.10	-0.24	99.59	0.00	191.0	0.987	0.05	0.17	764	1.22	**99.6%**
CTS_DIR_0880.LAB	12/6/2023	6:56:03	0.01	0.01	0.06	-0.46	99.46	0.00	191.1	0.987	0.04	0.19	832	1.21	**99.5%**
CTS_DIR_0881.LAB	12/6/2023	6:56:11	0.02	0.01	0.02	0.23	98.75	0.00	191.1	0.987	0.06	0.14	828	1.22	**98.8%**
CTS_DIR_0882.LAB	12/6/2023	6:56:18	0.00	-0.01	0.09	0.13	98.12	0.01	191.0	0.987	0.04	0.21	770	1.21	**98.1%**
CTS_DIR_0883.LAB	12/6/2023	6:56:26	-0.02	-0.02	0.02	-0.36	98.65	0.01	191.1	0.987	0.05	0.18	1086	1.21	**98.7%**
		Average					**98.95**								**99.0%**

49.10 ppm HCN/5.00 ppm SF6 Direct Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	HCN Recovery (%)
HCN_DIR_0901.LAB	12/6/2023	6:59:22	0.00	-0.01	-0.02	49.11	-0.97	4.86	190.97	0.99	0.05	0.28	1016	1.21	**100.0%**
HCN_DIR_0902.LAB	12/6/2023	6:59:29	0.00	0.00	0.10	49.09	-1.26	4.85	190.97	0.99	0.04	0.25	1178	1.21	**100.0%**
HCN_DIR_0903.LAB	12/6/2023	6:59:37	0.00	0.02	-0.02	48.84	-0.85	4.88	190.97	0.99	0.06	0.28	1134	1.21	**99.5%**
HCN_DIR_0904.LAB	12/6/2023	6:59:44	0.01	0.00	-0.04	48.93	-0.85	4.86	190.97	0.99	0.05	0.26	929	1.21	**99.7%**
HCN_DIR_0905.LAB	12/6/2023	6:59:52	0.01	-0.02	-0.05	49.38	-1.17	4.86	190.97	0.99	0.06	0.26	811	1.21	**100.6%**
HCN_DIR_0906.LAB	12/6/2023	6:59:59	0.00	-0.01	0.04	49.26	-1.10	4.84	190.97	0.99	0.06	0.27	1080	1.21	**100.3%**
HCN_DIR_0907.LAB	12/6/2023	7:00:07	0.00	-0.01	0.07	49.15	-1.26	4.85	190.97	0.99	0.06	0.29	929	1.21	**100.1%**
HCN_DIR_0908.LAB	12/6/2023	7:00:15	0.01	-0.02	-0.01	48.90	-0.92	4.85	190.99	0.99	0.06	0.27	1349	1.21	**99.6%**
		Average				**49.08**		**4.86**							**100.0%**

CTS, 99.97 ppm Ethylene System Purge and Response Time Test

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)	Response Time (sec)
CTS_RT_0909.LAB	12/6/2023	7:01:45	1.26	0.06	-0.01	0.30	-0.01	0.01	190.97	1.01	0.06	0.26	NaN	1.21	**0.0%**	**-**
CTS_RT_0910.LAB	12/6/2023	7:01:52	1.23	0.13	0.03	0.90	0.09	0.00	190.94	1.01	0.06	0.27	1142	1.21	**0.1%**	**8**
CTS_RT_0911.LAB	12/6/2023	7:01:59	0.29	0.05	0.15	2.38	70.33	0.18	190.95	1.01	0.06	0.21	840	1.21	**71.1%**	**16**
CTS_RT_0912.LAB	12/6/2023	7:02:07	0.02	0.01	0.07	-0.19	100.31	0.02	190.97	1.01	0.04	0.20	870	1.21	**101.4%**	**23**
CTS_RT_0913.LAB	12/6/2023	7:02:14	0.02	0.00	-0.04	-0.06	99.57	0.00	190.97	1.01	0.05	0.17	1192	1.21	**100.6%**	
CTS_RT_0914.LAB	12/6/2023	7:02:22	0.01	0.01	0.02	0.01	99.92	0.00	190.94	1.01	0.05	0.16	988	1.21	**101.0%**	
CTS_RT_0915.LAB	12/6/2023	7:02:29	0.02	-0.01	-0.04	-0.04	100.45	-0.01	190.95	1.01	0.05	0.17	903	1.21	**101.5%**	
CTS_RT_0916.LAB	12/6/2023	7:02:37	0.01	0.01	0.03	-0.14	100.47	0.01	190.90	1.01	0.05	0.14	1075	1.21	**101.5%**	
CTS_RT_0917.LAB	12/6/2023	7:02:45	0.00	0.00	0.10	-0.19	99.97	0.00	190.97	1.01	0.04	0.18	1181	1.21	**101.0%**	
CTS_RT_0918.LAB	12/6/2023	7:02:52	0.00	0.00	0.11	-0.14	100.46	0.00	190.97	1.01	0.05	0.17	1043	1.21	**101.5%**	
CTS_RT_0919.LAB	12/6/2023	7:02:59	0.01	-0.01	-0.01	-0.06	99.79	0.01	190.97	1.01	0.05	0.19	1131	1.21	**100.8%**	
		Average					**96.81**								**97.8%**	

Nitrogen (Zero) System Purge and Response Time Test

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)	Zero Time (sec)
N2_RT_0920.LAB	12/6/2023	7:03:23	0.01	0.01	0.03	-0.28	99.52	0.01	191.06	1.01	0.05	0.20	NaN	1.21	**100.6%**	**-**
N2_RT_0921.LAB	12/6/2023	7:03:30	0.02	0.00	0.02	-0.21	98.30	0.01	191.07	1.01	0.06	0.21	1015	1.21	**99.3%**	**8**
N2_RT_0922.LAB	12/6/2023	7:03:38	0.12	0.02	0.09	-0.01	14.48	-0.01	191.08	1.01	0.05	0.22	922	1.21	**14.6%**	**15**
N2_RT_0923.LAB	12/6/2023	7:03:45	0.01	0.01	0.15	0.10	0.60	0.00	191.07	1.01	0.05	0.17	943	1.21	**0.6%**	**23**
N2_RT_0924.LAB	12/6/2023	7:03:53	0.01	-0.02	0.06	-0.22	0.22	0.00	191.07	1.01	0.06	0.18	892	1.21	**0.2%**	
N2_RT_0925.LAB	12/6/2023	7:04:01	0.01	0.01	0.07	0.45	-0.04	0.00	191.08	1.01	0.05	0.17	1153	1.21	**0.0%**	
N2_RT_0926.LAB	12/6/2023	7:04:08	0.02	0.01	0.12	0.08	0.18	0.01	191.08	1.01	0.05	0.19	1222	1.21	**0.2%**	
N2_RT_0927.LAB	12/6/2023	7:04:16	0.02	0.02	0.01	-0.36	-0.20	0.00	191.07	1.01	0.05	0.17	823	1.21	**-0.2%**	
N2_RT_0928.LAB	12/6/2023	7:04:23	0.01	-0.01	0.10	0.23	0.13	0.00	191.10	1.01	0.06	0.17	819	1.21	**0.1%**	
N2_RT_0929.LAB	12/6/2023	7:04:31	0.01	-0.01	0.03	-0.11	0.07	-0.01	191.08	1.01	0.07	0.19	892	1.21	**0.1%**	
N2_RT_0930.LAB	12/6/2023	7:04:38	0.01	-0.02	0.03	-0.09	-0.09	0.01	191.08	1.01	0.05	0.17	996	1.21	**-0.1%**	

Ambient Air Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_AMB_0933.LAB	12/6/2023	7:06:30	1.27	0.04	0.02	0.12	0.04	0.00	191.24	1.01	0.05	0.20	NaN	1.21
KILN_AMB_0934.LAB	12/6/2023	7:07:30	1.28	0.04	-0.01	0.14	0.03	0.00	191.28	1.01	0.05	0.20	2835	1.21
KILN_AMB_0935.LAB	12/6/2023	7:08:30	1.28	0.04	0.02	0.24	0.10	0.00	191.33	1.01	0.06	0.22	2838	1.20
	Ambient Average					**0.17**		**0.00**						

Ambient Air Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN_AMB_SPK_0957.LAB	12/6/2023	7:13:45	1.24	0.03	0.09	2.33	-0.08	0.27	191.33	1.01	0.07	0.23	1009	1.21	**0.056**	**80.3%**
KILN_AMB_SPK_0958.LAB	12/6/2023	7:13:52	1.29	0.03	-0.01	3.08	0.11	0.26	191.27	1.01	0.07	0.21	1010	1.21	**0.053**	**112.5%**
KILN_AMB_SPK_0959.LAB	12/6/2023	7:14:00	1.25	0.02	-0.05	2.53	0.04	0.26	191.27	1.01	0.06	0.25	836	1.21	**0.054**	**90.7%**
KILN_AMB_SPK_0960.LAB	12/6/2023	7:14:07	1.16	0.05	0.14	2.75	0.01	0.26	191.27	1.01	0.07	0.25	712	1.21	**0.054**	**97.4%**
KILN_AMB_SPK_0961.LAB	12/6/2023	7:14:15	1.19	0.04	0.14	2.76	0.03	0.26	191.27	1.01	0.06	0.23	926	1.21	**0.054**	**97.7%**
KILN_AMB_SPK_0962.LAB	12/6/2023	7:14:22	1.22	0.06	0.03	2.78	-0.04	0.26	191.27	1.01	0.07	0.30	913	1.21	**0.053**	**101.4%**
KILN_AMB_SPK_0963.LAB	12/6/2023	7:14:30	1.20	0.04	-0.04	2.94	-0.06	0.27	191.28	1.01	0.06	0.25	1316	1.21	**0.055**	**103.5%**
KILN_AMB_SPK_0964.LAB	12/6/2023	7:14:38	1.19	0.03	0.04	2.68	-0.16	0.26	191.36	1.01	0.07	0.27	1165	1.21	**0.054**	**95.9%**
	Spike Average					**2.73**		**0.26**							**0.054**	**97.4%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN_CTS_SYS_0965.LAB	12/6/2023	7:15:25	0.00	-0.01	0.04	-0.04	99.80	-0.01	191.37	1.01	0.05	0.19	NaN	1.21	**100.9%**
KILN_CTS_SYS_0966.LAB	12/6/2023	7:15:33	0.01	-0.02	0.14	0.23	99.27	0.00	191.33	1.01	0.05	0.17	914	1.21	**100.3%**
KILN_CTS_SYS_0967.LAB	12/6/2023	7:15:41	0.01	-0.01	0.06	0.08	99.02	0.00	191.31	1.01	0.06	0.16	1269	1.21	**100.1%**
KILN_CTS_SYS_0968.LAB	12/6/2023	7:15:48	0.00	0.02	0.05	0.21	99.26	0.00	191.36	1.01	0.05	0.16	1085	1.21	**100.3%**
KILN_CTS_SYS_0969.LAB	12/6/2023	7:15:55	0.01	-0.01	0.02	-0.14	99.05	0.00	191.30	1.01	0.06	0.18	1385	1.21	**100.1%**
KILN_CTS_SYS_0970.LAB	12/6/2023	7:16:03	0.01	0.00	-0.04	0.19	98.63	0.00	191.27	1.01	0.05	0.16	1063	1.21	**99.7%**
KILN_CTS_SYS_0971.LAB	12/6/2023	7:16:10	0.02	0.01	0.05	0.14	98.81	0.01	191.31	1.01	0.05	0.18	956	1.21	**99.9%**
KILN_CTS_SYS_0972.LAB	12/6/2023	7:16:18	0.01	0.02	0.11	0.15	98.59	-0.01	191.31	1.01	0.05	0.16	800	1.21	**99.6%**
		Average					**99.05**								**100.1%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_N2_SYS_0973.LAB	12/6/2023	7:17:09	0.01	0.01	0.02	-0.08	0.32	-0.01	191.35	1.01	0.04	0.14	NaN	1.21
KILN_N2_SYS_0974.LAB	12/6/2023	7:17:24	0.01	0.00	0.04	-0.07	-0.07	0.00	191.37	1.01	0.04	0.16	1368	1.21
KILN_N2_SYS_0975.LAB	12/6/2023	7:17:39	0.01	0.00	0.02	0.05	-0.24	0.00	191.31	1.01	0.04	0.15	1286	1.21
KILN_N2_SYS_0976.LAB	12/6/2023	7:17:54	0.00	0.01	-0.03	0.15	0.06	0.00	191.33	1.01	0.05	0.14	1416	1.21
KILN_N2_SYS_0977.LAB	12/6/2023	7:18:09	-0.01	0.00	0.00	-0.11	0.05	0.00	191.31	1.01	0.03	0.12	1510	1.21
KILN_N2_SYS_0978.LAB	12/6/2023	7:18:24	0.00	0.01	0.03	-0.15	-0.07	0.00	191.33	1.01	0.06	0.11	1088	1.21
KILN_N2_SYS_0979.LAB	12/6/2023	7:18:39	0.00	-0.01	0.07	0.01	0.01	0.01	191.34	1.01	0.05	0.16	1346	1.21
KILN_N2_SYS_0980.LAB	12/6/2023	7:18:54	-0.02	0.00	0.03	-0.05	-0.02	0.00	191.37	1.01	0.04	0.11	1358	1.21
		Average			**0.02**	**-0.03**								
		Std Dev			**0.03**	**0.10**								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_NAT_0984.LAB	12/6/2023	7:28:31	8.78	11.16	-0.03	2.39	1.16	0.00	190.98	1.01	0.08	0.22	NaN	1.20
KILN_NAT_0985.LAB	12/6/2023	7:29:32	8.73	11.06	0.00	2.41	1.15	0.01	191.07	1.01	0.09	0.20	3592	1.20
KILN_NAT_0986.LAB	12/6/2023	7:30:31	8.68	11.03	-0.04	2.36	1.08	0.00	191.11	1.01	0.07	0.21	3096	1.20
	Native Average					**2.39**		**0.00**						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN_NAT_SPK_1003.LAB	12/6/2023	7:33:10	7.92	9.97	0.05	6.66	0.99	0.44	191.27	1.01	0.09	0.28	1552	1.20	**0.089**	**101.7%**
KILN_NAT_SPK_1004.LAB	12/6/2023	7:33:17	7.94	10.03	0.09	6.62	0.69	0.43	191.26	1.01	0.10	0.29	1247	1.20	**0.088**	**101.9%**
KILN_NAT_SPK_1005.LAB	12/6/2023	7:33:25	7.97	10.11	-0.01	6.61	0.85	0.43	191.27	1.01	0.09	0.24	893	1.20	**0.089**	**101.3%**
KILN_NAT_SPK_1006.LAB	12/6/2023	7:33:33	8.02	10.17	0.00	6.33	0.74	0.43	191.27	1.01	0.11	0.27	874	1.20	**0.089**	**96.8%**
KILN_NAT_SPK_1007.LAB	12/6/2023	7:33:40	8.02	10.20	0.07	6.60	0.90	0.44	191.27	1.01	0.09	0.27	1116	1.20	**0.089**	**100.9%**
KILN_NAT_SPK_1008.LAB	12/6/2023	7:33:47	8.07	10.17	-0.04	6.59	0.80	0.44	191.27	1.01	0.09	0.30	1003	1.20	**0.089**	**100.6%**
KILN_NAT_SPK_1009.LAB	12/6/2023	7:33:55	8.01	10.16	-0.05	6.24	1.46	0.44	191.27	1.01	0.08	0.31	1273	1.20	**0.090**	**94.5%**
KILN_NAT_SPK_1010.LAB	12/6/2023	7:34:03	8.03	10.14	0.04	6.26	0.93	0.44	191.27	1.01	0.10	0.27	1083	1.20	**0.089**	**95.7%**
	Spike Average					**6.49**		**0.44**							**0.089**	**99.2%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN_CTS_SYS_1012.LAB	12/6/2023	7:34:56	0.01	0.02	0.05	0.27	99.45	0.00	191.27	1.02	0.05	0.18	883	1.20	**100.5%**
KILN_CTS_SYS_1013.LAB	12/6/2023	7:35:04	0.00	-0.02	0.04	0.38	99.12	-0.01	191.27	1.02	0.07	0.18	761	1.21	**100.2%**
KILN_CTS_SYS_1014.LAB	12/6/2023	7:35:11	0.03	0.02	0.02	0.34	99.00	0.00	191.26	1.02	0.06	0.17	860	1.20	**100.1%**
KILN_CTS_SYS_1015.LAB	12/6/2023	7:35:19	0.02	0.00	0.07	0.10	99.22	0.01	191.27	1.01	0.06	0.15	1163	1.21	**100.3%**
KILN_CTS_SYS_1016.LAB	12/6/2023	7:35:26	0.01	0.00	0.02	-0.29	99.55	0.01	191.27	1.01	0.06	0.20	1204	1.20	**100.6%**
KILN_CTS_SYS_1017.LAB	12/6/2023	7:35:34	0.00	-0.02	0.01	-0.15	99.02	0.01	191.27	1.01	0.07	0.18	1047	1.21	**100.1%**
KILN_CTS_SYS_1018.LAB	12/6/2023	7:35:41	0.02	-0.02	0.13	-0.36	99.29	0.02	191.27	1.02	0.06	0.15	1123	1.21	**100.3%**
KILN_CTS_SYS_1019.LAB	12/6/2023	7:35:49	0.01	-0.01	-0.06	-0.22	98.42	0.00	191.27	1.02	0.07	0.17	1003	1.20	**99.5%**
		Average					**99.13**								**100.2%**

Nitrogen Direct to FTIR

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
N2_DIR_1037BKG.LAB	12/6/2023	7:44:46	0.00	0.00	0.00	0.00	0.00	0.00	191.09	0.99	0.00	0.00	1904	1.20
N2_DIR_1038.LAB	12/6/2023	7:45:07	0.00	0.00	0.00	0.14	0.01	0.00	191.09	0.99	0.04	0.15	1900	1.20
N2_DIR_1039.LAB	12/6/2023	7:45:22	0.00	0.00	-0.01	-0.18	0.20	0.00	191.07	0.99	0.04	0.18	1488	1.20
N2_DIR_1040.LAB	12/6/2023	7:45:37	0.00	0.00	0.03	0.13	-0.01	0.01	191.07	0.99	0.04	0.11	1260	1.20
N2_DIR_1041.LAB	12/6/2023	7:45:52	0.01	-0.01	0.07	-0.03	0.12	0.00	191.07	0.99	0.03	0.13	1194	1.20
N2_DIR_1042.LAB	12/6/2023	7:46:07	0.01	0.00	0.05	-0.07	0.12	0.00	191.07	0.99	0.05	0.14	1223	1.20
N2_DIR_1043.LAB	12/6/2023	7:46:22	-0.01	0.00	0.03	0.09	0.00	0.00	191.02	0.99	0.05	0.14	1495	1.20
N2_DIR_1044.LAB	12/6/2023	7:46:37	0.01	0.00	0.01	-0.03	-0.01	0.00	191.00	0.99	0.04	0.14	1453	1.20
N2_DIR_1045.LAB	12/6/2023	7:46:52	0.00	0.00	0.05	-0.21	0.03	0.00	190.99	0.99	0.04	0.16	1015	1.20
		Average			**0.03**	**-0.02**								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_1139.LAB	12/6/2023	9:20:47	11.02	13.15	-0.02	2.65	1.41	0.00	191.34	1.02	0.08	0.26	3328	1.20
KILN_1140.LAB	12/6/2023	9:21:48	10.56	13.25	-0.03	2.67	1.34	0.00	191.38	1.02	0.08	0.26	2997	1.20
KILN_1141.LAB	12/6/2023	9:22:47	10.82	13.36	-0.04	2.54	1.23	0.00	191.37	1.02	0.08	0.25	3300	1.20
	Native Average					**2.62**		**0.00**						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN_SPK_1164.LAB	12/6/2023	9:25:59	10.46	12.32	-0.04	6.06	1.08	0.40	191.3	1.017	0.09	0.30	1050	1.20	**0.082**	**94.4%**
KILN_SPK_1165.LAB	12/6/2023	9:26:07	10.41	12.30	-0.09	6.14	1.23	0.39	191.4	1.017	0.08	0.32	915	1.20	**0.080**	**96.7%**
KILN_SPK_1166.LAB	12/6/2023	9:26:14	10.45	12.23	-0.02	6.26	0.89	0.39	191.3	1.016	0.08	0.33	1202	1.21	**0.081**	**98.3%**
KILN_SPK_1167.LAB	12/6/2023	9:26:22	10.43	12.24	0.00	6.20	1.35	0.40	191.4	1.016	0.08	0.28	877	1.21	**0.082**	**96.7%**
KILN_SPK_1168.LAB	12/6/2023	9:26:29	10.43	12.19	-0.01	6.18	1.12	0.38	191.3	1.017	0.08	0.31	1260	1.21	**0.078**	**98.7%**
KILN_SPK_1169.LAB	12/6/2023	9:26:37	10.43	12.26	-0.11	6.40	1.24	0.39	191.4	1.016	0.10	0.30	797	1.21	**0.080**	**100.8%**
KILN_SPK_1170.LAB	12/6/2023	9:26:44	10.42	12.27	-0.10	6.28	1.22	0.38	191.4	1.016	0.09	0.28	798	1.21	**0.077**	**101.4%**
KILN_SPK_1171.LAB	12/6/2023	9:26:52	10.41	12.25	0.02	6.35	0.95	0.39	191.4	1.016	0.11	0.30	1027	1.20	**0.080**	**99.9%**
	Spike Average					**6.23**		**0.39**							**0.080**	**98.4%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN_CTS_SYS_1172.LAB	12/6/2023	9:27:35	0.02	0.01	0.05	0.03	99.02	0.01	191.36	1.02	0.06	0.18	NaN	1.21	**100.1%**
KILN_CTS_SYS_1173.LAB	12/6/2023	9:27:42	0.00	0.00	0.13	0.42	98.66	0.01	191.33	1.02	0.07	0.16	1111	1.21	**99.7%**
KILN_CTS_SYS_1174.LAB	12/6/2023	9:27:50	0.01	0.03	-0.04	0.23	99.71	0.01	191.33	1.02	0.05	0.19	898	1.21	**100.8%**
KILN_CTS_SYS_1175.LAB	12/6/2023	9:27:57	0.03	-0.01	0.04	-0.06	98.99	0.01	191.30	1.02	0.07	0.19	1102	1.21	**100.0%**
KILN_CTS_SYS_1176.LAB	12/6/2023	9:28:05	0.02	-0.02	0.07	-0.07	98.94	0.00	191.31	1.02	0.05	0.18	1058	1.21	**100.0%**
KILN_CTS_SYS_1177.LAB	12/6/2023	9:28:12	0.01	0.00	0.11	0.12	98.92	0.01	191.30	1.02	0.05	0.21	1033	1.21	**100.0%**
KILN_CTS_SYS_1178.LAB	12/6/2023	9:28:20	-0.01	0.01	-0.04	0.03	98.72	0.00	191.27	1.02	0.05	0.20	767	1.21	**99.8%**
KILN_CTS_SYS_1179.LAB	12/6/2023	9:28:27	0.02	0.00	0.05	-0.06	98.87	-0.01	191.27	1.02	0.07	0.17	764	1.21	**99.9%**
		Average					**98.98**								**100.0%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_N2_SYS_1189.LAB	12/6/2023	9:32:31	0.00	0.00	0.01	0.13	0.09	0.01	191.30	1.01	0.05	0.15	NaN	1.21
KILN_N2_SYS_1190.LAB	12/6/2023	9:32:46	0.00	0.00	0.00	-0.23	-0.09	0.00	191.31	1.01	0.05	0.17	1527	1.21
KILN_N2_SYS_1191.LAB	12/6/2023	9:33:01	0.00	0.01	0.06	0.01	0.00	0.01	191.28	1.01	0.04	0.13	1280	1.21
KILN_N2_SYS_1192.LAB	12/6/2023	9:33:16	0.01	-0.01	0.02	0.15	0.18	0.00	191.34	1.01	0.04	0.14	1571	1.21
KILN_N2_SYS_1193.LAB	12/6/2023	9:33:32	0.00	-0.01	-0.06	-0.12	0.11	0.01	191.28	1.01	0.04	0.14	1643	1.21
KILN_N2_SYS_1194.LAB	12/6/2023	9:33:46	0.00	0.00	0.01	0.12	0.00	0.01	191.31	1.01	0.04	0.16	1713	1.21
KILN_N2_SYS_1195.LAB	12/6/2023	9:34:01	0.00	-0.01	0.00	-0.22	-0.01	0.00	191.32	1.01	0.04	0.13	1828	1.21
KILN_N2_SYS_1196.LAB	12/6/2023	9:34:16	0.01	0.01	0.03	-0.03	-0.04	0.01	191.37	1.01	0.04	0.15	1491	1.21
		Average			**0.01**	**-0.02**								
		Std Dev			**0.03**	**0.15**								

Kiln 1 Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_1292.LAB	12/6/2023	11:10:18	11.99	13.29	-0.02	2.50	1.18	0.00	191.28	1.02	0.08	0.23	4031	1.21
KILN_1293.LAB	12/6/2023	11:11:18	11.98	13.14	0.00	2.75	1.28	0.00	191.28	1.02	0.07	0.22	3523	1.21
KILN_1294.LAB	12/6/2023	11:12:18	12.01	13.31	-0.04	2.76	1.43	0.00	191.28	1.02	0.08	0.22	3859	1.21
	Native Average					**2.67**		**0.00**						

Kiln 1 Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN_SPK_1328.LAB	12/6/2023	11:17:07	10.86	12.01	-0.09	6.72	1.30	0.41	191.28	1.02	0.10	0.31	1097	1.21	**0.084**	**102.6%**
KILN_SPK_1329.LAB	12/6/2023	11:17:14	10.89	11.99	-0.02	6.67	1.07	0.40	191.27	1.02	0.09	0.31	915	1.21	**0.083**	**102.3%**
KILN_SPK_1330.LAB	12/6/2023	11:17:21	10.83	12.00	-0.12	6.42	1.04	0.41	191.29	1.01	0.09	0.29	1071	1.21	**0.084**	**97.8%**
KILN_SPK_1331.LAB	12/6/2023	11:17:29	10.88	12.02	0.03	6.25	1.11	0.42	191.31	1.02	0.08	0.34	1122	1.21	**0.087**	**93.2%**
KILN_SPK_1332.LAB	12/6/2023	11:17:37	10.87	12.05	0.04	6.35	0.80	0.43	191.27	1.02	0.10	0.30	1071	1.21	**0.087**	**94.4%**
KILN_SPK_1333.LAB	12/6/2023	11:17:44	10.93	12.11	-0.08	6.49	1.32	0.41	191.27	1.02	0.12	0.30	848	1.21	**0.084**	**99.1%**
KILN_SPK_1334.LAB	12/6/2023	11:17:51	10.97	12.12	-0.07	6.22	1.17	0.41	191.30	1.02	0.09	0.30	910	1.21	**0.084**	**94.7%**
KILN_SPK_1335.LAB	12/6/2023	11:17:59	10.96	12.13	-0.02	6.45	1.08	0.43	191.31	1.02	0.09	0.28	1107	1.21	**0.088**	**95.8%**
	Spike Average					**6.45**		**0.41**							**0.085**	**97.5%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN_CTS_SYS_1338.LAB	12/6/2023	11:19:03	0.02	-0.01	0.14	0.35	99.36	0.01	191.30	1.02	0.06	0.18	1434	1.22	**100.4%**
KILN_CTS_SYS_1339.LAB	12/6/2023	11:19:10	0.00	0.01	0.00	0.19	99.10	0.01	191.29	1.02	0.07	0.23	1462	1.22	**100.2%**
KILN_CTS_SYS_1340.LAB	12/6/2023	11:19:18	0.02	0.00	0.07	-0.45	99.24	0.00	191.30	1.02	0.06	0.20	926	1.22	**100.3%**
KILN_CTS_SYS_1341.LAB	12/6/2023	11:19:25	0.00	0.01	0.11	0.00	99.40	0.00	191.29	1.02	0.06	0.20	941	1.22	**100.5%**
KILN_CTS_SYS_1342.LAB	12/6/2023	11:19:33	0.00	-0.01	-0.07	0.01	98.54	0.00	191.29	1.02	0.07	0.18	1061	1.22	**99.6%**
KILN_CTS_SYS_1343.LAB	12/6/2023	11:19:40	0.00	0.00	0.06	-0.50	99.92	0.01	191.28	1.02	0.07	0.17	1136	1.22	**101.0%**
KILN_CTS_SYS_1344.LAB	12/6/2023	11:19:48	0.01	0.00	0.00	0.42	98.97	0.00	191.29	1.02	0.06	0.19	871	1.22	**100.0%**
KILN_CTS_SYS_1345.LAB	12/6/2023	11:19:55	-0.01	0.02	0.00	0.17	98.09	-0.02	191.29	1.02	0.05	0.19	1075	1.22	**99.1%**
		Average					**99.08**								**100.1%**

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_N2_SYS_1356.LAB	12/6/2023	11:23:13	0.01	-0.01	0.01	-0.46	0.10	0.00	191.37	1.01	0.04	0.15	1433	1.22
KILN_N2_SYS_1357.LAB	12/6/2023	11:23:28	0.01	0.01	-0.01	-0.11	0.07	0.01	191.34	1.01	0.05	0.15	1764	1.22
KILN_N2_SYS_1358.LAB	12/6/2023	11:23:44	0.01	-0.01	0.08	-0.21	0.03	-0.01	191.32	1.01	0.06	0.16	1602	1.22
KILN_N2_SYS_1359.LAB	12/6/2023	11:23:59	0.00	0.01	0.12	-0.21	0.03	0.01	191.37	1.01	0.06	0.16	1244	1.22
KILN_N2_SYS_1360.LAB	12/6/2023	11:24:14	0.02	0.01	0.05	-0.27	-0.04	0.00	191.37	1.01	0.04	0.15	1143	1.22
KILN_N2_SYS_1361.LAB	12/6/2023	11:24:29	0.00	0.01	0.03	-0.05	-0.12	0.00	191.33	1.01	0.05	0.19	1518	1.22
KILN_N2_SYS_1362.LAB	12/6/2023	11:24:44	0.00	0.00	0.01	-0.24	0.14	0.01	191.35	1.01	0.04	0.14	1659	1.22
KILN_N2_SYS_1363.LAB	12/6/2023	11:24:59	0.01	0.00	-0.03	-0.21	0.23	0.00	191.37	1.01	0.04	0.14	1428	1.22
		Average			**0.03**	**-0.22**								
		Std Dev			**0.05**	**0.12**								

Ambient Air Prior to Analyte Spike

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_AMB_1365.LAB	12/6/2023	11:27:34	1.00	0.04	-0.01	-0.02	0.12	0.00	191.36	1.01	0.04	0.18	2342	1.21
KILN_AMB_1366.LAB	12/6/2023	11:28:34	0.98	0.04	0.00	0.01	-0.01	0.00	191.37	1.01	0.04	0.19	2250	1.21
KILN_AMB_1367.LAB	12/6/2023	11:29:34	0.95	0.05	-0.02	0.00	0.00	0.01	191.35	1.01	0.04	0.19	2767	1.22
	Ambient Average					**0.00**		**0.00**						

Ambient Air Analyte Spike, Using 49.10 ppm HCN/5.00 ppm SF6

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Dilution Factor	HCN Recovery (%)
KILN_AMB_SPK_1391.LAB	12/6/2023	11:36:13	0.85	0.04	0.09	2.81	-0.12	0.29	191.4	1.014	0.07	0.25	1099	1.21	**0.059**	**97.4%**
KILN_AMB_SPK_1392.LAB	12/6/2023	11:36:20	0.88	0.03	-0.01	3.25	0.27	0.29	191.4	1.013	0.06	0.22	959	1.22	**0.060**	**110.2%**
KILN_AMB_SPK_1393.LAB	12/6/2023	11:36:28	0.91	0.04	0.07	3.01	-0.01	0.30	191.4	1.013	0.06	0.23	1018	1.22	**0.061**	**99.8%**
KILN_AMB_SPK_1394.LAB	12/6/2023	11:36:35	0.89	0.04	0.02	3.00	-0.04	0.30	191.4	1.014	0.07	0.26	1059	1.22	**0.062**	**99.1%**
KILN_AMB_SPK_1395.LAB	12/6/2023	11:36:43	0.88	0.05	-0.06	2.95	-0.10	0.30	191.3	1.014	0.05	0.26	1028	1.21	**0.062**	**97.7%**
KILN_AMB_SPK_1396.LAB	12/6/2023	11:36:50	0.88	0.04	0.00	3.34	0.01	0.29	191.4	1.013	0.04	0.20	1413	1.21	**0.059**	**115.0%**
KILN_AMB_SPK_1397.LAB	12/6/2023	11:36:58	0.82	0.03	-0.04	3.30	-0.35	0.29	191.4	1.014	0.07	0.24	1079	1.21	**0.059**	**113.3%**
KILN_AMB_SPK_1398.LAB	12/6/2023	11:37:05	0.80	0.05	-0.02	3.12	0.06	0.29	191.4	1.013	0.07	0.21	1300	1.22	**0.059**	**107.8%**
	Spike Average					**3.10**		**0.29**							**0.060**	**105.0%**

CTS, 99.97 ppm Ethylene System Purge

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500	Ethylene Recovery (%)
KILN_CTS_SYS_1409.LAB	12/6/2023	11:40:19	0.01	0.02	-0.04	0.14	99.25	-0.01	191.37	1.01	0.05	0.18	1027	1.22	**100.3%**
KILN_CTS_SYS_1410.LAB	12/6/2023	11:40:26	0.00	0.00	-0.02	-0.22	99.31	0.01	191.37	1.01	0.05	0.19	1456	1.22	**100.4%**
KILN_CTS_SYS_1411.LAB	12/6/2023	11:40:33	0.00	0.01	0.07	0.28	99.04	0.01	191.36	1.01	0.06	0.20	1154	1.22	**100.1%**
KILN_CTS_SYS_1412.LAB	12/6/2023	11:40:41	0.01	0.00	0.00	0.52	99.50	0.00	191.27	1.01	0.05	0.21	926	1.22	**100.6%**
KILN_CTS_SYS_1413.LAB	12/6/2023	11:40:48	-0.01	-0.03	-0.02	0.29	99.38	-0.01	191.35	1.01	0.05	0.18	1122	1.22	**100.4%**
KILN_CTS_SYS_1414.LAB	12/6/2023	11:40:56	0.01	0.00	0.05	-0.12	99.58	-0.01	191.30	1.01	0.06	0.18	1089	1.22	**100.6%**
KILN_CTS_SYS_1415.LAB	12/6/2023	11:41:03	-0.01	0.01	-0.01	-0.40	98.93	0.00	191.28	1.01	0.06	0.21	835	1.22	**100.0%**
KILN_CTS_SYS_1416.LAB	12/6/2023	11:41:11	0.01	0.00	0.01	0.26	98.77	0.01	191.36	1.01	0.05	0.19	854	1.22	**99.8%**
		Average					**99.22**								**100.3%**

Nitrogen Direct to FTIR

Spectrum	Date	Time	H2O (%v)	CO2 (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
N2_DIR_1437.LAB	12/6/2023	11:55:55	0.00	0.00	0.03	-0.08	-0.01	0.00	191.01	0.99	0.03	0.10	3330	1.22
N2_DIR_1438.LAB	12/6/2023	11:57:56	0.00	0.00	0.01	-0.12	-0.05	0.00	191.08	0.99	0.03	0.11	3348	1.22
N2_DIR_1439.LAB	12/6/2023	11:59:56	0.00	0.00	0.02	-0.10	-0.03	0.00	191.07	0.99	0.03	0.10	3276	1.22

APPENDIX

Kiln 1 – FTIR Detection Limit Data

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_N2_SYS_0122.LAB	12/5/2023	7:10:21	0.01	-0.01	-0.14	0.21	0.00	191.43	1.01	0.04	0.15	1660	1.22
KILN_N2_SYS_0123.LAB	12/5/2023	7:10:36	0.02	-0.02	0.01	0.07	0.00	191.47	1.01	0.05	0.15	1633	1.22
KILN_N2_SYS_0124.LAB	12/5/2023	7:10:51	0.01	-0.03	-0.09	0.12	0.00	191.45	1.01	0.04	0.15	1195	1.22
KILN_N2_SYS_0125.LAB	12/5/2023	7:11:06	0.01	0.00	0.03	0.11	0.00	191.46	1.01	0.05	0.13	1184	1.22
KILN_N2_SYS_0126.LAB	12/5/2023	7:11:21	0.01	-0.03	0.18	0.29	0.00	191.46	1.01	0.04	0.16	1301	1.22
KILN_N2_SYS_0127.LAB	12/5/2023	7:11:36	0.00	-0.04	0.15	0.06	0.00	191.47	1.01	0.05	0.13	1279	1.22
KILN_N2_SYS_0128.LAB	12/5/2023	7:11:51	0.00	0.02	-0.20	0.11	0.01	191.47	1.01	0.05	0.14	1506	1.22
KILN_N2_SYS_128_0129.LAB	12/5/2023	7:14:09	0.01	-0.02	0.03	0.17	0.00	191.45	1.01	0.03	0.12	NaN	1.22

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_N2_SYS_0340.LAB	12/5/2023	9:40:17	-0.02	-0.06	-0.16	-0.12	0.00	191.37	1.01	0.04	0.20	1008	1.22
KILN_N2_SYS_0341.LAB	12/5/2023	9:40:32	-0.02	-0.02	-0.30	-0.06	0.00	191.37	1.01	0.04	0.19	1139	1.22
KILN_N2_SYS_0342.LAB	12/5/2023	9:40:47	-0.02	-0.02	-0.07	-0.17	0.00	191.41	1.01	0.05	0.18	1150	1.22
KILN_N2_SYS_0343.LAB	12/5/2023	9:41:02	-0.02	0.06	-0.17	0.00	0.01	191.37	1.01	0.04	0.19	1449	1.22
KILN_N2_SYS_0344.LAB	12/5/2023	9:41:17	-0.03	-0.01	-0.02	0.18	0.00	191.36	1.01	0.04	0.20	1415	1.22
KILN_N2_SYS_0345.LAB	12/5/2023	9:41:32	-0.03	-0.05	-0.30	0.00	0.00	191.35	1.01	0.03	0.20	1427	1.22
KILN_N2_SYS_0346.LAB	12/5/2023	9:41:47	-0.02	0.05	-0.20	-0.03	0.00	191.37	1.01	0.05	0.18	1179	1.22
KILN_N2_SYS_0347.LAB	12/5/2023	9:42:02	-0.02	0.05	0.09	0.02	0.01	191.37	1.01	0.04	0.23	1746	1.22

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_N2_SYS_0498.LAB	12/5/2023	11:23:27	-0.02	0.01	0.08	-0.09	0.01	191.38	1.01	0.04	0.18	1479	1.22
KILN_N2_SYS_0499.LAB	12/5/2023	11:23:42	-0.03	0.04	0.04	-0.02	0.00	191.39	1.01	0.04	0.22	1510	1.22
KILN_N2_SYS_0500.LAB	12/5/2023	11:23:57	-0.02	-0.02	-0.10	-0.14	0.00	191.42	1.01	0.03	0.21	1337	1.22
KILN_N2_SYS_0501.LAB	12/5/2023	11:24:12	-0.02	-0.01	-0.18	-0.01	0.00	191.37	1.01	0.05	0.21	1362	1.22
KILN_N2_SYS_0502.LAB	12/5/2023	11:24:27	-0.03	0.03	-0.01	0.05	0.00	191.37	1.01	0.03	0.22	1509	1.22
KILN_N2_SYS_0503.LAB	12/5/2023	11:24:42	-0.03	-0.02	0.00	-0.15	-0.01	191.37	1.01	0.05	0.20	1333	1.22
KILN_N2_SYS_0504.LAB	12/5/2023	11:24:57	-0.03	-0.06	-0.01	-0.06	0.00	191.37	1.01	0.04	0.23	1466	1.22
KILN_N2_SYS_0505.LAB	12/5/2023	11:25:12	-0.01	0.02	-0.04	0.07	0.00	191.44	1.01	0.04	0.23	1479	1.22

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_N2_SYS_0634.LAB	12/5/2023	13:09:51	-0.02	-0.02	-0.09	-0.06	0.00	191.27	1.01	0.03	0.22	NaN	1.22
KILN_N2_SYS_0635.LAB	12/5/2023	13:10:06	-0.02	0.08	-0.35	-0.02	0.00	191.27	1.01	0.04	0.24	1512	1.22
KILN_N2_SYS_0636.LAB	12/5/2023	13:10:21	-0.02	-0.03	0.14	-0.01	0.00	191.27	1.01	0.03	0.23	1395	1.22
KILN_N2_SYS_0637.LAB	12/5/2023	13:10:36	-0.02	-0.05	0.03	0.01	0.00	191.27	1.01	0.04	0.21	1313	1.22
KILN_N2_SYS_0638.LAB	12/5/2023	13:10:51	-0.03	-0.03	-0.24	-0.12	0.01	191.27	1.01	0.04	0.22	1363	1.22
KILN_N2_SYS_0639.LAB	12/5/2023	13:11:06	-0.03	0.00	-0.28	0.15	0.00	191.27	1.01	0.05	0.22	1504	1.22
KILN_N2_SYS_0640.LAB	12/5/2023	13:11:21	-0.02	0.04	-0.01	-0.01	0.00	191.27	1.01	0.04	0.25	1598	1.22
KILN_N2_SYS_0641.LAB	12/5/2023	13:11:37	-0.03	-0.03	-0.18	0.10	0.00	191.27	1.01	0.04	0.23	1265	1.22

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_N2_SYS_0686.LAB	12/5/2023	14:36:18	-0.03	0.06	-0.20	0.13	-0.01	191.37	1.01	0.04	0.22	1560	1.21
KILN_N2_SYS_0687.LAB	12/5/2023	14:36:34	-0.04	0.06	-0.36	-0.08	0.00	191.37	1.01	0.05	0.22	1424	1.21
KILN_N2_SYS_0688.LAB	12/5/2023	14:36:49	-0.02	-0.01	-0.17	0.13	0.00	191.37	1.01	0.05	0.27	1538	1.21
KILN_N2_SYS_0689.LAB	12/5/2023	14:37:04	-0.04	-0.05	0.04	-0.22	0.00	191.37	1.01	0.04	0.20	1234	1.21
KILN_N2_SYS_0690.LAB	12/5/2023	14:37:18	-0.02	-0.02	-0.12	-0.09	0.01	191.32	1.01	0.05	0.23	1244	1.21
KILN_N2_SYS_0691.LAB	12/5/2023	14:37:34	-0.02	0.00	-0.07	-0.18	0.01	191.37	1.01	0.04	0.22	1682	1.21
KILN_N2_SYS_0692.LAB	12/5/2023	14:37:49	-0.03	0.03	-0.22	-0.16	0.00	191.37	1.01	0.05	0.22	1317	1.21
KILN_N2_SYS_0693.LAB	12/5/2023	14:38:04	-0.04	0.01	-0.23	0.08	0.00	191.37	1.01	0.04	0.22	1262	1.21

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_N2_SYS_0802.LAB	12/5/2023	15:50:28	-0.04	0.04	0.00	-0.31	0.00	191.43	1.01	0.04	0.25	1602	1.21
KILN_N2_SYS_0803.LAB	12/5/2023	15:50:43	-0.02	0.02	-0.26	0.04	0.01	191.42	1.01	0.05	0.25	1366	1.21
KILN_N2_SYS_0804.LAB	12/5/2023	15:50:58	-0.04	0.05	0.05	-0.03	0.00	191.41	1.01	0.04	0.22	1292	1.21
KILN_N2_SYS_0805.LAB	12/5/2023	15:51:13	-0.04	0.00	-0.03	-0.22	0.00	191.41	1.01	0.04	0.23	1300	1.21
KILN_N2_SYS_0806.LAB	12/5/2023	15:51:28	-0.03	-0.02	0.07	-0.28	-0.01	191.44	1.01	0.05	0.23	1559	1.21
KILN_N2_SYS_0807.LAB	12/5/2023	15:51:43	-0.02	-0.01	0.08	-0.12	0.00	191.40	1.01	0.04	0.24	1306	1.21
KILN_N2_SYS_0808.LAB	12/5/2023	15:51:58	-0.04	0.01	-0.05	-0.06	0.00	191.43	1.01	0.04	0.22	1190	1.21
KILN_N2_SYS_0809.LAB	12/5/2023	15:52:13	-0.03	-0.01	-0.15	-0.09	-0.01	191.43	1.01	0.05	0.24	1195	1.21

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_N2_SYS_0973.LAB	12/6/2023	7:17:09	0.01	0.02	-0.08	0.32	-0.01	191.35	1.01	0.04	0.14	NaN	1.21
KILN_N2_SYS_0974.LAB	12/6/2023	7:17:24	0.01	0.04	-0.07	-0.07	0.00	191.37	1.01	0.04	0.16	1368	1.21
KILN_N2_SYS_0975.LAB	12/6/2023	7:17:39	0.01	0.02	0.05	-0.24	0.00	191.31	1.01	0.04	0.15	1286	1.21
KILN_N2_SYS_0976.LAB	12/6/2023	7:17:54	0.00	-0.03	0.15	0.06	0.00	191.33	1.01	0.05	0.14	1416	1.21
KILN_N2_SYS_0977.LAB	12/6/2023	7:18:09	-0.01	0.00	-0.11	0.05	0.00	191.31	1.01	0.03	0.12	1510	1.21
KILN_N2_SYS_0978.LAB	12/6/2023	7:18:24	0.00	0.03	-0.15	-0.07	0.00	191.33	1.01	0.06	0.11	1088	1.21
KILN_N2_SYS_0979.LAB	12/6/2023	7:18:39	0.00	0.07	0.01	0.01	0.01	191.34	1.01	0.05	0.16	1346	1.21
KILN_N2_SYS_0980.LAB	12/6/2023	7:18:54	-0.02	0.03	-0.05	-0.02	0.00	191.37	1.01	0.04	0.11	1358	1.21

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_N2_SYS_1189.LAB	12/6/2023	9:32:31	0.00	0.01	0.13	0.09	0.01	191.30	1.01	0.05	0.15	NaN	1.21
KILN_N2_SYS_1190.LAB	12/6/2023	9:32:46	0.00	0.00	-0.23	-0.09	0.00	191.31	1.01	0.05	0.17	1527	1.21
KILN_N2_SYS_1191.LAB	12/6/2023	9:33:01	0.00	0.06	0.01	0.00	0.01	191.28	1.01	0.04	0.13	1280	1.21
KILN_N2_SYS_1192.LAB	12/6/2023	9:33:16	0.01	0.02	0.15	0.18	0.00	191.34	1.01	0.04	0.14	1571	1.21
KILN_N2_SYS_1193.LAB	12/6/2023	9:33:32	0.00	-0.06	-0.12	0.11	0.01	191.28	1.01	0.04	0.14	1643	1.21
KILN_N2_SYS_1194.LAB	12/6/2023	9:33:46	0.00	0.01	0.12	0.00	0.01	191.31	1.01	0.04	0.16	1713	1.21
KILN_N2_SYS_1195.LAB	12/6/2023	9:34:01	0.00	0.00	-0.22	-0.01	0.00	191.32	1.01	0.04	0.13	1828	1.21
KILN_N2_SYS_1196.LAB	12/6/2023	9:34:16	0.01	0.03	-0.03	-0.04	0.01	191.37	1.01	0.04	0.15	1491	1.21

Nitrogen System Purge

Spectrum	Date	Time	H2O (%v)	HF (ppmv wet)	HCN (ppmv wet)	Ethylene (ppmv wet)	SF6 (ppmv wet)	FTIR Gas Cell Temp (C)	FTIR Gas Cell Pressure (Atm)	HF ppm (10) 191C resid	HCN PCA 191c R1 191c resid	SNR 2500	sBeam @ 2500
KILN_N2_SYS_1356.LAB	12/6/2023	11:23:13	0.01	0.01	-0.46	0.10	0.00	191.37	1.01	0.04	0.15	1433	1.22
KILN_N2_SYS_1357.LAB	12/6/2023	11:23:28	0.01	-0.01	-0.11	0.07	0.01	191.34	1.01	0.05	0.15	1764	1.22
KILN_N2_SYS_1358.LAB	12/6/2023	11:23:44	0.01	0.08	-0.21	0.03	-0.01	191.32	1.01	0.06	0.16	1602	1.22
KILN_N2_SYS_1359.LAB	12/6/2023	11:23:59	0.00	0.12	-0.21	0.03	0.01	191.37	1.01	0.06	0.16	1244	1.22
KILN_N2_SYS_1360.LAB	12/6/2023	11:24:14	0.02	0.05	-0.27	-0.04	0.00	191.37	1.01	0.04	0.15	1143	1.22
KILN_N2_SYS_1361.LAB	12/6/2023	11:24:29	0.00	0.03	-0.05	-0.12	0.00	191.33	1.01	0.05	0.19	1518	1.22
KILN_N2_SYS_1362.LAB	12/6/2023	11:24:44	0.00	0.01	-0.24	0.14	0.01	191.35	1.01	0.04	0.14	1659	1.22
KILN_N2_SYS_1363.LAB	12/6/2023	11:24:59	0.01	-0.03	-0.21	0.23	0.00	191.37	1.01	0.04	0.14	1428	1.22
		Average		**0.01**	**-0.09**								
		Std Dev		**0.04**	**0.14**								
		3 Sigma		**0.11**	**0.43**								

APPENDIX

Gas Certificates

Airgas Specialty Gases
Airgas USA LLC
6141 Easton Road
Plumsteadville, PA 18949
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED STANDARD-SPEC

Customer:	MONTROSE ENVIRONMENTAL		
Part Number:	X03NI99C15AC0W8	Reference Number:	160-402845896-1
Cylinder Number:	CC768259	Cylinder Volume:	144.4 CF
Laboratory:	124 - Plumsteadville - PA	Cylinder Pressure:	2015 PSIG
Analysis Date:	Sep 11, 2023	Valve Outlet:	350SS
Lot Number:	160-402845896-1		

Expiration Date: Mar 11, 2024

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
SULFUR HEXAFLUORIDE	5.000 PPM	5.000 PPM	+/- 5%
HYDROGEN CYANIDE	50.00 PPM	49.10 PPM	+/- 5%
NITROGEN	Balance		

Signature on file

Approved for Release

Airgas Specialty Gases
Airgas USA LLC
24075 US Hwy 6
Stryker, OH 43557
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: PRIMARY STANDARD

Part Number:	X02NI99P15AD524	Reference Number:	141-402834792-1
Cylinder Number:	EB0158986	Cylinder Volume:	140.0 CF
Laboratory:	124 - Stryker (SAP) - OH	Cylinder Pressure:	2015 PSIG
Analysis Date:	Sep 05, 2023	Valve Outlet:	350
Lot Number:	141-402834792-1		

Expiration Date: Sep 05, 2031

Primary Standard Gas Mixtures are traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
ETHYLENE	100.0 PPM	99.97 PPM	+/- 1%
NITROGEN	Balance		

Signature on file

Approved for Release

Appendix D
Quality Assurance/Quality Control

Appendix D.1
Units and Abbreviations

MONTROSE
AIR QUALITY SERVICES

UNITS OF MEASUREMENT

@ X% O_2	corrected to X% oxygen (corrected for dilution air)
|CC|	absolute value of the confidence coefficient
|d|	absolute value of the mean differences
ºC	degrees Celsius
ºF	degrees Fahrenheit
ºR	degrees Rankine
" H_2O	inches of water column
13.6	specific gravity of mercury
ΔH	pressure drop across orifice meter, inches H_2O
ΔP	velocity head of stack gas, inches H_2O
θ	total sampling time, minutes
µg	microgram
ρ_a	density of acetone, mg/ml
ρ_w	density of water, 0.9982 g/ml or 0.002201 lb/ml
acfm	actual cubic feet of gas per minute at stack conditions
A_n	cross-sectional area of nozzle, ft^2
A_s	cross-sectional area of stack, square feet (ft^2)
Btu	British thermal unit
B_{ws}	proportion by volume of water vapor in gas stream
C_a	particulate matter concentration in stack gas, gr/acf
C_{Avg}	average unadjusted gas concentration, ppmv
C_{Dir}	measured concentration of calibration gas, ppmv
cf or ft^3	cubic feet
cfm	cubic feet per minute
C_{Gas}	average gas concentration adjusted for bias, ppmv
C_M	average of initial and final system bias check responses from upscale calibration gas, ppmv
cm or m^3	cubic meters
C_{MA}	actual concentration of the upscale calibration gas, ppmv
C_O	average of initial and final system bias check responses from low-level calibration gas, ppmv
C_p	pitot tube coefficient
C_s	particulate matter concentration in stack gas, gr/dscf
CS	calibration span, % or ppmv
C_S	measured concentration of calibration gas, ppmv
C_V	manufactured certified concentration of calibration gas, ppmv
D	drift assessment, % of span
dcf	dry cubic feet
dcm	dry cubic meters
D_n	diameter of nozzle, inches
D_s	diameter of stack, inches
dscf	dry standard cubic feet
dscfm	dry standard cubic feet per minute
dscm	dry standard cubic meters
F_d	F-factor, dscf/MMBtu of heat input
fpm	feet per minute
fps	feet per second
ft	feet
ft^2	square feet
g	gram
gal	gallons
gr	grains (7000 grains per pound)

MONTROSE
AIR QUALITY SERVICES

UNITS OF MEASUREMENT

gr/dscf	grains per dry standard cubic feet
hr	hour
I	percent of isokinetic sampling
in	inch
k	kilo or thousand (metric units, multiply by 10^3)
K	kelvin (temperature)
K_3	conversion factor 0.0154 gr/mg
K_4	conversion factor 0.002668 ((in. Hg)(ft^3))/((ml)(°R))
kg	kilogram
K_p	pitot tube constant (85.49 ft/sec)
kwscfh	thousand wet standard cubic feet per hour
l	liters
lb/hr	pounds per hour
lb/MMBtu	pounds per million Btu
lpm	liters per minute
m	meter or milli
M	thousand (English units) or mega (million, metric units)
m^3	cubic meters
m_a	mass of residue of acetone after evaporation, mg
M_d	molecular weight of stack gas; dry basis, lb/lb-mole
meq	milliequivalent
mg	milligram
Mg	megagram (10^6 grams)
min	minute
ml or mL	milliliter
mm	millimeter
MM	million (English units)
MMBtu/hr	million Btu per hour
m_n	total amount of particulate matter collected, mg
mol	mole
mol. wt. or MW	molecular weight
M_s	molecular weight of stack gas; wet basis, lb/lb-mole
MW	molecular weight or megawatt
n	number of data points
ng	nanogram
nm	nanometer
Nm^3	normal cubic meter
P_{bar}	barometric pressure, inches Hg
pg	picogram
P_g	stack static pressure, inches H_2O
P_m	barometric pressure of dry gas meter, inches Hg
ppb	parts per billion
ppbv	parts per billion, by volume
ppbvd	parts per billion by volume, dry basis
ppm	parts per million
ppmv	parts per million, by volume
ppmvd	parts per million by volume, dry basis
ppmvw	parts per million by volume, wet basis
P_s	absolute stack gas pressure, inches Hg
psi	pounds per square inch
psia	pounds per square inch absolute
psig	pounds per square inch gauge

MONTROSE
AIR QUALITY SERVICES

UNITS OF MEASUREMENT

P_{std}	standard absolute pressure, 29.92 inches Hg
Q_a	volumetric flow rate, actual conditions, acfm
Q_s	volumetric flow rate, standard conditions, scfm
Q_{std}	volumetric flow rate, dry standard conditions, dscfm
R	ideal gas constant 21.85 ((in. Hg) ($ft^{3)}$)/((°R) (lbmole))
SB_{final}	post-run system bias check, % of span
SB_i	pre-run system bias check, % of span
scf	standard cubic feet
scfh	standard cubic feet per hour
scfm	standard cubic feet per minute
scm	standard cubic meters
scmh	standard cubic meters per hour
sec	second
sf, sq. ft., or ft^2	square feet
std	standard
t	metric ton (1000 kg)
$T_{0.975}$	t-value
T_a	absolute average ambient temperature, ºR (+459.67 for English)
T_m	absolute average dry gas meter temperature, ºR (+459.67 for English)
ton or t	ton = 2000 pounds
tph or tons/hr	tons per hour
tpy or tons/yr	tons per year
T_s	absolute average stack gas meter temperature, ºR (+459.67 for English)
T_{std}	absolute temperature at standard conditions
V	volt
V_a	volume of acetone blank, ml
V_{aw}	volume of acetone used in wash, ml
V_{lc}	total volume H_2O collected in impingers and silica gel, grams
V_m	volume of gas sampled through dry gas meter, ft^3
$V_{m(std)}$	volume of gas measured by the dry gas meter, corrected to standard conditions, dscf
V_{ma}	stack gas volume sampled, acf
V_n	volume collected at stack conditions through nozzle, acf
V_s	average stack gas velocity, feet per second
$V_{wc(std)}$	volume of water vapor condensed, corrected to standard conditions, scf
$V_{wi(std)}$	volume of water vapor in gas sampled from impingers, scf
$V_{wsg(std)}$	volume of water vapor in gas sampled from silica gel, scf
W	watt
W_a	weight of residue in acetone wash, mg
W_{imp}	total weight of impingers, grams
W_{sg}	total weight of silica gel, grams
Y	dry gas meter calibration factor, dimensionless

ABBREVIATIONS

AAS	atomic absorption spectroscopy
ACDP	air contaminant discharge permit
ACE	analyzer calibration error, percent of span
AD	absolute difference
ADL	above detection limit
AETB	Air Emissions Testing Body
AS	applicable standard (emission limit)
ASTM	American Society For Testing And Materials
BACT	best achievable control technology
BDL	below detection limit
BHP	brake horsepower
BIF	boiler and industrial furnace
BLS	black liquor solids
CC	confidence coefficient
CD	calibration drift
CE	calibration error
CEM	continuous emissions monitor
CEMS	continuous emissions monitoring system
CERMS	continuous emissions rate monitoring system
CET	calibration error test
CFR	Code of Federal Regulations
CGA	cylinder gas audit
CHNOS	elemental analysis for determination of C, H, N, O, and S content in fuels
CNCG	concentrated non-condensable gas
CO	catalytic oxidizer
COC	chain of custody
COMS	continuous opacity monitoring system
CPM	condensable particulate matter
CPMS	continuous parameter monitoring system
CT	combustion turbine
CTM	conditional test method
CTO	catalytic thermal oxidizer
CVAAS	cold vapor atomic absorption spectroscopy
D_e	equivalent diameter
DE	destruction efficiency
Dioxins	polychlorinated dibenzo-p-dioxins (PCDDs)
DLL	detection level limited
DNCG	dilute non-condensable gas
ECD	electron capture detector
EIT	Engineer In Training
ELCD	electrolytic conductivity detector (hall detector)
EMPC	estimated maximum possible concentration
EPA	US Environmental Protection Agency
EPRI	Electric Power Research Institute
ES	emission standard (applicable limit)
ESP	electrostatic precipitator
EU	emission unit
FCCU	fluid catalytic cracking unit
FGD	flue gas desulfurization
FI	flame ionization
FIA	flame ionization analyzer
FID	flame ionization detector
FPD	flame photometric detector
FPM	filterable particulate matter

ABBREVIATIONS

FTIR	Fourier-transform infrared spectroscopy
FTPB	field train proof blank
FTRB	field train recovery blank
Furans	polychlorinated dibenzofurans (PCDFs)
GC	gas chromatography
GC/MS	gas chromatography/mass spectroscopy
GFAAS	graphite furnace atomic absorption spectroscopy
GFC	gas filter correlation
GHG	greenhouse gas
HAP	hazardous air pollutant
HC	hydrocarbons
HHV	higher heating value
HPLC	high performance liquid chromatography
HRGC/HRMS	high-resolution gas chromatography/high-resolution mass spectroscopy
HRSG	heat recovery steam generator
IC	ion chromatography
ICAP	inductively-coupled argon plasma emission spectroscopy
ICPCR	ion chromatography with a post-column reactor
ICP-MS	inductively coupled plasma-mass spectroscopy
IR	infrared radiation
ISO	International Standards Organization
kW	kilowatts
LFG	landfill gas
LHV	lower heating value
LPG	liquified petroleum gas
MACT	maximum achievable control technology
MDI	methylene diphenyl diisocyanate
MDL	method detection limit
MNOC	maximum normal operating conditions
MRL	method reporting limit
MS	mass spectrometry
NA	not applicable or not available
NCASI	National Council For Air And Steam Improvement
NCG	non-condensable gases
ND	not detected
NDIR	non-dispersive infrared
NESHAP	National Emissions Standards For Hazardous Air Pollutants
NG	natural gas
NIOSH	National Institute For Occupational Safety And Health
NIST	National Institute Of Standards And Technology
NMC	non-methane cutter
NMOC	non-methane organic compounds
NMVOC	non-methane volatile organic compounds
NPD	nitrogen phosphorus detector
NSPS	New Source Performance Standards
OSHA	Occupational Safety And Health Administration
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyl compounds
PCWP	plywood and composite wood products
PE	Professional Engineer
PFAS	per- and polyfluoroalkyl substances (PFAS)
PI	photoionization
PID	photoionization detector
PM	particulate matter

ABBREVIATIONS

PM_{10}	particulate matter less than 10 microns in aerodynamic diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in aerodynamic diameter
POM	polycyclic organic matter
PS	performance specification
PSD	particle size distribution
PSEL	plant site emission limits
PST	performance specification test
PTE	permanent total enclosure
PTM	performance test method
QA/QC	quality assurance and quality control
QI	Qualified Individual
QSTI	Qualified Source Testing Individual
RA	relative accuracy
RAA	relative accuracy audit
RACT	reasonably available control technology
RATA	relative accuracy test audit
RCTO	rotary concentrator thermal oxidizer
RICE	stationary reciprocating internal combustion engine
RM	reference method
RTO	regenerative thermal oxidizer
SAM	sulfuric acid mist
SCD	sulfur chemiluminescent detector
SCR	selective catalytic reduction system
SD	standard deviation
Semi-VOST	semi-volatile organic compounds sample train
SRM	standard reference material
TAP	toxic air pollutant
TBD	to be determined
TCA	thermal conductivity analyzer
TCD	thermal conductivity detector
TGNENMOC	total gaseous non-ethane non-methane organic compounds
TGNMOC	total gaseous non-methane organic compounds
TGOC	total gaseous organic compounds
THC	total hydrocarbons
TIC	tentatively identified compound
TO	thermal oxidizer
TO	toxic organic (as in EPA Method TO-15)
TPM	total particulate matter
TSP	total suspended particulate matter
TTE	temporary total enclosure
ULSD	ultra-low sulfur diesel
UV	ultraviolet radiation range
VE	visible emissions
VOC	volatile organic compounds
VOST	volatile organic sample train
WC	water column
WWTP	waste water treatment plant

MONTROSE
AIR QUALITY SERVICES

CHEMICAL NOMENCLATURE

Ag	silver
As	arsenic
Ba	barium
Be	beryllium
C	carbon
Cd	cadmium
CdS	cadmium sulfide
CH_2O	formaldehyde
CH_3CHO	acetaldehyde
CH_3OH	methanol
CH_4	methane
C_2H_4O	ethylene oxide
C_2H_6	ethane
C_3H_4O	acrolein
C_3H_6O	propionaldehyde
C_3H_8	propane
C_6H_5OH	phenol
Cl_2	chlorine
ClO_2	chlorine dioxide
CO	carbon monoxide
Co	cobalt
CO_2	carbon dioxide
Cr	chromium
Cu	copper
EtO	ethylene oxide
EtOH	ethyl alcohol (ethanol)
H_2	hydrogen
H_2O	water
H_2O_2	hydrogen peroxide
H_2S	hydrogen sulfide
H_2SO_4	sulfuric acid
HCl	hydrogen chloride
Hg	mercury
IPA	isopropyl alcohol
MDI	methylene diphenyl diisocyanate
$MeCl_2$	methylene chloride
MEK	methyl ethyl ketone
MeOH	methanol
Mn	manganese
N_2	nitrogen
NH_3	ammonia
Ni	nickel
NO	nitric oxide
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
O_2	oxygen
P	phosphorus
Pb	lead
PCDD	polychlorinated dibenzo-p-dioxins
PCDF	polychlorinated dibenzofurans
Sb	antimony
Se	selenium
SO_2	sulfur dioxide
SO_3	sulfur trioxide
SO_x	sulfur oxides
TCDD	tetrachlorodibenzodioxin
TCDF	tetrachlorodibenzofuran
TGOC	total gaseous organic concentration
THC	total hydrocarbons
Tl	thallium
TRS	total reduced sulfur compounds
Zn	zinc

Appendix D.2
Manual Test Method QA/QC Data

Montrose Air Quality Services

Meter Box Annual Calibration

Critical Orifice Calibration Method (*EPA Method 5 Section 16.2.3*)

NIST Thermometer ID:	240123588	NIST Traceable Thermometer Calibration Due:	02/08/26
Orifice Kit ID:	2GB	Orifice Kit Calibration Due:	09/19/24
Meter Box Manufacturer:	Environmental Supply Company	Meter Box Calibration Due:	04/10/25
Meter Box Model:	C-5000 Source Sampler	Barometric Pressure:	29.60
Meter Box Identification No.:	CM-1	Theoretical Critical Vacuum:	13.96

---------- DRY GAS METER READINGS ----------									-CRITICAL ORIFICE READINGS-					
dH (in H2O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Initial Temps. Inlet (deg F)	Initial Temps. Outlet (deg F)	Final Temps. Inlet (deg F)	Final Temps. Outlet (deg F)	Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Ambient Temperature Initial (deg F)	Final (deg F)	Average (deg F)
0.67	11.08	982.335	987.335	5.000	60.0	60.0	61.0	61.0	DU-48	0.3455	24.0	71.0	71.0	71.0
1.10	8.53	987.335	992.335	5.000	60.0	60.0	61.0	61.0	DU-55	0.4545	22.0	71.0	71.0	71.0
1.80	6.67	992.335	997.335	5.000	60.0	60.0	61.0	61.0	DU-63	0.5850	21.0	70.0	70.0	70.0
3.40	4.83	997.335	1002.335	5.000	60.0	60.0	61.0	61.0	DU-73	0.8073	19.0	70.0	70.0	70.0
5.20	3.93	2.335	7.335	5.000	61.0	61.0	62.0	62.0	DU-81	0.9927	17.0	70.0	70.0	70.0

********** RESULTS **********

DRY GAS METER		ORIFICE			DRY GAS METER		ORIFICE		
VOLUME CORRECTED Vm(std) (cu ft)	VOLUME CORRECTED Vm(std) (liters)	VOLUME CORRECTED Vcr(std) (cu ft)	VOLUME CORRECTED Vcr(std) (liters)	VOLUME NOMINAL Vcr (cu ft)	CALIBRATION FACTOR *Y Value (number)	CALIBRATION FACTOR *Y Variation (number)	CALIBRATION FACTOR **dH@ Value (in H2O)	**dH@ Value (mm H2O)	CALIBRATION FACTOR **dH@ Variation (in H2O)
5.026	142.3	4.917	139.3	5.001	0.978	-0.010	1.920	48.77	0.097
5.032	142.5	4.980	141.0	5.064	0.990	0.001	1.822	46.27	-0.002
5.040	142.7	5.017	142.1	5.092	0.995	0.007	1.796	45.62	-0.028
5.060	143.3	5.013	142.0	5.089	0.991	0.002	1.781	45.25	-0.042
5.073	143.7	5.016	142.1	5.092	0.989	0.000	1.798	45.68	-0.025
					Average Meter Y =	**0.989**	**Average Orifice ΔH@ =**	**1.824**	46.32

**********THERMOCOUPLE CHANNEL CALIBRATION CHECK**********

Meter Box Manufacturer:	Environmental Supply Company	Thermocouple Source Make & Model:	REED R2810
Meter Box Model No.:	C-5000 Source Sampler	Thermocouple Source Serial No.:	18316748
Meter Box Identification No.:	CM-1	Thermocouple Source Calibration Expiration Date:	8/4/24
Meter Box Thermocouple Calibration Due Date:	4/10/25		

Channel	Response to 32.0 F	Difference	Response to 68.0 F	Difference	Response to 120.0 F	Difference	Response to 240.0 F	Difference	Response to 400.0 F	Difference	Response to 800.0 F	Difference
Aux	32	0.0	68	0.0	120	0.0	240	0.0	400	0.0	800	0.0
Stack	32	0.0	68	0.0	120	0.0	240	0.0	400	0.0	800	0.0
Probe	32	0.0	68	0.0	120	0.0	240	0.0	400	0.0	800	0.0
Oven	32	0.0	68	0.0	120	0.0	240	0.0	400	0.0	800	0.0
Filter	32	0.0	68	0.0	120	0.0	240	0.0	400	0.0	800	0.0
Exit	32	0.0	68	0.0	120	0.0	240	0.0	400	0.0	800	0.0

***Y tolerance for individual values is ± 2 % from average (*EPA Method 5 § 16.2.3.5*).**
****Delta $H_@$ tolerance for individual values is ± 0.20 from average (*EPA Method 5 Figure 5.5*).**
Thermocouple and reference thermometer tempatures must agreen within 2 °F (*EPA Method 5 §10.5*).

Calibrated By: J.T. Satterfield **Date Calibrated:** 4/10/24

Signed: J.T. Satterfield

Montrose Air Quality Services

Meter Box Annual Calibration

Critical Orifice Calibration Method (*EPA Method 5 Section 16.2.3*)

NIST Thermometer ID:	PCIT1	NIST Traceable Thermometer Calibration Due Date:	10/29/23
Orifice Kit ID:	VG 40-73	Orifice Kit Calibration Due Date:	04/04/23
Meter Box Manufacturer:	Apex Industries	Meter Box Annual Calibration Due Date:	02/08/24
Meter Box Model:	522-0 Source Sample	Barometric Pressure:	30.19
Meter Box Identification No.:	PCMB5	Theoretical Critical Vacuum:	14.24

---------- DRY GAS METER READINGS ----------									-CRITICAL ORIFICE READINGS-					
dH 0.00	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Initial Temps. Inlet (deg F)	Initial Temps. Outlet (deg F)	Final Temps. Inlet (deg F)	Final Temps. Outlet (deg F)	Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Ambient Temperature Initial (deg F)	Final (deg F)	Average (deg F)
0.33	17.50	523.389	528.836	5.447	76.0	76.0	77.0	77.0	VG-40	0.2362	24.0	74.0	74.0	74.0
0.69	11.00	528.836	533.880	5.044	77.0	77.0	77.0	77.0	VG-48	0.3477	22.0	75.0	75.0	75.0
1.20	9.00	533.880	539.168	5.288	76.0	76.0	77.0	77.0	VG-55	0.4476	21.0	75.0	76.0	75.5
2.00	6.50	544.267	549.367	5.100	77.0	77.0	77.0	77.0	VG-63	0.5963	19.0	74.0	74.0	74.0
3.60	5.50	549.367	555.250	5.883	77.0	77.0	77.0	77.0	VG-73	0.8205	15.5	74.0	76.0	75.0

********** **RESULTS** **********

DRY GAS METER		ORIFICE			DRY GAS METER		ORIFICE		
VOLUME CORRECTED Vm(std) (cu ft)	VOLUME CORRECTED Vm(std) (liters)	VOLUME CORRECTED Vcr(std) (cu ft)	VOLUME CORRECTED Vcr(std) (liters)	VOLUME NOMINAL Vcr (cu ft)	CALIBRATION FACTOR *Y Value (number)	CALIBRATION FACTOR *Y Variation (number)	CALIBRATION FACTOR **dH@ Value (in H2O)	CALIBRATION FACTOR **dH@ Value (mm H2O)	CALIBRATION FACTOR **dH@ Variation (in H2O)
5.413	153.3	5.400	152.9	5.415	0.998	0.000	1.936	49.17	0.063
5.013	142.0	4.992	141.4	5.015	0.996	-0.002	1.870	47.49	-0.003
5.267	149.1	5.256	148.8	5.285	0.998	0.000	1.966	49.93	0.093
5.084	144.0	5.064	143.4	5.078	0.996	-0.002	1.839	46.71	-0.033
5.888	166.7	5.890	166.8	5.917	1.000	0.003	1.752	44.49	-0.121
			Average Y		0.998		1.872	47.56	Average dH@

Y tolerance for individual values is ± 2 % from average (*EPA Method 5 § 16.2.3.5).

****Delta $H_@$ tolerance for individual values is ± 0.20 from average (*EPA Method 5 Figure 5.5*).**

Calibrated By: JOSHUA MYERS **Date Calibrated:** 2/8/23

Montrose Air Quality Services

Meter Box Annual Calibration

Critical Orifice Calibration Method (*EPA Method 5 Section 16.2.3*)

NIST Thermometer ID:	181390313	NIST Traceable Thermometer Calibration Due Date:	
Orifice Kit ID:	VG 40-73	Orifice Kit Calibration Due Date:	04/04/23
Meter Box Manufacturer:	Apex Industries	Meter Box Annual Calibration Due Date:	11/21/23
Meter Box Model:	522 Source Sampler	Barometric Pressure:	30.24
Meter Box Identification No.:	PCMB7	Theoretical Critical Vacuum:	14.26

---------- DRY GAS METER READINGS ----------									-CRITICAL ORIFICE READINGS-					
dH (in H2O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Initial Temps. Inlet (deg F)	Initial Temps. Outlet (deg F)	Final Temps. Inlet (deg F)	Final Temps. Outlet (deg F)	Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Ambient Temperature Initial (deg F)	Final (deg F)	Average (deg F)
0.32	16.50	530.600	535.800	5.200	73.0	73.0	74.0	74.0	VG-40	0.2362	22.5	74.0	74.0	74.0
0.66	12.50	535.800	541.575	5.775	74.0	74.0	75.0	75.0	VG-48	0.3477	21.0	74.0	74.0	74.0
1.20	9.00	560.039	565.423	5.384	77.0	77.0	78.0	78.0	VG-55	0.4476	20.0	74.0	74.0	74.0
2.00	7.00	547.041	552.584	5.543	76.0	76.0	76.0	76.0	VG-63	0.5963	18.0	74.0	74.0	74.0
3.50	6.50	553.012	560.039	7.027	76.0	76.0	78.0	78.0	VG-73	0.8205	15.0	74.0	74.0	74.0

********** RESULTS **********

DRY GAS METER		ORIFICE			DRY GAS METER		ORIFICE		
VOLUME CORRECTED Vm(std) (cu ft)	VOLUME CORRECTED Vm(std) (liters)	VOLUME CORRECTED Vcr(std) (cu ft)	VOLUME CORRECTED Vcr(std) (liters)	VOLUME NOMINAL Vcr (cu ft)	CALIBRATION FACTOR *Y Value (number)	CALIBRATION FACTOR *Y Variation (number)	CALIBRATION FACTOR **dH@ Value (in H2O)	CALIBRATION FACTOR **dH@ Value (mm H2O)	CALIBRATION FACTOR **dH@ Variation (in H2O)
5.205	147.4	5.100	144.4	5.105	0.980	-0.005	1.885	47.87	0.052
5.775	163.5	5.688	161.1	5.694	0.985	0.000	1.790	45.47	-0.043
5.361	151.8	5.272	149.3	5.277	0.983	-0.001	1.953	49.61	0.120
5.546	157.0	5.462	154.7	5.468	0.985	0.000	1.839	46.72	0.007
7.043	199.4	6.979	197.6	6.987	0.991	0.006	1.697	43.10	-0.136
			Average Y		0.985		1.833	46.56	Average dH@

***Y tolerance for individual values is ± 2 % from average (*EPA Method 5 § 16.2.3.5)*.**

****Delta $H_@$ tolerance for individual values is ± 0.20 from average (*EPA Method 5 Figure 5.5*).**

Calibrated By: JOSHUA MYERS **Date Calibrated:** 11/21/22

Montrose Air Quality Services

Meter Box Annual Calibration

Critical Orifice Calibration Method (*EPA Method 5 Section 16.2.3*)

NIST Thermometer ID:	211072459	NIST Traceable Thermometer Calibration Due:	12/14/23
Orifice Kit ID:	Set II DU (2GB)	Orifice Kit Calibration Due:	07/29/23
Meter Box Manufacturer:	Environmental Supply	Meter Box Calibration Due:	07/24/24
Meter Box Model:	C-5000	Barometric Pressure:	30.10
Meter Box Identification No.:	2602	Theoretical Critical Vacuum:	14.20

---------- DRY GAS METER READINGS ----------									-CRITICAL ORIFICE READINGS-					
dH (in H2O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Initial Temps. Inlet (deg F)	Initial Temps. Outlet (deg F)	Final Temps. Inlet (deg F)	Final Temps. Outlet (deg F)	Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Ambient Temperature Initial (deg F)	Final (deg F)	Average (deg F)
0.70	10.78	972.000	977.000	5.000	89.0	89.0	89.0	89.0	48	0.3503	19.0	89.9	89.9	89.9
2.00	6.33	982.200	987.200	5.000	89.0	89.0	89.0	89.0	63	0.5945	17.0	89.9	89.9	89.9
5.80	3.77	992.200	997.200	5.000	89.0	89.0	89.0	89.0	81	1.0108	12.0	87.8	88.3	88.1

********** RESULTS **********

DRY GAS METER		ORIFICE			DRY GAS METER		ORIFICE		
VOLUME CORRECTED Vm(std) (cu ft)	VOLUME CORRECTED Vm(std) (liters)	VOLUME CORRECTED Vcr(std) (cu ft)	VOLUME CORRECTED Vcr(std) (liters)	VOLUME NOMINAL Vcr (cu ft)	CALIBRATION FACTOR *Y Value (number)	CALIBRATION FACTOR *Y Variation (number)	CALIBRATION FACTOR **dH@ Value (in H2O)	CALIBRATION FACTOR **dH@ Value (mm H2O)	CALIBRATION FACTOR **dH@ Variation (in H2O)
4.846	137.2	4.848	137.3	5.021	1.001	0.003	1.884	47.86	0.010
4.861	137.7	4.830	136.8	5.003	0.994	-0.004	1.869	47.48	-0.005
4.906	138.9	4.894	138.6	5.052	0.998	0.000	1.869	47.47	-0.005
				Average Meter Y =	**0.997**		**Average Orifice ΔH@ =**	**1.874**	47.60

Y tolerance for individual values is ± 2 % from average (*EPA Method 5 § 16.2.3.5).
****Delta $H_{@}$ tolerance for individual values is ± 0.20 from average (*EPA Method 5 Figure 5.5*).***
Thermocouple and reference thermometer tempatures must agreen within 2 °F (*EPA Method 5 §10.5*).

Calibrated By: Jordan Young **Date Calibrated:** 7/24/23

Signed: Jordan Young

Appendix D.3
Instrumental Test Method QA/QC Data

Airgas
an Air Liquide company

Airgas South region
Airgas USA LLC
8804 Maislin Dr
Temple Terrace, FL 33637
Airgas.com

CERTIFICATE OF BATCH ANALYSIS

Grade of Product: CEM-CAL ZERO

Part Number:	NI CZ15A	Reference Number:	21-402855521-1
Cylinder Analyzed:	CC 706708	Cylinder Volume:	142.0 CF
Laboratory:	110 - Tampa Plant - FL	Cylinder Pressure:	2000 PSIG
Analysis Date:	Sep 21, 2023	Valve Outlet:	580
Lot Number:	21-402855521-1		

Expiration Date: Sep 21, 2031

ANALYTICAL RESULTS

Component	Requested Purity		Certified Concentration
NITROGEN	99.9995 %		99.9995 %
NOx	0.1 PPM	<	0.1 PPM
SO2	0.1 PPM	<	0.1 PPM
THC	0.1 PPM	<LDL	0.079 PPM
CARBON MONOXIDE	0.5 PPM	<LDL	0.164 PPM
CARBON DIOXIDE	1.0 PPM	<LDL	0.164 PPM

Permanent Notes: Airgas certifies that the contents of this cylinder meet the requirements of 40 CFR 72.2

Cylinders in Batch:

ALM- 050 315, CC 706708, CC156366, CC158228, CC19049, CC22702, CC260494, CC261814, CC277779, CC281341, CC287329, CC301822, CC318394, CC65993, CC87903, CC99403, EB0086846, EB0147969, SG9166106BAL, XC015750B

Impurities verified against analytical standards traceable to NIST by weight and/or analysis.

Signature on file

Approved for Release

Airgas Southeast region
Airgas USA LLC
4551 North Access Road
Chattanooga, TN 37416
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: ULTRA HIGH PURITY-PURE

Part Number:	NI UHP300	Reference Number:	87-402674253-1
Cylinder Number:	3000369	Cylinder Volume:	304.0 CF
Laboratory:	193 - Chattanooga Plant - TN	Cylinder Pressure:	2640 PSIG
Analysis Date:	Feb 20, 2023	Valve Outlet:	580
Lot Number:	87-402674253-1		

ANALYTICAL RESULTS

Component	Requested Purity		Certified Concentration
NITROGEN	99.999 %		99.999 %
THC	0.5 PPM	<LDL	0.03 PPM
CO + CO2	1.0 PPM		0.62 PPM
Moisture	1.0 PPM		0.170 PPM
Oxygen	1.0 PPM		0.818 PPM

Impurities verified against analytical standards traceable to NIST by weight and/or analysis.

Signature on file

Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI89E15A61C4	Reference Number:	122-402663652-1
Cylinder Number:	CC34630	Cylinder Volume:	145.0 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22023	Valve Outlet:	660
Gas Code:	O2,SO2,BALN	Certification Date:	Feb 22, 2023

Expiration Date: Feb 22, 2031

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
SULFUR DIOXIDE	500.0 PPM	489.8 PPM	G1	+/- 0.7% NIST Traceable	02/14/2023, 02/22/2023
OXYGEN	10.00 %	10.01 %	G1	+/- 0.4% NIST Traceable	02/15/2023
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	19060503	CC714617	495.2 PPM SULFUR DIOXIDE/NITROGEN	+/- 0.5%	Aug 02, 2025
NTRM	100106	K021587	9.967 % OXYGEN/NITROGEN	+/- 0.3%	Mar 22, 2028

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Siemens Oxymat 61 M3299 O2	Paramagnetic	Feb 08, 2023
Nicolet iS50 AUP2110292 SO2	FTIR	Feb 01, 2023

Triad Data Available Upon Request

Signature on file

Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI76E15A0295	Reference Number:	122-402996304-1
Cylinder Number:	SG9164710BAL	Cylinder Volume:	152.0 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22024	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Mar 19, 2024

Expiration Date: Mar 19, 2032

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	12.00 %	11.82 %	G1	+/- 0.8% NIST Traceable	03/19/2024
OXYGEN	12.00 %	12.01 %	G1	+/- 0.5% NIST Traceable	03/19/2024
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	19060402	6162642Y	11.105 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Dec 04, 2025
NTRM	100106	K021587	9.967 % OXYGEN/NITROGEN	+/- 0.3%	Mar 22, 2028

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
SIEMENS ULTRAMAT 6 N1P3228	Nondispersive Infrared (NDIR)	Feb 21, 2024
Siemens Oxymat 61 M3299 O2	Paramagnetic	Feb 21, 2024

Triad Data Available Upon Request

Approved for Release

Airgas Specialty Gases
Airgas USA LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI56E15A1055	Reference Number:	122-402438976-1
Cylinder Number:	XC023754B	Cylinder Volume:	162.0 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22022	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	May 16, 2022

Expiration Date: May 16, 2030

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	22.00 %	22.55 %	G1	+/- 0.6% NIST Traceable	05/16/2022
OXYGEN	22.00 %	22.17 %	G1	+/- 0.4% NIST Traceable	05/16/2022
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12061508	CC354696	19.87 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Jan 11, 2024
NTRM	08010220	K013155	23.20 % OXYGEN/NITROGEN	+/- 0.4%	Jun 01, 2024

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
SIEMENS ULTRAMAT 6 N1P3228	Nondispersive Infrared (NDIR)	May 04, 2022
Siemens Oxymat 61 M3299 O2	Paramagnetic	Apr 19, 2022

Triad Data Available Upon Request

Signature on file

Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI55E15A48Q4	Reference Number:	122-401826198-1
Cylinder Number:	CC216635	Cylinder Volume:	162.2 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22020	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Jun 05, 2020

Expiration Date: Jun 05, 2028

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	22.50 %	22.37 %	G1	+/- 0.6% NIST Traceable	06/05/2020
OXYGEN	22.50 %	22.83 %	G1	+/- 0.7% NIST Traceable	06/05/2020
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12061508	CC354696	19.87 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Jan 11, 2024
NTRM	08010202	1D003076	23.20 % OXYGEN/NITROGEN	+/- 0.4%	Jun 01, 2024

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA510 CO2 2L6YXWY0	Nondispersive Infrared (NDIR)	May 28, 2020
Horiba MPA510 O2 41499150042	Paramagnetic	May 28, 2020

Triad Data Available Upon Request

Approved for Release

Appendix D.4
Accreditation Information/Certifications

CERTIFICATE OF COMPLETION

Jose Medina

This document certifies that this individual has passed a comprehensive examination and is now a Qualified Individual (QI) as defined in Section 8.3 of ASTM D7036-04 for the following method(s):

Source Evaluation Society Group 1: *EPA Manual Gas Volume and Flow Measurements and Isokinetic Particulate Sampling Methods*

Certificate Number: 052-2019-7

Tate Strickler, Accreditation Director

DATE OF ISSUE: 4/11/19

DATE OF EXPIRATION: 4/11/24

MONTROSE ENVIRONMENTAL

Certificate of Completion

Jose Medina

This document certifies that this individual has passed a comprehensive examination and is now a Qualified Individual (QI) as defined in Section 8.3 of ASTM D7036-04 for the following method(s):

Source Evaluation Society Group 3: *EPA Gaseous Pollutants Instrumental Sampling Methods*

Certificate Number: 052-2022-3

Tate Strickler, VP – Quality Systems

Date of issue: 09/23/2022

Date of expiration: 09/22/2027

MONTROSE ENVIRONMENTAL

SOURCE EVALUATION SOCIETY

Qualified Source Testing Individual

LET IT BE KNOWN THAT

DAVID M. CAPERS

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

GASEOUS POLLUTANTS INSTRUMENTAL SAMPLING METHODS

ISSUED THIS 24TH DAY OF JULY 2020 AND EFFECTIVE UNTIL JULY 23RD, 2025

Peter R. Westlin, QSTI/QSTO Review Board

Peter S. Pakalnis, QSTI/QSTO Review Board

Tina Sanderson, QSTI/QSTO Review Board

J. Wade Bice, QSTI/QSTO Review Board

Karen D. Kajiya-Mills , QSTI/QSTO Review Board

Bruce Randall QSTI/QSTO Review Board

CERTIFICATE NO. 2020-1066

SOURCE EVALUATION SOCIETY

Qualified Source Testing Individual

LET IT BE KNOWN THAT

DAVID M. CAPERS

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

MANUAL GAS VOLUME MEASUREMENTS AND ISOKINETIC PARTICULATE SAMPLING METHODS

ISSUED THIS 1ST DAY OF JULY 2019 AND EFFECTIVE UNTIL JUNE 30TH, 2024

Peter R. Westlin, QSTI/QSTO Review Board

Peter S. Pakalnis, QSTI/QSTO Review Board

Tina Sanderson, QSTI/QSTO Review Board

J. Wade Bice, QSTI/QSTO Review Board

Karen D. Kajiya-Mills , QSTI/QSTO Review Board

Bruce Randall QSTI/QSTO Review Board

CERTIFICATE NO. 2020-1066

Appendix E
Regulatory Information

Appendix E.1
Brooksville Test Plan

Source Test Plan for 2023 ICR Testing
In-Line Cement Kiln 1 (EU 020) Main Stack
In-Line Cement Kiln 2 (EU 044) Main Stack
CEMEX Construction Materials Florida, LLC
Brooksville South Cement Plant
Facility ID No 0530021
Brooksville, Florida

Prepared For:

CEMEX Brooksville South Cement Plant
10311 Cement Plant Road
Brooksville, FL 34601

Prepared By:

Montrose Air Quality Services, LLC
30 Monroe Drive
Birmingham, AL 35124

For Submission To:

U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards
109 T.W. Alexander Drive
Durham, NC 27709

Document Number: SE052AS-031486-PP-668
Proposed Test Date(s): November 28 – December 1, 2023
Submittal Date: October 20, 2023

MONTROSE AIR QUALITY SERVICES

STAC STACK TESTING ACCREDITATION COUNCIL

A2LA ACCREDITED TO ASTM D7036 ONLY

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Except as otherwise required by law or regulation, this information contained in this communication is intended exclusively for the individual or entity to which it is addressed. This communication may contain information that is proprietary, privileged or confidential or otherwise legally exempt from disclosure. If you are not the named addressee, you are not authorized to read, print, retain, copy, or disseminate this message or any part of it.

Review and Certification

I certify that, to the best of my knowledge, the information contained in this document is complete and accurate and conforms to the requirements of the Montrose Quality Management System and ASTM D7036-04.

Signature:  **Date:** 10 / 20 / 2023

Name: Blake Ericson **Title:** Business Developer

I have reviewed, technically and editorially, details and other appropriate written materials contained herein. I hereby certify that to the best of my knowledge the presented material is authentic and accurate and conforms to the requirements of the Montrose Quality Management System and ASTM D7036-04.

Signature:  **Date:** 10 / 20 / 2023

Name: Neal Hendricks **Title:** Reporting Hub Manager

Facility Certification

I have reviewed this document and agree that the information contained herein is true, accurate, and complete, to the best of my knowledge.

Signature:  **Date:** 10 / 20 / 2023

Name: Greg Bridge **Title:** Corporate Environmental Manager

MONTROSE AIR QUALITY SERVICES

Table of Contents

Section **Page**

1.0 Introduction 6
1.1 Summary of Test Program 6
1.2 Reporting Units and Quality Assurance and Control Requirements 8
1.3 Key Personnel 10
2.0 Plant and Sampling Location Descriptions 12
2.1 Process Description, Operation, and Control Equipment 12
2.1.1 Facility Description 12
2.1.2 Emissions Unit Description – Portland Cement Line 1 13
2.1.3 Emissions Unit Description – Portland Cement Line 2 14
2.2 Flue Gas Sampling Location 15
2.3 Operating Conditions and Process Data 16
2.4 Plant Safety 17
2.4.1 Safety Responsibilities 17
2.4.2 Safety Program and Requirements 18
3.0 Sampling and Analytical Procedures 20
3.1 Test Methods 20
3.1.1 EPA Method 3A 20
3.1.2 EPA Method 26A 21
3.1.3 ASTM D6348-12 & EPA Method 320 23
3.2 Process Test Methods 26
4.0 Quality Assurance and Reporting 27
4.1 QA Audits 27
4.2 Quality Control Procedures 27
4.2.1 Equipment Inspection and Maintenance 27
4.2.2 Audit Samples 27
4.3 Data Analysis and Validation 27
4.4 Sample Identification and Custody 28
4.5 Quality Statement 28
4.6 Reporting 28
4.6.1 Example Report Format 29
4.6.2 Example Presentation of Test Results 29

List of Appendices

A Supporting Information 32
A.1 Units and Abbreviations 33
A.2 Accreditation Information/Certifications 41
A.3 Process Flow Diagrams 43
A.4 Stack Schematic 48
A.5 Quality Assurance Program Summary 51
A.6 Hydrogen Cyanide – Acute Exposure Guideline Levels 57
B General Equations 59
"S" Field Work Safety Plan 62

List of Tables

1-1 Summary of Test Program and Proposed Schedule 7
1-2 Reporting Units and Portland Cement Association Quality Assurance and Control Requirements 8
1-3 Test Personnel and Responsibilities 11
2-1 Sampling Location 15
2-2 Operating and Process Conditions 16
4-1 Example Cement ICR Emissions Results - In-Line Kiln 1 Main Stack, Raw Mill Off 30
A-1 Hydrogen Cyanide Acute Exposure Guideline Levels (AEGL) 57

List of Figures

3-1 EPA Method 3A Sampling Train 21
3-2 EPA Method 26A Sampling Train 23
3-3 EPA Method 320 Sampling Train 26
4-1 Typical Report Format 29
A-1 Process Flow Diagram – Portland Cement Line 1 43
A-2 Process Flow Diagram – Portland Cement Line 2 44
A-2 Stack Sample Port Location – In-Line Kiln 1 Main Stack 48
A-3 Stack Sample Port Location – In-Line Kiln 2 Main Stack 49

1.0 Introduction

1.1 Summary of Test Program

CEMEX Construction Materials Florida LLC – CEMEX Brooksville South Cement Plant (CEMEX) contracted Montrose Air Quality Services, LLC (Montrose) to perform air emissions source testing in accordance with the Clean Air Act section 114 information collection request Phase 2 requirements on the In-Line Kiln 1 Main Stack and In-Line Kiln 2 Main Stack at the Brooksville South Cement Plant facility located in Brooksville, Florida.

The test program has been designed based on the USEPA Clean Air Act Section 114 Request Letter and attachments, local rules and regulations, as well as related testing procedures set forth in EPA 40 CFR, Part 60.

The specific objectives are to:

- To acquire data of known accuracy and precision for each of the target analytes using specific EPA methodology combined with standardized quality assurance and quality control procedures that are stricter than those contained in the EPA methods.
- To determine the emissions, if any, of HCN, HF and Cl_2 under representative process and control system operating conditions
- To provide a standardized data set to the EPA so that reliable facility inter-comparisons of emissions can be made
- Conduct the test program with a focus on safety

Montrose will provide the test personnel and the necessary equipment to measure emissions as outlined in this test plan. Facility personnel will provide the process and production data to be included in the final report. A summary of the test program and proposed schedule is presented in Table 1-1.

Table 1-1
Summary of Test Program and Proposed Schedule

Proposed Test Date(s)	Unit ID / Source Name	Activity / Parameters	Test Methods	No. of Runs[2]	Duration (Minutes)
11/28/23-12/1/23	In-Line Kiln 1 Main Stack	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	60
11/28/23-12/1/23	In-Line Kiln 1 Main Stack	O_2	EPA 3A	3	60
11/28/23-12/1/23	In-Line Kiln 1 Main Stack	HCl, HF[1] and Cl_2	EPA 26A	3 paired	60
11/28/23-12/1/23	In-Line Kiln 1 Main Stack	H_2O, HCN, HF[1], CO_2	ASTM D6348-12/ EPA 320	3	60
11/28/23-12/1/23	In-Line Kiln 1 Main Stack	Post-test meter calibration check	EPA ALT-009	--	--
11/28/23-12/1/23	In-Line Kiln 1 Main Stack	Post-test thermocouple calibration check	EPA ALT-011	--	--
11/28/23-12/1/23	In-Line Kiln 2 Main Stack	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	60
11/28/23-12/1/23	In-Line Kiln 2 Main Stack	O_2	EPA 3A	3	60
11/28/23-12/1/23	In-Line Kiln 2 Main Stack	HCl, HF[1] and Cl_2	EPA 26A	3 paired	60
11/28/23-12/1/23	In-Line Kiln 2 Main Stack	H_2O, HCN, HF[1], CO_2	ASTM D6348-12/ EPA 320	3	60
11/28/23-12/1/23	In-Line Kiln 2 Main Stack	Post-test meter calibration check	EPA ALT-009	--	--
11/28/23-12/1/23	In-Line Kiln 2 Main Stack	Post-test thermocouple calibration check	EPA ALT-011	--	--

(1) HF results will be reported for the Method 26A trains and compared to FTIR results by ASTM D6348/EPA Method 320 results, as requested by EPA.
(2) These runs will be conducted on the In-Line Kiln under raw mill-on and raw mill-off normal operating conditions.

To simplify this test plan, a list of Units and Abbreviations is included in Appendix A. Throughout this test plan, chemical nomenclature, acronyms, and reporting units are not defined. Please refer to the list for specific details.

1.2 Reporting Units and Quality Assurance and Control Requirements

The reporting units and the required quality assurance and control criteria are presented in Table 1-2.

Table 1-2
Reporting Units and Portland Cement Association Quality Assurance and Control Requirements

Unit ID / Source Name	Parameter	Reporting Units	Detection Limit (for run duration)	QA and QC
In-Line Kiln 1 Main Stack & In-Line Kiln 2 Main Stack	Volumetric flow rate	acfm, scfm, dscfm	--	As per M26A isokinetic testing or separately by Methods 1-3. FTIR measurements for H_2O. Wind Tunnel calibrated pitot tube having a Cp of 0.84 or less is required for all flow measurements. Compare preliminary velocity traverse measurements and sample run flow rate measurements to installed certified flow rate monitor. Investigate and resolve differences greater than 10% of average flow rate.
In-Line Kiln 1 Main Stack & In-Line Kiln 2 Main Stack	O_2	% vd	--	Analyte Concentrations corrected @ 7% O_2 Span is 10%, 15%, or 20% (for co-mingled stacks only) Acceptance criteria are 0.2% O_2 difference for analyzer calibration error, and 0.2% O_2 for system bias checks, and zero and upscale drift checks.
In-Line Kiln 1 Main Stack & In-Line Kiln 2 Main Stack	CO_2	% vd	--	--
In-Line Kiln 1 Main Stack & In-Line Kiln 2 Main Stack	Moisture	%	--	--
In-Line Kiln 1 Main Stack & In-Line Kiln 2 Main Stack	HCN	ppmvd @ 7% O_2, lb/hr, & lb/ton clinker	0.5 ppm	Increase scans if needed to achieve detection limits. Increasing to 400 from relative 64 (gives a 2.5 S/N advantage) HCN spiking before and after each run by adding 10% or less spike to approximately double the native effluent concentration, or conduct spike to add 3-4 ppm to native concentration, whichever results in greater spiked concentration. Spike recovery results shall be ±20% of the excepted value or ±0.5 ppm, whichever is less restrictive. 5% CTS requirement

Unit ID / Source Name	Parameter	Reporting Units	Detection Limit (for run duration)	QA and QC
In-Line Kiln 1 Main Stack & In-Line Kiln 2 Main Stack	HF	ppmvd @ 7% O_2, lb/hr, & lb/ton clinker	0.2-0.3 ppm	Rely on CTS (5%), HCN and tracer gas responses to validate HF FTIR data
In-Line Kiln 1 Main Stack & In-Line Kiln 2 Main Stack	Cl2	ppmvd @ 7% O_2, lb/hr, & lb/ton clinker	~ 0.07 mg/m3 (~0.2 ppm)	Duplicate Simultaneous Trains; Collect minimum of 1 dscm for each sampling train. Acceptance criteria for paired samples: 10% Relative Deviation or 0.2 ppm absolute difference, whichever is least restrictive Insert dry impinger between acid and base impingers

1.3 Key Personnel

A list of project participants is included below:

Facility Information

Source Location:	CEMEX Construction Materials Florida, LLC CEMEX Brooksville South Cement Plant 10311 Cement Plant Road Brooksville, FL 34601

Project Contact:	Greg Bridge	Lillian DePrimo
Role:	Corporate Environmental Manager	Vice President, Environmental
Company:	CEMEX	CEMEX
Telephone:	352-442-5375	--
Email:	gregm.bridge@cemex.com	lillianf.deprimo@cemex.com

Agency Information

Regulatory Agency:	U.S. EPA
Agency Contact:	Brian Storey
Telephone:	(919) 541-1103
Email:	storey.brian@epa.gov

Testing Company Information

Testing Firm:	Montrose Air Quality Services, LLC	
Contact:	Blake Ericson	Todd Greg
Title:	Business Development	District Manager
Telephone:	586-242-3599	865-250-9067
Email:	bericson@montrose-env.com	togregg@montrose-env.com

Laboratory Information

Laboratory:	Montrose Environmental	Enthalpy Analytical
City, State:	Mount Pleasant, Michigan	Raleigh, North Carolina
Method:	EPA 320	EPA 26A

Table 1-3 details the roles and responsibilities of the test team.

Table 1-3
Test Personnel and Responsibilities

Role	Primary Assignment	Additional Responsibilities
Client Project Manager	Coordinate project	Post-test follow up
Field Project Manager	Operate mobile lab	Facility interface, test crew coordination
FTIR Field Operator	Operate FTIR	Facility interface, test crew coordination
FTIR Oversight/Review	Review FTIR operations and data per quality objectives	Post-test data coordination
Field Technician	Execute stack platform responsibilities	Preparation, support PM

2.0 Plant and Sampling Location Descriptions

2.1 Process Description, Operation, and Control Equipment

2.1.1 Facility Description

The facility consists of two Portland cement manufacturing lines, a coal yard and all the required auxiliary equipment. This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to a National Ambient Air Quality Standard (NAAQS). The facility is located approximately 20 km east of the Prevention of Significant Deterioration of Air Quality (PSD) Class I Chassahowitzka Wilderness Area. The placard page above indicates the exact geographical coordinates.

The CEMEX plant comprises two Portland cement manufacturing lines; associated raw and product material handling activities; coal handling activities and auxiliary equipment; as well as, all of the land designated as the South Brooksville facility.

Portland Cement Line 1 includes an in-line kiln/raw mill, coal mill, clinker cooler and associated process equipment. Waste heat from the kiln is used to provide heat to the raw mill, coal mill and the kiln preheater, which is used to drive off moisture from the materials used for making clinker. All of the materials handling activities are controlled by fabric filter baghouse control systems, except for the Clinker Receiving/Handling System and the coal yard activities. For the Clinker Receiving/Handling System, the fugitive particulate matter emissions generated from the transfer of clinker from the receiving hopper to the belt conveyor are controlled using an atomized water dust suppression system. Water sprays or chemical wetting agents and stabilizers are used at the coal receiving area, the coal storage area, and the coal transfer system to control fugitive particulate matter emissions and minimize visible emissions. All fly ash handling systems (including transfer and silo storage) are totally enclosed and vented (including pneumatic system exhaust) through fabric filters. Continuous monitors are operated for particulate matter (PM), total hydrocarbons (THC), mercury (Hg), nitrogen oxides (NO_X), sulfur dioxide (SO_2), carbon dioxide (CO_2) and oxygen (O_2); however, the NO_X and SO_2 continuous monitors are not used to demonstration compliance with NO_X and SO_2 emissions standards. SO_2 is used for surrogate monitoring for HCl.

For the Portland Cement Line 1, the maximum clinker production rate is 83.0 tons per hour (TPH) on a 24-hour average basis and 727,800 tons in any consecutive 12-month period. Fuels fired in the pyroprocessing system consist only of coal, petcoke, natural gas, No. 2 distillate fuel oil, residual fuel oil, "on-specification" used oil, and tire derived fuel (TDF), including shredded and whole tires. No. 2 fuel oil is used for the cement kiln No. 1's startup/preheating operation. “On-specification” used oil is allowed to be fired as a blend with purchased fuel oil as a startup fuel only. The TDF may be introduced at the base of the preheater (i.e., kiln No. 1's inlet) or at the hot end of the kiln with a Tire Injection Mechanism (TIM). The firing of the TDF does not commence unless the kiln No. 1 has

reached an operating temperature (at least 1,400 ºF), which is measured at the cement kiln No. 1's inlet.

Portland Cement Line 2 includes a raw mill system, a dry process preheater/precalciner kiln system, clinker handling system, finish grinding operations, three cement loadout silos, and coal handling and grinding operations. NO_X emissions are controlled by the use of Selective Non-catalytic Reduction (SNCR) technology. SO_2 emissions are controlled by use of low sulfur raw materials and inherent scrubbing by finely divided lime in the calciner and limestone in the raw mill. Carbon monoxide (CO) and volatile organic compounds (VOC) emissions are controlled by promoting complete combustion in the kiln and calciner and minimizing carbon and the oil/grease content of raw materials. Particulate matter (PM/PM10) from the pyroprocessing system and the clinker cooler are controlled by fabric filter baghouses. Mercury emissions are controlled by material balance with a minimum of quarterly analyses of raw material samples and making and maintaining records of monthly and rolling 12-month mercury throughput. All of the materials handling activity particulate matter emissions are controlled by fabric filters. Water sprays or chemical wetting agents and stabilizers are used at the coal receiving area, the coal storage area, and the coal transfer system to control fugitive particulate matter emissions and minimize visible emissions. Continuous monitors are operated for PM, Hg, NO_X, SO_2, CO, THC, CO_2 and O_2.

Portland Cement Line 2 has a capacity of 156 TPH of clinker production and 240 TPH of Portland cement production. Daily and annual rates are 1,277,500 tons per year (3,500 tons/day, 24-hour average) of clinker production, and 1,800,000 tons per year (5,760 760 tons/day or 240 ton/hr) of cement production. Fuels allowed to be used in the pyro processing system are natural gas, distillate fuel oil, on specification used oil, coal, petroleum coke, propane, fly ash, tire derived fuels and certain categories of alternative fuels. Line 2 also includes a coal processing operation that crushes coal and petroleum coke and has an annual processing capacity of 175,200 tons of coal and petroleum coke and may also utilize alternative fuels as specified in this permit.

2.1.2 Emissions Unit Description – Portland Cement Line 1

Portland Cement Line 1 is designed for 83 TPH of cement clinker product. The cement kiln, in-line raw mill, coal mill and clinker cooler of Portland Cement Line 1 prior to 2012 exhausted to a common baghouse and exhaust stack with Florida Power Development, LLC (FPD) power plant. On June 30, 2018, the FPD power plant has been permanently shut down and currently is in the process of being dismantled. Kiln 1 continues to operate as a stand-alone cement kiln.

Waste heat from the kiln is used to provide heat to the raw mill, coal mill and the kiln preheater, which is used to drive off moisture from the materials used for making clinker. The movement of raw materials, recycled materials, and product are through enclosed transfer systems. All gas streams from the various transfer systems vent through a single baghouse system into the ambient air. The existing site is zoned for mining, so limestone and clay used in the production of cement are supplied on site. The kiln is allowed to fire coal, petcoke, natural gas, distillate and residual fuel oil, on-specification used oil, and

shredded and whole tires.

Key pollutants from the Kiln 1 system include PM of various size categories, CO, NO_X, THC, SO_2, Hg, HCl, dioxin/furans (D/F) and greenhouse gases (GHGs) – primarily CO_2. PM emissions from the kiln system are controlled by the main baghouse. Emissions of CO and THC are controlled by good combustion practices, and NO_X emissions are controlled by best management practices and through a Selective Non-Catalytic Reduction (SNCR) system. Gas conditioning tower is used to control the baghouse inlet temperature and D/F formation by injecting water to cool preheater exhaust gases. Continuous monitors are operated for PM, THC, Hg, NO_X, SO_2, CO_2 and O_2; however, the NO_X and SO_2 continuous monitors are not used to demonstration compliance with NO_X and SO_2 emissions standards specified in this emissions unit. SO_2 is used for surrogate monitoring for HCl. The stack height is 322 feet, with an exit diameter of 18.65 feet and a nominal exit temperature of 250ºF. The nominal volumetric flow rate is 363,000 acfm (250,000 dscfm).

2.1.3 Emissions Unit Description – Portland Cement Line 2

Portland Cement Line 2 is designed for 156 TPH of cement clinker production. This clinker is ground with calcium sulfate (gypsum) to produce Portland cement at the rate of 240 TPH. The in-line kiln/raw mill and clinker cooler vent through a single baghouse system into the ambient air. Waste heat from the kiln is used to provide heat to the raw mill and the kiln preheater, which is used to drive off moisture from the materials used for making clinker. The kiln is allowed to fire coal, petroleum coke, natural gas, flyash, propane, distillate fuel oil, on-specification oil, whole tires and alternative fuels. NO_X emissions are controlled by the use of Selective Non- Catalytic Reduction (SNCR) technology. SO_2 emissions are controlled by use of low sulfur raw materials and inherent scrubbing by finely divided lime in the calciner and limestone in the raw mill. CO and VOC emissions are controlled by promoting complete combustion in the kiln and calciner and minimizing carbon and oily content of raw materials. PM/PM10 from the pyroprocessing system and the clinker cooler is controlled by a large fabric filter baghouse. Mercury emissions are controlled by material balance, dust transfer, and/or activated carbon injection. Continuous emissions monitors are operated for PM (via CPMS), Hg, NO_X, SO_2, CO_2, THC and O_2.

Line 2 commenced operation on November 29, 2008. The stack characteristics for this unit are: Stack Height = 318 feet, Exit Diameter = 10.1 feet, Volumetric Flow Rate = 330,000 acfm and Exit Temperature = 250° F.

2.2 Flue Gas Sampling Location

Actual stack measurements, number of traverse points, and location of traverse points will be evaluated in the field as part of the test program. Table 2-1 presents the anticipated stack measurements based on the historical data and traverse points for the sampling locations listed.

Table 2-1
Sampling Location

Sampling Location	Stack Inside Diameter (in.)	Distance from Nearest Disturbance		Number of Traverse Points
		Downstream EPA "B" (in./dia.)	Upstream EPA "A" (in./dia.)	
In-Line Kiln No. 1 Main Stack	223.8	1860/8.3	1512/6.8	Isokinetic: 12 (3/port) Gaseous: Single
In-Line Kiln No. 1 Main Stack	121.2	2136/17.7	768/6.4	Isokinetic: 12 (3/port) Gaseous: Single

The sample location is verified in the field to conform to EPA Method 1. Acceptable cyclonic flow conditions are confirmed prior to testing using EPA Method 1, Section 11.4. Appendix A presents process flow diagrams and stack schematics.

2.3 Operating Conditions and Process Data

The facility operates continuously for 24 hours per day and 365 days per year. Emission tests are performed during normal representative operation, with the in-line raw mill both on and off. The unit is tested when operating in accordance with the Clean Air Act section 114 information collection request Phase 2 requirements:

- Duplicate trains are required for each test run for Method 26A.

For this testing program, the In-Line Kiln is being tested under two test scenarios:

- Raw Mill On, normal operating conditions (SNCR on, possibly lime injection on)
- Raw Mill Off, normal operating conditions (SNCR on, possibly lime injection on)

Please see Table 2-2 for facility specific operating and process conditions.

Table 2-2
Operating and Process Conditions

Target Analyte	Test Method	Duration	Process Conditions
O_2	3A	3 1-hour runs for each process and/or control condition	--
Volumetric flow rate	M1-4	3 1-hour runs for each process and/or control condition	--
Cl_2	M26A	3 1-hour runs for each process and/or control condition	Mill On Mill Off
HF	ASTM D6348-12 and EPA 320	3 1-hour runs for each process and/or control condition	Mill On Mill Off
HCN	ASTM D6348-12/ EPA 320	3 1-hour runs for each process and/or control condition	Mill On Mill Off

Plant personnel are responsible for establishing the test conditions and collecting all applicable unit-operating data. Data collected includes the following parameters:

- Clinker Production Rates, Tons/hr
- Baghouse inlet temperature, °F
- Kiln Feed Production Rates, Tons/hr
- Applicable CEMS Data

2.4 Plant Safety

Montrose will comply with all safety requirements at the facility. The facility Client Sponsor, or designated point of contact, is responsible for ensuring routine compliance with plant entry, health, and safety requirements. The Client Sponsor has the authority to impose or waive facility restrictions. The Montrose test team leader has the authority to negotiate any deviations from the facility restrictions with the Client Sponsor. Any deviations must be documented.

2.4.1 Safety Responsibilities

Planning

- Montrose must complete a field review with the Client Sponsor prior to the project date. The purpose of the review is to develop a scope of work that identifies the conditions, equipment, methods, and physical locations that will be utilized along with any policies or procedures that will affect our work
- We must reach an agreement on the proper use of client emergency services and ensure that proper response personnel are available, as needed
- The potential for chemical exposure and actions to be taken in case of exposure must be communicated to Montrose. This information must include expected concentrations of the chemicals and the equipment used to identify the substances.
- Montrose will provide a list of equipment being brought to the site, if required by the client
- All test personnel shall complete site-specific hazard awareness training before entering each cement plant.

Project Day

- All test personnel entering cement plants shall have MSHA Part 46 training (initial and annual updates) and documentation of MSA training records in-hand
- Montrose personnel will arrive with the appropriate training and credentials for the activities they will be performing and the equipment that they will operate
- Our team will meet daily to review the Project Scope, Job Hazard Assessment, and Work Permits. The Client Sponsor and Operations Team are invited to

participate.

- Montrose will provide equipment that can interface with the client utilities previously identified in the planning phase and only work with equipment that our client has made ready and prepared for connection
- We will follow client direction regarding driving safety, safe work permitting, staging of equipment, and other crafts or work in the area
- As per EPA 40 CFR, Part 60 Subpart A, Section 60.8, the facility must provide the following provisions at each sample location:
  - Sampling ports, which meet EPA minimum requirements for testing. The caps should be removed or be hand-tight.
  - Safe sampling platforms
  - Safe access to the platforms and test ports, including any scaffolding or man lifts
  - Sufficient utilities to perform all necessary testing
- Montrose will use the client communication system, as directed, in case of plant or project emergency
- Any adverse conditions, unplanned shutdowns or other deviations to the agreed scope and project plan must be reviewed with the Client Sponsor prior to continuing work. This will include any safe work permit and hazard assessment updates.

Completion

- Montrose personnel will report any process concerns, incidents or near misses to the Client Sponsor prior to leaving the site
- Montrose will clean up our work area to the same condition as it was prior to our arrival
- We will ensure that all utilities, connection points or equipment have been returned to the pre-project condition or as stated in the safe work permit. In addition, we will walk out the job completion with Operations and the Client Sponsor if required by the facility.

2.4.2 Safety Program and Requirements

Montrose has a comprehensive health and safety program that satisfies State and Federal OSHA requirements. The program includes an Illness and Injury Prevention Program, site-specific safety meetings, and training in safety awareness and procedures. The basic elements include:

- All regulatory required policies/procedures and training for OSHA, EPA and FMCSA
- Medical monitoring, as necessary
- Use of Personal Protective Equipment (PPE) and chemical detection equipment

- Hazard communication
- Pre-test and daily toolbox meetings
- Continued evaluation of work and potential hazards
- Near-miss and incident reporting procedures as required by Montrose and the Client

Montrose will provide standard PPE to employees. The PPE will include but is not limited to; hard hats, safety shoes, glasses with side shields or goggles, hearing protection, hand protections, and fall protection. In addition, our trailers are equipped with four gas detectors to ensure that workspace has no unexpected equipment leaks or other ambient hazards.

The detailed Site Safety Plan for this project is attached to this test plan in Appendix "S".

3.0 Sampling and Analytical Procedures

3.1 Test Methods

The test methods for this test program have been presented in Table 1-1. Additional information regarding specific applications or modifications to standard procedures is presented below.

3.1.1 EPA Method 3A, Determination of Oxygen and Carbon Dioxide in Emissions from Stationary Sources (Instrumental Analyzer Procedure)

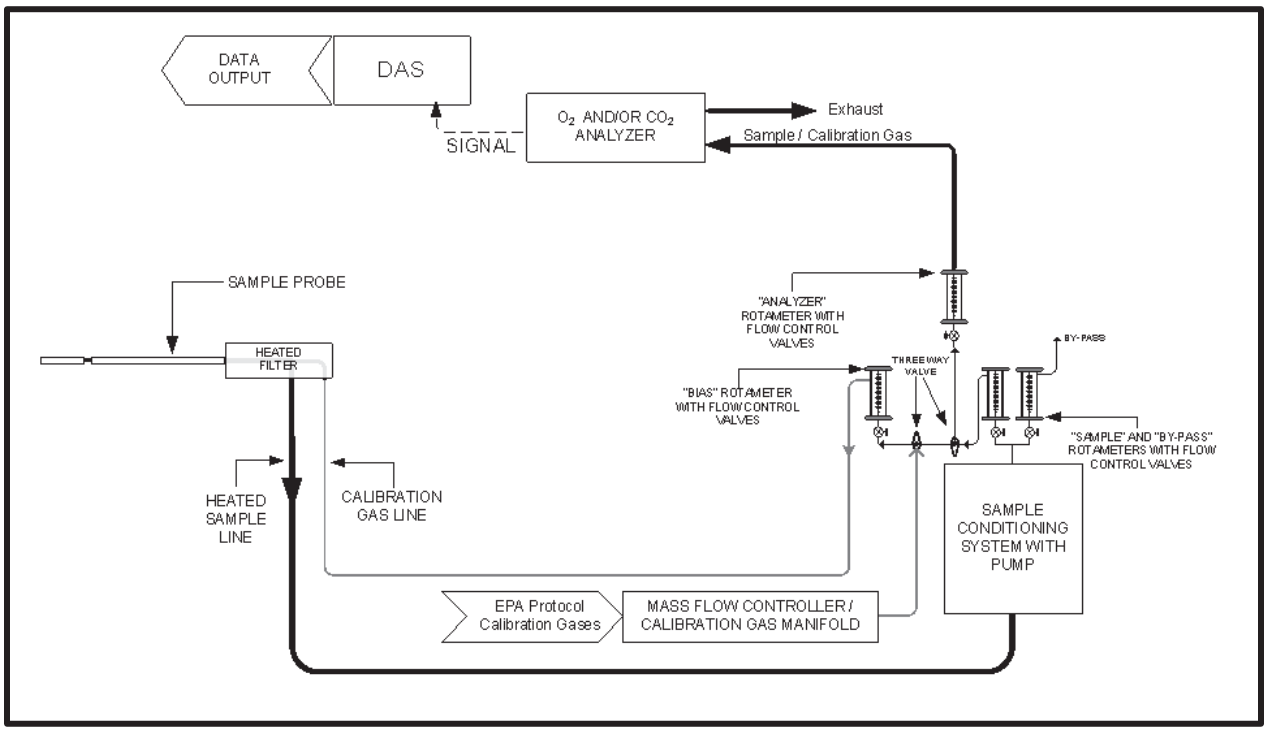
EPA Method 3A is an instrumental test method used to measure the concentration of O_2 and CO_2 in stack gas. The effluent gas is continuously or intermittently sampled and conveyed to analyzers that measure the concentrations of O_2 and CO_2. The performance requirements of the method must be met to validate data.

Pertinent information regarding the performance of the method is presented below:

- Method Options:
  - EPA Method 3A is used to measure O_2 to normalize target analyte concentrations to 7% O_2
  - If the stratification test provisions in section 8.1.2 of Method 7E are used to reduce the number of required sampling points, the alternative acceptance criterion for three-point sampling will be ±0.5 percent CO_2 or O_2, and the alternative acceptance criterion for single-point sampling will be ±0.3 percent CO_2 or O_2. In that case single-point integrated sampling as described in section 8.2.1 of Method 3 may be used.
  - A paramagnetic analyzer is used to measure O_2
- Method Exceptions:
  - Method 3A calibration acceptance criteria are reduced to 0.2% O_2 difference for analyzer calibration error, and 0.2% O_2 for zero and upscale system bias checks, and zero and upscale drift checks because normalizing data to 7% O_2 requires accurate measurement.
- Target and/or Minimum Required Sample Duration: 60 minutes
- Target Analytes: O_2

The typical sampling system is detailed in Figure 3-1.

Figure 3-1
EPA Method 3A Sampling Train



3.1.2 EPA Method 26A, Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources Isokinetic Method

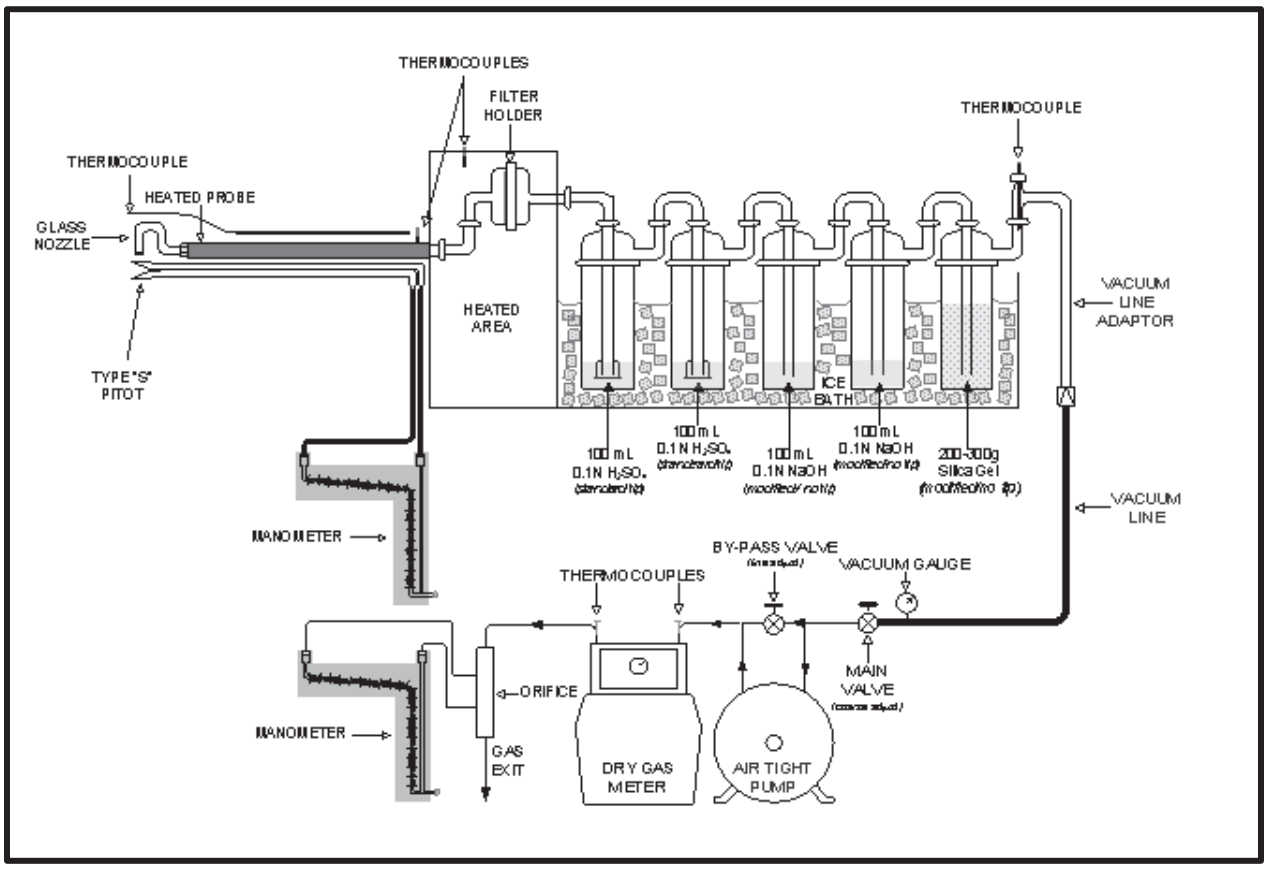
EPA Method 26A is a manual, isokinetic method used to measure hydrogen halide and halogen emissions from stationary sources. Gaseous and particulate pollutants are withdrawn isokinetically from the source and collected in an optional cyclone, on a filter, and in absorbing solutions. The cyclone collects any liquid droplets and is not necessary if the source emissions do not contain them; however, it is preferable to include the cyclone in the sampling train to protect the filter from any liquid present. The filter collects particulate matter including halide salts but is not routinely recovered or analyzed. Acidic and alkaline absorbing solutions collect the gaseous hydrogen halides and halogens, respectively. Following sampling of emissions containing liquid droplets, any halides/halogens dissolved in the liquid in the cyclone and on the filter are vaporized to gas and collected in the impingers by pulling conditioned ambient air through the sampling train. The hydrogen halides are solubilized in the acidic solution and form chloride (Cl^-), bromide (Br^-), and fluoride (F^-) ions. The halogens have a very low solubility in the acidic solution and pass through to the alkaline solution where they are hydrolyzed to form a proton (H^+), the halide ion, and the hypohalous acid (HClO or HBrO). Sodium thiosulfate is added to the alkaline solution to assure reaction with the hypohalous acid to form a second halide ion such that two halide ions are formed for each molecule of halogen gas. The halide ions in the separate solutions are measured by ion chromatography (IC).

Pertinent information regarding the performance of the method is presented below:

- Method Options:
  - EPA Method 26A will be used primarily to quantify Cl_2 concentrations. (Method 26A will also provide results for HF and will be compared to FTIR measurement results, as requested by EPA). Method 26A Section 2.1 Principle states; "The filter collects particulate matter including halide salts but is not routinely recovered or analyzed." The PM filters and upstream components will not be recovered nor analyzed for this test program.
  - Duplicate simultaneous trains (aka "paired trains") for each test run will be used to determine precision. The relative deviation (RD) will be calculated (same as Method 30B) between the Cl_2 concentrations with the paired trains.
  - A 10% relative deviation or 0.2 ppm absolute difference in Cl_2 results is required. Accuracy will be determined using the standard analytical procedures from Method 26A.
  - Quality control consists of adding a dry impinger being in between the first two acidic impingers for HF concentration determination and the last two basic impingers for Cl_2 determination. The contents of the dry impinger will be combined with the contents of the first two acid impingers and analyzed for fluoride ions attributable to HF. The contents of the last two basic impingers will be analyzed for chloride ions attributable to Cl_2.
  - Additional quality control consists of collecting and analyzing a blank train for every three test runs. The blank train is to be assembled from a used train, leak checked and sit for a period equal to the sampling time, i.e., 1-hr. The blank train data will be used to determine the method detection limit for the test program target analytes, i.e., the lowest number that could be detected, and compared to stack emissions.
- Method Exceptions:
  - None
- Target Analytes: HF, Cl_2
- Target and/or Minimum Required Sample Duration: 60 minutes
- Target and/or Minimum Required Sample Volume: 35 dscf or 1 dscm
- Analytical Laboratory: Enthalpy Analytical, Raleigh, North Carolina

The typical sampling system is detailed in Figure 3-2.

Figure 3-2
EPA Method 26A Sampling Train



3.1.3 ASTM D6348-12 & EPA Method 320, Determination of Gaseous Compounds by Extractive Direct Interface FTIR Spectroscopy & Measurement of Vapor Phase Organic and Inorganic Emissions by Extractive FTIR Spectroscopy

ASTM Method D-6348-12 & EPA Method 320 are instrumental test methods used to measure specific analyte concentrations for which EPA reference spectra have been developed or prepared. Extractive emission measurements are performed using FTIR spectroscopy. The FTIR analyzer is composed of a spectrometer and detector, a high optical throughput sampling cell, analysis software, and a quantitative spectral library. The analyzer collects high resolution spectra in the mid infrared spectral region (400 to 4,000 cm^{-1}), which are analyzed using the quantitative spectral library. This provides an accurate, highly sensitive measurement of gases and vapors.

ASTM D 6348-12 specifically, and EPA Method 320 generally, will be used to measure HCN and HF concentrations with the following additional requirements. Detection limit requirements are 0.5 ppm, or lower, for both compounds.

Pertinent information regarding the performance of the method is presented below:

Method Options:
Detection limits, Instrument Health and Specific Operation

- Laboratory Tests Before Field Test Program
  - Before testing, acquire 7 consecutive samples of dry nitrogen through the sampling system and calculate the standard deviation for each of the test program target analytes multiplied by a factor of 3. These data are the representative of detection limits for this test program and are to be compared to the 0.5 ppm required DL.
  - The results for the SNR @ 2500 should be >2500, at 64 scans.
  - The results for S Beam @ 2500 should be >0.9.
  - Perform Direct Analysis of HCN calibration gases and verify FTIR response agrees with tag value within 5%. All testing companies are asked to report these results to expeditiously, to PCA to assess need for modified reference spectra and/or change to direct analysis criterion.
  - Note: Optimization of HF reference spectra from MKS needs to be further investigated and possibly modified. If modifications are required, updated HF references and a calibration curve will be provided to participating stack testing companies prior to testing.

- During Field Test Program
  - Conduct an instrument background on each test day prior to any testing using dry nitrogen directed to the gas cell. Conduct the background for at least 128 scans.
  - Maintain the probe, filter, sample line and all sample system components in contact with effluent above 375ºF or 191ºC (consistent with FTIR calibration temperature) to avoid any possible "cold spots."
  - Heated sample lines should be ≤100 feet wherever possible, and not longer than 200 feet, without prior approval for unusual test circumstances.
  - Perform system zero with all sampling system components at operating temperature by injecting nitrogen at the sample probe and through sample filter and entire measurement system. After equilibration has been achieved, quantify all measurement components for at least 128 scans.
  - Sample ambient until equilibration of the measurement system has been achieved. Quantify all measurement components for at least 128 scans.
  - Position sample probe at effluent measurement point and sample until equilibration of the measurement system has been achieved. Quantify effluent concentrations for initial dynamic spike.
  - Analyte spiking will be conducted for HCN before the first test run, and

after each successive test run for a minimum of 4 spikes per test condition. (Additional spikes are required before and after corrective action for the sampling or analysis system and/or before and after removing the sampling system from the stack.) These results will determine accuracy.

- Maintain spike gas injections at 10% or less of total sample volume.
- Select spike gas concentration and flow rate to approximately double the native effluent concentration, or conduct spike to add 3-4 ppm to native concentration, whichever results in greater spiked concentration.
- Spike recovery results shall be within ±20% of the expected value or ±0.5 ppm, whichever is least restrictive.
- Specific HCN gases will be manufactured for this test program in the range of 50-100 ppm to provide spikes in the 5-10 ppm range, or lower[1]. An SF_6 or appropriate tracer will be used to calculate the exact spike gas dilution ratio of 10% or less.

- Direct nitrogen through the sampling system until all traces of spike gas are removed and lines are proven below DL for target analytes.
- Conduct sample Run 1
- Residual results for HCN and HF should be less than 0.2-0.3 ppm for data acceptance, or less than 5% of the measured value, whichever is least restrictive.
- Calculate the standard deviation for each of the test program target analytes for seven consecutive sample spectra from Run 1, multiplied by a factor of 3. These data shall be compared to the pre-test system nitrogen standard deviation results and also included in the facility test report.
    i. The SNR and S Beam need also to meet the criteria of >2500 and >0.9 respectively.
- Repeat Analyte Spiking for HCN and subsequent system nitrogen injection before proceeding to Run 2.
- Continue sequence until at least three valid runs per test condition are completed.

- Reporting
    - a. All effluent and measurement components required to perform quantitative analyses (i.e., target analytes, co-absorbing components, tracers, etc.) shall be reported as an Excel exported .PRN file along with their residual results, and SNR and S Beam at 2500 cm.

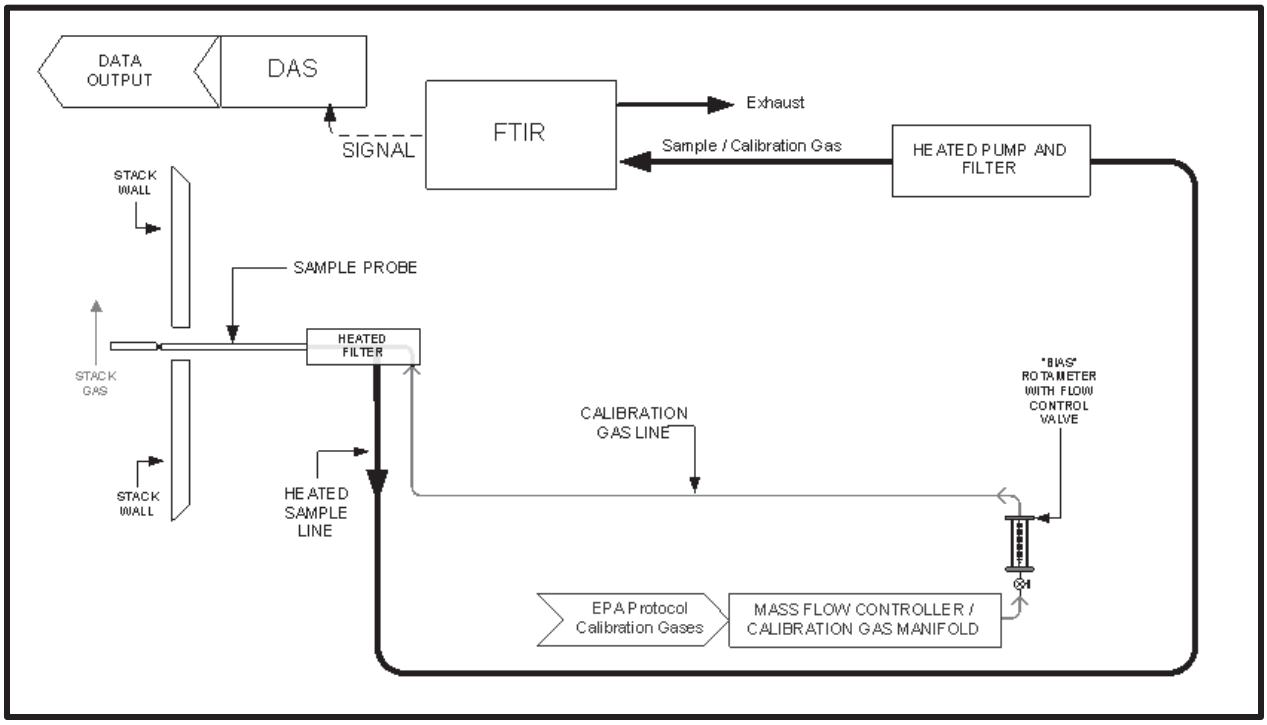
[1] HCN calibrations gases will be manufactured by Airgas Exploratory Products under the EPA Alt 114 "Gas Manufacturer Alternate Certification" procedures.

- b. All results of CTS, and analyte spiking
- c. All results from standard deviation calculations; direct and system zero nitrogen injections, ambient air samples and all effluent samples.

- Target Analytes: H_2O, HCN, HF
- Target and/or Minimum Required Sample Duration: 60 minutes
- Analytical Laboratory: Montrose Air Quality Services, Mt Pleasant, Michigan

The typical sampling system is detailed in Figure 3-3.

Figure 3-3
EPA Method 320 Sampling Train



3.2 Process Test Methods

The applicable regulations do not require process samples to be collected during this test program.

4.0 Quality Assurance and Reporting

4.1 QA Audits

Montrose has instituted a rigorous QA/QC program for its air quality testing. Quality assurance audits are performed as part of the test program to ensure that the results are calculated using the highest quality data available. This program ensures that the emissions data we report are as accurate as possible. The procedures included in the cited reference methods are followed during preparation, sampling, calibration, and analysis. Montrose is responsible for preparation, calibration, and cleaning of the sampling apparatus. Montrose will also perform the sampling, sample recovery, storage, and shipping. Approved contract laboratories may perform some of the preparation and sample analyses, as needed.

4.2 Quality Control Procedures

Montrose calibrates and maintains equipment as required by the methods performed and applicable regulatory guidance. Montrose follows internal procedures to prevent the use of malfunctioning or inoperable equipment in test programs. All equipment is operated by trained personnel. Any incidence of nonconforming work encountered during testing is reported and addressed through the corrective action system.

4.2.1 Equipment Inspection and Maintenance

Each piece of field equipment that requires calibration is assigned a unique identification number to allow tracking of its calibration history. All field equipment is visually inspected prior to testing and includes pre-test calibration checks as required by the test method or regulatory agency.

4.2.2 Audit Samples

When required by the test method and available, Montrose obtains EPA TNI SSAS audit samples from an accredited provider for analysis along with the samples. Currently, the SSAS program has been suspended pending the availability of a second accredited audit sample provider. If the program is reinstated, the audit samples will be ordered. If required as part of the test program, the audit samples are stored, shipped, and analyzed along with the emissions samples collected during the test program. The audit sample results are reported along with the emissions sample results.

4.3 Data Analysis and Validation

Montrose converts the raw field, laboratory, and process data to reporting units consistent with the permit or subpart. Calculations are made using proprietary computer spreadsheets or data acquisition systems. One run of each test method is also verified using a separate example calculation. The example calculations are checked against the spreadsheet results and are included in the final report. The “Standard Conditions” for this project are 29.92 inches of mercury and 68°F.

4.4 Sample Identification and Custody

The on-site Field Project Manager will assume or assign the role of sample and data custodian until relinquishing custody. The sample custodian will follow proper custody procedures before departing from the test site including:

- Assign the unique sample identification number to each sample
- Attach sample labels and integrity seals to all samples
- Complete COC form(s), ensuring that the sample identification numbers on the samples match the sample identification numbers on the COC
- Pack and store samples in accordance with the test method requirements in appropriate transport containers for protection from breakage, contamination, or loss
- Keep samples in a secure locked area if not in the direct presence of Montrose staff

The sample custodian will follow proper custody procedures upon arriving at the Montrose office including:

- Remove samples and COC documents from vehicles and check into designated secure sample holding areas
- Store samples requiring additional measures such as refrigeration or dry ice appropriately

4.5 Quality Statement

Montrose is qualified to conduct this test program and has established a quality management system that led to accreditation with ASTM Standard D7036-04 (Standard Practice for Competence of Air Emission Testing Bodies). Montrose participates in annual functional assessments for conformance with D7036-04 which are conducted by the American Association for Laboratory Accreditation (A2LA). All testing performed by Montrose is supervised on site by at least one Qualified Individual (QI) as defined in D7036-04 Section 8.3.2. Data quality objectives for estimating measurement uncertainty within the documented limits in the test methods are met by using approved test protocols for each project as defined in D7036-04 Sections 7.2.1 and 12.10. Additional quality assurance information is included in the appendices. The content of this test plan is modeled after the EPA Emission Measurement Center Guideline Document (GD-042).

4.6 Reporting

Montrose will prepare a final report to present the test data, calculations/equations, descriptions, and results. Prior to release by Montrose, each report is reviewed and certified by the project manager and their supervisor, or a peer. The final version of the source test report will be submitted to CEMEX within five days of receipt of all draft report comments, and no more than 45 days from completion of the testing, but no later than early March 2024 to meet EPA reporting requirements for this ICR. The report will include a series of

appendices to present copies of the intermediate calculations and example calculations, raw field data, laboratory analysis data, process data, and equipment calibration data. The electronic copy of the final report will be submitted via ERT.

4.6.1 Example Report Format

The report is divided into various sections describing the different aspects of the source testing program. Figure 4-1 presents a typical Table of Contents for the final report.

Figure 4-1
Typical Report Format

Cover Page

Certification of Report

Table of Contents

Section

1.0 Introduction

2.0 Plant and Sampling Location Descriptions

3.0 Sampling and Analytical Procedures

4.0 Test Discussion and Results

5.0 Internal QA/QC Activities

Appendices

A Field Data and Calculations

B Facility Process Data

C Laboratory Analysis Data

D Quality Assurance/Quality Control

E Regulatory Information

4.6.2 Example Presentation of Test Results

Table 4-1 presents the typical tabular format that is used to summarize the results in the final source test report. Separate tables will outline the results for each target analyte and compare them to their respective emissions limits.

Table 4-1
Example Cement ICR Emissions Results -
In-Line Kiln 1 Main Stack, Raw Mill Off

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	11/28/23	11/28/23	11/28/23	-
Time	XX	XX	XX	-
Process Data				
clinker production, ton/hr	XX	XX	XX	XX
Sampling & Flue Gas Parameters				
sample duration, minutes	60	60	60	60
sample volume, dscf	XX	XX	XX	XX
isokinetic rate, %	XX	XX	XX	XX
O_2, % volume dry	XX	XX	XX	XX
CO_2, % volume dry	XX	XX	XX	XX
flue gas temperature, °F	XX	XX	XX	XX
moisture content, % volume	XX	XX	XX	XX
velocity, ft/s	XX	XX	XX	XX
volumetric flow rate, dscfm	XX	XX	XX	XX
HCN				
ppmvd	XX	XX	XX	XX
ppmvd @ 7% O_2	XX	XX	XX	XX
lb/hr	XX	XX	XX	XX
lb/ton clinker	XX	XX	XX	XX
HF (ASTM D6348/EPA Method 320)				
ppmvd	XX	XX	XX	XX
ppmvd @ 7% O_2	XX	XX	XX	XX
lb/hr	XX	XX	XX	XX
lb/ton clinker	XX	XX	XX	XX
HF (Method 26A)				
ppmvd	XX	XX	XX	XX
ppmvd @ 7% O_2	XX	XX	XX	XX
lb/hr	XX	XX	XX	XX
lb/ton clinker	XX	XX	XX	XX
Cl_2				
ppmvd	XX	XX	XX	XX
ppmvd @ 7% O_2	XX	XX	XX	XX

Parameter / Units	Run 1	Run 2	Run 3	Average
lb/hr	XX	XX	XX	XX
lb/ton clinker	XX	XX	XX	XX

Appendix A
Supporting Information

Appendix A.1
Units and Abbreviations

UNITS OF MEASUREMENT

@ X% O_2	corrected to X% oxygen (corrected for dilution air)
|CC|	absolute value of the confidence coefficient
|d|	absolute value of the mean differences
ºC	degrees Celsius
ºF	degrees Fahrenheit
ºR	degrees Rankine
" H_2O	inches of water column
13.6	specific gravity of mercury
ΔH	pressure drop across orifice meter, inches H_2O
ΔP	velocity head of stack gas, inches H_2O
θ	total sampling time, minutes
µg	microgram
ρ_a	density of acetone, mg/ml
ρ_w	density of water, 0.9982 g/ml or 0.002201 lb/ml
acfm	actual cubic feet of gas per minute at stack conditions
A_n	cross-sectional area of nozzle, ft^2
A_s	cross-sectional area of stack, square feet (ft^2)
Btu	British thermal unit
B_{ws}	proportion by volume of water vapor in gas stream
C_a	particulate matter concentration in stack gas, gr/acf
C_{Avg}	average unadjusted gas concentration, ppmv
C_{Dir}	measured concentration of calibration gas, ppmv
cf or ft^3	cubic feet
cfm	cubic feet per minute
C_{Gas}	average gas concentration adjusted for bias, ppmv
C_M	average of initial and final system bias check responses from upscale calibration gas, ppmv
cm or m^3	cubic meters
C_{MA}	actual concentration of the upscale calibration gas, ppmv
C_O	average of initial and final system bias check responses from low-level calibration gas, ppmv
C_p	pitot tube coefficient
C_s	particulate matter concentration in stack gas, gr/dscf
CS	calibration span, % or ppmv
C_S	measured concentration of calibration gas, ppmv
C_V	manufactured certified concentration of calibration gas, ppmv
D	drift assessment, % of span
dcf	dry cubic feet
dcm	dry cubic meters
D_n	diameter of nozzle, inches
D_s	diameter of stack, inches
dscf	dry standard cubic feet
dscfm	dry standard cubic feet per minute
dscm	dry standard cubic meters
F_d	F-factor, dscf/MMBtu of heat input
fpm	feet per minute
fps	feet per second
ft	feet
ft^2	square feet
g	gram
gal	gallons
gr	grains (7000 grains per pound)
gr/dscf	grains per dry standard cubic feet
hr	hour
I	percent of isokinetic sampling
in	inch

k	kilo or thousand (metric units, multiply by 10^3)
K	kelvin (temperature)
K_3	conversion factor 0.0154 gr/mg
K_4	conversion factor 0.002668 ((in. Hg)(ft^3))/((ml)(°R))
kg	kilogram
K_p	pitot tube constant (85.49 ft/sec)
kwscfh	thousand wet standard cubic feet per hour
l	liters
lb/hr	pounds per hour
lb/MMBtu	pounds per million Btu
lpm	liters per minute
m	meter or milli
M	thousand (English units) or mega (million, metric units)
m^3	cubic meters
m_a	mass of residue of acetone after evaporation, mg
M_d	molecular weight of stack gas; dry basis, lb/lb-mole
meq	milliequivalent
mg	milligram
Mg	megagram (10^6 grams)
min	minute
ml or mL	milliliter
mm	millimeter
MM	million (English units)
MMBtu/hr	million Btu per hour
m_n	total amount of particulate matter collected, mg
mol	mole
mol. wt. or MW	molecular weight
M_s	molecular weight of stack gas; wet basis, lb/lb-mole
MW	molecular weight or megawatt
n	number of data points
ng	nanogram
nm	nanometer
Nm^3	normal cubic meter
P_{bar}	barometric pressure, inches Hg
pg	picogram
P_g	stack static pressure, inches H_2O
P_m	barometric pressure of dry gas meter, inches Hg
ppb	parts per billion
ppbv	parts per billion, by volume
ppbvd	parts per billion by volume, dry basis
ppm	parts per million
ppmv	parts per million, by volume
ppmvd	parts per million by volume, dry basis
ppmvw	parts per million by volume, wet basis
P_s	absolute stack gas pressure, inches Hg
psi	pounds per square inch
psia	pounds per square inch absolute
psig	pounds per square inch gauge
P_{std}	standard absolute pressure, 29.92 inches Hg
Q_a	volumetric flow rate, actual conditions, acfm
Q_s	volumetric flow rate, standard conditions, scfm
Q_{std}	volumetric flow rate, dry standard conditions, dscfm
R	ideal gas constant 21.85 ((in. Hg) ($ft^{3)}$)/((°R) (lbmole))
SB_{final}	post-run system bias check, % of span
SB_i	pre-run system bias check, % of span
scf	standard cubic feet

scfh	standard cubic feet per hour
scfm	standard cubic feet per minute
scm	standard cubic meters
scmh	standard cubic meters per hour
sec	second
sf, sq. ft., or ft^2	square feet
std	standard
t	metric ton (1000 kg)
$T_{0.975}$	t-value
T_a	absolute average ambient temperature, ºR (+459.67 for English)
T_m	absolute average dry gas meter temperature, ºR (+459.67 for English)
ton or t	ton = 2000 pounds
tph or tons/hr	tons per hour
tpy or tons/yr	tons per year
T_s	absolute average stack gas meter temperature, ºR (+459.67 for English)
T_{std}	absolute temperature at standard conditions
V	volt
V_a	volume of acetone blank, ml
V_{aw}	volume of acetone used in wash, ml
V_{lc}	total volume H_2O collected in impingers and silica gel, grams
V_m	volume of gas sampled through dry gas meter, ft^3
$V_{m(std)}$	volume of gas measured by the dry gas meter, corrected to standard conditions, dscf
V_{ma}	stack gas volume sampled, acf
V_n	volume collected at stack conditions through nozzle, acf
V_s	average stack gas velocity, feet per second
$V_{wc(std)}$	volume of water vapor condensed, corrected to standard conditions, scf
$V_{wi(std)}$	volume of water vapor in gas sampled from impingers, scf
$V_{wsg(std)}$	volume of water vapor in gas sampled from silica gel, scf
W	watt
W_a	weight of residue in acetone wash, mg
W_{imp}	total weight of impingers, grams
W_{sg}	total weight of silica gel, grams
Y	dry gas meter calibration factor, dimensionless

ABBREVIATIONS

AAS	atomic absorption spectroscopy
ACDP	air contaminant discharge permit
ACE	analyzer calibration error, percent of span
AD	absolute difference
ADL	above detection limit
AETB	Air Emissions Testing Body
AS	applicable standard (emission limit)
ASTM	American Society for Testing and Materials
BACT	best achievable control technology
BDL	below detection limit
BHP	brake horsepower
BIF	boiler and industrial furnace
BLS	black liquor solids
CC	confidence coefficient
CD	calibration drift
CE	calibration error
CEM	continuous emissions monitor
CEMS	continuous emissions monitoring system
CERMS	continuous emissions rate monitoring system
CET	calibration error test
CFR	Code of Federal Regulations
CGA	cylinder gas audit
CHNOS	elemental analysis for determination of C, H, N, O, and S content in fuels
CNCG	concentrated non-condensable gas
CO	catalytic oxidizer
COC	chain of custody
COMS	continuous opacity monitoring system
CPM	condensable particulate matter
CPMS	continuous parameter monitoring system
CT	combustion turbine
CTM	conditional test method
CTO	catalytic thermal oxidizer
CVAAS	cold vapor atomic absorption spectroscopy
D_e	equivalent diameter
DE	destruction efficiency
Dioxins	polychlorinated dibenzo-p-dioxins (PCDDs)
DLL	detection level limited
DNCG	dilute non-condensable gas
ECD	electron capture detector
EIT	Engineer In Training
ELCD	electrolytic conductivity detector (hall detector)
EMPC	estimated maximum possible concentration
EPA	US Environmental Protection Agency
EPRI	Electric Power Research Institute
ES	emission standard (applicable limit)
ESP	electrostatic precipitator
EU	emission unit
FCCU	fluid catalytic cracking unit
FGD	flue gas desulfurization
FI	flame ionization
FIA	flame ionization analyzer
FID	flame ionization detector
FPD	flame photometric detector
FPM	filterable particulate matter
FTIR	Fourier-transform infrared spectroscopy

FTPB	field train proof blank
FTRB	field train recovery blank
Furans	polychlorinated dibenzofurans (PCDFs)
GC	gas chromatography
GC/MS	gas chromatography/mass spectroscopy
GFAAS	graphite furnace atomic absorption spectroscopy
GFC	gas filter correlation
GHG	greenhouse gas
HAP	hazardous air pollutant
HC	hydrocarbons
HHV	higher heating value
HPLC	high performance liquid chromatography
HRGC/HRMS	high-resolution gas chromatography/high-resolution mass spectroscopy
HRSG	heat recovery steam generator
IC	ion chromatography
ICAP	inductively-coupled argon plasma emission spectroscopy
ICPCR	ion chromatography with a post-column reactor
ICP-MS	inductively coupled plasma-mass spectroscopy
IR	infrared radiation
ISO	International Standards Organization
kW	kilowatts
LFG	landfill gas
LHV	lower heating value
LPG	liquified petroleum gas
MACT	maximum achievable control technology
MDI	methylene diphenyl diisocyanate
MDL	method detection limit
MNOC	maximum normal operating conditions
MRL	method reporting limit
MS	mass spectrometry
NA	not applicable or not available
NCASI	National Council for Air and Steam Improvement
NCG	non-condensable gases
ND	not detected
NDIR	non-dispersive infrared
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NG	natural gas
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Standards and Technology
NMC	non-methane cutter
NMOC	non-methane organic compounds
NMVOC	non-methane volatile organic compounds
NPD	nitrogen phosphorus detector
NSPS	New Source Performance Standards
OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyl compounds
PCWP	plywood and composite wood products
PE	Professional Engineer
PFAS	per- and polyfluoroalkyl substances (PFAS)
PI	photoionization
PID	photoionization detector
PM	particulate matter
PM_{10}	particulate matter less than 10 microns in aerodynamic diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in aerodynamic diameter
POM	polycyclic organic matter

PS	performance specification
PSD	particle size distribution
PSEL	plant site emission limits
PST	performance specification test
PTE	permanent total enclosure
PTM	performance test method
QA/QC	quality assurance and quality control
QI	Qualified Individual
QSTI	Qualified Source Testing Individual
RA	relative accuracy
RAA	relative accuracy audit
RACT	reasonably available control technology
RATA	relative accuracy test audit
RCTO	rotary concentrator thermal oxidizer
RICE	stationary reciprocating internal combustion engine
RM	reference method
RTO	regenerative thermal oxidizer
SAM	sulfuric acid mist
SCD	sulfur chemiluminescent detector
SCR	selective catalytic reduction system
SD	standard deviation
Semi-VOST	semi-volatile organic compounds sample train
SRM	standard reference material
TAP	toxic air pollutant
TBD	to be determined
TCA	thermal conductivity analyzer
TCD	thermal conductivity detector
TGNENMOC	total gaseous non-ethane non-methane organic compounds
TGNMOC	total gaseous non-methane organic compounds
TGOC	total gaseous organic compounds
THC	total hydrocarbons
TIC	tentatively identified compound
TO	thermal oxidizer
TO	toxic organic (as in EPA Method TO-15)
TPM	total particulate matter
TSP	total suspended particulate matter
TTE	temporary total enclosure
ULSD	ultra-low sulfur diesel
UV	ultraviolet radiation range
VE	visible emissions
VOC	volatile organic compounds
VOST	volatile organic sample train
WC	water column
WWTP	waste water treatment plant

CHEMICAL NOMENCLATURE

Ag	silver
As	arsenic
Ba	barium
Be	beryllium
C	carbon
Cd	cadmium
CdS	cadmium sulfide
CH_2O	formaldehyde
CH_3CHO	acetaldehyde
CH_3OH	methanol
CH_4	methane
C_2H_4O	ethylene oxide
C_2H_6	ethane
C_3H_4O	acrolein
C_3H_6O	propionaldehyde
C_3H_8	propane
C_6H_5OH	phenol
Cl_2	chlorine
ClO_2	chlorine dioxide
CO	carbon monoxide
Co	cobalt
CO_2	carbon dioxide
Cr	chromium
Cu	copper
EtO	ethylene oxide
EtOH	ethyl alcohol (ethanol)
H_2	hydrogen
H_2O	water
H_2O_2	hydrogen peroxide
H_2S	hydrogen sulfide
H_2SO_4	sulfuric acid
HCl	hydrogen chloride
Hg	mercury
IPA	isopropyl alcohol
MDI	methylene diphenyl diisocyanate
$MeCl_2$	methylene chloride
MEK	methyl ethyl ketone
MeOH	methanol
Mn	manganese
N_2	nitrogen
NH_3	ammonia
Ni	nickel
NO	nitric oxide
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
O_2	oxygen
P	phosphorus
Pb	lead
PCDD	polychlorinated dibenzo-p-dioxins
PCDF	polychlorinated dibenzofurans
Sb	antimony
Se	selenium
SO_2	sulfur dioxide
SO_3	sulfur trioxide
SO_x	sulfur oxides
TCDD	tetrachlorodibenzodioxin
TCDF	tetrachlorodibenzofuran
TGOC	total gaseous organic concentration
THC	total hydrocarbons
Tl	thallium
TRS	total reduced sulfur compounds
Zn	zinc

Appendix A.2
Accreditation Information/Certifications

STACK TESTING ACCREDITATION COUNCIL

American Association for Laboratory Accreditation

Accredited Air Emission Testing Body

A2LA has accredited

MONTROSE AIR QUALITY SERVICES

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036:2004 - Standard Practice for Competence of Air Emission Testing Bodies.

Presented this 4th day of February 2022.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3925.01
Valid to February 29, 2024

This accreditation program is not included under the A2LA ILAC Mutual Recognition Arrangement.

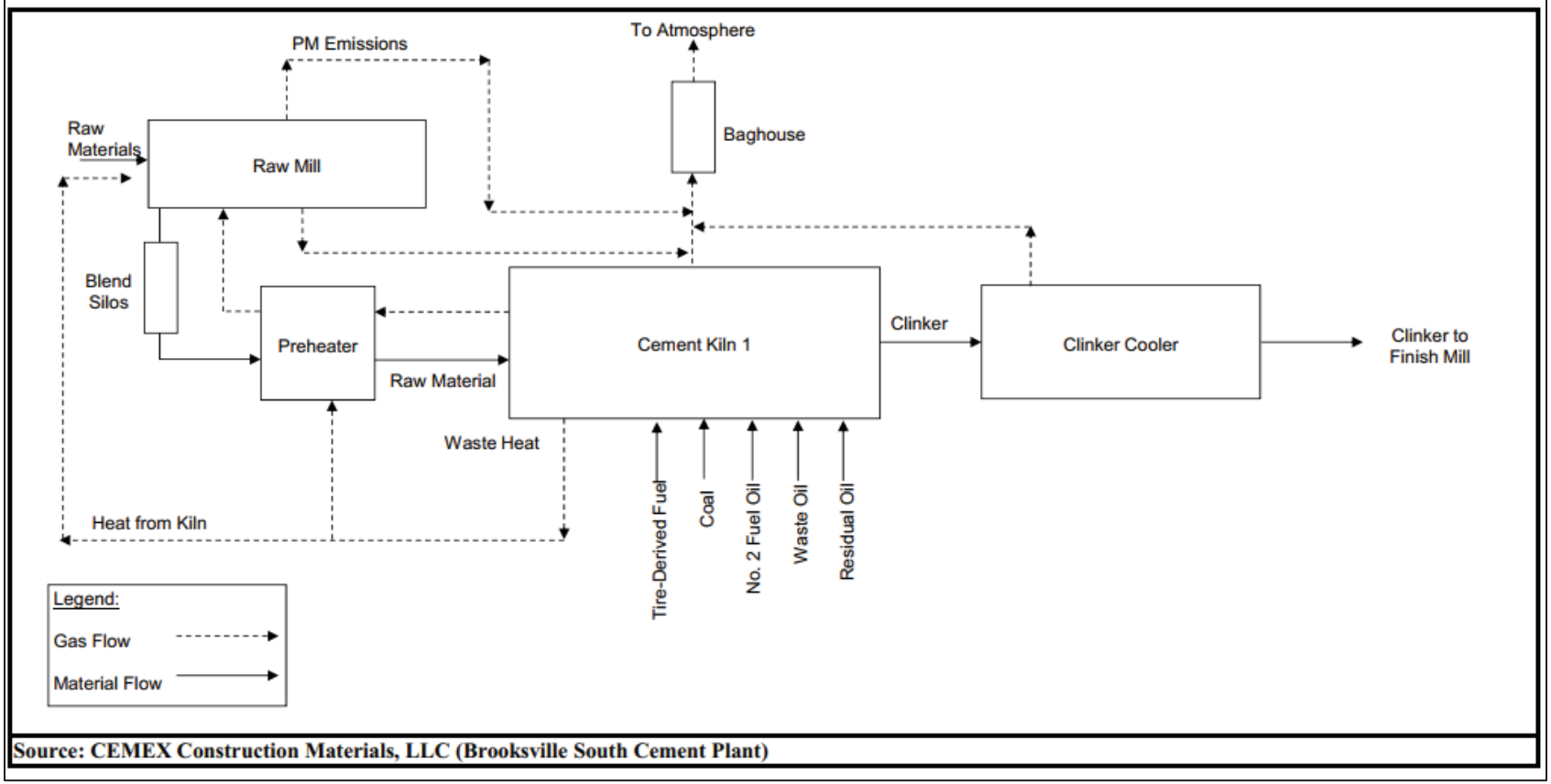
Appendix A.3
Process Flow Diagrams

Figure A-1
Process Flow Diagram – Portland Cement Line 1

Facility ID: 0530021
Poject No. 307_16_26
Date: 30-Aug-2017

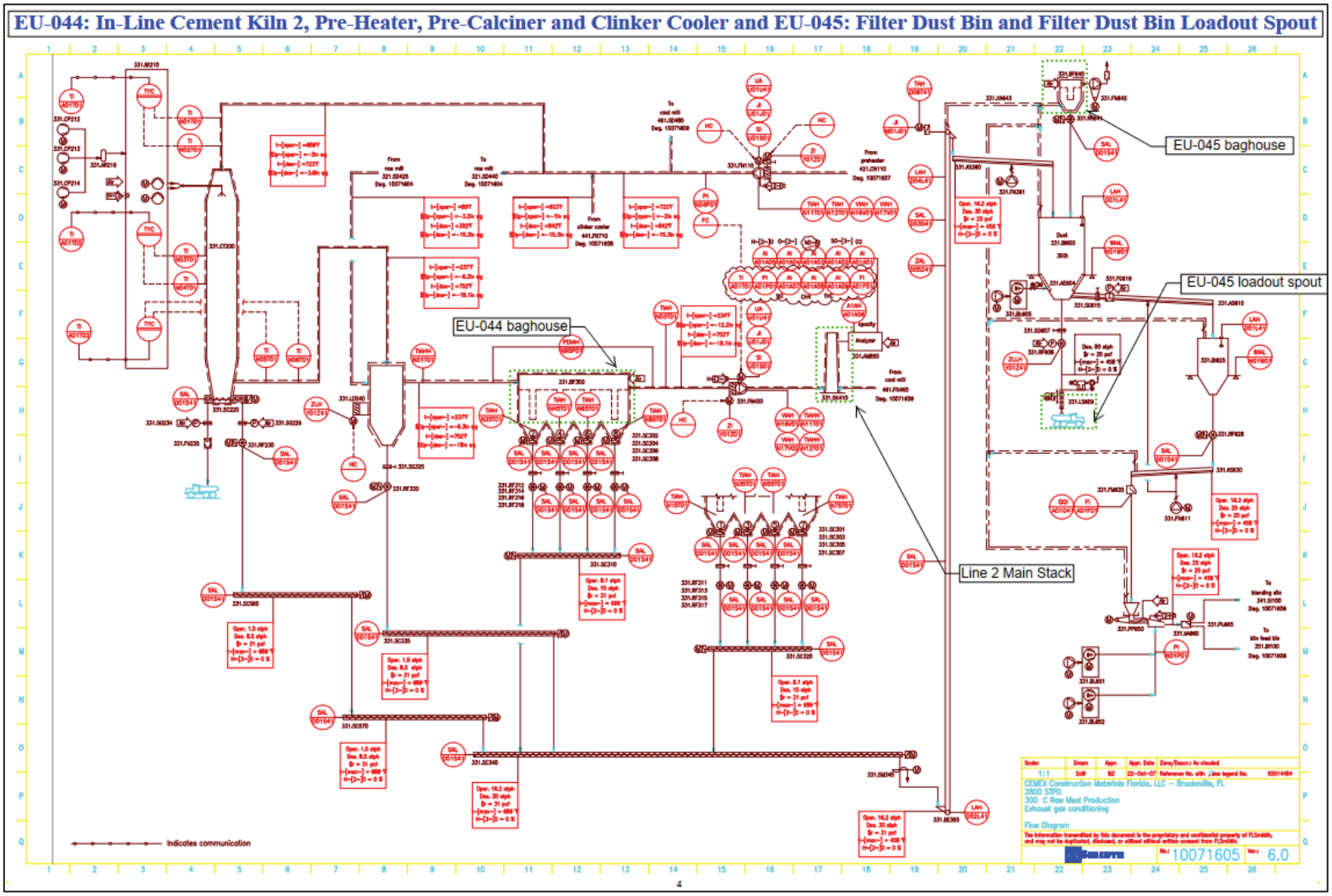
EU 020 - In-Line Cement Kiln 1, In-Line Kiln/Raw Mill and Clinker Cooler 1

Attachment: Process Flow Diagram

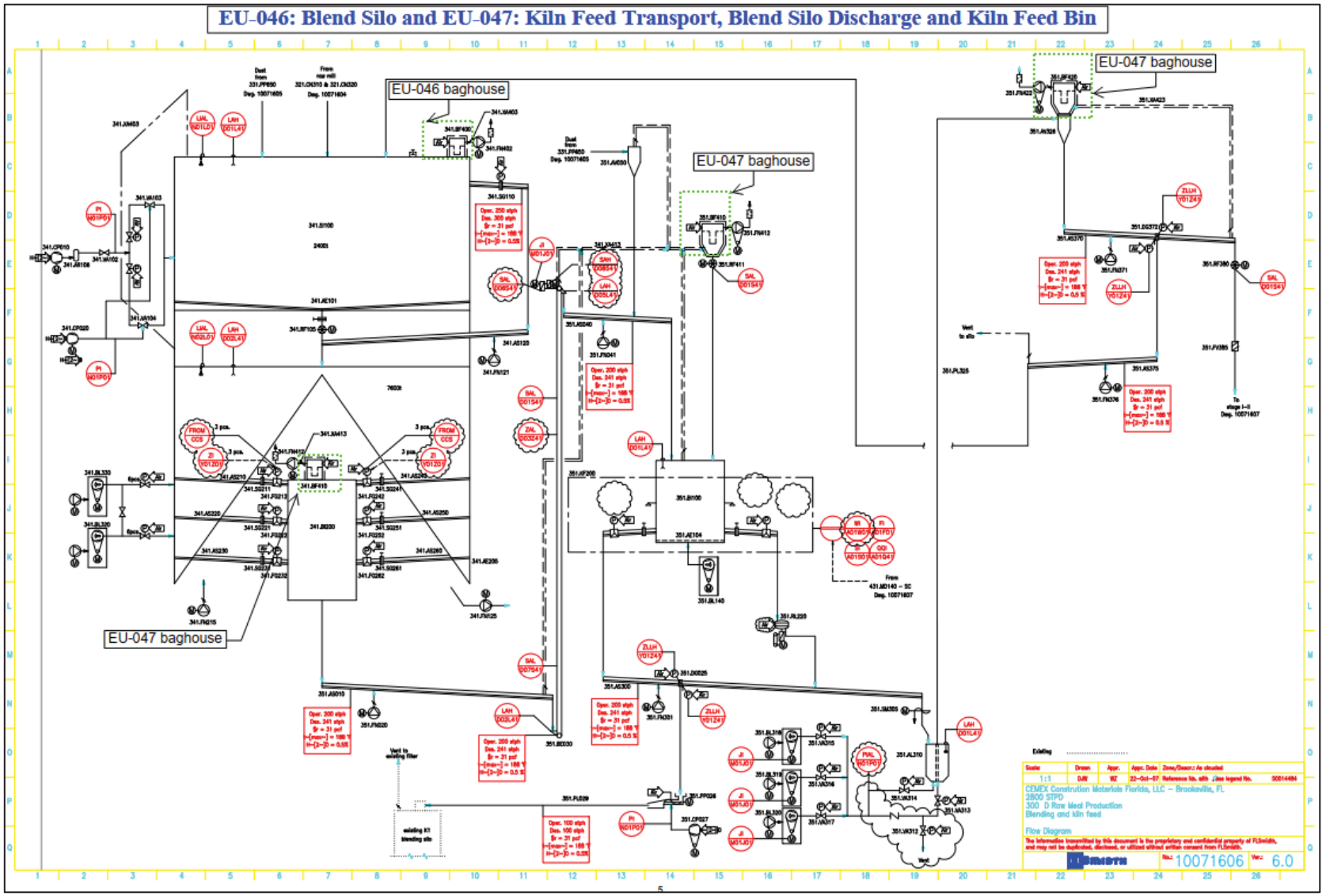


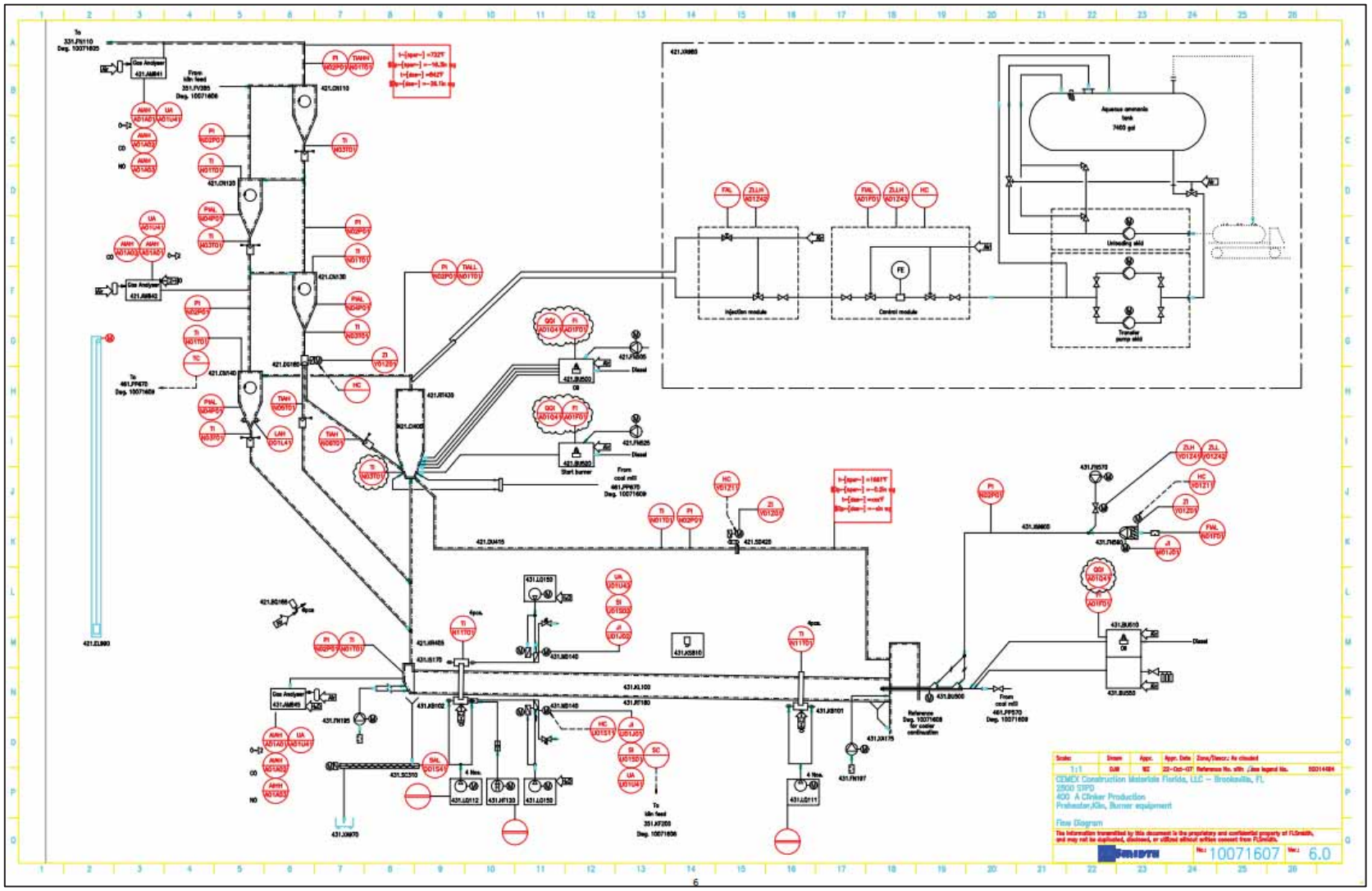
Source: CEMEX Construction Materials, LLC (Brooksville South Cement Plant)

Figure A-2
Process Flow Diagram – Portland Cement Line 2



EU-046: Blend Silo and EU-047: Kiln Feed Transport, Blend Silo Discharge and Kiln Feed Bin



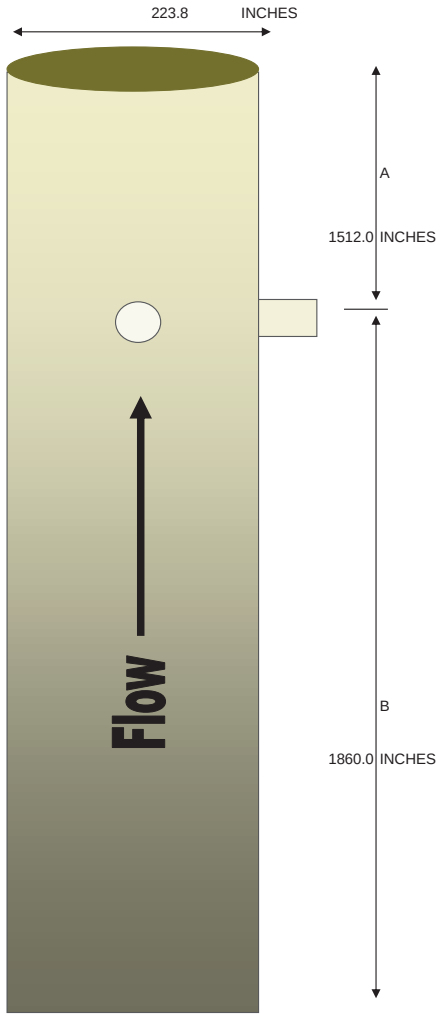

Aqueous ammonia tank 7400 gal
Unloading skid
Transfer pump skid
Injection module
Control module
Start burner
Gas Analyzer
Reference Dwg. 10071608 for cooler continuation
CEMEX Construction Materials Florida, LLC – Brooksville, FL
2500 STPD
400 A Clinker Production
Preheater,Kiln, Burner equipment
Flow Diagram
No.: 10071607
Rev.: 6.0

Appendix A.4
Stack Schematic

MONTROSE AIR QUALITY SERVICES

Figure A-2
Stack Sample Port Location – In-Line Kiln 1 Main Stack

Type of Traverse: Velocity or Particulate:		Particulate	Port Type	Nipple	Port Diameter	TBD
Stack Diameter, inches:	223.8		Stack Area, Ft^2:			273.179
Stack Height, feet:	322		Number of Ports:			4
Stack Properties:	Inches	Duct Diameters	Length of Port, inches:			TBD
Upstream From Flow Disturbance (A):	1512	6.8	Total Number of Traverse Points:			12
Downstream From Flow Disturbance (B):	1860	8.3	Number of Points per port / traverse:		3	6



Point No.	Inside Stack Inches	Outside Port Inches
1	9.8	9.8 + Port Length
2	32.7	32.7 + Port Length
3	66.2	66.2 + Port Length

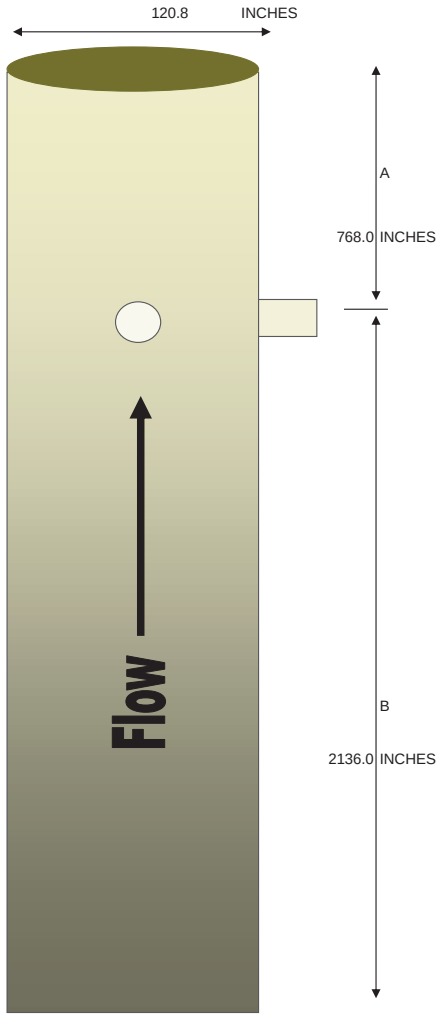
* Adjusted points diameter > 24" no point closer than 1.0 inch

* Adjusted points diameter ≤ 24" no point closer than 0.5 inch

Stack Diameters between 12-24 inches minimum points are 8 ; 4 points per port if the 8 / 2 diameters downstream and upstream criteria is met.

Figure A-3
Stack Sample Port Location – In-Line Kiln 2 Main Stack

Type of Traverse: Velocity or Particulate:			Particulate	Port Type	Nipple	Port Diameter	TBD
Stack Diameter, inches:	120.84			Stack Area, Ft^2:			79.643
Stack Height, feet:	318			Number of Ports:			4
Stack Properties:		Inches	Duct Diameters	Length of Port, inches:			TBD
Upstream From Flow Disturbance (A):		768	6.4	Total Number of Traverse Points:			12
Downstream From Flow Disturbance (B):		2136	17.7	Number of Points per port / traverse:		3	6



Point No.	Inside Stack Inches	Outside Port Inches
1	5.3	5.3 + Port Length
2	17.6	17.6 + Port Length
3	35.8	35.8 + Port Length

* Adjusted points diameter > 24" no point closer than 1.0 inch

* Adjusted points diameter ≤ 24" no point closer than 0.5 inch

Stack Diameters between 12-24 inches minimum points are 8 ; 4 points per port if the 8 / 2 diameters downstream and upstream criteria is met.

Appendix A.5
Quality Assurance Program Summary

Quality Assurance Program Summary

As part of Montrose Air Quality Services, LLC (Montrose) ASTM D7036-04 certification, Montrose is committed to providing emission related data which is complete, precise, accurate, representative, and comparable. Montrose quality assurance program and procedures are designed to ensure that the data meet or exceed the requirements of each test method for each of these items. The quality assurance program consists of the following items:

- Assignment of an Internal QA Officer
- Development and use of an internal QA Manual
- Personnel training
- Equipment maintenance and calibration
- Knowledge of current test methods
- Chain-of-custody
- QA reviews of test programs

Assignment of an Internal QA Officer: Montrose has assigned an internal QA Officer who is responsible for administering all aspects of the QA program.

Internal Quality Assurance Manual: Montrose has prepared a QA Manual according to the requirements of ASTM D7036-04 and guidelines issued by EPA. The manual documents and formalizes all of Montrose's QA efforts. The manual is revised upon periodic review and as Montrose adds capabilities. The QA manual provides details on the items provided in this summary.

Personnel Testing and Training: Personnel testing and training is essential to the production of high quality test results. Montrose training programs include:

- A requirement for all technical personnel to read and understand the test methods performed
- A requirement for all technical personnel to read and understand the Montrose QA manual
- In-house testing and training
- Quality Assurance meetings
- Third party testing where available
- Maintenance of training records.

Equipment Maintenance and Calibration: All laboratory and field equipment used as a part of Montrose's emission measurement programs is maintained according to manufacturer's recommendations. A summary of the major equipment maintenance schedules is summarized in Table 1. In addition to routine maintenance, calibrations are performed on all sampling equipment according to the procedures outlined in the applicable test method. The calibration intervals and techniques for major equipment components is summarized in Table 2. The calibration technique may vary to meet regulatory agency requirements.

Knowledge of Current Test Methods: Montrose maintains current copies of EPA, ARB, and

SCAQMD Source Test Manuals and Rules and Regulations.

Chain-of-Custody: Montrose maintains chain-of-custody documentation on all data sheets and samples. Samples are stored in a locked area accessible only to Montrose source test personnel. Data sheets are kept in the custody of the originator, program manager, or in locked storage until return to Montrose office. Electronic field data is duplicated for backup on secure storage media. The original data sheets are used for report preparation and any additions are initialed and dated.

QA Reviews: Periodic field, laboratory, and report reviews are performed by the in-house QA coordinator. Periodically, test plans are reviewed to ensure proper test methods are selected and reports are reviewed to ensure that the methods were followed and any deviations from the methods are justified and documented.

ASTM D7036-04 Required Information

Uncertainty Statement

Montrose is qualified to conduct this test program and has established a quality management system that led to accreditation with ASTM Standard D7036-04 (Standard Practice for Competence of Air Emission Testing Bodies). Montrose participates in annual functional assessments for conformance with D7036-04 which are conducted by the American Association for Laboratory Accreditation (A2LA). All testing performed by Montrose is supervised on site by at least one Qualified Individual (QI) as defined in D7036-04 Section 8.3.2. Data quality objectives for estimating measurement uncertainty within the documented limits in the test methods are met by using approved test protocols for each project as defined in D7036-04 Sections 7.2.1 and 12.10. Additional quality assurance information is presented in the report appendices.

Performance Data

Performance data are available for review.

Qualified Personnel

A qualified individual (QI), defined by performance on a third party or internal test on the test methods, is present on each test event.

Plant Entry and Safety Requirements

Plant Entry

All test personnel are required to check in with the guard at the entrance gate or other designated area. Specific details are provided by the facility and project manager.

Safety Requirements

All personnel shall have the following personal protective equipment (PPE) and wear them where designated:

- Hard Hat
- Safety Glasses
- Steel Toe Boots
- Hearing Protection
- Gloves
- High Temperature Gloves (if required)
- Flame Resistant Clothing (if required)

The following safety measures are followed:

- Good housekeeping
- SDS for all on-site hazardous materials
- Confine selves to necessary areas (stack platform, mobile laboratory, CEMS data acquisition system, control room, administrative areas)
- Knowledge of evacuation procedures

Each facility will provide plant specific safety training.

Table 1
Equipment Maintenance Schedule

Equipment	Acceptance Limits	Frequency of Service	Methods of Service
Pumps	1. Absence of leaks 2. Ability to draw manufacturers required vacuum and flow	As recommended by manufacturer	1. Visual inspection 2. Clean 3. Replace parts 4. Leak check
Flow Meters	1. Free mechanical movement	As recommended by manufacturer	1. Visual inspection 2. Clean 3. Calibrate
Integrated Sampling Tanks	1. Absence of leaks	Depends on nature of use	1. Steam clean 2. Leak check
Mobile Van Sampling System	1. Absence of leaks	Depends on nature of use	1. Change filters 2. Change gas dryer 3. Leak check 4. Check for system contamination
Sampling lines	1. Sample degradation less than 2%	After each test series	1. Blow dry, inert gas through line until dry

Table 2
Major Sampling Equipment Calibration Requirements

Sampling Equipment	Calibration Frequency	Calibration Procedure	Acceptable Calibration Criteria
Continuous Analyzers	Before and After Each Test Day	3-point calibration error test	0.2 %O_2
Continuous Analyzers	Before and After Each Test Run	2-point sample system bias check	0.2 %O_2
Continuous Analyzers	After Each Test Run	2-point analyzer drift determination	0.2 %O_2
CEMS System	Beginning of Each Day	leak check	< 1 in. Hg decrease in 5 min. at > 20 in. Hg
Continuous Analyzers	Semi-Annually	3-point linearity	< 1% of analyzer range
NO_x Analyzer	Daily	NO_2 -> NO converter efficiency	> 90%
Differential Pressure Gauges (except for manometers)	Semi-Annually	Correction factor based on 5-point comparison to standard	± 5%
Differential Pressure Gauges (except for manometers)	Bi-Monthly	3-point comparison to standard, no correction factor	± 5%
Barometer	Semi-Annually	Adjusted to mercury-in-glass or National Weather Service Station	± 0.1 inches Hg
Dry Gas Meter	Semi-Annually	Calibration check at 4 flow rates using a NIST traceable standard	± 2%
Dry Gas Meter	Bi-Monthly	Calibration check at 2 flow rates using a NIST traceable standard	± 2% of semi-annual factor
Dry Gas Meter Orifice	Annually	4-point calibration for ΔH@	--
Temperature Sensors	Semi-Annually	3-point calibration vs. NIST traceable standard	± 1.5%

Note: Calibration requirements that meet applicable regulatory agency requirements are used.

Appendix A.6
Hydrogen Cyanide – Acute Exposure Guideline Levels

PEL & Lethal Exposure Levels to Hydrogen Cyanide

As hydrogen cyanide (CAS number 74-90-8) is an analyte of interest of this test program, and the test methodology involves use of hydrogen cyanide standards, the following table is included to inform of the severity of adverse of effects of varying concentrations of hydrogen cyanide.

Table A-1
Hydrogen Cyanide Acute Exposure Guideline Levels (AEGL)

Class		Concentration (ppm)					Result
		10-min	30-min	1-hour	4-hour	8-hour	
AEGL-1	Non-disabling	2.5	2.5	2.0	1.3	1.0	No adverse effects/slight central nervous system effect in humans
AEGL-2	Disabling	17	10	7.1	3.5	2.5	Some central nervous system depression (monkey)
AEGL-3	Lethal	27	21	15	8.6	6.6	Lethal (LC01) (rat)

Appendix B
General Equations

General Equations
Volumetric Flow Rate

Stack area, A_s, ft^3

$$A = \pi\left(\left(\frac{D_s}{2}\right)\left(\frac{1\ ft}{12\ in}\right)\right)^2$$

Meter Pressure, P_m, in. H_2O

$$P_m = P_{bar} + \frac{\Delta H}{13.6}$$

Stack Pressure, P_s, in. H_2O

$$P_s = P_{bar} + \frac{P_g}{13.6}$$

Volume of water vapor condensed, $V_{wc(std)}$, scf

$$V_{wc(std)} = 0.04716(V_f - V_i)$$

Standard dry gas volume, $V_{m(std)}$, dscf

$$V_{m(std)} = \frac{V_m Y P_m T_{std}}{P_{std} T_m}$$

Moisture content, B_{ws}, dimensionless

$$B_{ws} = \frac{V_{wc(std)}}{V_{m(std)} + V_{wc(std)}}$$

Moisture content at saturation, TB_{ws}, dimensionless

$$TB_{ws} = \frac{10^{\left(6.6911 - \left(\frac{3{,}144}{T_s + 390.86}\right)\right)}}{P_s}$$

Molecular Weight, Dry Basis, M_d, lb/lb mol

$$M_d = 0.32\%O2 + 0.44\%CO_2 + 0.28(100 - \%O_2 - \%CO_2)$$

Molecular Weight, Wet Basis, M_w, lb/lb mol

$$M_w = M_d(1 - B_{ws}) + 18.015(B_{ws})$$

Average Stack Gas Velocity, v_s, ft/s

$$v_s = 85.49(C_p)\left(\frac{\sum_{i=1}^{n}\sqrt{\Delta p}}{n}\right)\sqrt{\frac{T_s}{(P_s)(M_w)}}$$

Volumetric Flow Rate, Actual, acfm

$$Q_a = \frac{60s}{min}(v_s)(A_s)$$

Volumetric Flow Rate, Corrected to Standard Conditions, scfm

$$Q_s = Q_a\left(\frac{T_{std}}{T_s}\right)\left(\frac{P_s}{P_{std}}\right)$$

Volumetric Flow Rate, Corrected to Dry Standard Conditions, dscfm

$$Q_s = Q_a\left(\frac{T_{std}}{T_s}\right)\left(\frac{P_s}{P_{std}}\right)(1 - B_{ws})$$

General Equations
Gas Emissions

Effluent Gas Concentration, C_{Gas}, ppmvd or $\%O_2/\%CO_2$

$$C_{Gas} = (C_{avg} - C_O)\left(\frac{C_{MA}}{C_M - C_O}\right)$$

Effluent Gas Concentration, Corrected to Dry Basis, $C_{Gas,\ dry\ basis}$, ppmvd

$$C_{Gas,\ dry\ basis} = \frac{C_{gas,\ wet\ basis}}{1 - B_{ws}}$$

Effluent Gas Concentration Corrected to 7% O2, $C_{Gas\ @\ 7\%O2}$, ppmvd

$$C_{Gas\ @\ 7\%\ O2} = C_{gas}\left(\frac{20.9 - 7}{20.9 - \%O_2}\right)$$

Effluent Gas Concentration, $C_{Gas,\ lb/dscf}$, lb/dscf (where 1 ppmv of analyte = 1 mole of analyte per 1 million moles of air)

$$C_{Gas,\ lb/dscf} = \left(\frac{mol\ analyte}{1{,}000{,}000\ mol\ air}\right)\left(\frac{1\ mol\ air}{24.056\ L\ air}\right)\left(\frac{28.3168\ L}{ft^3}\right)(MW_{analtye})\left(\frac{1\ lb}{453.592\ g}\right)$$
$$= \frac{(ppmv_{analyte})(MW_{analyte})}{385{,}300{,}000}$$

Gas Emissions Rate, $E_{Gas,\ lb/hr}$, lb/hr

$$E_{Gas,\ lb/hr} = (C_{Gas,\ lb/dscf})(Q_{std})\left(\frac{60\ min}{1\ hr}\right)$$

Gas Emissions Rate, $E_{Gas,\ lb/ton}$, lb/ton

$$E_{Gas,\ lb/ton} = \left(\frac{E_{Gas,\ lb/hr}}{P_{ton/hr}}\right)$$

Appendix “S”
Field Work Safety Plan

SITE SAFETY PLAN BOOKLET

Project: 031486

Customer: CEMEX

Location: Brooksville, Florida

Units: In-Line Kiln 1 & In-Line Kiln 2

Client Project Manager: Blake Ericson

Revision Date: December 2, 2019

Site Safety Plan and JHA Purpose and Instructions

Purpose

Employee safety is the top priority of Montrose Environmental Group. All employees must be trained to assess and mitigate hazards. The District Manager and Project Manager are responsible to ensure all hazards have been properly identified and managed. All employees have Stop Work Authority in all situations where an employee feels they or their co-worker cannot perform a job safely or if there is a task for which they have not been adequately trained.

The Site Safety Plan (SSP) has been developed to help assist Montrose test crews with identifying physical and health hazards and determining how the hazards will be managed. Additionally, the SSP will help each crew manage the safety of the employees by providing emergency procedures and information. The booklet contains a several safety forms that may be required in the field.

Instructions

The SSP consists of the following:

1. A Pre-Mobilization Test Plan – To be completed in it's entirety by the client project Manager prior to the test.

2. A Job Hazard Analysis is a standardized, two-page, fillable form that is used to evaluated the task/site's particular hazards and controls. The form also includes a daily toolbox topic and daily hazard review with sign off by the team. The client Project Manager is responsible to complete the JHA form through section 8. Upon arrival at the test site, the team will review the form for accuracy, making any corrections required and complete the remainder of the JHA. Section 9 will require at least three tasks, hazards and controls be identified for the project. Each team member has the option to discuss making changes or adding to the JHA and must sign on the Job Hazard Analysis form in agreement and sign in Section 10. The JHA is to be modified when conditions change. A toolbox meeting with a daily topic in addition to a review of the hazard analysis is required daily for the duration of the test. An additional sheet of paper with the toolbox topic and signatures can be added to the SSP packet.

3. Hazard Control Matrix - contains useful information on both engineering and administrative controls that a crew can use to reduce or eliminate the hazards they have observed plus applicable PPE that may be required.

4. Additional Forms, as applicable

   a. Aerial Lift Inspection Form

   b. Heat Stress Prevention Form Based on Heat Index

   c. Extended Hours Form

The SSP is a living document. The Project Manager should continually update their SSPs as new information and conditions change or if new hazards are presented.

Each completed SSP should be maintained with the Test Plan in the office for a period of 3 years. There will be an audit process developed for the Site Safety Plans.

PRE-MOBILIZATION TEST INFORMATION

PROJECT NAME/LOCATION: CEMEX PROJECT #: 031486

TEST DATE: 11/28/23-12/1/23 PROJECT MANAGER: _____

TEST SCOPE: Methods 1-4, 26A, ASTMD6348-12/Method 320

SITE CONTACT: Name: Greg Bridge Contact Phone: 352-442-5375

Source Type: New Source: ____ Revisit: ____ Prj#/Date/Tech: _____

Coal Fired Electric Utility: ____ Ethanol Plant: ____ Chemical Mfg. of _____

Cement/Lime Kiln Plant: X Specialty Mfg. of: _____ Other: _____

Anticipated Effluent Composition – check all that apply and fill in expected concentration in ppm/%

☐	☐	☐	☐	☐
CO	NO_X	SO_2	VOC	other

If other, explain: _____

Flammable: _____ **Toxic:** _____ **Corrosive:** _____ **Dust:** X

Engineering Controls to be Implemented:

_____

_____

Additional Safety Equipment Required:

Personal gas monitors: ____

Respiratory Protection:

Half Face____ Full Face____ HEPA Filters____ Supplied Air: _____ (Safety Dept. Approval)

Approximate Flue Gas Temperatures, (F)

☑	☑	☐	☐	☐
below 210	210 to 450	450 to 950	above 950	other

If other, explain: _____

Approximate Duct Pressure, (iwg):

☑	☐	☐	☐	☐
below -3	-3 to +3	+3 to +7	above +7	other

If other, explain: _____

PRE-MOBILIZATION TEST INFORMATION

Sampling Location: **Stack Port** X **Duct Port** ____

Approximate Sampling Platform Height, (ft)

☐	☐	☐	☑	☐
below 6	6 to 50	50 to 100	above 100	other

If other, explain: _____

Access and Protection:

Elevators: X Ladders: ____ Aerial Lift: ____ Scaffold: ____ Equipment Hoist: ____

Guardrails: ____ Toe plate: ____ Engineered Tie Off Points: ____ Heat Shield: ____

Other:_____

Describe how equipment will be mobilized to the sampling location:

_____

_____

Additional Information:

_____

_____

Effluent Chemical Regulatory Limits

Gas Name	Chemical Formula	Cal OSHA PEL[1] (ppm)	Cal OSHA STEL[2] (ppm)	NIOSH REL TWA[3] (ppm)	Cal OSHA Ceiling (ppm)	IDLH[4] (ppm)
Carbon Monoxide	CO	25	200	35	200	1,200
Nitric Oxide	NO_x	25	ND[5]	25	ND	100
Sulfur Dioxide	SO_2	2	5	2	ND	100
Hydrogen Chloride	HCl	0.3	2	ND	2	50
Hydrogen Sulfide	H_2S	10	15	10 (10 min.)[C]	50	100

California Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) based on an 8-hour shift;
2: Cal OSHA Short-term Exposure Limit (STEL) based on a 15-minute period;
3: National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit (REL) Time-weighted Average (TWA) based on an 8-hour shift;
4: Immediately Dangerous to Life or Health (IDLH);
5: Not Defined (ND);
C: Ceiling Limit - Maximum allowable human exposure limit for an airborne or gaseous substance, which is not to be exceeded, even momentarily.

Prepared by: _____ Date: _____

Reviewed by: _____ Date: _____

1.

Client	CEMEX	Contact Name		Date	
Facility	Miami Cement Plant	SSP Writer		PM	
Client Rep					

Job Preparation

☐ Job Site Walk Through Completed ☐ Site Specific Training Complete

☐ Safe Work Permit Received from Client

All hazards and mitigation steps must be documented. If this JHA does not cover all the hazards identified, use Section 9 to document that information.

If the heat index is expected to be above 91°, fill out the Heat Stress Prevention Form.

2. **Facility Information/Emergency Preparedness**

If non-emergency medical attention is needed, call: AXIOM #: 877-502-9466.

Plant Emergency # _____ Certified First Aid Person: _____

EMS Location Evacuation Routes Rally Point

Severe Weather Shelter Location Eye Wash & Safety Shower Location

Operational: ☐ Yes ☐ No

Source Information: (list type): _____

Stack Gas Temp. (^{o}F) _____ Stack Gas Press. ("H_2O) _____ Stack Gas Components: _____

Stack Gas Inhalation Potential? ☐ Yes ☐ No If yes, see List of Hazard Chemicals.

3. **Error Risk**

☐ Time Pressure	☐ Remote Work Location	☐ > 12 hr shift	☐ Working > 8 consecutive days
☐ Lack of procedures	☐ Extreme temps, wind >30mph	☐ Personal illness/fatigue	☐ Vague work guidance
☐ Monotonous Activity	☐ First day back after time off	☐ Multiple job locations	☐ Other:

4.

Physical Hazards	**Hazard Controls**
Dust Hazards	☐ Dust Mask ☐ Goggles ☐ Other: _____
Thermal Burn	☐ Hot Gloves ☐ Heat Shields ☐ Other Protective Clothing: _____
Electrical Hazards	☐ Connections Protected from Elements ☐ External GFCI ☐ Other: _____ ☐ XP Rating Requirement ☐ Intrinsically Safe Requirement
Inadequate Lighting	☐ Install Temporary Lighting ☐ Headlamps
Slip and Trip	☐ Housekeeping ☐ Barricade Area ☐ Other: _____
Hand Protection	☐ Cut Resistant Gloves ☐ Pinch Pts. ☐ General ☐ Electrical ☐ Impact Resistant ☐ Other: _____

Potential Hazards for Consideration

Secondary Permits	☐ Hot Work ☐ Confined Space ☐ Excavation
Working from Heights **See also Sect. 7**	☐ Falling objects ☐ Fall protection ☐ Drop zone protection ☐ Platform load ratings ☐ Scaffold inspection ☐ Ladder inspection ☐ Barricades for equipment
Electrical	☐ Exposed wire/connector ☐ Verify equipment grounding ☐ Arc Flash
Lifting	☐ Crane lift plan ☐ Rigging inspection ☐ Tag lines used ☐ Hoists in place
Respiratory **See also Sect. 8**	☐ Unexpected exposure ☐ Chemical ☐ Dust (combustible) ☐ PEL provided ☐ Cartridges or supplied air available ☐ Gas detection equipment

5. **Required PPE** ☐ Hard Hats ☐ Safety Glasses ☐ Safety Toe Shoe/Boot ☐ Hearing Protection ☐ Safety Spotter

☐ Hi-Vis Vests	☐ Harness/Lanyard*	☐ Goggles	☐ Personal Monitor Type: _____
☐ Metatarsal Guards	☐ Hot Gloves	☐ Face Shield	☐ Respirator Type: _____
☐ Nomex/FRC	☐ Other PPE:		

Additional Work Place Hazards

6. **Critical Procedures** – check all that apply – ***indicates additional form must be completed or collected from client

☐ Heat Stress Prevention* ☐ Confined Space* ☐ Aerial Work Platform* ☐ Roof Work ☐ Scaffold

☐ Cold Weather Work ☐ Hazardous Energy Control* ☐ Exposure Monitoring ☐ Other: _____

7. **Working From Heights**

Fall Protection	☐ Fixed Guardrails/Toe boards ☐ Fall Prevention PPE Warning Line System
Falling Objects Protection	☐ Barricading ☐ Netting ☐ House Keeping ☐ Tethered Tools ☐ Catch Blanket or Tarp
Fall Hazard Communication	☐ Adjacent/Overhead Workers ☐ Contractor Contact ☐ Client Contact

8. **Other Considerations**

Environmental Hazards - Weather Forecast

☐ Heat/Cold ☐ Lightning ☐ Rain ☐ Snow ☐ Ice ☐ Tornado ☐ Wind Speed

Steps for Mitigation:

Electrical Safety Planning

Plant Hook up: ☐ 110V ☐ 220/240V ☐ 480V ☐ Generator ☐ Hard wired into panel

Electrical Classified Area: ☐ Yes ☐ No Trailer Grounded: ☐ Yes ☐ No Plug Type _____

Electrical Hook Up Responsibility: _____

List of Hazardous Chemicals **Other Chemicals:**

☐ Acetone ☐ Nitric Acid ☐ Hydrogen Peroxide ☐ Compressed Gases _____

☐ Hexane ☐ Sulfuric Acid ☐ Isopropyl Alcohol ☐ Flammable Gas _____

☐ Toluene ☐ Hydrochloric Acid ☐ Liquid Nitrogen ☐ Non-Flammable Gas _____

☐ H2S ☐ Carbon Monoxide _____ _____ _____

Steps for Mitigation:

Wildlife/Fauna in Area

☐ Poison Ivy ☐ Poison Oak ☐ Insects: _____ ☐ Wildlife: _____

Personnel w/ known allergies to bees stings or other allergens? ☐ Yes _____ ☐ No

9. **Observed Hazards and Mitigation Steps**

Task	Potential Hazard(s)	Steps for Mitigation
•	1	1
	2	2
	3	3
•	1	1
	2	2
	3	3
•	1	1
	2	2
	3	3
•	1	1
	2	2
	3	3

10. JHA REVIEW: Crew Names & Signatures

Printed Name	Signature	Date	Printed Name	Signature	Date

11. Daily JHA Meeting & Review

Items to review:

- Change in conditions
- Extended work hours
- Daily Safety Topic
- New workers or contractors
- Occurrence of near misses or injuries

Initialing demonstrates that site conditions and hazards have not changed from the original SSP. If changes did occur, make the necessary updates to this JHA and add notes as applicable in Section 9.

Day	Discussion Topic	Initials
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		

Daily Aerial Lift Inspection Form

All checks must be completed prior to each work shift, before operation of the aerial lift. This checklist must be used at the beginning of each shift or following 6 to 8 hours of use.

Aerial Lift Model #:	**Serial Number:**
Make:	**Rented or Owned:**

- Check "Yes" if an item is adequate, operational, and safe.
- Check "No" to indicate that a repair or other corrective action is required prior to use.
- Check "N/A" to indicate "Not Applicable."

Items to be Inspected	Yes	No	N/A
1. All aerial lift components are in working condition (i.e. no loose or missing parts, torn or loose hoses, etc.) – if something can be easily loosened by hand then it is not sufficient.	☐	☐	☐
2. Hydraulic fluid level is sufficient, with the platform fully lowered	☐	☐	☐
3. Hydraulic system pressure (see manufacturer specs) is acceptable. If the pressure is low, determine cause and repair in accordance with accepted procedures as outlined in service manual.	☐	☐	☐
4. Tires and wheel lug nuts (for tightness)	☐	☐	☐
5. Hoses and cables (i.e. worn areas or chafing)	☐	☐	☐
6. Platform rails and safety gate (no damage present)	☐	☐	☐
7. Pivot pins secure	☐	☐	☐
8. Welds are not cracked and structural members are not bent or broken	☐	☐	☐
9. Warning and instructional labels are legible and secure, and load capacity is clearly marked.	☐	☐	☐
10. Manufacturer's Instruction Manual is present inside the bucket	☐	☐	☐
11. Base controls (switches and push buttons) can be properly operated	☐	☐	☐
12. Platform conditions are safe (i.e. not slippery)	☐	☐	☐
13. Fire extinguisher is present, mounted and fully charged, located inside the bucket	☐	☐	☐
14. Headlights, safety strobe light and back-up alarm are functional	☐	☐	☐
15. Workplace is free of hazards (overhead powerlines, obstructions, level surface, high winds, etc.) ***Do not operate if winds are 20 mph, unless otherwise specified by manufacturer recommendations.**	☐	☐	☐

Operator Name & Signature | Location | Date

Ground Control Name & Signature | Location | Date

Harness Inspections:

Printed Name | Signature | Date

Printed Name | Signature | Date

Printed Name | Signature | Date

Extended Hours Safety Audit

Project Number: _____ Date: _____ Time: _____

When a project is expected to extend past a 14-hour work day, this form must be completed to evaluate the condition of the crew, and the safety of the work environment.

Permission to proceed into extended work hours must come from a District Manager (DM) or Regional Vice President (RVP). Technical RVPs can authorize moving forward, if they are in the field or if they are managing the project.

1. Hold test crew meeting **Test crew initials:** _____

The test leader should look for signs of the following in their crews:

• Irritability • Lack of motivation • Headaches • Giddiness	• Fatigue • Depression • Reduced alertness, lack of concentration and memory

The test leader should assess the environmental and hazardous concerns:

• Temperature and weather • Lighting • Working from Heights	• Hoisting • PPE (i.e. respirators, etc.) • Pollutant concentration in ambient air (SO_2, H_2S, ect.)

2. Notify DM or RVP

The PM must contact either the DM or RVP to discuss the safety issues that may arise due to the extended work period. During this time, they can come to an agreement on how to proceed. Items to discuss include:

- Reason for extended hours
- Reason for delay
- Production limitations
- Impending Weather

3. Contact the client

The PM, DM or RVP must discuss with client any identified safety concerns, the client's needs and mutually agree on how to proceed. Discussion should also include the appropriate rest period needed before the next day's work shift can begin. The DM and/or a RVP must be informed on the final decision.

Final Outcome:	
Approver:	

Heat Stress Prevention Form

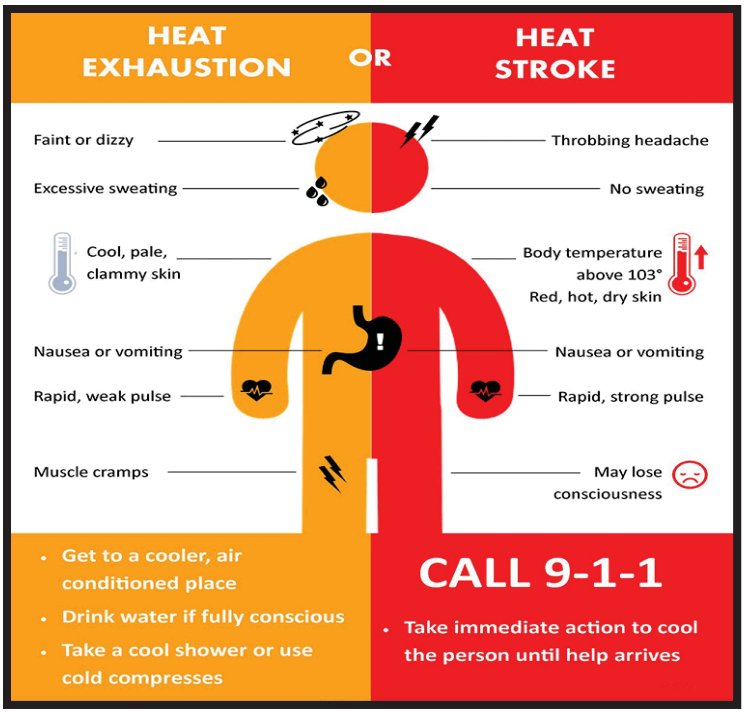
This form is to be used when the Expected Heat Index is above 91° F, and is to be kept with project documentation.

Project Manager (PM):	**Expected High Temp:**
Date(s):	**Expected Heat Index:**

1. Review the signs of Heat Exhaustion and Heat Stroke

2. <u>If Heat Index is above 91° F:</u>
   - Provide cold water and/or sports drinks to all field staff (avoid caffeinated drinks and energy drinks which can increase core temperature).
     - Bring no less than one gallon of water per employee
   - If employee(s) are dehydrated, on blood pressure medication or not acclimated to heat, ensure they are aware of the heightened risk for heat illness
   - Provide cool head bands/vests/etc.
   - Have ice available to employees
   - Implement work shift rotations and breaks, particularly for employees working in direct sunlight.
   - Provide as much shade at the jobsite as possible, including tarps, tents or other acceptable temporary structures.
   - PM should interview each field staff periodically to evaluate for signs of heat illness

3. <u>If Heat Index is above 103° F:</u>
   - Employees must stop for drinks and breaks every hour (about 4 cups/hour)
   - Employees are not permitted to work alone for more than one hour at a time without a break offering shade and drinks
   - Employees should wear cool bands and vests if working outside more than one hour at a time
   - PM should interview each field staff every 2 hours to evaluate for signs of heat illness



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This is the Last Page of This Document

If you have any questions, please contact one of the following individuals by email or phone.

Name:	Neal Hendricks
Title:	Reporting Hub Manager
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Name:	Blake Ericson
Title:	Business Development
Email:	bericson@montrose-env.com
Phone:	586-242-3599

Appendix E.2
Miami Test Plan

Source Test Plan for 2023 ICR Testing
In-Line Kiln (EU 018)
CEMEX Construction Materials Florida LLC
Miami Cement Plant, Facility ID No 0250014
Miami, Florida

Prepared For:

CEMEX Miami Cement Plant
1200 NW 137th Ave
Miami, FL 33182

Prepared By:

Montrose Air Quality Services, LLC
30 Monroe Drive
Birmingham, AL 35124

For Submission To:

U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards
109 T.W. Alexander Drive
Durham, NC 27709

Document Number: SE052AS-031494-PP-667
Proposed Test Date(s): December 5 & 6, 2023
Submittal Date: October 20, 2023

MONTROSE AIR QUALITY SERVICES

STAC STACK TESTING ACCREDITATION COUNCIL

A2LA ACCREDITED TO ASTM D7036 ONLY

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Review and Certification

I certify that, to the best of my knowledge, the information contained in this document is complete and accurate and conforms to the requirements of the Montrose Quality Management System and ASTM D7036-04.

Signature:  Date: 10 / 20 / 2023

Name: Blake Ericson Title: Business Developer

I have reviewed, technically and editorially, details and other appropriate written materials contained herein. I hereby certify that to the best of my knowledge the presented material is authentic and accurate and conforms to the requirements of the Montrose Quality Management System and ASTM D7036-04.

Signature:  Date: 10 / 20 / 2023

Name: Neal Hendricks Title: Reporting Hub Manager

Facility Certification

I have reviewed this document and agree that the information contained herein is true, accurate, and complete, to the best of my knowledge.

Signature:  Date: 10 / 20 / 2023

Name: Greg Bridge Title: Corporate Environmental Manager

Table of Contents

Section **Page**

1.0 Introduction 6
1.1 Summary of Test Program 6
1.2 Reporting Units and Quality Assurance and Control Requirements 7
1.3 Key Personnel 9
2.0 Plant and Sampling Location Descriptions 11
2.1 Process Description, Operation, and Control Equipment 11
2.1.1 Facility Description 11
2.1.2 Emissions Unit Description 12
2.2 Flue Gas Sampling Location 13
2.3 Operating Conditions and Process Data 14
2.4 Plant Safety 15
2.4.1 Safety Responsibilities 15
2.4.2 Safety Program and Requirements 16
3.0 Sampling and Analytical Procedures 18
3.1 Test Methods 18
3.1.1 EPA Method 3A 18
3.1.2 EPA Method 26A 19
3.1.3 ASTM D6348-12 & EPA Method 320 21
3.2 Process Test Methods 24
4.0 Quality Assurance and Reporting 25
4.1 QA Audits 25
4.2 Quality Control Procedures 25
4.2.1 Equipment Inspection and Maintenance 25
4.2.2 Audit Samples 25
4.3 Data Analysis and Validation 25
4.4 Sample Identification and Custody 26
4.5 Quality Statement 26
4.6 Reporting 26
4.6.1 Example Report Format 27
4.6.2 Example Presentation of Test Results 27

List of Appendices

A Supporting Information 30
A.1 Units and Abbreviations 31
A.2 Accreditation Information/Certifications 39
A.3 Process Flow Diagrams 41
A.4 Stack Schematic 43
A.5 Quality Assurance Program Summary 45
A.6 Hydrogen Cyanide – Acute Exposure Guideline Levels 51
B General Equations 53
"S" Field Work Safety Plan 56

List of Tables

1-1 Summary of Test Program and Proposed Schedule 7
1-2 Reporting Units and Portland Cement Association Quality Assurance and Control Requirements 7
1-3 Test Personnel and Responsibilities 10
2-1 Sampling Location 13
2-2 Operating and Process Conditions 14
4-1 Example Cement ICR Emissions Results - In-Line Kiln Main Stack, Raw Mill Off 28
A-1 Hydrogen Cyanide Acute Exposure Guideline Levels (AEGL) 51

List of Figures

3-1 EPA Method 3A Sampling Train 19
3-2 EPA Method 26A Sampling Train 21
3-3 EPA Method 320 Sampling Train 24
4-1 Typical Report Format 27
A-1 Process Flow Diagram 41
A-2 Stack Sample Port Location – In-Line Kiln Main Stack 43

1.0 Introduction

1.1 Summary of Test Program

CEMEX Construction Materials Florida LLC – CEMEX Miami Cement Plant (CEMEX) contracted Montrose Air Quality Services, LLC (Montrose) to perform air emissions source testing in accordance with the Clean Air Act section 114 information collection request Phase 2 requirements on the In-Line Kiln Main Stack at the Miami Cement Plant facility located in Miami, Florida.

The test program has been designed based on the USEPA Clean Air Act Section 114 Request Letter and attachments, local rules and regulations, as well as related testing procedures set forth in EPA 40 CFR, Part 60.

The specific objectives are to:

- To acquire data of known accuracy and precision for each of the target analytes using specific EPA methodology combined with standardized quality assurance and quality control procedures that are stricter than those contained in the EPA methods.
- To determine the emissions, if any, of HCN, HF and Cl_2 under representative process and control system operating conditions
- To provide a standardized data set to the EPA so that reliable facility inter-comparisons of emissions can be made
- Conduct the test program with a focus on safety

Montrose will provide the test personnel and the necessary equipment to measure emissions as outlined in this test plan. Facility personnel will provide the process and production data to be included in the final report. A summary of the test program and proposed schedule is presented in Table 1-1.

Table 1-1
Summary of Test Program and Proposed Schedule

Proposed Test Date(s)	Unit ID / Source Name	Activity / Parameters	Test Methods	No. of Runs[2]	Duration (Minutes)
12/5/23 & 12/6/23	In-Line Kiln Main Stack	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	60
12/5/23 & 12/6/23	In-Line Kiln Main Stack	O_2	EPA 3A	3	60
12/5/23 & 12/6/23	In-Line Kiln Main Stack	HCl, HF[1] and Cl_2	EPA 26A	3 paired	60
12/5/23 & 12/6/23	In-Line Kiln Main Stack	H_2O, HCN, HF[1], CO_2	ASTM D6348-12/ EPA 320	3	60
12/5/23 & 12/6/23	In-Line Kiln Main Stack	Post-test meter calibration check	EPA ALT-009	--	--
12/5/23 & 12/6/23	In-Line Kiln Main Stack	Post-test thermocouple calibration check	EPA ALT-011	--	--

(1) HF results will be reported for the Method 26A trains and compared to FTIR results by ASTM D6348/EPA Method 320 results, as requested by EPA.
(2) These runs will be conducted on the In-Line Kiln under raw mill-on and raw mill-off normal operating conditions.

To simplify this test plan, a list of Units and Abbreviations is included in Appendix A. Throughout this test plan, chemical nomenclature, acronyms, and reporting units are not defined. Please refer to the list for specific details.

1.2 Reporting Units and Quality Assurance and Control Requirements

The reporting units and the required quality assurance and control criteria are presented in Table 1-2.

Table 1-2
Reporting Units and Portland Cement Association Quality Assurance and Control Requirements

Unit ID / Source Name	Parameter	Reporting Units	Detection Limit (for run duration)	QA and QC
In-Line Kiln Main Stack	Volumetric flow rate	acfm, scfm, dscfm	--	As per M26A isokinetic testing or separately by Methods 1-3. FTIR measurements for H_2O. Wind Tunnel calibrated pitot tube having a Cp of 0.84 or less is required for all flow measurements. Compare preliminary velocity traverse measurements and sample run flow rate measurements to installed certified flow rate monitor. Investigate and resolve differences greater than 10% of average flow rate.

Unit ID / Source Name	Parameter	Reporting Units	Detection Limit (for run duration)	QA and QC
In-Line Kiln Main Stack	O_2	% vd	--	Analyte Concentrations corrected @ 7% O_2 Span is 10%, 15%, or 20% (for co-mingled stacks only) Acceptance criteria are 0.2% O_2 difference for analyzer calibration error, and 0.2% O_2 for system bias checks, and zero and upscale drift checks.
In-Line Kiln Main Stack	CO_2	% vd	--	--
In-Line Kiln Main Stack	Moisture	%	--	--
In-Line Kiln Main Stack	HCN	ppmvd @ 7% O_2, lb/hr, & lb/ton clinker	0.5 ppm	Increase scans if needed to achieve detection limits. Increasing to 400 from relative 64 (gives a 2.5 S/N advantage) HCN spiking before and after each run by adding 10% or less spike to approximately double the native effluent concentration, or conduct spike to add 3-4 ppm to native concentration, whichever results in greater spiked concentration. Spike recovery results shall be ±20% of the excepted value or ±0.5 ppm, whichever is less restrictive. 5% CTS requirement
In-Line Kiln Main Stack	HF	ppmvd @ 7% O_2, lb/hr, & lb/ton clinker	0.2-0.3 ppm	Rely on CTS (5%), HCN and tracer gas responses to validate HF FTIR data
In-Line Kiln Main Stack	Cl2	ppmvd @ 7% O_2, lb/hr, & lb/ton clinker	~ 0.07 mg/m3 (~0.2 ppm)	Duplicate Simultaneous Trains; Collect minimum of 1 dscm for each sampling train. Acceptance criteria for paired samples: 10% Relative Deviation or 0.2 ppm absolute difference, whichever is least restrictive Insert dry impinger between acid and base impingers

1.3 Key Personnel

A list of project participants is included below:

Facility Information

Source Location:	CEMEX Construction Materials FL, LLC Miami Cement Plant 1200 NW 137th Avenue Miami, FL 33182

Project Contact:	Greg Bridge	Lillian DePrimo
Role:	Corporate Environmental Manager	Vice President, Environmental
Company:	CEMEX	CEMEX
Telephone:	352-442-5375	--
Email:	gregm.bridge@cemex.com	lillianf.deprimo@cemex.com

Agency Information

Regulatory Agency:	U.S. EPA
Agency Contact:	Brian Storey
Telephone:	(919) 541-1103
Email:	storey.brian@epa.gov

Testing Company Information

Testing Firm:	Montrose Air Quality Services, LLC	
Contact:	Blake Ericson	Todd Gregg
Title:	Business Development	District Manager
Telephone:	586-242-3599	865-250-9067
Email:	bericson@montrose-env.com	togregg@montrose-env.com

Laboratory Information

Laboratory:	Montrose Environmental	Enthalpy Analytical
City, State:	Mount Pleasant, Michigan	Raleigh, North Carolina
Method:	EPA 320	EPA 26A

Table 1-3 details the roles and responsibilities of the test team.

Table 1-3
Test Personnel and Responsibilities

Role	Primary Assignment	Additional Responsibilities
Client Project Manager	Coordinate project	Post-test follow up
Field Project Manager	Operate mobile lab	Facility interface, test crew coordination
FTIR Field Operator	Operate FTIR	Facility interface, test crew coordination
FTIR Oversight/Review	Review FTIR operations and data per quality objectives	Post-test data coordination
Field Technician	Execute stack platform responsibilities	Preparation, support PM

2.0 Plant and Sampling Location Descriptions

2.1 Process Description, Operation, and Control Equipment

2.1.1 Facility Description

The Miami Cement Plant is a Portland cement manufacturing plant that primarily consists of the following emission units (EU): a dry process preheater/precalciner (PH/C) kiln with an in-line raw mill, a limestone quarry and crushing system, facilities for receiving materials by rail and truck, storage piles for short term material storage, a storage building for intermediate raw material and clinker storage, a stone dryer and soil thermal treatment plant, 6 finish mills, 2 packhouses, 32 cement silos, a rail and truck bulk loadout facility, a liquid fuel tank farm and the Sweetwater Ready Mix Concrete Batch Facility and Concrete Block Plant, a concrete batching plant and concrete block plant owned by CEMEX located on an adjacent facility. This facility is also supported by a portable diesel engine-powered crusher.

Limestone is extracted from the quarry, processed and combined with various other materials (including, but not limited to, bauxite, ash, shale and gypsum) in the raw mill and mixed to achieve the desired chemical composition of calcium, silica, alumina, iron and other constituents. The mixture of raw materials, known as raw meal, is fed into a vertical roller mill to be ground into fine particulates. The raw meal is then fed into a rotary kiln.

The kiln fires mixes of permitted fuels to heat the raw meal, which chemically transforms the raw meal into clinker. After passing through the kiln, the clinker enters the clinker cooler. After being cooled, the clinker is discharged into storage silos. The kiln exhaust is partially vented to the raw mill to preheat the raw meal prior to being fed into the kiln preheater and partially vented to the coal mill to dry coal. Coal from the coal mill is processed and stored prior to combustion in the kiln and calciner burners.

Clinker is transported to the six horizontal, cylindrical finish mills (Finish Mill Nos. 1-6), which are filled with grinding media. Clinker and additives such as gypsum are ground into fine, powdered cement by the rotating mills.

Cement from the finish mills is pneumatically to a system of 32 bulk cement storage silos. Cement is withdrawn from these silos for distribution via trucks, railroad cars and bags. Cement is also transported to a packhouse with two bagging lines.

The adjacent Sweetwater Ready Mix Concrete Batch Facility and Concrete Block Plant consists of 2 twin- compartment cement silos, an aggregate handling system, a loadout system and the concrete block plant. Aggregates, including various sizes of gravel, natural sand and screenings, are mixed with finished cement, water and liquid admixtures in varying compositions to produce read-mix concrete or concrete blocks. Read-mix concrete is then loaded into mixing trucks, where it is mixed in transit to job sites. Concrete used to make blocks is loaded into a mixer machine which then feeds into block molds. The blocks

are cured in unheated kilns before being transported to a paved yard for storage.

2.1.2 Emissions Unit Description

This emissions unit consists of a dry process PH/C kiln, in-line raw mill and clinker cooler. The raw meal is fed into the kiln system where it passes through or bypasses a 5-stage preheater before entering the rotary kiln. The kiln burns fuels to heat the raw meal to a temperature where it chemically transforms into clinker before being cooled and transported to clinker storage units. The kiln is permitted to produce up to 4,050 tons of clinker per day and 1,300,000 tons of clinker per consecutive 12-month period. The kiln is permitted to burn coal, petroleum coke, propane, No. 2 fuel oil, residual fuel oil, limited amounts of on-specification and off-specification used oil and limited amounts of alternative fuels. Alternative fuels are fed into the kiln using mechanical and pneumatic handling and feeding systems. The tire injection mechanism system (TIMS) uses an automated pitching device to launch one tire at a time into the front of the kiln.

Kiln exhaust gas and waste heat vents into the preheater, raw mill and coal mill before exiting partially out of the main kiln stack and the coal mill stack. The main kiln stack is equipped with a baghouse for PM control and is shared by the kiln, some raw mill operations and the clinker cooler. The main kiln stack is 359 feet (ft) tall with an exit diameter of 11 ft. According to recent application data, exhaust gas exits the stack at volumetric flow rates of 348,377 actual cubic feet per minute (acfm) and 212,492 dry standard cubic feet per minute (dscfm) and an exit temperature of 282°F.

Mercury (Hg) emissions from coal combustion and raw meal heating are controlled by dust shuttling and activated carbon injection (ACI). The kiln uses dry sorbent injection (DSI) as needed to control acid gas emissions. Gas temperature inside the kiln system baghouse inlet is controlled to minimize dioxin/furan (d/f) emissions. The main kiln stack is equipped with continuous monitoring systems (CMS) for nitrogen oxide (NO_X) emissions, carbon monoxide (CO), total hydrocarbons (THC), sulfur dioxide (SO_2) used as a surrogate for hydrogen chloride (HCl) emissions compliance, Hg and carbon dioxide (CO_2).

The main kiln stack and baghouse emissions point 421-BF1 is identified as the emissions point to the Main Stack with dust collector for preheater/precalciner/raw mill/kiln/clinker cooler.

2.2 Flue Gas Sampling Location

Actual stack measurements, number of traverse points, and location of traverse points will be evaluated in the field as part of the test program. Table 2-1 presents the anticipated stack measurements based on the historical data and traverse points for the sampling locations listed.

Table 2-1
Sampling Location

Sampling Location	Stack Inside Diameter (in.)	Distance from Nearest Disturbance		Number of Traverse Points
		Downstream EPA "B" (in./dia.)	Upstream EPA "A" (in./dia.)	
In-Line Kiln Main Stack	132.4	1842/31.9	1220/9.2	Isokinetic: 12 (3/port) Gaseous: Single

The sample location is verified in the field to conform to EPA Method 1. Acceptable cyclonic flow conditions are confirmed prior to testing using EPA Method 1, Section 11.4. Appendix A presents process flow diagrams and stack schematics.

2.3 Operating Conditions and Process Data

The facility operates continuously for 24 hours per day and 365 days per year. Emission tests are performed during normal representative operation, with the in-line raw mill both on and off. The unit is tested when operating in accordance with the Clean Air Act section 114 information collection request Phase 2 requirements:

- Duplicate trains are required for each test run for Method 26A.

For this testing program, the In-Line Kiln is being tested under two test scenarios:

- Raw Mill On, normal operating conditions (SNCR on, possibly lime injection on)
- Raw Mill Off, normal operating conditions (SNCR on, possibly lime injection on)

Please see Table 2-2 for facility specific operating and process conditions.

Table 2-2
Operating and Process Conditions

Target Analyte	Test Method	Duration	Process Conditions
O_2	3A	3 1-hour runs for each process and/or control condition	--
Volumetric flow rate	M1-4	3 1-hour runs for each process and/or control condition	--
Cl_2	M26A	3 1-hour runs for each process and/or control condition	Mill On Mill Off
HF	ASTM D6348-12 and EPA 320	3 1-hour runs for each process and/or control condition	Mill On Mill Off
HCN	ASTM D6348-12/ EPA 320	3 1-hour runs for each process and/or control condition	Mill On Mill Off

Plant personnel are responsible for establishing the test conditions and collecting all applicable unit-operating data. Data collected includes the following parameters:

- Clinker Production Rates, Tons/hr
- Baghouse inlet temperature, °F
- Kiln Feed Production Rates, Tons/hr
- Applicable CEMS Data

2.4 Plant Safety

Montrose will comply with all safety requirements at the facility. The facility Client Sponsor, or designated point of contact, is responsible for ensuring routine compliance with plant entry, health, and safety requirements. The Client Sponsor has the authority to impose or waive facility restrictions. The Montrose test team leader has the authority to negotiate any deviations from the facility restrictions with the Client Sponsor. Any deviations must be documented.

2.4.1 Safety Responsibilities

Planning

- Montrose must complete a field review with the Client Sponsor prior to the project date. The purpose of the review is to develop a scope of work that identifies the conditions, equipment, methods, and physical locations that will be utilized along with any policies or procedures that will affect our work
- We must reach an agreement on the proper use of client emergency services and ensure that proper response personnel are available, as needed
- The potential for chemical exposure and actions to be taken in case of exposure must be communicated to Montrose. This information must include expected concentrations of the chemicals and the equipment used to identify the substances.
- Montrose will provide a list of equipment being brought to the site, if required by the client
- All test personnel shall complete site-specific hazard awareness training before entering each cement plant.

Project Day

- All test personnel entering cement plants shall have MSHA Part 46 training (initial and annual updates) and documentation of MSA training records in-hand
- Montrose personnel will arrive with the appropriate training and credentials for the activities they will be performing and the equipment that they will operate
- Our team will meet daily to review the Project Scope, Job Hazard Assessment, and Work Permits. The Client Sponsor and Operations Team are invited to

participate.

- Montrose will provide equipment that can interface with the client utilities previously identified in the planning phase and only work with equipment that our client has made ready and prepared for connection
- We will follow client direction regarding driving safety, safe work permitting, staging of equipment, and other crafts or work in the area
- As per EPA 40 CFR, Part 60 Subpart A, Section 60.8, the facility must provide the following provisions at each sample location:
  - Sampling ports, which meet EPA minimum requirements for testing. The caps should be removed or be hand-tight.
  - Safe sampling platforms
  - Safe access to the platforms and test ports, including any scaffolding or man lifts
  - Sufficient utilities to perform all necessary testing
- Montrose will use the client communication system, as directed, in case of plant or project emergency
- Any adverse conditions, unplanned shutdowns or other deviations to the agreed scope and project plan must be reviewed with the Client Sponsor prior to continuing work. This will include any safe work permit and hazard assessment updates.

Completion

- Montrose personnel will report any process concerns, incidents or near misses to the Client Sponsor prior to leaving the site
- Montrose will clean up our work area to the same condition as it was prior to our arrival
- We will ensure that all utilities, connection points or equipment have been returned to the pre-project condition or as stated in the safe work permit. In addition, we will walk out the job completion with Operations and the Client Sponsor if required by the facility.

2.4.2 Safety Program and Requirements

Montrose has a comprehensive health and safety program that satisfies State and Federal OSHA requirements. The program includes an Illness and Injury Prevention Program, site-specific safety meetings, and training in safety awareness and procedures. The basic elements include:

- All regulatory required policies/procedures and training for OSHA, EPA and FMCSA
- Medical monitoring, as necessary
- Use of Personal Protective Equipment (PPE) and chemical detection equipment

- Hazard communication
- Pre-test and daily toolbox meetings
- Continued evaluation of work and potential hazards
- Near-miss and incident reporting procedures as required by Montrose and the Client

Montrose will provide standard PPE to employees. The PPE will include but is not limited to; hard hats, safety shoes, glasses with side shields or goggles, hearing protection, hand protections, and fall protection. In addition, our trailers are equipped with four gas detectors to ensure that workspace has no unexpected equipment leaks or other ambient hazards.

The detailed Site Safety Plan for this project is attached to this test plan in Appendix "S".

3.0 Sampling and Analytical Procedures

3.1 Test Methods

The test methods for this test program have been presented in Table 1-1. Additional information regarding specific applications or modifications to standard procedures is presented below.

3.1.1 EPA Method 3A, Determination of Oxygen and Carbon Dioxide in Emissions from Stationary Sources (Instrumental Analyzer Procedure)

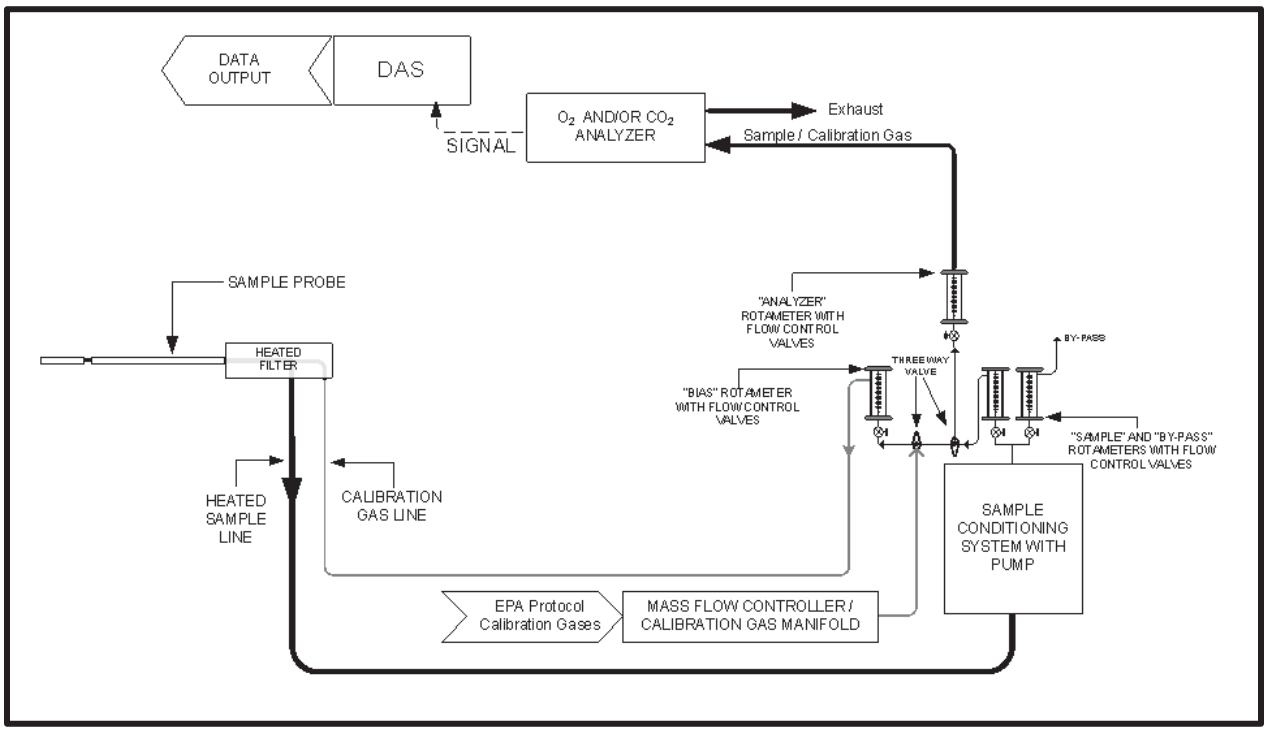
EPA Method 3A is an instrumental test method used to measure the concentration of O_2 and CO_2 in stack gas. The effluent gas is continuously or intermittently sampled and conveyed to analyzers that measure the concentrations of O_2 and CO_2. The performance requirements of the method must be met to validate data.

Pertinent information regarding the performance of the method is presented below:

- Method Options:
  - EPA Method 3A is used to measure O_2 to normalize target analyte concentrations to 7% O_2
  - If the stratification test provisions in section 8.1.2 of Method 7E are used to reduce the number of required sampling points, the alternative acceptance criterion for three-point sampling will be ±0.5 percent CO_2 or O_2, and the alternative acceptance criterion for single-point sampling will be ±0.3 percent CO_2 or O_2. In that case single-point integrated sampling as described in section 8.2.1 of Method 3 may be used.
  - A paramagnetic analyzer is used to measure O_2
- Method Exceptions:
  - Method 3A calibration acceptance criteria are reduced to 0.2% O_2 difference for analyzer calibration error, and 0.2% O_2 for zero and upscale system bias checks, and zero and upscale drift checks because normalizing data to 7% O_2 requires accurate measurement.
- Target and/or Minimum Required Sample Duration: 60 minutes
- Target Analytes: O_2

The typical sampling system is detailed in Figure 3-1.

Figure 3-1
EPA Method 3A Sampling Train



3.1.2 EPA Method 26A, Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources Isokinetic Method

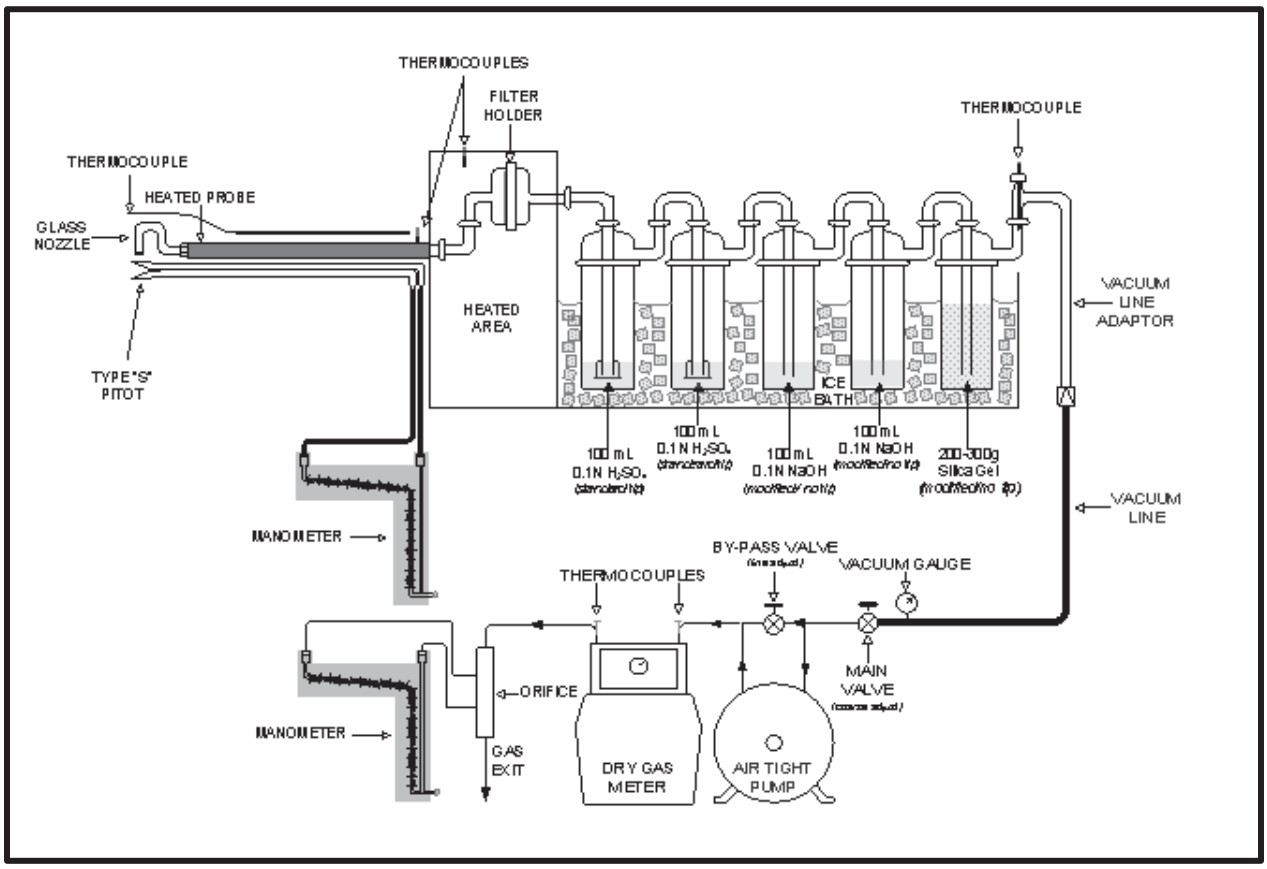
EPA Method 26A is a manual, isokinetic method used to measure hydrogen halide and halogen emissions from stationary sources. Gaseous and particulate pollutants are withdrawn isokinetically from the source and collected in an optional cyclone, on a filter, and in absorbing solutions. The cyclone collects any liquid droplets and is not necessary if the source emissions do not contain them; however, it is preferable to include the cyclone in the sampling train to protect the filter from any liquid present. The filter collects particulate matter including halide salts but is not routinely recovered or analyzed. Acidic and alkaline absorbing solutions collect the gaseous hydrogen halides and halogens, respectively. Following sampling of emissions containing liquid droplets, any halides/halogens dissolved in the liquid in the cyclone and on the filter are vaporized to gas and collected in the impingers by pulling conditioned ambient air through the sampling train. The hydrogen halides are solubilized in the acidic solution and form chloride (Cl^-), bromide (Br^-), and fluoride (F^-) ions. The halogens have a very low solubility in the acidic solution and pass through to the alkaline solution where they are hydrolyzed to form a proton (H^+), the halide ion, and the hypohalous acid (HClO or HBrO). Sodium thiosulfate is added to the alkaline solution to assure reaction with the hypohalous acid to form a second halide ion such that two halide ions are formed for each molecule of halogen gas. The halide ions in the separate solutions are measured by ion chromatography (IC).

Pertinent information regarding the performance of the method is presented below:

- Method Options:
  - EPA Method 26A will be used primarily to quantify Cl_2 concentrations. (Method 26A will also provide results for HF and will be compared to FTIR measurement results, as requested by EPA). Method 26A Section 2.1 Principle states; "The filter collects particulate matter including halide salts but is not routinely recovered or analyzed." The PM filters and upstream components will not be recovered nor analyzed for this test program.
  - Duplicate simultaneous trains (aka "paired trains") for each test run will be used to determine precision. The relative deviation (RD) will be calculated (same as Method 30B) between the Cl_2 concentrations with the paired trains.
  - A 10% relative deviation or 0.2 ppm absolute difference in Cl_2 results is required. Accuracy will be determined using the standard analytical procedures from Method 26A.
  - Quality control consists of adding a dry impinger being in between the first two acidic impingers for HF concentration determination and the last two basic impingers for Cl_2 determination. The contents of the dry impinger will be combined with the contents of the first two acid impingers and analyzed for fluoride ions attributable to HF. The contents of the last two basic impingers will be analyzed for chloride ions attributable to Cl_2.
  - Additional quality control consists of collecting and analyzing a blank train for every three test runs. The blank train is to be assembled from a used train, leak checked and sit for a period equal to the sampling time, i.e., 1-hr. The blank train data will be used to determine the method detection limit for the test program target analytes, i.e., the lowest number that could be detected, and compared to stack emissions.
- Method Exceptions:
  - None
- Target Analytes: HF, Cl_2
- Target and/or Minimum Required Sample Duration: 60 minutes
- Target and/or Minimum Required Sample Volume: 35 dscf or 1 dscm
- Analytical Laboratory: Enthalpy Analytical, Raleigh, North Carolina

The typical sampling system is detailed in Figure 3-2.

Figure 3-2
EPA Method 26A Sampling Train



3.1.3 ASTM D6348-12 & EPA Method 320, Determination of Gaseous Compounds by Extractive Direct Interface FTIR Spectroscopy & Measurement of Vapor Phase Organic and Inorganic Emissions by Extractive FTIR Spectroscopy

ASTM Method D-6348-12 & EPA Method 320 are instrumental test methods used to measure specific analyte concentrations for which EPA reference spectra have been developed or prepared. Extractive emission measurements are performed using FTIR spectroscopy. The FTIR analyzer is composed of a spectrometer and detector, a high optical throughput sampling cell, analysis software, and a quantitative spectral library. The analyzer collects high resolution spectra in the mid infrared spectral region (400 to 4,000 cm^{-1}), which are analyzed using the quantitative spectral library. This provides an accurate, highly sensitive measurement of gases and vapors.

ASTM D 6348-12 specifically, and EPA Method 320 generally, will be used to measure HCN and HF concentrations with the following additional requirements. Detection limit requirements are 0.5 ppm, or lower, for both compounds.

Pertinent information regarding the performance of the method is presented below:

Method Options:
Detection limits, Instrument Health and Specific Operation

- Laboratory Tests Before Field Test Program
  - Before testing, acquire 7 consecutive samples of dry nitrogen through the sampling system and calculate the standard deviation for each of the test program target analytes multiplied by a factor of 3. These data are the representative of detection limits for this test program and are to be compared to the 0.5 ppm required DL.
  - The results for the SNR @ 2500 should be >2500, at 64 scans.
  - The results for S Beam @ 2500 should be >0.9.
  - Perform Direct Analysis of HCN calibration gases and verify FTIR response agrees with tag value within 5%. All testing companies are asked to report these results to expeditiously, to PCA to assess need for modified reference spectra and/or change to direct analysis criterion.
  - Note: Optimization of HF reference spectra from MKS needs to be further investigated and possibly modified. If modifications are required, updated HF references and a calibration curve will be provided to participating stack testing companies prior to testing.

- During Field Test Program
  - Conduct an instrument background on each test day prior to any testing using dry nitrogen directed to the gas cell. Conduct the background for at least 128 scans.
  - Maintain the probe, filter, sample line and all sample system components in contact with effluent above 375ºF or 191ºC (consistent with FTIR calibration temperature) to avoid any possible "cold spots."
  - Heated sample lines should be ≤100 feet wherever possible, and not longer than 200 feet, without prior approval for unusual test circumstances.
  - Perform system zero with all sampling system components at operating temperature by injecting nitrogen at the sample probe and through sample filter and entire measurement system. After equilibration has been achieved, quantify all measurement components for at least 128 scans.
  - Sample ambient until equilibration of the measurement system has been achieved. Quantify all measurement components for at least 128 scans.
  - Position sample probe at effluent measurement point and sample until equilibration of the measurement system has been achieved. Quantify effluent concentrations for initial dynamic spike.
  - Analyte spiking will be conducted for HCN before the first test run, and

after each successive test run for a minimum of 4 spikes per test condition. (Additional spikes are required before and after corrective action for the sampling or analysis system and/or before and after removing the sampling system from the stack.) These results will determine accuracy.

- Maintain spike gas injections at 10% or less of total sample volume.
- Select spike gas concentration and flow rate to approximately double the native effluent concentration, or conduct spike to add 3-4 ppm to native concentration, whichever results in greater spiked concentration.
- Spike recovery results shall be within ±20% of the expected value or ±0.5 ppm, whichever is least restrictive.
- Specific HCN gases will be manufactured for this test program in the range of 50-100 ppm to provide spikes in the 5-10 ppm range, or lower[1]. An SF_6 or appropriate tracer will be used to calculate the exact spike gas dilution ratio of 10% or less.

- Direct nitrogen through the sampling system until all traces of spike gas are removed and lines are proven below DL for target analytes.
- Conduct sample Run 1
- Residual results for HCN and HF should be less than 0.2-0.3 ppm for data acceptance, or less than 5% of the measured value, whichever is least restrictive.
- Calculate the standard deviation for each of the test program target analytes for seven consecutive sample spectra from Run 1, multiplied by a factor of 3. These data shall be compared to the pre-test system nitrogen standard deviation results and also included in the facility test report.
    i. The SNR and S Beam need also to meet the criteria of >2500 and >0.9 respectively.
- Repeat Analyte Spiking for HCN and subsequent system nitrogen injection before proceeding to Run 2.
- Continue sequence until at least three valid runs per test condition are completed.

- Reporting
    - a. All effluent and measurement components required to perform quantitative analyses (i.e., target analytes, co-absorbing components, tracers, etc.) shall be reported as an Excel exported .PRN file along with their residual results, and SNR and S Beam at 2500 cm.

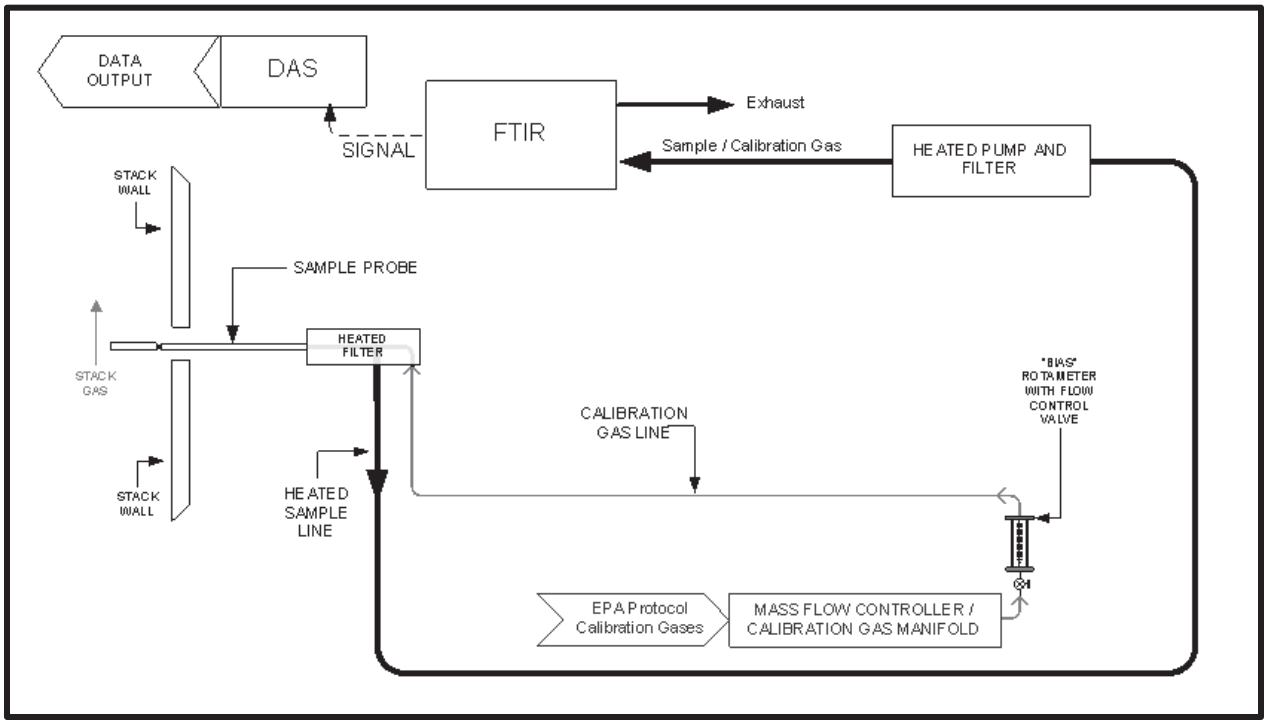
[1] HCN calibrations gases will be manufactured by Airgas Exploratory Products under the EPA Alt 114 "Gas Manufacturer Alternate Certification" procedures.

- b. All results of CTS, and analyte spiking
- c. All results from standard deviation calculations; direct and system zero nitrogen injections, ambient air samples and all effluent samples.

- Target Analytes: H_2O, HCN, HF
- Target and/or Minimum Required Sample Duration: 60 minutes
- Analytical Laboratory: Montrose Air Quality Services, Mt Pleasant, Michigan

The typical sampling system is detailed in Figure 3-3.

Figure 3-3
EPA Method 320 Sampling Train



3.2 Process Test Methods

The applicable regulations do not require process samples to be collected during this test program.

4.0 Quality Assurance and Reporting

4.1 QA Audits

Montrose has instituted a rigorous QA/QC program for its air quality testing. Quality assurance audits are performed as part of the test program to ensure that the results are calculated using the highest quality data available. This program ensures that the emissions data we report are as accurate as possible. The procedures included in the cited reference methods are followed during preparation, sampling, calibration, and analysis. Montrose is responsible for preparation, calibration, and cleaning of the sampling apparatus. Montrose will also perform the sampling, sample recovery, storage, and shipping. Approved contract laboratories may perform some of the preparation and sample analyses, as needed.

4.2 Quality Control Procedures

Montrose calibrates and maintains equipment as required by the methods performed and applicable regulatory guidance. Montrose follows internal procedures to prevent the use of malfunctioning or inoperable equipment in test programs. All equipment is operated by trained personnel. Any incidence of nonconforming work encountered during testing is reported and addressed through the corrective action system.

4.2.1 Equipment Inspection and Maintenance

Each piece of field equipment that requires calibration is assigned a unique identification number to allow tracking of its calibration history. All field equipment is visually inspected prior to testing and includes pre-test calibration checks as required by the test method or regulatory agency.

4.2.2 Audit Samples

When required by the test method and available, Montrose obtains EPA TNI SSAS audit samples from an accredited provider for analysis along with the samples. Currently, the SSAS program has been suspended pending the availability of a second accredited audit sample provider. If the program is reinstated, the audit samples will be ordered. If required as part of the test program, the audit samples are stored, shipped, and analyzed along with the emissions samples collected during the test program. The audit sample results are reported along with the emissions sample results.

4.3 Data Analysis and Validation

Montrose converts the raw field, laboratory, and process data to reporting units consistent with the permit or subpart. Calculations are made using proprietary computer spreadsheets or data acquisition systems. One run of each test method is also verified using a separate example calculation. The example calculations are checked against the spreadsheet results and are included in the final report. The “Standard Conditions” for this project are 29.92 inches of mercury and 68°F.

4.4 Sample Identification and Custody

The on-site Field Project Manager will assume or assign the role of sample and data custodian until relinquishing custody. The sample custodian will follow proper custody procedures before departing from the test site including:

- Assign the unique sample identification number to each sample
- Attach sample labels and integrity seals to all samples
- Complete COC form(s), ensuring that the sample identification numbers on the samples match the sample identification numbers on the COC
- Pack and store samples in accordance with the test method requirements in appropriate transport containers for protection from breakage, contamination, or loss
- Keep samples in a secure locked area if not in the direct presence of Montrose staff

The sample custodian will follow proper custody procedures upon arriving at the Montrose office including:

- Remove samples and COC documents from vehicles and check into designated secure sample holding areas
- Store samples requiring additional measures such as refrigeration or dry ice appropriately

4.5 Quality Statement

Montrose is qualified to conduct this test program and has established a quality management system that led to accreditation with ASTM Standard D7036-04 (Standard Practice for Competence of Air Emission Testing Bodies). Montrose participates in annual functional assessments for conformance with D7036-04 which are conducted by the American Association for Laboratory Accreditation (A2LA). All testing performed by Montrose is supervised on site by at least one Qualified Individual (QI) as defined in D7036-04 Section 8.3.2. Data quality objectives for estimating measurement uncertainty within the documented limits in the test methods are met by using approved test protocols for each project as defined in D7036-04 Sections 7.2.1 and 12.10. Additional quality assurance information is included in the appendices. The content of this test plan is modeled after the EPA Emission Measurement Center Guideline Document (GD-042).

4.6 Reporting

Montrose will prepare a final report to present the test data, calculations/equations, descriptions, and results. Prior to release by Montrose, each report is reviewed and certified by the project manager and their supervisor, or a peer. The final version of the source test report will be submitted to CEMEX within five days of receipt of all draft report comments, and no more than 45 days from completion of the testing, but no later than early March 2024 to meet EPA reporting requirements for this ICR. The report will include a series of

appendices to present copies of the intermediate calculations and example calculations, raw field data, laboratory analysis data, process data, and equipment calibration data. The electronic copy of the final report will be submitted via ERT.

4.6.1 Example Report Format

The report is divided into various sections describing the different aspects of the source testing program. Figure 4-1 presents a typical Table of Contents for the final report.

Figure 4-1
Typical Report Format

Cover Page

Certification of Report

Table of Contents

Section

1.0 Introduction

2.0 Plant and Sampling Location Descriptions

3.0 Sampling and Analytical Procedures

4.0 Test Discussion and Results

5.0 Internal QA/QC Activities

Appendices

A Field Data and Calculations

B Facility Process Data

C Laboratory Analysis Data

D Quality Assurance/Quality Control

E Regulatory Information

4.6.2 Example Presentation of Test Results

Table 4-1 presents the typical tabular format that is used to summarize the results in the final source test report. Separate tables will outline the results for each target analyte and compare them to their respective emissions limits.

Table 4-1
Example Cement ICR Emissions Results -
In-Line Kiln Main Stack, Raw Mill Off

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	12/6/23	12/6/23	12/6/23	-
Time	XX	XX	XX	-
Process Data				
clinker production, ton/hr	XX	XX	XX	XX
Sampling & Flue Gas Parameters				
sample duration, minutes	60	60	60	60
sample volume, dscf	XX	XX	XX	XX
isokinetic rate, %	XX	XX	XX	XX
O_2, % volume dry	XX	XX	XX	XX
CO_2, % volume dry	XX	XX	XX	XX
flue gas temperature, °F	XX	XX	XX	XX
moisture content, % volume	XX	XX	XX	XX
velocity, ft/s	XX	XX	XX	XX
volumetric flow rate, dscfm	XX	XX	XX	XX
HCN				
ppmvd	XX	XX	XX	XX
ppmvd @ 7% O_2	XX	XX	XX	XX
lb/hr	XX	XX	XX	XX
lb/ton clinker	XX	XX	XX	XX
HF (ASTM D6348/EPA Method 320)				
ppmvd	XX	XX	XX	XX
ppmvd @ 7% O_2	XX	XX	XX	XX
lb/hr	XX	XX	XX	XX
lb/ton clinker	XX	XX	XX	XX
HF (Method 26A)				
ppmvd	XX	XX	XX	XX
ppmvd @ 7% O_2	XX	XX	XX	XX
lb/hr	XX	XX	XX	XX
lb/ton clinker	XX	XX	XX	XX
Cl_2				
ppmvd	XX	XX	XX	XX
ppmvd @ 7% O_2	XX	XX	XX	XX

Parameter / Units	Run 1	Run 2	Run 3	Average
lb/hr	XX	XX	XX	XX
lb/ton clinker	XX	XX	XX	XX

Appendix A
Supporting Information

Appendix A.1
Units and Abbreviations

UNITS OF MEASUREMENT

@ X% O_2	corrected to X% oxygen (corrected for dilution air)
|CC|	absolute value of the confidence coefficient
|d|	absolute value of the mean differences
ºC	degrees Celsius
ºF	degrees Fahrenheit
ºR	degrees Rankine
" H_2O	inches of water column
13.6	specific gravity of mercury
ΔH	pressure drop across orifice meter, inches H_2O
ΔP	velocity head of stack gas, inches H_2O
θ	total sampling time, minutes
µg	microgram
ρ_a	density of acetone, mg/ml
ρ_w	density of water, 0.9982 g/ml or 0.002201 lb/ml
acfm	actual cubic feet of gas per minute at stack conditions
A_n	cross-sectional area of nozzle, ft^2
A_s	cross-sectional area of stack, square feet (ft^2)
Btu	British thermal unit
B_{ws}	proportion by volume of water vapor in gas stream
C_a	particulate matter concentration in stack gas, gr/acf
C_{Avg}	average unadjusted gas concentration, ppmv
C_{Dir}	measured concentration of calibration gas, ppmv
cf or ft^3	cubic feet
cfm	cubic feet per minute
C_{Gas}	average gas concentration adjusted for bias, ppmv
C_M	average of initial and final system bias check responses from upscale calibration gas, ppmv
cm or m^3	cubic meters
C_{MA}	actual concentration of the upscale calibration gas, ppmv
C_O	average of initial and final system bias check responses from low-level calibration gas, ppmv
C_p	pitot tube coefficient
C_s	particulate matter concentration in stack gas, gr/dscf
CS	calibration span, % or ppmv
C_S	measured concentration of calibration gas, ppmv
C_V	manufactured certified concentration of calibration gas, ppmv
D	drift assessment, % of span
dcf	dry cubic feet
dcm	dry cubic meters
D_n	diameter of nozzle, inches
D_s	diameter of stack, inches
dscf	dry standard cubic feet
dscfm	dry standard cubic feet per minute
dscm	dry standard cubic meters
F_d	F-factor, dscf/MMBtu of heat input
fpm	feet per minute
fps	feet per second
ft	feet
ft^2	square feet
g	gram
gal	gallons
gr	grains (7000 grains per pound)
gr/dscf	grains per dry standard cubic feet
hr	hour
I	percent of isokinetic sampling
in	inch

k	kilo or thousand (metric units, multiply by 10^3)
K	kelvin (temperature)
K_3	conversion factor 0.0154 gr/mg
K_4	conversion factor 0.002668 ((in. Hg)(ft^3))/((ml)(°R))
kg	kilogram
K_p	pitot tube constant (85.49 ft/sec)
kwscfh	thousand wet standard cubic feet per hour
l	liters
lb/hr	pounds per hour
lb/MMBtu	pounds per million Btu
lpm	liters per minute
m	meter or milli
M	thousand (English units) or mega (million, metric units)
m^3	cubic meters
m_a	mass of residue of acetone after evaporation, mg
M_d	molecular weight of stack gas; dry basis, lb/lb-mole
meq	milliequivalent
mg	milligram
Mg	megagram (10^6 grams)
min	minute
ml or mL	milliliter
mm	millimeter
MM	million (English units)
MMBtu/hr	million Btu per hour
m_n	total amount of particulate matter collected, mg
mol	mole
mol. wt. or MW	molecular weight
M_s	molecular weight of stack gas; wet basis, lb/lb-mole
MW	molecular weight or megawatt
n	number of data points
ng	nanogram
nm	nanometer
Nm^3	normal cubic meter
P_{bar}	barometric pressure, inches Hg
pg	picogram
P_g	stack static pressure, inches H_2O
P_m	barometric pressure of dry gas meter, inches Hg
ppb	parts per billion
ppbv	parts per billion, by volume
ppbvd	parts per billion by volume, dry basis
ppm	parts per million
ppmv	parts per million, by volume
ppmvd	parts per million by volume, dry basis
ppmvw	parts per million by volume, wet basis
P_s	absolute stack gas pressure, inches Hg
psi	pounds per square inch
psia	pounds per square inch absolute
psig	pounds per square inch gauge
P_{std}	standard absolute pressure, 29.92 inches Hg
Q_a	volumetric flow rate, actual conditions, acfm
Q_s	volumetric flow rate, standard conditions, scfm
Q_{std}	volumetric flow rate, dry standard conditions, dscfm
R	ideal gas constant 21.85 ((in. Hg) ($ft^{3)}$)/((°R) (lbmole))
SB_{final}	post-run system bias check, % of span
SB_i	pre-run system bias check, % of span
scf	standard cubic feet

scfh	standard cubic feet per hour
scfm	standard cubic feet per minute
scm	standard cubic meters
scmh	standard cubic meters per hour
sec	second
sf, sq. ft., or ft^2	square feet
std	standard
t	metric ton (1000 kg)
$T_{0.975}$	t-value
T_a	absolute average ambient temperature, ºR (+459.67 for English)
T_m	absolute average dry gas meter temperature, ºR (+459.67 for English)
ton or t	ton = 2000 pounds
tph or tons/hr	tons per hour
tpy or tons/yr	tons per year
T_s	absolute average stack gas meter temperature, ºR (+459.67 for English)
T_{std}	absolute temperature at standard conditions
V	volt
V_a	volume of acetone blank, ml
V_{aw}	volume of acetone used in wash, ml
V_{lc}	total volume H_2O collected in impingers and silica gel, grams
V_m	volume of gas sampled through dry gas meter, ft^3
$V_{m(std)}$	volume of gas measured by the dry gas meter, corrected to standard conditions, dscf
V_{ma}	stack gas volume sampled, acf
V_n	volume collected at stack conditions through nozzle, acf
V_s	average stack gas velocity, feet per second
$V_{wc(std)}$	volume of water vapor condensed, corrected to standard conditions, scf
$V_{wi(std)}$	volume of water vapor in gas sampled from impingers, scf
$V_{wsg(std)}$	volume of water vapor in gas sampled from silica gel, scf
W	watt
W_a	weight of residue in acetone wash, mg
W_{imp}	total weight of impingers, grams
W_{sg}	total weight of silica gel, grams
Y	dry gas meter calibration factor, dimensionless

ABBREVIATIONS

AAS	atomic absorption spectroscopy
ACDP	air contaminant discharge permit
ACE	analyzer calibration error, percent of span
AD	absolute difference
ADL	above detection limit
AETB	Air Emissions Testing Body
AS	applicable standard (emission limit)
ASTM	American Society for Testing and Materials
BACT	best achievable control technology
BDL	below detection limit
BHP	brake horsepower
BIF	boiler and industrial furnace
BLS	black liquor solids
CC	confidence coefficient
CD	calibration drift
CE	calibration error
CEM	continuous emissions monitor
CEMS	continuous emissions monitoring system
CERMS	continuous emissions rate monitoring system
CET	calibration error test
CFR	Code of Federal Regulations
CGA	cylinder gas audit
CHNOS	elemental analysis for determination of C, H, N, O, and S content in fuels
CNCG	concentrated non-condensable gas
CO	catalytic oxidizer
COC	chain of custody
COMS	continuous opacity monitoring system
CPM	condensable particulate matter
CPMS	continuous parameter monitoring system
CT	combustion turbine
CTM	conditional test method
CTO	catalytic thermal oxidizer
CVAAS	cold vapor atomic absorption spectroscopy
D_e	equivalent diameter
DE	destruction efficiency
Dioxins	polychlorinated dibenzo-p-dioxins (PCDDs)
DLL	detection level limited
DNCG	dilute non-condensable gas
ECD	electron capture detector
EIT	Engineer In Training
ELCD	electrolytic conductivity detector (hall detector)
EMPC	estimated maximum possible concentration
EPA	US Environmental Protection Agency
EPRI	Electric Power Research Institute
ES	emission standard (applicable limit)
ESP	electrostatic precipitator
EU	emission unit
FCCU	fluid catalytic cracking unit
FGD	flue gas desulfurization
FI	flame ionization
FIA	flame ionization analyzer
FID	flame ionization detector
FPD	flame photometric detector
FPM	filterable particulate matter
FTIR	Fourier-transform infrared spectroscopy

FTPB	field train proof blank
FTRB	field train recovery blank
Furans	polychlorinated dibenzofurans (PCDFs)
GC	gas chromatography
GC/MS	gas chromatography/mass spectroscopy
GFAAS	graphite furnace atomic absorption spectroscopy
GFC	gas filter correlation
GHG	greenhouse gas
HAP	hazardous air pollutant
HC	hydrocarbons
HHV	higher heating value
HPLC	high performance liquid chromatography
HRGC/HRMS	high-resolution gas chromatography/high-resolution mass spectroscopy
HRSG	heat recovery steam generator
IC	ion chromatography
ICAP	inductively-coupled argon plasma emission spectroscopy
ICPCR	ion chromatography with a post-column reactor
ICP-MS	inductively coupled plasma-mass spectroscopy
IR	infrared radiation
ISO	International Standards Organization
kW	kilowatts
LFG	landfill gas
LHV	lower heating value
LPG	liquified petroleum gas
MACT	maximum achievable control technology
MDI	methylene diphenyl diisocyanate
MDL	method detection limit
MNOC	maximum normal operating conditions
MRL	method reporting limit
MS	mass spectrometry
NA	not applicable or not available
NCASI	National Council for Air and Steam Improvement
NCG	non-condensable gases
ND	not detected
NDIR	non-dispersive infrared
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NG	natural gas
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Standards and Technology
NMC	non-methane cutter
NMOC	non-methane organic compounds
NMVOC	non-methane volatile organic compounds
NPD	nitrogen phosphorus detector
NSPS	New Source Performance Standards
OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyl compounds
PCWP	plywood and composite wood products
PE	Professional Engineer
PFAS	per- and polyfluoroalkyl substances (PFAS)
PI	photoionization
PID	photoionization detector
PM	particulate matter
PM_{10}	particulate matter less than 10 microns in aerodynamic diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in aerodynamic diameter
POM	polycyclic organic matter

PS	performance specification
PSD	particle size distribution
PSEL	plant site emission limits
PST	performance specification test
PTE	permanent total enclosure
PTM	performance test method
QA/QC	quality assurance and quality control
QI	Qualified Individual
QSTI	Qualified Source Testing Individual
RA	relative accuracy
RAA	relative accuracy audit
RACT	reasonably available control technology
RATA	relative accuracy test audit
RCTO	rotary concentrator thermal oxidizer
RICE	stationary reciprocating internal combustion engine
RM	reference method
RTO	regenerative thermal oxidizer
SAM	sulfuric acid mist
SCD	sulfur chemiluminescent detector
SCR	selective catalytic reduction system
SD	standard deviation
Semi-VOST	semi-volatile organic compounds sample train
SRM	standard reference material
TAP	toxic air pollutant
TBD	to be determined
TCA	thermal conductivity analyzer
TCD	thermal conductivity detector
TGNENMOC	total gaseous non-ethane non-methane organic compounds
TGNMOC	total gaseous non-methane organic compounds
TGOC	total gaseous organic compounds
THC	total hydrocarbons
TIC	tentatively identified compound
TO	thermal oxidizer
TO	toxic organic (as in EPA Method TO-15)
TPM	total particulate matter
TSP	total suspended particulate matter
TTE	temporary total enclosure
ULSD	ultra-low sulfur diesel
UV	ultraviolet radiation range
VE	visible emissions
VOC	volatile organic compounds
VOST	volatile organic sample train
WC	water column
WWTP	waste water treatment plant

CHEMICAL NOMENCLATURE

Ag	silver
As	arsenic
Ba	barium
Be	beryllium
C	carbon
Cd	cadmium
CdS	cadmium sulfide
CH_2O	formaldehyde
CH_3CHO	acetaldehyde
CH_3OH	methanol
CH_4	methane
C_2H_4O	ethylene oxide
C_2H_6	ethane
C_3H_4O	acrolein
C_3H_6O	propionaldehyde
C_3H_8	propane
C_6H_5OH	phenol
Cl_2	chlorine
ClO_2	chlorine dioxide
CO	carbon monoxide
Co	cobalt
CO_2	carbon dioxide
Cr	chromium
Cu	copper
EtO	ethylene oxide
EtOH	ethyl alcohol (ethanol)
H_2	hydrogen
H_2O	water
H_2O_2	hydrogen peroxide
H_2S	hydrogen sulfide
H_2SO_4	sulfuric acid
HCl	hydrogen chloride
Hg	mercury
IPA	isopropyl alcohol
MDI	methylene diphenyl diisocyanate
$MeCl_2$	methylene chloride
MEK	methyl ethyl ketone
MeOH	methanol
Mn	manganese
N_2	nitrogen
NH_3	ammonia
Ni	nickel
NO	nitric oxide
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
O_2	oxygen
P	phosphorus
Pb	lead
PCDD	polychlorinated dibenzo-p-dioxins
PCDF	polychlorinated dibenzofurans
Sb	antimony
Se	selenium
SO_2	sulfur dioxide
SO_3	sulfur trioxide
SO_x	sulfur oxides
TCDD	tetrachlorodibenzodioxin
TCDF	tetrachlorodibenzofuran
TGOC	total gaseous organic concentration
THC	total hydrocarbons
Tl	thallium
TRS	total reduced sulfur compounds
Zn	zinc

Appendix A.2
Accreditation Information/Certifications

STACK TESTING ACCREDITATION COUNCIL

American Association for Laboratory Accreditation

Accredited Air Emission Testing Body

A2LA has accredited

MONTROSE AIR QUALITY SERVICES

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036:2004 - Standard Practice for Competence of Air Emission Testing Bodies.

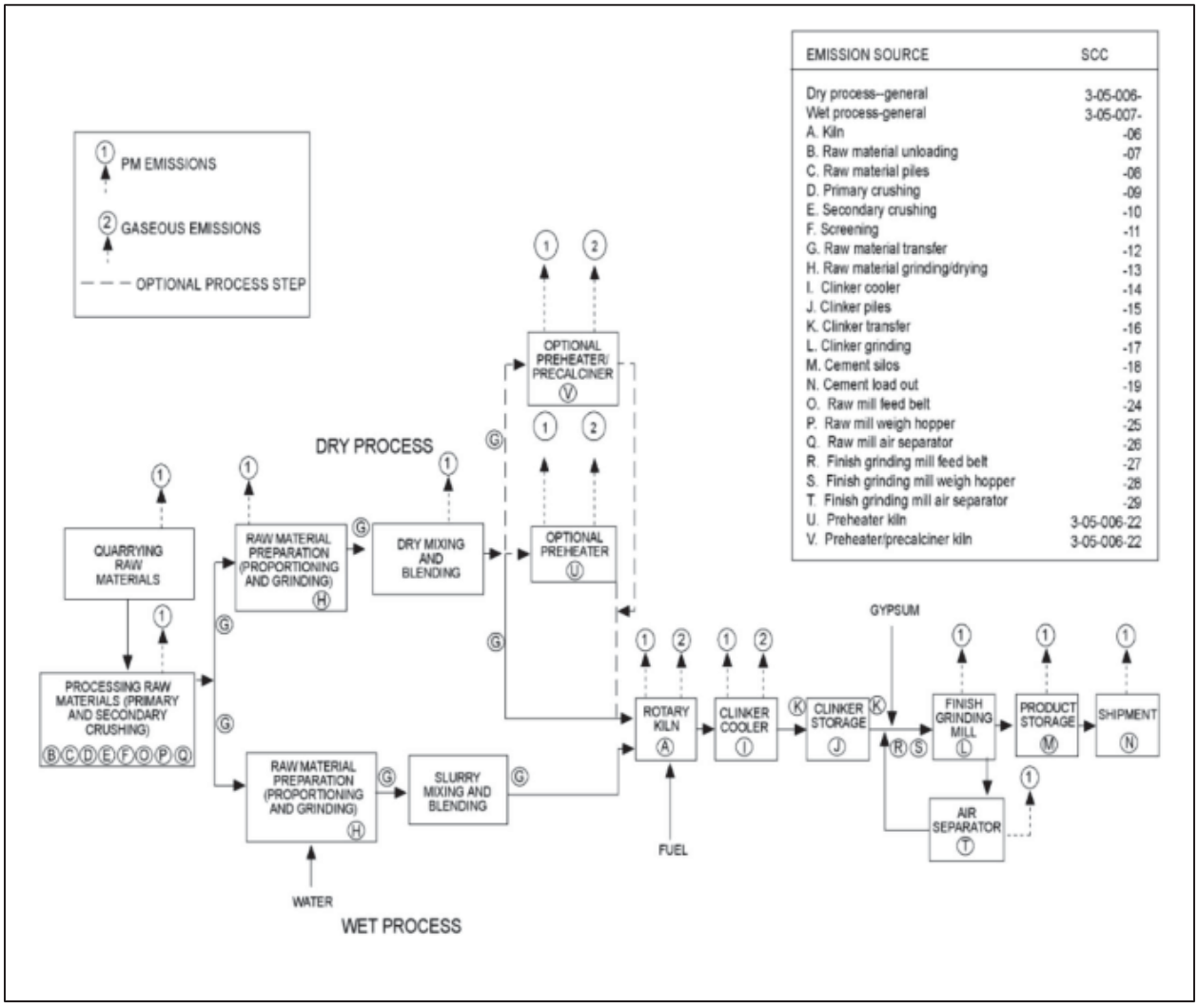
Presented this 4th day of February 2022.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3925.01
Valid to February 29, 2024

This accreditation program is not included under the A2LA ILAC Mutual Recognition Arrangement.

Appendix A.3
Process Flow Diagrams

Figure A-1
Process Flow Diagram

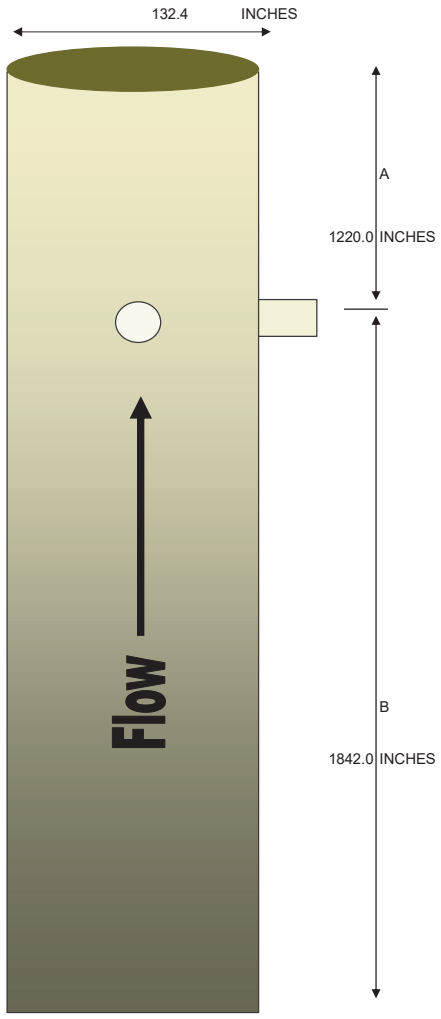


Appendix A.4
Stack Schematic

MONTROSE AIR QUALITY SERVICES

Figure A-2
Stack Sample Port Location – In-Line Kiln Main Stack

Type of Traverse: Velocity or Particulate:		Particulate	Port Type	Nipple	Port Diameter	TBD
Stack Diameter, inches:	132.4		Stack Area, Ft^2:			95.610
Stack Height, feet:	359		Number of Ports:			4
Stack Properties:	Inches	Duct Diameters	Length of Port, inches:			TBD
Upstream From Flow Disturbance (A):	1220	9.2	Total Number of Traverse Points:			12
Downstream From Flow Disturbance (B):	1842	13.9	Number of Points per port / traverse:		3	6



Point No.	Inside Stack Inches	Outside Port Inches
1	5.8	5.8 + Port Length
2	19.3	19.3 + Port Length
3	39.2	39.2 + Port Length

* Adjusted points diameter > 24" no point closer than 1.0 inch

* Adjusted points diameter ≤ 24" no point closer than 0.5 inch

Stack Diameters between 12-24 inches minimum points are 8 ; 4 points per port if the 8 / 2 diameters downstream and upstream criteria is met.

Appendix A.5
Quality Assurance Program Summary

Quality Assurance Program Summary

As part of Montrose Air Quality Services, LLC (Montrose) ASTM D7036-04 certification, Montrose is committed to providing emission related data which is complete, precise, accurate, representative, and comparable. Montrose quality assurance program and procedures are designed to ensure that the data meet or exceed the requirements of each test method for each of these items. The quality assurance program consists of the following items:

- Assignment of an Internal QA Officer
- Development and use of an internal QA Manual
- Personnel training
- Equipment maintenance and calibration
- Knowledge of current test methods
- Chain-of-custody
- QA reviews of test programs

Assignment of an Internal QA Officer: Montrose has assigned an internal QA Officer who is responsible for administering all aspects of the QA program.

Internal Quality Assurance Manual: Montrose has prepared a QA Manual according to the requirements of ASTM D7036-04 and guidelines issued by EPA. The manual documents and formalizes all of Montrose's QA efforts. The manual is revised upon periodic review and as Montrose adds capabilities. The QA manual provides details on the items provided in this summary.

Personnel Testing and Training: Personnel testing and training is essential to the production of high quality test results. Montrose training programs include:

- A requirement for all technical personnel to read and understand the test methods performed
- A requirement for all technical personnel to read and understand the Montrose QA manual
- In-house testing and training
- Quality Assurance meetings
- Third party testing where available
- Maintenance of training records.

Equipment Maintenance and Calibration: All laboratory and field equipment used as a part of Montrose's emission measurement programs is maintained according to manufacturer's recommendations. A summary of the major equipment maintenance schedules is summarized in Table 1. In addition to routine maintenance, calibrations are performed on all sampling equipment according to the procedures outlined in the applicable test method. The calibration intervals and techniques for major equipment components is summarized in Table 2. The calibration technique may vary to meet regulatory agency requirements.

Knowledge of Current Test Methods: Montrose maintains current copies of EPA, ARB, and

SCAQMD Source Test Manuals and Rules and Regulations.

Chain-of-Custody: Montrose maintains chain-of-custody documentation on all data sheets and samples. Samples are stored in a locked area accessible only to Montrose source test personnel. Data sheets are kept in the custody of the originator, program manager, or in locked storage until return to Montrose office. Electronic field data is duplicated for backup on secure storage media. The original data sheets are used for report preparation and any additions are initialed and dated.

QA Reviews: Periodic field, laboratory, and report reviews are performed by the in-house QA coordinator. Periodically, test plans are reviewed to ensure proper test methods are selected and reports are reviewed to ensure that the methods were followed and any deviations from the methods are justified and documented.

ASTM D7036-04 Required Information

Uncertainty Statement

Montrose is qualified to conduct this test program and has established a quality management system that led to accreditation with ASTM Standard D7036-04 (Standard Practice for Competence of Air Emission Testing Bodies). Montrose participates in annual functional assessments for conformance with D7036-04 which are conducted by the American Association for Laboratory Accreditation (A2LA). All testing performed by Montrose is supervised on site by at least one Qualified Individual (QI) as defined in D7036-04 Section 8.3.2. Data quality objectives for estimating measurement uncertainty within the documented limits in the test methods are met by using approved test protocols for each project as defined in D7036-04 Sections 7.2.1 and 12.10. Additional quality assurance information is presented in the report appendices.

Performance Data

Performance data are available for review.

Qualified Personnel

A qualified individual (QI), defined by performance on a third party or internal test on the test methods, is present on each test event.

Plant Entry and Safety Requirements

Plant Entry

All test personnel are required to check in with the guard at the entrance gate or other designated area. Specific details are provided by the facility and project manager.

Safety Requirements

All personnel shall have the following personal protective equipment (PPE) and wear them where designated:

- Hard Hat
- Safety Glasses
- Steel Toe Boots
- Hearing Protection
- Gloves
- High Temperature Gloves (if required)
- Flame Resistant Clothing (if required)

The following safety measures are followed:

- Good housekeeping
- SDS for all on-site hazardous materials
- Confine selves to necessary areas (stack platform, mobile laboratory, CEMS data acquisition system, control room, administrative areas)
- Knowledge of evacuation procedures

Each facility will provide plant specific safety training.

Table 1
Equipment Maintenance Schedule

Equipment	Acceptance Limits	Frequency of Service	Methods of Service
Pumps	1. Absence of leaks 2. Ability to draw manufacturers required vacuum and flow	As recommended by manufacturer	1. Visual inspection 2. Clean 3. Replace parts 4. Leak check
Flow Meters	1. Free mechanical movement	As recommended by manufacturer	1. Visual inspection 2. Clean 3. Calibrate
Integrated Sampling Tanks	1. Absence of leaks	Depends on nature of use	1. Steam clean 2. Leak check
Mobile Van Sampling System	1. Absence of leaks	Depends on nature of use	1. Change filters 2. Change gas dryer 3. Leak check 4. Check for system contamination
Sampling lines	1. Sample degradation less than 2%	After each test series	1. Blow dry, inert gas through line until dry

Table 2
Major Sampling Equipment Calibration Requirements

Sampling Equipment	Calibration Frequency	Calibration Procedure	Acceptable Calibration Criteria
Continuous Analyzers	Before and After Each Test Day	3-point calibration error test	0.2 %O_2
Continuous Analyzers	Before and After Each Test Run	2-point sample system bias check	0.2 %O_2
Continuous Analyzers	After Each Test Run	2-point analyzer drift determination	0.2 %O_2
CEMS System	Beginning of Each Day	leak check	< 1 in. Hg decrease in 5 min. at > 20 in. Hg
Continuous Analyzers	Semi-Annually	3-point linearity	< 1% of analyzer range
NO_x Analyzer	Daily	NO_2 -> NO converter efficiency	> 90%
Differential Pressure Gauges (except for manometers)	Semi-Annually	Correction factor based on 5-point comparison to standard	± 5%
Differential Pressure Gauges (except for manometers)	Bi-Monthly	3-point comparison to standard, no correction factor	± 5%
Barometer	Semi-Annually	Adjusted to mercury-in-glass or National Weather Service Station	± 0.1 inches Hg
Dry Gas Meter	Semi-Annually	Calibration check at 4 flow rates using a NIST traceable standard	± 2%
Dry Gas Meter	Bi-Monthly	Calibration check at 2 flow rates using a NIST traceable standard	± 2% of semi-annual factor
Dry Gas Meter Orifice	Annually	4-point calibration for ΔH@	--
Temperature Sensors	Semi-Annually	3-point calibration vs. NIST traceable standard	± 1.5%

Note: Calibration requirements that meet applicable regulatory agency requirements are used.

Appendix A.6
Hydrogen Cyanide – Acute Exposure Guideline Levels

PEL & Lethal Exposure Levels to Hydrogen Cyanide

As hydrogen cyanide (CAS number 74-90-8) is an analyte of interest of this test program, and the test methodology involves use of hydrogen cyanide standards, the following table is included to inform of the severity of adverse of effects of varying concentrations of hydrogen cyanide.

Table A-1
Hydrogen Cyanide Acute Exposure Guideline Levels (AEGL)

Class		Concentration (ppm)					Result
		10-min	30-min	1-hour	4-hour	8-hour	
AEGL-1	Non-disabling	2.5	2.5	2.0	1.3	1.0	No adverse effects/slight central nervous system effect in humans
AEGL-2	Disabling	17	10	7.1	3.5	2.5	Some central nervous system depression (monkey)
AEGL-3	Lethal	27	21	15	8.6	6.6	Lethal (LC01) (rat)

Appendix B
General Equations

General Equations
Volumetric Flow Rate

Stack area, A_s, ft^3

$$A = \pi\left(\left(\frac{D_s}{2}\right)\left(\frac{1\ ft}{12\ in}\right)\right)^2$$

Meter Pressure, P_m, in. H_2O

$$P_m = P_{bar} + \frac{\Delta H}{13.6}$$

Stack Pressure, P_s, in. H_2O

$$P_s = P_{bar} + \frac{P_g}{13.6}$$

Volume of water vapor condensed, $V_{wc(std)}$, scf

$$V_{wc(std)} = 0.04716(V_f - V_i)$$

Standard dry gas volume, $V_{m(std)}$, dscf

$$V_{m(std)} = \frac{V_m Y P_m T_{std}}{P_{std} T_m}$$

Moisture content, B_{ws}, dimensionless

$$B_{ws} = \frac{V_{wc(std)}}{V_{m(std)} + V_{wc(std)}}$$

Moisture content at saturation, TB_{ws}, dimensionless

$$TB_{ws} = \frac{10^{\left(6.6911 - \left(\frac{3{,}144}{T_s + 390.86}\right)\right)}}{P_s}$$

Molecular Weight, Dry Basis, M_d, lb/lb mol

$$M_d = 0.32\%O2 + 0.44\%CO_2 + 0.28(100 - \%O_2 - \%CO_2)$$

Molecular Weight, Wet Basis, M_w, lb/lb mol

$$M_w = M_d(1 - B_{ws}) + 18.015(B_{ws})$$

Average Stack Gas Velocity, v_s, ft/s

$$v_s = 85.49(C_p)\left(\frac{\sum_{i=1}^{n}\sqrt{\Delta p}}{n}\right)\sqrt{\frac{T_s}{(P_s)(M_w)}}$$

Volumetric Flow Rate, Actual, acfm

$$Q_a = \frac{60s}{min}(v_s)(A_s)$$

Volumetric Flow Rate, Corrected to Standard Conditions, scfm

$$Q_s = Q_a\left(\frac{T_{std}}{T_s}\right)\left(\frac{P_s}{P_{std}}\right)$$

Volumetric Flow Rate, Corrected to Dry Standard Conditions, dscfm

$$Q_s = Q_a\left(\frac{T_{std}}{T_s}\right)\left(\frac{P_s}{P_{std}}\right)(1 - B_{ws})$$

General Equations
Gas Emissions

Effluent Gas Concentration, C_{Gas}, ppmvd or $\%O_2/\%CO_2$

$$C_{Gas} = (C_{avg} - C_O)\left(\frac{C_{MA}}{C_M - C_O}\right)$$

Effluent Gas Concentration, Corrected to Dry Basis, $C_{Gas,\ dry\ basis}$, ppmvd

$$C_{Gas,\ dry\ basis} = \frac{C_{gas,\ wet\ basis}}{1 - B_{ws}}$$

Effluent Gas Concentration Corrected to 7% O2, $C_{Gas\ @\ 7\%O2}$, ppmvd

$$C_{Gas\ @\ 7\%\ O2} = C_{gas}\left(\frac{20.9 - 7}{20.9 - \%O_2}\right)$$

Effluent Gas Concentration, $C_{Gas,\ lb/dscf}$, lb/dscf (where 1 ppmv of analyte = 1 mole of analyte per 1 million moles of air)

$$C_{Gas,\ lb/dscf} = \left(\frac{mol\ analyte}{1{,}000{,}000\ mol\ air}\right)\left(\frac{1\ mol\ air}{24.056\ L\ air}\right)\left(\frac{28.3168\ L}{ft^3}\right)(MW_{analtye})\left(\frac{1\ lb}{453.592\ g}\right)$$
$$= \frac{(ppmv_{analyte})(MW_{analyte})}{385{,}300{,}000}$$

Gas Emissions Rate, $E_{Gas,\ lb/hr}$, lb/hr

$$E_{Gas,\ lb/hr} = (C_{Gas,\ lb/dscf})(Q_{std})\left(\frac{60\ min}{1\ hr}\right)$$

Gas Emissions Rate, $E_{Gas,\ lb/ton}$, lb/ton

$$E_{Gas,\ lb/ton} = \left(\frac{E_{Gas,\ lb/hr}}{P_{ton/hr}}\right)$$

Appendix “S”
Field Work Safety Plan

SITE SAFETY PLAN BOOKLET

Project: 031494

Customer: CEMEX

Location: Miami, Florida

Units: In-Line Kiln

Client Project Manager: Blake Ericson

Revision Date: December 2, 2019

Site Safety Plan and JHA Purpose and Instructions

Purpose

Employee safety is the top priority of Montrose Environmental Group. All employees must be trained to assess and mitigate hazards. The District Manager and Project Manager are responsible to ensure all hazards have been properly identified and managed. All employees have Stop Work Authority in all situations where an employee feels they or their co-worker cannot perform a job safely or if there is a task for which they have not been adequately trained.

The Site Safety Plan (SSP) has been developed to help assist Montrose test crews with identifying physical and health hazards and determining how the hazards will be managed. Additionally, the SSP will help each crew manage the safety of the employees by providing emergency procedures and information. The booklet contains a several safety forms that may be required in the field.

Instructions

The SSP consists of the following:

1. A Pre-Mobilization Test Plan – To be completed in it's entirety by the client project Manager prior to the test.

2. A Job Hazard Analysis is a standardized, two-page, fillable form that is used to evaluated the task/site's particular hazards and controls. The form also includes a daily toolbox topic and daily hazard review with sign off by the team. The client Project Manager is responsible to complete the JHA form through section 8. Upon arrival at the test site, the team will review the form for accuracy, making any corrections required and complete the remainder of the JHA. Section 9 will require at least three tasks, hazards and controls be identified for the project. Each team member has the option to discuss making changes or adding to the JHA and must sign on the Job Hazard Analysis form in agreement and sign in Section 10. The JHA is to be modified when conditions change. A toolbox meeting with a daily topic in addition to a review of the hazard analysis is required daily for the duration of the test. An additional sheet of paper with the toolbox topic and signatures can be added to the SSP packet.

3. Hazard Control Matrix - contains useful information on both engineering and administrative controls that a crew can use to reduce or eliminate the hazards they have observed plus applicable PPE that may be required.

4. Additional Forms, as applicable

   a. Aerial Lift Inspection Form

   b. Heat Stress Prevention Form Based on Heat Index

   c. Extended Hours Form

The SSP is a living document. The Project Manager should continually update their SSPs as new information and conditions change or if new hazards are presented.

Each completed SSP should be maintained with the Test Plan in the office for a period of 3 years. There will be an audit process developed for the Site Safety Plans.

PRE-MOBILIZATION TEST INFORMATION

PROJECT NAME/LOCATION: CEMEX PROJECT #: 031494

TEST DATE: 12/5/2023-12/6/2023 PROJECT MANAGER: _____

TEST SCOPE: Methods 1-4, 26A, ASTMD6348-12/Method 320

SITE CONTACT: Name: Greg Bridge Contact Phone: 352-442-5375

Source Type: New Source: ____ Revisit: ____ Prj#/Date/Tech: _____

Coal Fired Electric Utility: ____ Ethanol Plant: ____ Chemical Mfg. of _____

Cement/Lime Kiln Plant: X Specialty Mfg. of: _____ Other: _____

Anticipated Effluent Composition – check all that apply and fill in expected concentration in ppm/%

☐	☐	☐	☐	☐
CO	NO_X	SO_2	VOC	other

If other, explain: _____

Flammable: _____ **Toxic:** _____ **Corrosive:** _____ **Dust:** X

Engineering Controls to be Implemented:

_____

_____

Additional Safety Equipment Required:

Personal gas monitors: ____

Respiratory Protection:

Half Face____ Full Face____ HEPA Filters____ Supplied Air: _____ (Safety Dept. Approval)

Approximate Flue Gas Temperatures, (F)

☑	☑	☐	☐	☐
below 210	210 to 450	450 to 950	above 950	other

If other, explain: _____

Approximate Duct Pressure, (iwg):

☑	☐	☐	☐	☐
below -3	-3 to +3	+3 to +7	above +7	other

If other, explain: _____

PRE-MOBILIZATION TEST INFORMATION

Sampling Location: **Stack Port** X ____ **Duct Port** ____

Approximate Sampling Platform Height, (ft)

☐	☐	☐	☑	☐
below 6	6 to 50	50 to 100	above 100	other

If other, explain: _____

Access and Protection:

Elevators: X ____ Ladders: ____ Aerial Lift: ____ Scaffold: ____ Equipment Hoist: ____

Guardrails: ____ Toe plate: ____ Engineered Tie Off Points: ____ Heat Shield: ____

Other:_____

Describe how equipment will be mobilized to the sampling location:

_____

_____

Additional Information:

_____

_____

Effluent Chemical Regulatory Limits

Gas Name	Chemical Formula	Cal OSHA PEL[1] (ppm)	Cal OSHA STEL[2] (ppm)	NIOSH REL TWA[3] (ppm)	Cal OSHA Ceiling (ppm)	IDLH[4] (ppm)
Carbon Monoxide	CO	25	200	35	200	1,200
Nitric Oxide	NO_x	25	ND[5]	25	ND	100
Sulfur Dioxide	SO_2	2	5	2	ND	100
Hydrogen Chloride	HCl	0.3	2	ND	2	50
Hydrogen Sulfide	H_2S	10	15	10 (10 min.)[C]	50	100

California Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) based on an 8-hour shift;
2: Cal OSHA Short-term Exposure Limit (STEL) based on a 15-minute period;
3: National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit (REL) Time-weighted Average (TWA) based on an 8-hour shift;
4: Immediately Dangerous to Life or Health (IDLH);
5: Not Defined (ND);
C: Ceiling Limit - Maximum allowable human exposure limit for an airborne or gaseous substance, which is not to be exceeded, even momentarily.

Prepared by: _____ Date: _____

Reviewed by: _____ Date: _____

1.

Client	CEMEX	Contact Name		Date	
Facility	Miami Cement Plant	SSP Writer		PM	
Client Rep					

Job Preparation

☐ Job Site Walk Through Completed ☐ Site Specific Training Complete

☐ Safe Work Permit Received from Client

All hazards and mitigation steps must be documented. If this JHA does not cover all the hazards identified, use Section 9 to document that information.

If the heat index is expected to be above 91°, fill out the Heat Stress Prevention Form.

2. **Facility Information/Emergency Preparedness**

If non-emergency medical attention is needed, call: AXIOM #: 877-502-9466.

Plant Emergency # _____ Certified First Aid Person: _____

EMS Location Evacuation Routes Rally Point

Severe Weather Shelter Location Eye Wash & Safety Shower Location

Operational: ☐ Yes ☐ No

Source Information: (list type): _____

Stack Gas Temp. (^{o}F) _____ Stack Gas Press. ("H_2O) _____ Stack Gas Components: _____

Stack Gas Inhalation Potential? ☐ Yes ☐ No If yes, see List of Hazard Chemicals.

3. **Error Risk**

☐ Time Pressure	☐ Remote Work Location	☐ > 12 hr shift	☐ Working > 8 consecutive days
☐ Lack of procedures	☐ Extreme temps, wind >30mph	☐ Personal illness/fatigue	☐ Vague work guidance
☐ Monotonous Activity	☐ First day back after time off	☐ Multiple job locations	☐ Other:

4.

Physical Hazards	**Hazard Controls**
Dust Hazards	☐ Dust Mask ☐ Goggles ☐ Other: _____
Thermal Burn	☐ Hot Gloves ☐ Heat Shields ☐ Other Protective Clothing: _____
Electrical Hazards	☐ Connections Protected from Elements ☐ External GFCI ☐ Other: _____ ☐ XP Rating Requirement ☐ Intrinsically Safe Requirement
Inadequate Lighting	☐ Install Temporary Lighting ☐ Headlamps
Slip and Trip	☐ Housekeeping ☐ Barricade Area ☐ Other: _____
Hand Protection	☐ Cut Resistant Gloves ☐ Pinch Pts. ☐ General ☐ Electrical ☐ Impact Resistant ☐ Other: _____

Potential Hazards for Consideration

Secondary Permits	☐ Hot Work ☐ Confined Space ☐ Excavation
Working from Heights **See also Sect. 7**	☐ Falling objects ☐ Fall protection ☐ Drop zone protection ☐ Platform load ratings ☐ Scaffold inspection ☐ Ladder inspection ☐ Barricades for equipment
Electrical	☐ Exposed wire/connector ☐ Verify equipment grounding ☐ Arc Flash
Lifting	☐ Crane lift plan ☐ Rigging inspection ☐ Tag lines used ☐ Hoists in place
Respiratory **See also Sect. 8**	☐ Unexpected exposure ☐ Chemical ☐ Dust (combustible) ☐ PEL provided ☐ Cartridges or supplied air available ☐ Gas detection equipment

5. **Required PPE** ☐ Hard Hats ☐ Safety Glasses ☐ Safety Toe Shoe/Boot ☐ Hearing Protection ☐ Safety Spotter

☐ Hi-Vis Vests ☐ Harness/Lanyard* ☐ Goggles ☐ Personal Monitor Type: _____

☐ Metatarsal Guards ☐ Hot Gloves ☐ Face Shield ☐ Respirator Type: _____

☐ Nomex/FRC ☐ Other PPE:

Additional Work Place Hazards

6. **Critical Procedures** – check all that apply – ***indicates additional form must be completed or collected from client

☐ Heat Stress Prevention* ☐ Confined Space* ☐ Aerial Work Platform* ☐ Roof Work ☐ Scaffold

☐ Cold Weather Work ☐ Hazardous Energy Control* ☐ Exposure Monitoring ☐ Other: _____

7. **Working From Heights**

Fall Protection	☐ Fixed Guardrails/Toe boards ☐ Fall Prevention PPE Warning Line System
Falling Objects Protection	☐ Barricading ☐ Netting ☐ House Keeping ☐ Tethered Tools ☐ Catch Blanket or Tarp
Fall Hazard Communication	☐ Adjacent/Overhead Workers ☐ Contractor Contact ☐ Client Contact

8. **Other Considerations**

Environmental Hazards - Weather Forecast

☐ Heat/Cold ☐ Lightning ☐ Rain ☐ Snow ☐ Ice ☐ Tornado ☐ Wind Speed

Steps for Mitigation:

Electrical Safety Planning

Plant Hook up: ☐ 110V ☐ 220/240V ☐ 480V ☐ Generator ☐ Hard wired into panel

Electrical Classified Area: ☐ Yes ☐ No Trailer Grounded: ☐ Yes ☐ No Plug Type _____

Electrical Hook Up Responsibility: _____

List of Hazardous Chemicals

				Other Chemicals:
☐ Acetone	☐ Nitric Acid	☐ Hydrogen Peroxide	☐ Compressed Gases	
☐ Hexane	☐ Sulfuric Acid	☐ Isopropyl Alcohol	☐ Flammable Gas	
☐ Toluene	☐ Hydrochloric Acid	☐ Liquid Nitrogen	☐ Non-Flammable Gas	
☐ H2S	☐ Carbon Monoxide			

Steps for Mitigation:

Wildlife/Fauna in Area

☐ Poison Ivy ☐ Poison Oak ☐ Insects: _____ ☐ Wildlife: _____

Personnel w/ known allergies to bees stings or other allergens? ☐ Yes _____ ☐ No

9. **Observed Hazards and Mitigation Steps**

Task	Potential Hazard(s)	Steps for Mitigation
•	1	1
	2	2
	3	3
•	1	1
	2	2
	3	3
•	1	1
	2	2
	3	3
•	1	1
	2	2
	3	3

10. JHA REVIEW: Crew Names & Signatures

Printed Name	Signature	Date	Printed Name	Signature	Date

11. Daily JHA Meeting & Review

Items to review:

- Change in conditions
- Extended work hours
- Daily Safety Topic
- New workers or contractors
- Occurrence of near misses or injuries

Initialing demonstrates that site conditions and hazards have not changed from the original SSP. If changes did occur, make the necessary updates to this JHA and add notes as applicable in Section 9.

Day	Discussion Topic	Initials
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		

Daily Aerial Lift Inspection Form

All checks must be completed prior to each work shift, before operation of the aerial lift. This checklist must be used at the beginning of each shift or following 6 to 8 hours of use.

Aerial Lift Model #:	**Serial Number:**
Make:	**Rented or Owned:**

- Check "Yes" if an item is adequate, operational, and safe.
- Check "No" to indicate that a repair or other corrective action is required prior to use.
- Check "N/A" to indicate "Not Applicable."

Items to be Inspected	Yes	No	N/A
1. All aerial lift components are in working condition (i.e. no loose or missing parts, torn or loose hoses, etc.) – if something can be easily loosened by hand then it is not sufficient.	☐	☐	☐
2. Hydraulic fluid level is sufficient, with the platform fully lowered	☐	☐	☐
3. Hydraulic system pressure (see manufacturer specs) is acceptable. If the pressure is low, determine cause and repair in accordance with accepted procedures as outlined in service manual.	☐	☐	☐
4. Tires and wheel lug nuts (for tightness)	☐	☐	☐
5. Hoses and cables (i.e. worn areas or chafing)	☐	☐	☐
6. Platform rails and safety gate (no damage present)	☐	☐	☐
7. Pivot pins secure	☐	☐	☐
8. Welds are not cracked and structural members are not bent or broken	☐	☐	☐
9. Warning and instructional labels are legible and secure, and load capacity is clearly marked.	☐	☐	☐
10. Manufacturer's Instruction Manual is present inside the bucket	☐	☐	☐
11. Base controls (switches and push buttons) can be properly operated	☐	☐	☐
12. Platform conditions are safe (i.e. not slippery)	☐	☐	☐
13. Fire extinguisher is present, mounted and fully charged, located inside the bucket	☐	☐	☐
14. Headlights, safety strobe light and back-up alarm are functional	☐	☐	☐
15. Workplace is free of hazards (overhead powerlines, obstructions, level surface, high winds, etc.) ***Do not operate if winds are 20 mph, unless otherwise specified by manufacturer recommendations.**	☐	☐	☐

Operator Name & Signature | Location | Date

Ground Control Name & Signature | Location | Date

Harness Inspections:

Printed Name | Signature | Date

Printed Name | Signature | Date

Printed Name | Signature | Date

Extended Hours Safety Audit

Project Number: _____ Date: _____ Time: _____

When a project is expected to extend past a 14-hour work day, this form must be completed to evaluate the condition of the crew, and the safety of the work environment.

Permission to proceed into extended work hours must come from a District Manager (DM) or Regional Vice President (RVP). Technical RVPs can authorize moving forward, if they are in the field or if they are managing the project.

1. Hold test crew meeting **Test crew initials:** _____

The test leader should look for signs of the following in their crews:

- Irritability
- Lack of motivation
- Headaches
- Giddiness
- Fatigue
- Depression
- Reduced alertness, lack of concentration and memory

The test leader should assess the environmental and hazardous concerns:

- Temperature and weather
- Lighting
- Working from Heights
- Hoisting
- PPE (i.e. respirators, etc.)
- Pollutant concentration in ambient air (SO_2, H_2S, ect.)

2. Notify DM or RVP

The PM must contact either the DM or RVP to discuss the safety issues that may arise due to the extended work period. During this time, they can come to an agreement on how to proceed. Items to discuss include:

- Reason for extended hours
- Reason for delay
- Production limitations
- Impending Weather

3. Contact the client

The PM, DM or RVP must discuss with client any identified safety concerns, the client's needs and mutually agree on how to proceed. Discussion should also include the appropriate rest period needed before the next day's work shift can begin. The DM and/or a RVP must be informed on the final decision.

Final Outcome:	
Approver:	

Heat Stress Prevention Form

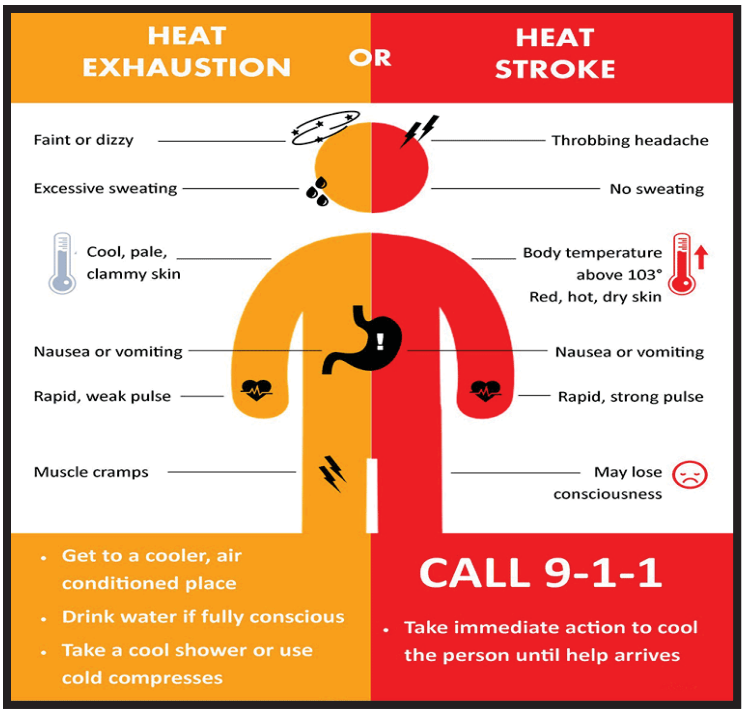
This form is to be used when the Expected Heat Index is above 91° F, and is to be kept with project documentation.

Project Manager (PM):	**Expected High Temp:**
Date(s):	**Expected Heat Index:**

1. Review the signs of Heat Exhaustion and Heat Stroke

2. <u>If Heat Index is above 91° F:</u>
   - Provide cold water and/or sports drinks to all field staff (avoid caffeinated drinks and energy drinks which can increase core temperature).
     - Bring no less than one gallon of water per employee
   - If employee(s) are dehydrated, on blood pressure medication or not acclimated to heat, ensure they are aware of the heightened risk for heat illness
   - Provide cool head bands/vests/etc.
   - Have ice available to employees
   - Implement work shift rotations and breaks, particularly for employees working in direct sunlight.
   - Provide as much shade at the jobsite as possible, including tarps, tents or other acceptable temporary structures.
   - PM should interview each field staff periodically to evaluate for signs of heat illness

3. <u>If Heat Index is above 103° F:</u>
   - Employees must stop for drinks and breaks every hour (about 4 cups/hour)
   - Employees are not permitted to work alone for more than one hour at a time without a break offering shade and drinks
   - Employees should wear cool bands and vests if working outside more than one hour at a time
   - PM should interview each field staff every 2 hours to evaluate for signs of heat illness



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If you have any questions, please contact one of the following individuals by email or phone.

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