



Hexion Inc.

2017 MONITORING REPORT

Hexion Inc.
1411 Industrial Drive, Fayetteville, NC
REC Administrative Agreement No. NCD003189024

August 31, 2018



2017 MONITORING REPORT



Daniel Rhodes, PG
Geologist II



Ryan Gerber, PE
Senior Project Engineer



J. Alan Pinnix, PG
Registered Site Manager

Prepared for:
Hexion Inc.

Prepared by:
Arcadis G&M of North Carolina, Inc.
801 Corporate Center Drive
Suite 300
Raleigh
North Carolina 27607
Tel 919 854 1282
Fax 919 854 5448

Our Ref.:
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Date:
August 31, 2018

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IHSB SITE NAME Hexion Inc. (AA No. NCD003189024)

DATE & NAME OF DOCUMENT August 2018 2017 Monitoring Report

TYPE OF SUBMITTAL (circle all that apply): Report Work plan, Work Phase Comp. Statement, Schedule Change

REMEDIATING PARTY DOCUMENT CERTIFICATION STATEMENT (.0306(B)(2))

"I certify under penalty of law that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this certification, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material and information contained herein is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for willfully submitting false, inaccurate or incomplete information."

Hexion Inc. Ben Tyler

Name of Remediating Party

[Handwritten Signature]
Signature of Remediating Party

9-21-18
Date

NOTARIZATION

North Carolina (Enter State)

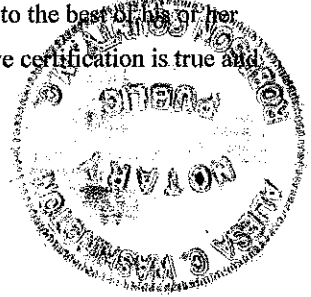
Cumberland COUNTY

I, Aliesa C. Washington, a Notary Public of said County and State, do hereby certify that Ben Tyler did personally appear and sign before me this day, produced proper identification in the form of Drivers license, was duly sworn or affirmed, and declared that, to the best of his or her knowledge and belief, after thorough investigation, the information contained in the above certification is true and accurate, and he or she then signed this Certification in my presence.

WITNESS my hand and official seal this 24 day of September, 2018.

Aliesa C. Washington
Notary Public (signature)

(OFFICIAL SEAL)



My commission expires: 4/23/19

IHSB SITE NAME Hexion Inc. (AA No. NCD003189024)

DATE & NAME OF DOCUMENT August 2018 2017 Monitoring Report

TYPE OF SUBMITTAL (circle all that apply): Report, Work plan, Work Phase Comp. Statement, Schedule Change

REGISTERED SITE MANAGER CERTIFICATION OF SIGNATURES

As the Registered Environmental Consultant for the Site for which this filing is made, I certify that the signatures included herewith are genuine and authentic original handwritten signatures and/or true, accurate, and complete copies of the genuine and authentic original handwritten signatures of the persons who purport to sign for this filing. I further certify that I have collected through reliable means the originals and/or copies of said signatures from the persons authorized to sign for this filing who, in fact, signed the originals thereof. Those persons and I understand and agree that any copies of signatures have the same legally binding effect as original handwritten signatures, and I certify that any person for whom I am submitting a copy of their signature has provided me with their express consent to submit said copy. Additionally, I certify that I am authorized to attest to the genuineness and authenticity of the signatures, both originals and any copies, being submitted herewith and that by signing below, I do in fact attest to the genuineness and authenticity of all the signatures, both originals and copies, being submitted for this filing.

J. Alan Pinnix
Name of Registered Site Manager

[Signature]
Signature of Registered Site Manager

9/27/2018
Date

REGISTERED SITE MANAGER DOCUMENT CERTIFICATION STATEMENT (.0306(b)(1))

"I certify under penalty of law that I am personally familiar with the information contained in this submittal, including any and all supporting documents accompanying this certification, and that the material and information contained herein is, to the best of my knowledge and belief, true, accurate and complete and complies with the Inactive Hazardous Sites Response Act N.C.G.S. 130A-310, et seq, and the remedial action program Rules 15A NCAC 13C .0300. I am aware that there are significant penalties for willfully submitting false, inaccurate or incomplete information."

J. Alan Pinnix
Name of Registered Site Manager

[Signature]
Signature of Registered Site Manager

9/27/2018
Date

NOTARIZATION

North Carolina (Enter State)

Wake COUNTY

Harnett

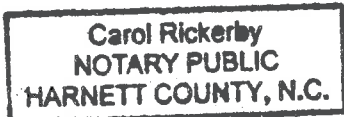
I, Carol Rickerby, a Notary Public of ~~said~~ Harnett County and State, do hereby certify that J. Alan Pinnix did personally appear and sign before me this day, produced proper identification in the form of NCDL 895951, was duly sworn or affirmed, and declared that, he or she is the duly authorized environmental consultant of the remediating party of the property referenced above and that, to the best of his or her knowledge and belief, after thorough investigation, the information contained in the above certifications is true and accurate, and he or she then signed these Certifications in my presence.

WITNESS my hand and official seal this 27 day of September, 2018

[Signature]
Notary Public (signature)

(OFFICIAL SEAL)

My commission expires: 11/30/2019.



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ACRONYMS AND ABBREVIATIONS

2L Groundwater Standard	Title 15A Subchapter 2L Groundwater Standards
Arcadis	Arcadis G&M of North Carolina, Inc.
Borden Chemical	Borden Chemical, Inc.
EPT	Enhanced Groundwater Pump-and-Treat
Hexamine	Hexamethylenetetramine
Hexion	Hexion Inc.
IMAC	Interim Maximum Allowable Concentration
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter
N	Total Nitrogen
NCAC	North Carolina Administrative Code
NCDEQ	North Carolina Department of Environmental Quality
O&M	Operation and maintenance
RAP	Remedial Action Plan
REC	Registered Environmental Consultant
RI	Remedial Investigation
RTU	Ready to Use
SAP	Sample and Analysis Plan
Site	The Hexion facility located at 1411 Industrial Drive in Fayetteville, North Carolina
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds

1 INTRODUCTION

Hexion Inc. (Hexion) retained Arcadis G&M of North Carolina, Inc. (Arcadis) to prepare this Groundwater Monitoring Report for their facility located at 1411 Industrial Drive in Fayetteville, North Carolina (the Site) (**Figure 1**). This report was developed in accordance with North Carolina Department of Environmental Quality (NCDEQ) Registered Environmental Consultant (REC) Program Implementation Guidance dated October 2015 (NCDEQ 2015) and the REC Program Rules contained within Title 15A of the North Carolina Administrative Code (NCAC) 13C .0300. The purpose of this report is to document the results of sampling activities completed in July 2017 and October 2017, and operation and maintenance (O&M) activities performed on the enhanced groundwater pump-and-treat system (EPT) for 2017.

1.1 Site Description

The Hexion facility is located in an industrial complex on the southeastern side of Fayetteville, North Carolina. **Figure 1** shows the Site location and the topography within a 1-mile radius, as provided by the U.S. Geological Survey topographic map of the Fayetteville and Vander, North Carolina quadrangles. The approximate latitude and longitude of the Site is 35° 1' 45.1" North and 78° 51' 41.4" West, respectively. The Site is comprised of approximately 26 acres within a single parcel of land with Cumberland County Tax Parcel number 0446-15-2670. **Figure 2** depicts the Site and the layout of the EPT system. A drainage ditch runs near the southern boundary of the Site, which drains into the Cape Fear River. The surrounding properties include Carolina By-Products to the north, Tidewater Transit Company, Inc.'s terminal to the south, and Aberdeen & Rockfish Railroad to the west. The Site is bordered on the east by the Cape Fear River.

The Site is an active chemical manufacturing facility producing urea formaldehyde resins, phenolic/formaldehyde resins, formaldehyde solutions, wax emulsions, and hexamethylenetetramine (Hexamine). These chemicals are used in a variety of products, including resins used in plywood and particle board, automotive insulation, brake linings, abrasives, and chemical intermediates. Raw materials are brought to the plant and products are shipped to customers via rail and truck.

2 SITE BACKGROUND AND HISTORY

2.1 Background

Prior to 1956, the land the Site is located on had been owned by various families and appears to have been undeveloped. In 1956, The Borden Company purchased the Site and began construction of a chemical manufacturing facility on the property. Borden Chemical, Inc. (Borden Chemical) was divested from The Borden Company in 1996. In 2005, Resolution Performance Products LLC, Resolution Specialty Materials, and Borden Chemical merged to form Hexion. In a letter dated October 27, 2010, NCDEQ was notified that Hexion became Momentive Specialty Chemicals, Inc. on October 1, 2010.

The Site is currently an active chemical manufacturing facility producing urea formaldehyde resins, phenolic/formaldehyde resins, wax emulsion, and Hexamine, which are used in a variety of products, including resins used in plywood and particle board, auto insulation, brake linings, abrasives, and chemical intermediates. Raw materials are brought to the plant and products are shipped to customers via rail and truck. Manufacturing began at the Site in 1956 when The Borden Company built Reactor 1 and the Formaldehyde Plant 1. Upgrades at the facility have been completed in phases, including: construction of Reactor 2 and Formaldehyde Plant 2 in 1962; construction of Reactor 3 in 1965; construction of Formaldehyde Plant 3 and the Hexamine Plant in 1966; construction of the Wax Plant in 1971; construction of Reactor 4, the methanol tanks, the Ready To Use (RTU) mixer, and Formaldehyde Plant 4 in 1988; and construction of Reactor 5 in 1992.

2.2 Regulatory History

Monitoring of Site groundwater began in 1982, when, at the request of NCDEQ, four monitor wells were installed to determine if site-related constituents were present in the groundwater at the Site. From 1982 to 1986, quarterly groundwater samples were collected from the four wells. Elevated ammonia concentrations were first detected in 1987. Groundwater samples were collected periodically from 1988 to 1996, but results were not submitted to NCDEQ. A formal annual groundwater monitoring program was initiated in 1996, and results were submitted to NCDEQ after that time.

Increases in ammonia and formaldehyde concentrations were observed in groundwater following the February 2004 monitoring event. Confirmatory sampling verified the increased ammonia and formaldehyde concentrations and the seepage of impacted groundwater from the embankment toward the eastern side of the Site. A Remedial Investigation Work Plan (Arcadis 2010) was submitted for the Site in September 2010. A more complete summary of the Site's regulatory history is included within the Remedial Investigation Work Plan (Arcadis 2010).

2.3 Facility Improvements

Hexion completed facility improvement projects to prevent further migration of Site constituents to groundwater at the urea off-loading area and the waste-water treatment plant in 2016 and 2017, respectively. These facility improvements were selected as soil remedial alternatives based on evaluation and recommendations presented in the Remedial Action Plan (RAP) dated August 27, 2013 (Arcadis 2013a). Summaries of the soil remedial actions are described in the following sections.

2.3.1 Urea Off-Loading Area

Remedial actions were completed at the Urea Off-Loading Area at the Site between November and December 2015 to eliminate and/or reduce the potential for urea to migrate from the ground surface, the surface to soil and groundwater. Previous releases of urea in this area was a source of ammonia in groundwater at the Site. The remedial actions were completed in stages beginning with the installation of engineering controls including impervious surfaces and containment areas. Ammonia-impacted soils were removed to the extent necessary to implement the following infrastructure improvements:

- Concrete pads were installed to create an impervious area around the urea off-loading bins. The concrete pads had recesses for the rails which were filled with an elastomeric mortar to seal the cavity between the rails and the concrete.
- All the below-ground urea hopper entries were modified to expand hopper openings and to seal the transitions between hoppers and the concrete.
- A French Drain System was installed below-ground on the eastern side of the Urea Off-Loading Area for perched water recovery and reduction of surface water flow.
- Canopy structures were repaired to reduce the potential for precipitation to enter the Urea Off-Loading Area.

A full description of the remedial actions completed are documented in the Construction Completion Report for the Facility Improvements at the Urea Off-Loading Area dated April 12, 2016 (Arcadis 2016a).

2.3.2 Eastern Wastewater Treatment Pond:

Remedial actions were completed at the Eastern Wastewater Treatment Pond between January 2017 to April 2017 to eliminate the transport pathway for constituent migration to soil and groundwater. Previous leaks of wastewater from this pond was a source of ammonia in groundwater at the Site. A temporary bypass system to process the wastewater was installed before the inspection and repair of the eastern treatment pond. The pond was drained and cleaned to assess the conditions of the concrete bottom and walls. The inspection identified minor cracks in the concrete lining on the sides. A double high-density polyethylene (HDPE) liner system, including sump and pump interstitial monitoring system was installed for detection of leaks. A full description of the remedial actions completed are documented in the Construction Completion Report for the Facility Upgrades at the Eastern Wastewater Treatment Pond dated May 8, 2017 (Arcadis 2017).

3 OPERATION OF THE ENHANCED GROUNDWATER PUMP-AND-TREAT SYSTEM

O&M activities were performed during the reporting period to inspect, monitor, and report on the performance of the EPT system as prescribed in the Preconstruction Report (Arcadis 2013b) submitted to the NCDEQ REC Program on November 7, 2013. **Appendix A** contains a system log of the O&M and data collection activities. A few notes from the O&M activities include:

- The recovery system had 100-percent run time during the reporting period.
- Approximately 247,261 gallons of groundwater were recovered between the period of December 1, 2016 and December 12, 2017 with an average recovery of 677 gallons per day.
- Most of the extracted groundwater was produced from recovery well RW-5 (see **Figure 2** and **Figure A-1** in **Appendix A**).
- Recovery wells PW-2R and RW-7, located near the wastewater treatment pond continued to have generally low recovery rates.
- Recovery well RW-6 did not produce any water during the reporting period because the saturated thickness at this well location was relatively thin and this well has historically not produced water.

Groundwater elevation gauging was performed on selected Site wells on July 19, 2017 and October 30, 2017 to assess groundwater drawdown effects from the EPT system. Depth-to-water measurements were collected using procedures discussed within the Remedial Investigation (RI) Report (Arcadis 2012). Groundwater elevation data from the July 2017 and October 2017 gauging events is presented on **Table 1** along with historical groundwater elevation data collected since 2013. Potentiometric surface maps for the July 2017 and October 2017 are provided in **Figure 3** and **Figure 4**, respectively.

4 GROUNDWATER MONITORING ACTIVITIES

4.1 Sampling and Analysis Plan

Based on groundwater monitoring results from 2014 and 2015, Arcadis proposed in the 4th Quarter 2015 Progress Report (Arcadis 2016b) to reduce the sampling and analysis plan (SAP) for future sampling events. **Table 2** presents the revised SAP for the 2017 sampling events, which maintained the existing semi-annual sampling schedule through 2017 but removed selected constituents from further analysis if not detected above the 2L Groundwater Standards for at least four consecutive semi-annual sampling events:

- Volatile organic compounds were removed from the SAP in February 2016 with the exception of cis-1,2-dichloroethene (cis-DCE) and vinyl chloride in monitoring/recovery wells MW-39, PZ-1R, PZ-14R, and RW-5.
- Semi-volatile organic compounds were removed from the SAP in February 2016 except for phenol in recovery well PW-1R.
- Formaldehyde was removed from the SAP in February 2016 from all monitoring/recovery wells except RW-5, RW-7, PW-1R, MW-44, PZ-16R, and PW-1R which continue to contain formaldehyde above the 2L Groundwater Standard.
- Methanol was removed entirely from the monitoring program starting with the October 2017 sampling event following 3 years of semi-annual sampling in which methanol had not been detected at a concentration greater than the 2L Groundwater Standard.

4.2 Site-Wide Groundwater Monitoring Activities

Arcadis gauged groundwater elevations and collected groundwater samples from Site monitor wells on July 18 and 19, 2017 and October 30 and 31, 2017 in accordance with the revised SAP included in the 4th Quarter 2015 Progress Report (Arcadis 2016b). Sampling procedures are presented in the RI Report (Arcadis 2012). Low-flow purging and sampling methods were performed using variable-speed peristaltic pumps and disposable tubing. All groundwater samples were submitted for laboratory analysis of ammonia as total nitrogen by Method 351.1. Selected samples were analyzed for the following constituents in accordance with the current SAP:

- cis-DCE and vinyl chloride by USEPA Method 8260B
- formaldehyde by Method 8315
- methanol by 8015C (July 2017 event only)
- nitrate and nitrite as Nitrogen by Method 353.2, and
- phenol by USEPA Method 8270D.

4.3 Surface Water Sampling Activities

On July 18, 2017, Arcadis collected Surface Water samples from sampling locations SWS-2, SWS-3, and SWS-4 in accordance with the revised SAP (Arcadis 2016b), using sampling procedures presented in the RI Report (Arcadis 2012). All surface water samples were submitted for laboratory analysis of ammonia as total nitrogen by Method 351.1.

4.4 Seep Inspection and Sampling Activities

Arcadis inspected the eight identified seep locations on the Cape Fear River embankment on August 9, 2017 and observed seep water at all seep locations except for Seep 3. Arcadis collected seep samples from the seven identified seeps for laboratory analysis of ammonia as total nitrogen by Method 351.1 in accordance with the revised SAP included in the 4th Quarter 2015 Progress Report (Arcadis 2016b). All constituents besides ammonia were removed from the revised SAP following 2 years of semi-annual sampling (four events total) in which no constituents other than ammonia were detected above their respective 2L Groundwater Standards or 2B Surface Water Standards.

5 MONITORING RESULTS

5.1 Site-Wide Groundwater Monitoring Results

Analytical sample results from the July 2017 and October 2017 monitoring events are summarized in **Table 3** along with all groundwater analytical data collected following the baseline sampling event in December 2013. Historical groundwater analytical data in **Table 3** are compared to the NCAC 2L Groundwater Standards or the Interim Maximum Allowable Concentration (IMAC) Standards for compounds with no established 2L Groundwater Standards. Historical groundwater constituents not included in the current SAP have been removed from **Table 3**. Copies of the laboratory reports are included in **Appendix B**. Constituents that were present at concentrations greater than their respective 2L Groundwater Standard or IMAC in at least one well during the July and October 2017 sampling events included: phenol; formaldehyde; cis-1,2-dichloroethene (cis-DCE); vinyl chloride; nitrate/nitrite, and ammonia.

Ammonia concentrations detected in July and October 2017 are depicted with estimated isoconcentration lines on **Figures 5** and **Figure 6** respectively. Other constituents exceeding the 2L Groundwater Standards during the July and October monitoring events were present in limited areas of the Site and were not presented on the figures. Constituents detected at concentrations above their respective 2L Groundwater Standard or IMAC during the July and October 2017 sampling events are summarized in the following table:

Constituent	2L Groundwater Standard	July 2017	October 2017
Ammonia	1.5 milligrams per liter (mg/L) (IMAC)	Greater than 2L in 17 of 20 samples. Range from 3.6 (RW-2/ MW-40) to 2,600 mg/L (PW-1R).	Greater than 2L in 17 of 20 Samples. Range from 3.5 mg/L (PZ-38) to 3,000 mg/L (PW-1R).
Nitrate/Nitrite	10 / 1 mg/L	MW-39 (10 / 4.9mg/L) RW-5 (55 / 10 mg/L)	(Not detected in MW-39) RW-5 (32 / 8.8 mg/L)
Cis-DCE	70 micrograms per liter (µg/L)	PW-1R (120 µg/L)	All Less Than 2L Groundwater Standard
Vinyl Chloride	0.03 µg/L	PW-1R (2.3 µg/L) PZ-14R (6.1 µg/L) RW-5 (2.0 µg/L).	MW-39 (0.82 µg/L) PW-1R (1.3 µg/L) PZ-14R (5.0 µg/L) RW-5 (1.0 µg/L).
Phenol	30 µg/L	PW-1R (210 µg/L)	PW-1R (86 µg/L)
Formaldehyde	0.6 µg/L	PW-1R (8.44 µg/L) RW-7 (1.79 µg/L)	PW-1R (3.45 µg/L) (Less than 2L in RW-7)

5.2 Surface Water Results

Ammonia concentrations detected in surface water samples collected in July 2017 along with previous results since February 2012 are summarized on **Table 4** and are compared to the USEPA Ammonium Health Advisory and the Ammonium Water Quality Criteria as there is no applicable NCAC 2B Surface Water Standard established for ammonia. The ammonia concentrations in SW-4 (9.5 mg/L) was above the USEPA Ammonium Water Quality Criteria (7.9 mg/L) but less than the USEPA Ammonium Health Advisory (30 mg/L). Ammonia concentrations in SWS-2 and SWS-3 were less than both water quality criteria.

5.3 Seep Results

Analytical results for seep samples along with previous seep results October 2010 are summarized in **Table 5** and are compared to the groundwater IMAC and NCAC 2B Surface Water Standards for protection of aquatic life. Ammonia concentrations were detected above the IMAC (1.5 mg/L) at six of the seven seep locations sampled and was below the IMAC at Seep-5; no seep water was present at Seep-3. Ammonia concentrations in August 2017 ranged from 0.54 mg/L (Seep-5) to 44 mg/L (Seep-2) and were generally similar or less than average concentrations detected since 2010. Most notably, ammonia concentrations in Seep-1 (31 mg/L) were significantly less than the 125 mg/L average of the previous seven ammonia concentrations detected at Seep-1.

6 DISCUSSION AND CONCLUSION

6.1 Delineation of Groundwater

The extent of constituent concentrations in groundwater is well defined at the Site and remains generally stable with some constituents attenuating over time. Of the constituents detected in groundwater, only ammonia was detected site-wide (see **Figure 4**). All other constituents were only present in localized areas of the Site.

The remaining Site constituents: phenol; formaldehyde; cis-1,2-dichloroethene; vinyl chloride; and nitrate/nitrite; were present at concentrations greater than their respective 2L Groundwater Standards during the July 2017 and October 2017 events in limited areas of the Site. The majority of these compounds were detected primarily at well PW-1R, located in the hexamine process area. PW-1R is a recovery well with a high recovery rate which likely prevents migration of these compounds away from this area of the Site. Other than PW-1R, wells that had constituents above the 2L Groundwater Standard included: vinyl chloride in wells PZ-14R and RW-5, nitrate/nitrite in MW-39 and RW-5, and formaldehyde in RW-7.

Methanol was not detected at the Site at a concentration greater than the 2L Groundwater Standards during eight sampling events from June 2014 to July 2017, therefore methanol is no longer a constituent of concern at the Site and was removed from the SAP starting with the October 2017 sampling event.

Constituent concentrations in groundwater during the July 2017 and October 2017 site-wide sampling events were generally similar to or less than the previous monitoring events since December 2013. Facility improvement projects were completed at the Urea Off-Loading Area and the Eastern Wastewater Treatment Pond in 2016 and 2017, respectively. These projects are expected to prevent or reduce future migration of ammonia and other constituents to groundwater below the Site, which combined with operation of the groundwater recovery system and natural attenuation, is expected to result in decreasing concentrations of ammonia and other constituents in groundwater over time. Hexion will continue to monitor groundwater constituent concentrations annually at the Site to confirm that attenuation is occurring.

6.2 Delineation of Surface Water

Ammonia concentrations in the surface water ditch continue to fluctuate and are periodically detected above the NCAC 2B Surface Water Standards for protection of aquatic life (7.9 mg/L). Ammonia concentrations in the surface water ditch are expected to decrease over time as groundwater concentrations continue to attenuate. Hexion will continue to monitor surface water constituent concentrations at the Site annually to confirm that attenuation is occurring.

6.3 Delineation of Seeps

Ammonia concentrations in groundwater continue to seep out of the river embankment on the eastern portion of the Site; however, the concentrations detected in July 2017 and October 2017 were less than historical average concentrations. Based on visual observations at the Site, the seep water appears to evaporate and to be absorbed into the soil as it migrates down the embankment. Seep water was not

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observed migrating into the Cape Fear River. Ammonia concentrations in the seep water are expected to decrease over time as ammonia concentrations in groundwater continue to attenuate. Hexion will continue to monitor seep water constituent concentrations at the Site annually to confirm that attenuation is occurring.

7 REFERENCES

- Arcadis G&M of North Carolina Inc. (Arcadis), 2010. Remedial Investigation Work Plan, Momentive Specialty Chemicals, Inc. Fayetteville, North Carolina. September 28.
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- Arcadis, 2013b. Preconstruction Report for an Enhanced Groundwater Recovery System, Momentive Specialty Chemicals, Inc., 1411 Industrial Drive, Fayetteville, North Carolina. REC Administrative Agreement No. NCD003189024. November 4.
- Arcadis, 2016a. Construction Completion Report for Facility Improvements at the Urea Off-Loading Area. Hexion Inc., 1411 Industrial Drive, Fayetteville, North Carolina. REC Administrative Agreement No. NCD003189024. April 12.
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- Arcadis, 2017. Construction Completion Report for Facility Upgrades at the Eastern Wastewater Treatment Pond. Hexion Inc., 1411 Industrial Drive, Fayetteville, North Carolina. REC Administrative Agreement No. NCD003189024. May 8.
- North Carolina Department of Environmental Quality. 2015. Registered Environmental Consultant Program Implementation Guidance. Division of Waste Management, Superfund Section, Inactive Hazardous Sites Branch. October 22.

TABLES



Table 1
Groundwater Elevation Measurements
Hexion Inc., Fayetteville, North Carolina

Well ID	Total Depth (ft bls)	Ground Surface Elevation (ft msl)	TOC Elevation (ft msl)	Date	Depth to Groundwater (ft btoc)	Groundwater Elevation (ft msl)
PZ-7	15.31	86.77	86.67	6/23/2014	9.96	76.71
				9/24/2014	10.90	75.77
				12/15/2014	10.38	76.29
				3/23/2015	9.98	76.69
				9/24/2015	10.43	76.24
				2/1/2016	9.84	76.83
				8/24/2016	10.29	76.38
				7/19/2017	NA	NA
PZ-9	15.11	85.94	87.67	6/23/2014	7.65	80.02
				9/24/2014	7.51	80.16
				12/15/2014	7.80	79.87
				3/23/2015	6.89	80.78
				9/24/2015	7.68	79.99
				2/1/2016	8.14	78.53
				8/24/2016	7.15	80.52
				7/19/2017	NA	NA
PZ-10R	16.00	86.28	86.01	12/9/2013	11.22	74.79
				6/23/2014	10.85	75.16
				9/24/2014	11.05	74.96
				12/15/2014	11.24	74.77
				3/23/2015	10.61	75.40
				9/24/2015	11.20	74.81
				2/1/2016	10.59	75.42
				8/24/2016	NA	NA
7/19/2017	NA	NA				
PZ-11	15.14	87.01	86.84	6/23/2014	13.14	73.70
				9/24/2014	13.13	73.71
				12/15/2014	13.35	73.49
				3/23/2015	13.07	73.77
				9/24/2015	13.33	73.51
				2/1/2016	12.93	73.91
				8/24/2016	13.17	73.67
				7/19/2017	NA	NA
PZ-12	15.87	86.74	86.60	6/23/2014	7.05	79.55
				9/24/2014	10.81	75.79
				12/15/2014	11.91	74.69
				3/23/2015	8.32	78.28
				9/24/2015	10.78	75.82
				2/1/2016	8.70	77.90
				8/24/2016	10.87	75.73
				7/19/2017	11.49	75.11
PZ-13	15.31	86.33	86.09	12/9/2013	9.00	77.09
				6/23/2014	8.11	77.98
				9/24/2014	8.17	77.92
				12/15/2014	8.38	77.71
				3/23/2015	7.97	78.12
				9/24/2015	8.70	77.39
				2/1/2016	8.18	77.91
				8/24/2016	8.41	77.68
PZ-14R	14.97	86.25	86.11	7/19/2017	8.43	77.66
				10/30/2017	8.81	77.28
				9/24/2014	7.83	78.28
				10/30/2017	8.31	77.80

See last page for notes.

Table 1
Groundwater Elevation Measurements
Hexion Inc., Fayetteville, North Carolina

Well ID	Total Depth (ft bls)	Ground Surface Elevation (ft msl)	TOC Elevation (ft msl)	Date	Depth to Groundwater (ft btoc)	Groundwater Elevation (ft msl)
PZ-16R	15.00	87.93	87.63	12/9/2013	11.39	76.24
				6/23/2014	10.74	76.89
				9/24/2014	10.96	76.67
				12/15/2014	11.47	76.16
				3/23/2015	10.44	77.19
				9/24/2015	11.26	76.37
				2/1/2016	10.75	76.88
				8/24/2016	11.05	76.58
				7/19/2017	10.89	76.74
10/30/2017	11.40	76.23				
PZ-18	13.20	NM	87.23	12/9/2013	8.06	79.17
				6/23/2014	7.65	79.58
				9/24/2014	7.73	79.50
				12/15/2014	8.12	79.11
				3/23/2015	7.45	79.78
				9/24/2015	8.10	79.13
				2/1/2016	7.46	79.77
				8/24/2016	7.86	79.37
				7/19/2017	6.59	80.64
10/30/2017	8.30	78.93				
PZ-34	18.40	85.99	88.60	12/9/2013	12.32	76.28
				6/23/2014	11.71	76.89
				9/24/2014	11.72	76.88
				12/15/2014	12.23	76.37
				3/23/2015	11.51	77.09
				9/24/2015	12.30	76.30
				2/1/2016	11.79	76.81
				8/24/2016	11.94	76.66
				7/19/2017	12.23	76.37
10/30/2017	12.86	75.74				
PZ-38 ^a	13.00	83.63	83.32	12/9/2013	5.20	78.12
				6/23/2014	5.05	78.27
				9/24/2014	4.64	78.68
				12/15/2014	5.26	78.06
				3/23/2015	4.87	78.45
				9/24/2015	5.50	77.82
				2/1/2016	5.05	78.27
				8/24/2016	5.28	78.04
				7/19/2017	5.22	78.10
10/30/2017	5.55	77.77				
MW-39	15.00	85.82	85.50	12/9/2013	8.38	77.12
				6/23/2014	7.88	77.62
				9/24/2014	7.99	77.51
				12/15/2014	8.33	77.17
				3/23/2015	8.23	77.27
				9/24/2015	8.29	77.21
				2/1/2016	7.90	77.60
				8/24/2016	7.98	77.52
				7/19/2017	8.08	77.42
10/30/2017	8.31	77.19				
MW-40	10.00	83.86	83.55	12/9/2013	2.40	81.15
				6/23/2014	4.27	79.28
				9/24/2014	2.68	80.87
				12/15/2014	3.25	80.30
				3/23/2015	2.47	81.08
				9/24/2015	4.41	79.14
				2/1/2016	2.29	81.26
				8/24/2016	4.02	79.53
				7/19/2017	3.06	80.49
10/30/2017	2.69	80.86				

See last page for notes.

Table 1
Groundwater Elevation Measurements
Hexion Inc., Fayetteville, North Carolina

Well ID	Total Depth (ft bls)	Ground Surface Elevation (ft msl)	TOC Elevation (ft msl)	Date	Depth to Groundwater (ft btoc)	Groundwater Elevation (ft msl)
MW-41	9.00	82.49	82.20	12/9/2013	2.10	80.10
				6/23/2014	1.49	80.71
				9/24/2014	2.45	79.75
				12/15/2014	2.69	79.51
				3/23/2015	1.72	80.48
				9/24/2015	3.02	79.18
				2/1/2016	1.94	80.26
				8/24/2016	2.84	79.36
				7/19/2017	2.02	80.18
10/30/2017	1.91	80.29				
MW-44	15.00	88.04	87.75	12/9/2013	10.58	77.17
				6/23/2014	9.97	77.78
				9/24/2014	10.20	77.55
				12/15/2014	10.50	77.25
				3/23/2015	9.73	78.02
				9/24/2015	10.43	77.32
				2/1/2016	9.90	77.85
				8/24/2016	10.24	77.51
				7/19/2017	10.14	77.61
10/30/2017	10.51	77.24				
MW-45	15.00	86.08	85.67	12/9/2013	7.06	78.61
				6/23/2014	6.54	79.13
				9/24/2014	6.57	79.10
				12/15/2014	7.06	78.61
				3/23/2015	5.92	79.75
				9/24/2015	7.06	78.61
				2/1/2016	6.10	79.57
				8/24/2016	6.70	78.97
				7/19/2017	6.99	78.68
10/30/2017	7.08	78.59				
MW-47	11.00	84.61	84.20	12/9/2013	6.02	78.18
				6/23/2014	5.80	78.40
				9/24/2014	5.69	78.51
				12/15/2014	6.01	78.19
				3/23/2015	5.39	78.81
				9/24/2015	6.09	78.11
				2/1/2016	5.62	78.58
				8/24/2016	5.81	78.39
				7/19/2017	5.85	78.35
10/30/2017	6.18	78.02				
OB-1	15.14	86.98	87.70	6/23/2014	10.92	76.78
				9/24/2014	11.09	76.61
				12/15/2014	11.33	76.37
				3/23/2015	10.12	77.58
				9/24/2015	11.38	76.32
				2/1/2016	9.90	77.80
				8/24/2016	9.35	78.35
7/19/2017	NA	NA				
10/30/2017	10.35	77.35				
T-22	18.90	84.21	85.07	12/9/2013	6.20	78.87
				6/23/2014	6.33	78.74
				9/24/2014	5.91	79.16
				12/15/2014	6.01	79.06
				3/23/2015	6.14	78.93
				9/24/2015	6.38	78.69
				2/1/2016	5.85	79.22
				8/24/2016	6.14	78.93
				7/19/2017	6.25	78.82
10/30/2017	6.54	78.53				

See last page for notes.

Table 1
Groundwater Elevation Measurements
Hexion Inc., Fayetteville, North Carolina

Well ID	Total Depth (ft bls)	Ground Surface Elevation (ft msl)	TOC Elevation (ft msl)	Date	Depth to Groundwater (ft btoc)	Groundwater Elevation (ft msl)
PW-1R	24.00	86.01	87.69	12/9/2013	10.56	77.13
				6/23/2014	8.85	78.84
				9/24/2014	9.86	77.83
				12/15/2014	10.61	77.08
				3/23/2015	9.60	78.09
				9/24/2015	9.95	77.74
				2/1/2016	9.68	78.01
				8/24/2016	8.82	78.87
				7/19/2017	NA	NA
10/30/2017	11.02	76.67				
PW-2R	22.50	86.13	87.86	12/9/2013	12.80	75.06
				6/23/2014	13.89	73.97
				9/24/2014	14.96	72.90
				12/15/2014	15.81	72.05
				3/23/2015	14.68	73.18
				9/24/2015	15.80	72.06
				2/1/2016	15.04	72.82
				8/24/2016	15.82	72.04
				7/19/2017	NA	NA
10/30/2017	15.83	72.03				
RW-1	14.00	82.93	85.17	6/23/2014	6.85	78.32
				9/24/2014	6.82	78.35
				12/15/2014	7.17	78.00
				3/23/2015	6.78	78.39
				9/24/2015	7.35	77.82
				2/1/2016	6.78	78.39
				8/24/2016	7.10	78.07
				7/19/2017	NA	NA
				10/30/2017	7.32	77.85
RW-2	14.50	83.20	85.37	6/23/2014	7.18	78.19
				9/24/2014	7.11	78.26
				12/15/2014	7.39	77.98
				3/23/2015	7.02	78.35
				9/24/2015	7.69	77.68
				2/1/2016	7.21	78.16
				8/24/2016	7.38	77.99
				7/18/2017	7.28	78.09
10/30/2017	7.62	77.75				
RW-3	15.00	83.11	85.29	6/23/2014	7.09	78.20
				9/24/2014	7.03	78.26
				12/15/2014	7.28	78.01
				3/23/2015	6.90	78.39
				9/24/2015	7.60	77.69
				2/1/2016	7.12	78.17
				8/24/2016	7.32	77.97
				7/19/2017	NA	NA
10/30/2017	7.58	77.71				
RW-4	14.00	83.58	85.58	6/23/2014	7.43	78.15
				9/24/2014	7.32	78.26
				12/15/2014	7.64	77.94
				3/23/2015	7.23	78.35
				9/24/2015	7.85	77.73
				2/1/2016	7.40	78.18
				8/24/2016	7.55	78.03
				7/19/2017	NA	NA
10/30/2017	NA	NA				

See last page for notes.

Table 1
Groundwater Elevation Measurements
Hexion Inc., Fayetteville, North Carolina

Well ID	Total Depth (ft bls)	Ground Surface Elevation (ft msl)	TOC Elevation (ft msl)	Date	Depth to Groundwater (ft btoc)	Groundwater Elevation (ft msl)
RW-5	24.00	86.24	87.74	12/9/2013	9.50	78.24
				6/23/2014	9.37	78.37
				9/24/2014	9.82	77.92
				12/15/2014	10.01	77.73
				3/23/2015	9.00	78.74
				9/24/2015	10.23	77.51
				2/1/2016	9.08	78.66
				8/24/2016	9.12	78.62
				7/19/2017	NA	NA
10/30/2017	10.14	77.60				
RW-6	23.50	86.72	88.29	12/9/2013	Dry	Dry
				6/23/2014	Dry	Dry
				9/24/2014	Dry	Dry
				12/15/2014	Dry	Dry
				3/23/2015	Dry	Dry
				9/24/2015	Dry	Dry
				2/1/2016	Dry	Dry
				8/24/2016	Dry	Dry
				7/19/2017	15.27	73.02
10/30/2017	Dry	Dry				
RW-7	24.00	87.48	89.04	12/9/2013	13.16	75.88
				6/23/2014	8.03	81.01
				9/24/2014	14.90	74.14
				12/15/2014	15.54	73.50
				3/23/2015	14.55	74.49
				9/24/2015	17.30	71.74
				2/1/2016	15.67	73.37
				8/24/2016	16.42	72.62
				7/19/2017	NA	NA
10/30/2017	18.07	70.97				

Notes:

- ft bls Feet below land surface
- ft msl Feet above mean sea level
- ft btoc Feet below top of casing
- ^a Previously named Piez-1
- NA Not available
- NM Not measured

Table 2
Sampling and Analysis Plan for Groundwater, Seeps, and Surface Water
Hexion Inc., Fayetteville, North Carolina

Well ID	Annual Event (Each February)						
	cis-1,2-DCE and VC (Method 8260B) ^a	Phenol (Method 8270D) ^b	Ammonia as N (Method 351.1)	Nitrate and Nitrite (Method 353.2)	Formaldehyde (Method 8315)	Field Parameters ^c	Groundwater Elevation Levels
Groundwater Samples							
RW-2	--	--	1	--	--	1	1
RW-5	1	--	1	1	1	1	1
RW-6	--	--	1	--	--	1	1
RW-7	--	--	1	--	1	1	1
PW-1R	1	1	1	--	1	1	1
PW-2R	--	--	1	1	--	1	1
MW-39	1	--	1	1	--	1	1
MW-40	--	--	1	--	--	1	1
MW-41	--	--	1	--	--	1	1
MW-44	--	--	1	--	1	1	1
MW-45	--	--	1	--	--	1	1
MW-47	--	--	1	--	--	1	1
PZ-10	--	--	1	--	--	1	1
PZ-12	--	--	1	--	--	1	1
PZ-13	--	--	1	--	--	1	1
PZ-14R	1	--	1	--	--	1	1
PZ-16R	--	--	1	--	1	1	1
PZ-17	--	--	1	--	--	1	1
PZ-18	--	--	1	--	--	1	1
PZ-34	--	--	1	--	--	1	1
PZ-38	--	--	1	--	--	1	1
T-22	--	--	1	--	--	1	1
QA/QC (Dups)	2	2	2	2	2	--	--
Equip Blank	2	--	--	--	--	--	--
Totals:	8	3	24	5	7	22	22
Seep Samples^e							
Seep-1	--	--	1	--	--	--	--
Seep-2	--	--	1	--	--	--	--
Seep-3	--	--	1	--	--	--	--
Seep-4	--	--	1	--	--	--	--
Seep-5	--	--	1	--	--	--	--
Seep-6	--	--	1	--	--	--	--
Seep-7	--	--	1	--	--	--	--
Seep-8	--	--	1	--	--	--	--
QA/QC (Dups)	--	--	1	--	--	--	--
Equip Blank	--	--	1	--	--	--	--
Totals:	0	0	10	0	0	0	0
Surface Water Samples							
SWS-2	--	--	1	--	--	--	--
SWS-3	--	--	1	--	--	--	--
SWS-4	--	--	1	--	--	--	--
QA/QC (Dups)	--	--	1	--	--	--	--
Equip Blank	--	--	1	--	--	--	--
Totals:	0	0	5	0	0	0	0

General Notes:

^a cis-1,2-Dichloroethene and vinyl chloride only.

^b Phenol only.

^c Field parameters include temperature, pH, dissolved oxygen, specific conductance, oxidation-reduction potential, and turbidity.

^d A methanol sample was not collected from RW-2 in October 2017 as it has been below the NCAC 2L Groundwater Standard for the last 8 monitoring events.the previous eight below the NCAC 2L Groundwater Standard

^e Seep samples will not be collected when seep locations do not have sufficient water to collect a sample.

Table 3
Groundwater Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L	Units	MW-39 12/11/13	MW-39 06/23/14	MW-39 09/25/14	MW-39 12/16/14	MW-39 03/25/15	MW-39 09/22/15	MW-39 02/02/16	MW-39 08/23/16	MW-39 07/19/17	MW-39 10/31/17
Field Parameters												
Dissolved Oxygen (mg/L)	NE	mg/L	0.15	0.27	0.30	0.47	0.30	0.13	0.25	0.03	0.09	0.06
Oxidation-Reduction Potential (mV)	NE	mV	-38.7	9.1	67.3	-70.1	-243.7	-113.7	102.9	-137.1	-14.0	63.0
pH (units)	6.5-8.5	SU	8.76	8.82	8.79	9.04	8.81	8.56	9.03	8.48	8.58	9.14
Specific Conductance (µmhos/cm)	NE	umhos/cm	7,197	7,618	7,435	6,680	5,703	5,278	4,649	3,803	5,880	5,520
Temperature (°C)	NE	°C	16.98	26.24	24.20	16.02	15.31	25.72	14.80	27.88	27.40	22.86
Turbidity	NE	NTU	NA	5.08	8.05	6.47	37.6	2.43	1.99	3.43	0	3.03
Volatile Organics												
1,1-Dichloroethane	6	ug/L	1.4	0.69 J	0.65 J	0.97 J	0.96 J	0.73 J	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	ug/L	2.2	1.3	0.94 J	1.4	1.7	1.4	1.5 [1.4]	NA	0.83 J	2.2
Vinyl chloride	0.03	ug/L	1.1	0.94 J	0.91 J	0.87 J	0.91 J	1 U	1 U [1.1]	NA	0.32 U	0.82
Semivolatile Organics												
Phenol	30	ug/L	4.9 J	1.4 U	10 U	10 U	14	21	NA	NA	NA	NA
Methanol												
Methanol (by USEPA Test Method 8015C)	4	mg/L	1 U	0.47	1 U	1 U	1 U	1 U	NA	NA	NA	NA
Formaldehyde												
Formaldehyde (by USEPA Test Method 8315A)	0.6	mg/L	0.163 J	0.0561 U	0.0907 U	0.403 J	0.0839	0.0730 J	NA	NA	NA	NA
Miscellaneous												
Ammonia (by USEPA Test Method 350.1)	1.5	mg/L	1,300	1,400	1,300	1,200	970	1100	750 [720]	550	780	930
Nitrate/Nitrite-N (by USEPA Test Method 353.2)	11	mg/L	NA	14	13	2.8	0.1 U	0.1 U	0.1 U [0.1 U]	0.1 U	15	0.041 U
Nitrite-N (by USEPA Test Method 353.2)	1	mg/L	NA	9.6	7.5	1.8	0.069 J	0.024 J	0.1 U [0.1 U]	0.1 U	4.9	0.017 U
Nitrate-N (by USEPA Test Method 353.2)	10	mg/L	0.3	4.4	5.5	1	0.1 U	0.1 U	0.1 U [0.1 U]	0.1 U	10	0.025 U

Table 3
Groundwater Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L	Units	MW-40 12/10/13	MW-40 09/25/14	MW-40 03/25/15	MW-40 09/22/15	MW-40 02/01/16	MW-40 08/23/16	MW-40 07/18/17	MW-40 10/30/17	MW-41 12/10/13	MW-41 09/25/14	MW-41 03/25/15	MW-41 09/22/15	MW-41 02/01/16
Field Parameters															
Dissolved Oxygen (mg/L)	NE	mg/L	0.38	0.34	1.12	0.16	0.65	0.35	3.59	0.26	0.34	0.33	0.33	0.37	0.32
Oxidation-Reduction Potential (mV)	NE	mV	89.2	120.4	190.5	-22.5	214.4	104.4	NA	14.9	55.0	-36.7	25.9	-73.5	111.8
pH (units)	6.5-8.5	SU	5.24	4.71	5.25	5.01	4.50	5.20	5.20	6.01	5.86	6.17	6.08	5.89	5.71
Specific Conductance (µmhos/cm)	NE	umhos/cm	227	200	179	238	146	201	208	253	308	232	176	182	169
Temperature (°C)	NE	°C	15.68	22.46	16.15	23.72	15.90	25.05	23.22	20.57	16.81	23.38	15.18	25.56	17.47
Turbidity	NE	NTU	NA	4.08	4.13	1.01	7.18	4.06	NA	2.32	NA	40.8	32.1	5.28	12.4
Volatile Organics															
1,1-Dichloroethane	6	ug/L	1 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	ug/L	1 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.03	ug/L	1 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics															
Phenol	30	ug/L	10 U	10 U	10 U	10 U	NA	NA	NA	NA	10 U	10 U	10 U	10 U	NA
Methanol															
Methanol (by USEPA Test Method 8015C)	4	mg/L	1 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Formaldehyde															
Formaldehyde (by USEPA Test Method 8315A)	0.6	mg/L	0.171	0.0922 U [0.0922 U]	0.0384 J	0.171 J	NA	NA	NA	NA	0.128 J	0.0922 U	0.0401 J	0.186 J	NA
Miscellaneous															
Ammonia (by USEPA Test Method 350.1)	1.5	mg/L	3.3	3.4	5	3.7	4.1	3.5	3.6	3.8	0.7	0.92	1.4	1.4	0.89
Nitrate/Nitrite-N (by USEPA Test Method 353.2)	11	mg/L	NA	0.042 J	0.072 J	0.052 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite-N (by USEPA Test Method 353.2)	1	mg/L	NA	0.1 U	0.1 U	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate-N (by USEPA Test Method 353.2)	10	mg/L	0.066 J	0.042 J	0.072 J	0.052 J	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 3
Groundwater Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L	Units	MW-41 08/22/16	MW-41 07/19/17	MW-41 10/30/17	MW-44 12/10/13	MW-44 06/24/14	MW-44 09/24/14	MW-44 12/17/14	MW-44 03/24/15	MW-44 09/22/15	MW-44 02/01/16	MW-44 08/23/16	MW-44 07/18/17	MW-44 10/31/17
Field Parameters															
Dissolved Oxygen (mg/L)	NE	mg/L	0.27	0.18	0.16	0.28	0.21	0.17	0.54	2.06	0.14	0.20	0.25	3.83	1.82
Oxidation-Reduction Potential (mV)	NE	mV	4.1	76.0	423.0	-144.0	-113.8	-127.0	-155.8	-132.2	-108.5	-110.1	-128.0	NA	-123.8
pH (units)	6.5-8.5	SU	5.83	5.44	6.17	7.32	7.34	7.20	7.40	7.84	7.04	7.23	7.07	6.01	6.76
Specific Conductance (µmhos/cm)	NE	umhos/cm	220	198	171	3,000	3,236	2,791	2,815	2,630	1,971	2,207	1,919	1,486	1,311
Temperature (°C)	NE	°C	26.86	25.95	22.05	16.95	21.98	22.18	16.80	14.49	23.34	18.29	25.23	23.25	22.04
Turbidity	NE	NTU	9	3.2	4.71	NA	1.47	10.1	16.2	2.1	1.28	1.81	3.53	NA	1.26
Volatile Organics															
1,1-Dichloroethane	6	ug/L	NA	NA	NA	1 U	0.13 U	1 U	1 U	1 U	1 U	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	ug/L	NA	NA	NA	1 U	0.15 U	1 U	1 U	1 U	1 U	NA	NA	NA	NA
Vinyl chloride	0.03	ug/L	NA	NA	NA	1 U	0.32 U	1 U	1 U	1 U	1 U	NA	NA	NA	NA
Semivolatile Organics															
Phenol	30	ug/L	NA	NA	NA	10 U	1.4 U	10 U	10 U	10 U	10 U	NA	NA	NA	NA
Methanol															
Methanol (by USEPA Test Method 8015C)	4	mg/L	NA	NA	NA	1 U	0.36	1 U	1 U	1 U	1 U	NA	NA	NA	NA
Formaldehyde															
Formaldehyde (by USEPA Test Method 8315A)	0.6	mg/L	NA	NA	NA	0.147 J	0.0552 U	0.0922 U	0.843	0.0728	0.0797 J	0.107 J	7.03	0.271	0.0844
Miscellaneous															
Ammonia (by USEPA Test Method 350.1)	1.5	mg/L	0.8	1.1	1.1	290	320	220	260	230	150	170	130	98	100
Nitrate/Nitrite-N (by USEPA Test Method 353.2)	11	mg/L	NA	NA	NA	NA	0.044 J	0.12	0.1 U	0.1 U	0.1 U	NA	NA	NA	NA
Nitrite-N (by USEPA Test Method 353.2)	1	mg/L	NA	NA	NA	NA	0.017 U	0.019 J	0.1 U	0.1 U	0.1 U	NA	NA	NA	NA
Nitrate-N (by USEPA Test Method 353.2)	10	mg/L	NA	NA	NA	0.1 U	0.044 J	0.1	0.1 U	0.1 U	0.1 U	NA	NA	NA	NA

Table 3
Groundwater Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L	Units	MW-45 12/11/13	MW-45 09/24/14	MW-45 03/24/15	MW-45 09/22/15	MW-45 02/02/16	MW-45 08/23/16	MW-45 07/19/17	MW-45 10/31/17	MW-47 12/11/13	MW-47 09/25/14	MW-47 03/25/15	MW-47 09/23/15
Field Parameters														
Dissolved Oxygen (mg/L)	NE	mg/L	0.22	0.08	1.53	0.07	0.25	0.33	2.55	2.75	0.33	0.38	0.63	0.25
Oxidation-Reduction Potential (mV)	NE	mV	181.5	-66.5	-73.3	-73.4	-57.6	-6.6	NA	-19.1	234.9	161.2	213.9	-8.1
pH (units)	6.5-8.5	SU	5.46	6.44	6.24	6.00	6.26	5.90	4.60	5.57	5.18	5.16	5.37	5.15
Specific Conductance (µmhos/cm)	NE	umhos/cm	356	352	223	299	4	283	124	215	434	399	441	391
Temperature (°C)	NE	°C	18.34	24.05	18.53	25.06	19.99	27.05	24.43	21.86	16.49	25.80	15.71	27.31
Turbidity	NE	NTU	NA	8.49	12	16.8	8.72	12.3	NA	15.2	NA	12.4	1.22	1.01
Volatile Organics														
1,1-Dichloroethane	6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.03	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics														
Phenol	30	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U [10 U]	10 U	10 U
Methanol														
Methanol (by USEPA Test Method 8015C)	4	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Formaldehyde														
Formaldehyde (by USEPA Test Method 8315A)	0.6	mg/L	0.0191 U	0.0878 U [0.0922 U]	0.0303 J	0.153 J	NA	NA	NA	NA	0.0256 J	0.0907 U [0.0922 U]	0.0181 J	0.0195 J
Miscellaneous														
Ammonia (by USEPA Test Method 350.1)	1.5	mg/L	0.25	1.1	0.73	1.5	2.9	2	0.45 U	1.2	13	12 [12]	13	16
Nitrate/Nitrite-N (by USEPA Test Method 353.2)	11	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite-N (by USEPA Test Method 353.2)	1	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate-N (by USEPA Test Method 353.2)	10	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 3
Groundwater Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L	Units	MW-47 02/01/16	MW-47 08/22/16	MW-47 07/19/17	MW-47 10/31/17	PW-1R 12/09/13	PW-1R 06/23/14	PW-1R 09/25/14	PW-1R 12/16/14	PW-1R 03/24/15	PW-1R 09/23/15	PW-1R 02/01/16	PW-1R 08/23/16	PW-1R 07/19/17	PW-1R 10/31/17
Field Parameters																
Dissolved Oxygen (mg/L)	NE	mg/L	0.24	0.21	0.23	0.17	0.24	6.13	NA	4.65	7.45	5.61	5.43	4.07	2.50	7.84
Oxidation-Reduction Potential (mV)	NE	mV	239.1	198.0	206.0	216.8	-85.2	-11.2	NA	61.3	-34.6	-78.7	20.2	-31.1	-2.0	-4.3
pH (units)	6.5-8.5	SU	5.00	4.99	4.67	5.05	9.10	9.02	NA	9.16	9.12	8.90	9.14	9.02	9.53	9.41
Specific Conductance (µmhos/cm)	NE	umhos/cm	448	502	519	461	11,350	10,728	NA	9,025	7,178	9,253	8,770	12,720	15,000	11,815
Temperature (°C)	NE	°C	18.10	29.18	29.17	23.80	17.82	22.16	NA	18.19	13.77	25.78	21.49	32.31	30.96	12.35
Turbidity	NE	NTU	1.19	13.6	NA	2.77	NA	33.5	NA	>1,000	>1,000	21.4	18.5	47.1	3.4	26.4
Volatile Organics																
1,1-Dichloroethane	6	ug/L	NA	NA	NA	NA	1 U	1.3 U	10 U	10 U	10 U	10 U	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	ug/L	NA	NA	NA	NA	180	72	66	50	77	52	87 [86]	66	120	64 [51]
Vinyl chloride	0.03	ug/L	NA	NA	NA	NA	3.9	3.2 U	10 U	10 U	10 U	10 U	2 [1.5]	1.1	2.3	1.3 [1.5]
Semivolatile Organics																
Phenol	30	ug/L	NA	NA	NA	NA	220	930	11	10 U	260	34	69 [53]	340	210	86
Methanol																
Methanol (by USEPA Test Method 8015C)	4	mg/L	NA	NA	NA	NA	1.4	6.8	1.6	1.1	1.2	0.92 J	NA	NA	NA	NA
Formaldehyde																
Formaldehyde (by USEPA Test Method 8315A)	0.6	mg/L	NA	NA	NA	NA	7.38	7.44	3.42 [3.44]	7.79	0.84	1.17	2.22 [2.26]	3.1	8.44	3.45 [3.34]
Miscellaneous																
Ammonia (by USEPA Test Method 350.1)	1.5	mg/L	14	14	15	14	2300	2200	1800	1700	1400	2200	1,700 [1,700]	2600	2600	3000
Nitrate/Nitrite-N (by USEPA Test Method 353.2)	11	mg/L	NA	NA	NA	NA	0.1 U	0.76	0.11	0.21	0.16	1.1	NA	NA	NA	NA
Nitrite-N (by USEPA Test Method 353.2)	1	mg/L	NA	NA	NA	NA	0.057 J	0.72	0.1 U	0.094 J	0.018 J	0.47	NA	NA	NA	NA
Nitrate-N (by USEPA Test Method 353.2)	10	mg/L	NA	NA	NA	NA	0.1 U	0.04 J	0.11	0.12	0.14	0.63	NA	NA	NA	NA

Table 3
Groundwater Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L	Units	PW-2R 12/10/13	PW-2R 09/24/14	PW-2R 03/24/15	PW-2R 09/22/15	PW-2R 02/03/16	PW-2R 08/23/16	PW-2R 07/18/17	PW-2R 10/31/17	PZ-2 12/16/13	PZ-10R 12/11/13	PZ-10R 06/23/14	PZ-10R 09/26/14	PZ-10R 12/15/14
Field Parameters															
Dissolved Oxygen (mg/L)	NE	mg/L	0.24	NA	3.16	4.65	3.85	3.45	5.41	10.57	NA	0.15	0.24	0.18	0.30
Oxidation-Reduction Potential (mV)	NE	mV	-88.4	NA	-18.8	-2.8	192.6	-45.6	-44.3	-107.5	NA	-122.3	-99.3	-70.1	-97.8
pH (units)	6.5-8.5	SU	7.24	NA	7.32	7.35	7.43	7.48	7.02	7.19	NA	6.42	6.62	6.35	6.57
Specific Conductance (µmhos/cm)	NE	umhos/cm	2,152	NA	3,891	4,096	3,302	3,625	3,134	3,089	NA	1,279	1,358	1,303	1,238
Temperature (°C)	NE	°C	16.33	NA	13.93	23.58	21.03	31.08	28.79	10.77	NA	20.06	23.19	22.88	28.80
Turbidity	NE	NTU	NA	NA	13	15	20	29.8	NA	13.8	NA	NA	3.93	7.62	4.16
Volatile Organics															
1,1-Dichloroethane	6	ug/L	5 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	ug/L	5 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.03	ug/L	5 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics															
Phenol	30	ug/L	10 U	10 U	10 U	10 U	NA	NA	NA	NA	10 U	10 U	1.4 U	10 U	10 U [10 U]
Methanol															
Methanol (by USEPA Test Method 8015C)	4	mg/L	0.56 J	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Formaldehyde															
Formaldehyde (by USEPA Test Method 8315A)	0.6	mg/L	0.147 J	0.0907 U	0.119	0.183 J	NA	NA	NA	NA	0.0327 J	0.214	0.0549 U	0.0878 U	0.431 J [0.554]
Miscellaneous															
Ammonia (by USEPA Test Method 350.1)	1.5	mg/L	190	550	500	540	410	400	380	420	1.5	82	92	84	77 [79]
Nitrate/Nitrite-N (by USEPA Test Method 353.2)	11	mg/L	NA	6.3	28	0.1 U	0.1 U	0.042 J	0.064	0.079 J	NA	NA	NA	NA	NA
Nitrite-N (by USEPA Test Method 353.2)	1	mg/L	NA	4.6	1.6	0.1 U	0.1 U	0.1 U	1.0 U	0.017 U	NA	NA	NA	NA	NA
Nitrate-N (by USEPA Test Method 353.2)	10	mg/L	0.1 U	1.7	26	0.1 U	0.1 U	0.042 J	0.07 J	0.079 J	NA	NA	NA	NA	NA

Table 3
Groundwater Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L	Units	PZ-10R 03/23/15	PZ-10R 09/22/15	PZ-10R 10/30/17	PZ-12 12/09/13	PZ-12 09/26/14	PZ-12 03/24/15	PZ-12 09/23/15	PZ-12 02/02/16	PZ-12 08/22/16	PZ-12 07/19/17	PZ-12 10/30/17	PZ-13 12/09/13	PZ-13 06/23/14
Field Parameters															
Dissolved Oxygen (mg/L)	NE	mg/L	3.97	0.12	4.93	0.78	4.92	3.55	0.17	0.13	0.33	0.14	5.10	0.20	0.49
Oxidation-Reduction Potential (mV)	NE	mV	-106.2	-91.3	-120.1	-90.6	-40.5	-68.6	-100.8	-84.3	-41.5	11.0	-52.7	-168.1	-81.1
pH (units)	6.5-8.5	SU	6.81	6.54	6.19	6.57	6.46	6.85	6.34	7.09	6.38	6.09	6.00	7.00	6.89
Specific Conductance (µmhos/cm)	NE	umhos/cm	1,425	1,165	1,074	494	684	764	549	699	648	680	700	1,825	414
Temperature (°C)	NE	°C	16.44	26.49	23.05	16.48	22.78	16.38	23.20	16.98	24.18	24.67	21.91	17.72	21.47
Turbidity	NE	NTU	14.64	1.84	1.53	NA	120	486	32.6	0.91	5.33	0	7.79	NA	5.33
Volatile Organics															
1,1-Dichloroethane	6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.03	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics															
Phenol	30	ug/L	10 U [10 U]	NA	NA	10 U	10 U	10 U	10 U	NA	NA	NA	NA	17	1.6 J
Methanol															
Methanol (by USEPA Test Method 8015C)	4	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Formaldehyde															
Formaldehyde (by USEPA Test Method 8315A)	0.6	mg/L	0.0681 [0.0406 J]	NA	NA	0.128 J	0.0878 U	0.0358 J	0.161 J	NA	NA	NA	NA	0.0593 J	0.0558 U
Miscellaneous															
Ammonia (by USEPA Test Method 350.1)	1.5	mg/L	110 [100]	NA	79 [79]	11	13	12	16	24	20	28	32	120	23
Nitrate/Nitrite-N (by USEPA Test Method 353.2)	11	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite-N (by USEPA Test Method 353.2)	1	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate-N (by USEPA Test Method 353.2)	10	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 3
Groundwater Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L	Units	PZ-13 09/26/14	PZ-13 12/15/14	PZ-13 03/23/15	PZ-13 09/23/15	PZ-13 02/02/16	PZ-13 08/22/16	PZ-13 07/19/17	PZ-13 10/31/17	PZ-14 09/26/13	PZ-14R 09/25/14	PZ-14R 03/24/15	PZ-14R 09/23/15	PZ-14R 02/03/16	PZ-14R 08/22/16
Field Parameters																
Dissolved Oxygen (mg/L)	NE	mg/L	0.35	0.41	4.37	0.13	0.10	0.26	0.00	0.23	0.22	0.33	0.96	0.10	0.09	0.14
Oxidation-Reduction Potential (mV)	NE	mV	-34.8	-127.3	-101.4	-100.7	-106.3	-81.7	-47.0	-98.1	-119.6	-72.3	-132.2	-133.3	-142.7	-141.8
pH (units)	6.5-8.5	SU	6.35	7.09	6.84	6.73	7.27	6.56	6.01	6.60	8.23	7.18	7.29	7.29	7.45	7.23
Specific Conductance (µmhos/cm)	NE	umhos/cm	263	272	212	498	125	422	548	718	6,652	1,718	579	1,554	1,289	1,845
Temperature (°C)	NE	°C	22.39	17.96	15.05	24.08	17.01	24.63	24.02	22.87	25.35	24.28	17.32	24.71	18.60	26.06
Turbidity	NE	NTU	10.4	5.88	3.87	2.25	208	1.75	0	2.33	NA	2.2	12.2	2.13	3.9	2.3
Volatile Organics																
1,1-Dichloroethane	6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	NA	NA
cis-1,2-Dichloroethene	70	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	46	1.2	1 U	0.71 J	1 U	4.7
Vinyl chloride	0.03	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	4.7	1 U	1 U	1 U	0.51 J	2.4
Semivolatile Organics																
Phenol	30	ug/L	10 U	10 U	10 U	1.8 J	NA	NA	NA	NA	0.02	1.9 J	10 U	3.3 J	NA	NA
Methanol																
Methanol (by USEPA Test Method 8015C)	4	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	NA	NA
Formaldehyde																
Formaldehyde (by USEPA Test Method 8315A)	0.6	mg/L	0.0878 U	0.306 J	0.0398 J	0.0829 J	NA	NA	NA	NA	0.250 U	0.0907 U	0.0160 J	0.0500 J	NA	NA
Miscellaneous																
Ammonia (by USEPA Test Method 350.1)	1.5	mg/L	16	19	7.4	41	4.4	26	33	50	711	150	46	180	110	170
Nitrate/Nitrite-N (by USEPA Test Method 353.2)	11	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1 U	0.1 U	0.1 U	NA	NA
Nitrite-N (by USEPA Test Method 353.2)	1	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1 U	0.1 U	0.1 U	NA	NA
Nitrate-N (by USEPA Test Method 353.2)	10	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	0.025 U	0.1 U	0.1 U	0.1 U	NA	NA

**Table 3
Groundwater Analytical Results
Hexion Inc., Fayetteville, North Carolina**

Location ID: Date Collected:	NCAC 2L	Units	PZ-14R 07/19/17	PZ-14R 10/31/17	PZ-16R 12/10/13	PZ-16R 06/24/14	PZ-16R 09/26/14	PZ-16R 12/16/14	PZ-16R 03/24/15	PZ-16R 09/22/15	PZ-16R 02/01/16	PZ-16R 08/23/16	PZ-16R 07/18/17	PZ-16R 10/31/17
Field Parameters														
Dissolved Oxygen (mg/L)	NE	mg/L	0.00	0.00	0.29	0.61	0.24	0.35	1.81	0.14	0.27	0.19	2.06	2.36
Oxidation-Reduction Potential (mV)	NE	mV	-121.0	-161.9	-74.4	-29.8	-22.2	-94.3	-68.7	-63.2	-45.5	-41.2	NA	-57.0
pH (units)	6.5-8.5	SU	7.39	7.86	6.46	6.34	6.06	6.54	6.40	6.29	6.29	6.21	6.10	5.90
Specific Conductance (µmhos/cm)	NE	umhos/cm	281	317	707	553	547	576	549	482	475	435	381	381
Temperature (°C)	NE	°C	27.90	24.48	17.30	20.73	22.35	18.14	15.88	22.82	18.89	24.64	22.07	21.40
Turbidity	NE	NTU	0	3.96	NA	1.33	6.15	8.77	6.48	0.37	1.79	2.15	NA	1.54
Volatile Organics														
1,1-Dichloroethane	6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	ug/L	13 [13]	19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.03	ug/L	6.1 [6.4]	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics														
Phenol	30	ug/L	NA	NA	10 U	10 U	10 U [10 U]	10 U	10 U	10 U	NA	NA	NA	NA
Methanol														
Methanol (by USEPA Test Method 8015C)	4	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Formaldehyde														
Formaldehyde (by USEPA Test Method 8315A)	0.6	mg/L	NA	NA	0.0629 J	0.0878 J	0.0878 U [0.0878 U]	0.303 J	0.0307 J	0.256	0.0781 J	0.149 N	0.222	0.0286 J
Miscellaneous														
Ammonia (by USEPA Test Method 350.1)	1.5	mg/L	290 [300]	430	9.8	9.7 U	9.7 [9.9]	9.3	11	9.2	8.3	6.5	5.0	4.5
Nitrate/Nitrite-N (by USEPA Test Method 353.2)	11	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite-N (by USEPA Test Method 353.2)	1	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate-N (by USEPA Test Method 353.2)	10	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 3
Groundwater Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L	Units	PZ-18 12/10/13	PZ-18 09/26/14	PZ-18 03/25/15	PZ-18 09/22/15	PZ-18 02/02/16	PZ-18 08/23/16	PZ-18 07/19/17	PZ-18 10/30/17	PZ-34 12/19/11	PZ-34 06/20/13	PZ-34 12/09/13	PZ-34 09/24/14	PZ-34 03/24/15	PZ-34 09/23/15
Field Parameters																
Dissolved Oxygen (mg/L)	NE	mg/L	2.82	0.43	0.72	0.79	1.26	0.54	2.55	5.73	0.35	0.19	0.32	0.21	1.98	0.18
Oxidation-Reduction Potential (mV)	NE	mV	65.5	111.4	162.1	-35.9	149.1	241.8	NA	182.1	-140.1	-28.9	-162.1	-93.1	-52.5	-108.4
pH (units)	6.5-8.5	SU	6.12	5.35	5.69	5.43	5.37	5.91	5.18	5.40	7.01	5.99	6.75	6.59	6.30	6.44
Specific Conductance (µmhos/cm)	NE	umhos/cm	898	528	426	282	230	392	251	264	1,521	788	1,480	486	250	426
Temperature (°C)	NE	°C	15.88	22.40	15.59	23.16	17.20	24.41	22.61	20.64	18.46	22.31	17.62	22.83	15.91	24.47
Turbidity	NE	NTU	NA	2.43	NA	0.87	1.66	2.46	NA	2.44	NA	NA	NA	NA	38.4	20.5
Volatile Organics																
1,1-Dichloroethane	6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.03	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics																
Phenol	30	ug/L	10 U	10 U	10 U	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methanol																
Methanol (by USEPA Test Method 8015C)	4	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Formaldehyde																
Formaldehyde (by USEPA Test Method 8315A)	0.6	mg/L	0.0179 U	0.0893 U	0.0402 J	0.0115 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous																
Ammonia (by USEPA Test Method 350.1)	1.5	mg/L	2.5	0.76	0.94	0.45	0.11	0.37	0.16	0.087 J	NA	NA	86	30	12	24
Nitrate/Nitrite-N (by USEPA Test Method 353.2)	11	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2	0.12	0.15
Nitrite-N (by USEPA Test Method 353.2)	1	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1 U	0.1 U	0.1 U
Nitrate-N (by USEPA Test Method 353.2)	10	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.14	0.2	0.12	0.15

Table 3
Groundwater Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L	Units	PZ-34 02/03/16	PZ-34 08/22/16	PZ-34 07/19/17	PZ-34 10/30/17	PZ-38 12/19/11	PZ-38 06/20/13	PZ-38 10/18/13	PZ-38 12/09/13	PZ-38 09/24/14	PZ-38 03/25/15	PZ-38 02/03/16	PZ-38 08/22/16	PZ-38 07/19/17	PZ-38 10/31/17
Field Parameters																
Dissolved Oxygen (mg/L)	NE	mg/L	0.15	0.30	0.11	2.90	0.35	0.19	NA	0.34	0.09	0.50	0.15	0.17	0.15	0.27
Oxidation-Reduction Potential (mV)	NE	mV	-98.2	-90.8	-40.0	-126.2	-140.1	-28.9	NA	-56.3	-54.9	-46.7	-24.9	-34.7	-5.0	-62.8
pH (units)	6.5-8.5	SU	6.75	6.36	6.22	6.23	7.01	5.99	NA	6.15	6.23	6.20	5.85	5.89	5.65	6.21
Specific Conductance (µmhos/cm)	NE	umhos/cm	273	459	587	977	1,521	788	NA	1,136	813	682	560	600	483	342
Temperature (°C)	NE	°C	18.76	25.56	25.32	22.90	18.46	22.31	NA	17.71	22.74	13.65	17.31	27.10	27.32	21.76
Turbidity	NE	NTU	6.91	10.6	0	5.93	NA	NA	NA	NA	17.1	54	5.85	14.1	0	3.83
Volatile Organics																
1,1-Dichloroethane	6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.03	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics																
Phenol	30	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methanol																
Methanol (by USEPA Test Method 8015C)	4	mg/L	NA	NA	NA	NA	3.7	1 U	1 U	NA	1 U	1 U	NA	NA	NA	NA
Formaldehyde																
Formaldehyde (by USEPA Test Method 8315A)	0.6	mg/L	NA	NA	NA	NA	0.205	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous																
Ammonia (by USEPA Test Method 350.1)	1.5	mg/L	12	19	36	71	5.8	NA	NA	7.1	4.9	5.1	4.6	5.5	5.5	3.5
Nitrate/Nitrite-N (by USEPA Test Method 353.2)	11	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	0.21	0.12	NA	NA	NA	NA
Nitrite-N (by USEPA Test Method 353.2)	1	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	0.1 U	0.1 U	NA	NA	NA	NA
Nitrate-N (by USEPA Test Method 353.2)	10	mg/L	NA	NA	NA	NA	NA	NA	NA	0.13	0.21	0.12	NA	NA	NA	NA

Table 3
Groundwater Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L	Units	RW-1 06/20/13	RW-1 10/18/13	RW-2 11/02/08	RW-2 11/10/10	RW-2 12/19/11	RW-2 06/20/13	RW-2 10/18/13	RW-2 11/21/13	RW-2 06/24/14	RW-2 09/26/14
Field Parameters												
Dissolved Oxygen (mg/L)	NE	mg/L	NA	NA	NA	NA	1.22	0.51	NA	NA	1.58	NA
Oxidation-Reduction Potential (mV)	NE	mV	NA	NA	NA	NA	26.5	-171.7	NA	NA	-79.7	NA
pH (units)	6.5-8.5	SU	NA	NA	NA	NA	6.10	6.56	NA	NA	6.80	NA
Specific Conductance (µmhos/cm)	NE	umhos/cm	NA	NA	NA	NA	1,136	1,441	NA	NA	648	NA
Temperature (°C)	NE	°C	NA	NA	NA	NA	17.80	22.19	NA	NA	24.17	NA
Turbidity	NE	NTU	NA	NA	NA	NA	NA	NA	NA	NA	79.5	NA
Volatile Organics												
1,1-Dichloroethane	6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.03	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics												
Phenol	30	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methanol												
Methanol (by USEPA Test Method 8015C)	4	mg/L	1 U	1 U	43600	5700	2200	120	1 U	310	3.6	1 U
Formaldehyde												
Formaldehyde (by USEPA Test Method 8315A)	0.6	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous												
Ammonia (by USEPA Test Method 350.1)	1.5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	6	36
Nitrate/Nitrite-N (by USEPA Test Method 353.2)	11	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite-N (by USEPA Test Method 353.2)	1	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate-N (by USEPA Test Method 353.2)	10	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 3
Groundwater Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L	Units	RW-2 12/17/14	RW-2 03/25/15	RW-2 09/23/15	RW-2 02/03/16	RW-2 08/22/16	RW-2 07/19/17	RW-2 10/30/17	RW-5 12/09/13	RW-5 06/23/14	RW-5 09/25/14
Field Parameters												
Dissolved Oxygen (mg/L)	NE	mg/L	NA	0.98	0.13	0.17	0.10	0.12	0.16	0.60	4.51	NA
Oxidation-Reduction Potential (mV)	NE	mV	NA	-91.9	-80.2	-24.9	-43.6	14.0	-114.7	29.1	-2.8	NA
pH (units)	6.5-8.5	SU	NA	6.55	6.45	6.23	6.20	5.55	6.75	8.99	8.69	NA
Specific Conductance (µmhos/cm)	NE	umhos/cm	NA	608	392	444	410	340	449	5,500	4,573	NA
Temperature (°C)	NE	°C	NA	12.71	24.65	16.94	27.61	29.55	21.54	18.02	29.50	NA
Turbidity	NE	NTU	NA	44.8	114	28.1	76.3	0.6	49.7	NA	10.3	NA
Volatile Organics												
1,1-Dichloroethane	6	ug/L	NA	NA	NA	NA	NA	NA	NA	1 U	0.13 U	1 U
cis-1,2-Dichloroethene	70	ug/L	NA	NA	NA	NA	NA	NA	NA	1 U	0.15 U	0.55 J
Vinyl chloride	0.03	ug/L	NA	NA	NA	NA	NA	NA	NA	0.46 J	1.4	1.6
Semivolatile Organics												
Phenol	30	ug/L	NA	NA	NA	NA	NA	NA	NA	10 U	1.4 U	10 U
Methanol												
Methanol (by USEPA Test Method 8015C)	4	mg/L	1 U	0.83 J	1 U	1 U	1 U	0.52 U	NA	1 U	0.9	1 U
Formaldehyde												
Formaldehyde (by USEPA Test Method 8315A)	0.6	mg/L	NA	NA	NA	NA	NA	NA	NA	0.308	0.0569 U	0.949
Miscellaneous												
Ammonia (by USEPA Test Method 350.1)	1.5	mg/L	14	9.1	9.6	4.7	3.8	3.6	4	980	740	580
Nitrate/Nitrite-N (by USEPA Test Method 353.2)	11	mg/L	NA	NA	NA	NA	NA	NA	NA	110	120	95
Nitrite-N (by USEPA Test Method 353.2)	1	mg/L	NA	NA	NA	NA	NA	NA	NA	19	52	38
Nitrate-N (by USEPA Test Method 353.2)	10	mg/L	NA	NA	NA	NA	NA	NA	NA	91	68	57

Table 3
Groundwater Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L	Units	RW-5 12/16/14	RW-5 03/25/15	RW-5 09/23/15	RW-5 02/02/16	RW-5 08/23/16	RW-5 07/19/17	RW-5 10/31/17	RW-6 12/09/13	RW-6 06/24/14	RW-6 09/25/14	RW-6 12/16/14	RW-6 03/25/15	RW-6 07/18/17
Field Parameters															
Dissolved Oxygen (mg/L)	NE	mg/L	3.49	6.18	4.37	4.58	2.79	6.01	4.48	1.79	NR	NR	NR	NR	NR
Oxidation-Reduction Potential (mV)	NE	mV	6.2	49.1	-77.5	-170.4	-11.0	4.0	-11.3	-56.8	NR	NR	NR	NR	NR
pH (units)	6.5-8.5	SU	8.98	8.71	8.59	8.66	8.88	8.45	8.91	10.56	NR	NR	NR	NR	NR
Specific Conductance (µmhos/cm)	NE	umhos/cm	3,466	3,661	3,174	3,134	3,943	2,420	2,475	1,020	NR	NR	NR	NR	NR
Temperature (°C)	NE	°C	19.88	17.48	25.19	17.25	26.51	29.97	17.72	17.67	NR	NR	NR	NR	NR
Turbidity	NE	NTU	173	134	3.55	352	262	NA	6.63	NA	NR	NR	NR	NR	NR
Volatile Organics															
1,1-Dichloroethane	6	ug/L	1 U	1 U	1 U [1 U]	NA	NA	NA	NA	1 U	NA	1 U	NA	NA	NA
cis-1,2-Dichloroethene	70	ug/L	0.43 J	16	0.54 J [0.42 J]	1 U	13	0.15 U	0.69 J	1 U	NA	1 U	NR	NR	NR
Vinyl chloride	0.03	ug/L	2.6	0.9 J	1.5 [1.3]	1.2	1 U	2	1	1 U	NA	1 U	NR	NR	NR
Semivolatile Organics															
Phenol	30	ug/L	10 U	10 U	10 U [10 U]	NA	NA	NA	NA	10 U	NA	10 U	NR	NR	NR
Methanol															
Methanol (by USEPA Test Method 8015C)	4	mg/L	0.52 U	1 U	1 U [1 U]	NA	NA	NA	NA	1 U	NA	1 U	NR	NR	NR
Formaldehyde															
Formaldehyde (by USEPA Test Method 8315A)	0.6	mg/L	0.172 UB	0.0360 N	0.071J [0.042J]	0.146 J	0.505	0.393	0.0975	0.0179 U	NA	0.0922 U	NR	NR	NR
Miscellaneous															
Ammonia (by USEPA Test Method 350.1)	1.5	mg/L	540	540	680 [570]	440	840	290	390	9.9	NA	130	NR	NR	NR
Nitrate/Nitrite-N (by USEPA Test Method 353.2)	11	mg/L	81	58	67 [68]	76 J-	0.076 J	65	41	0.61	NA	180	NR	NR	NR
Nitrite-N (by USEPA Test Method 353.2)	1	mg/L	34	39	31 [30]	36	0.1 U	10	8.8	0.46	NA	1.8	NR	NR	NR
Nitrate-N (by USEPA Test Method 353.2)	10	mg/L	47	19	36 [38]	40 J-	0.076 J	55	32	0.15	NA	180	NR	NR	NR

Table 3
Groundwater Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L	Units	RW-7 12/16/11	RW-7 06/20/13	RW-7 12/10/13	RW-7 06/23/14	RW-7 09/24/14	RW-7 12/16/14	RW-7 03/24/15	RW-7 09/22/15	RW-7 02/01/16	RW-7 08/23/16	RW-7 07/18/17	RW-7 10/31/17
Field Parameters														
Dissolved Oxygen (mg/L)	NE	mg/L	0.15	0.30	0.19 [0.19]	1.96	NA	6.07	1.53	3.85	3.47	2.61	7.49	6.04
Oxidation-Reduction Potential (mV)	NE	mV	31.5	-25.7	-131.1 [-131.1]	-100.3	NA	-33.7	-156.4	-3.8	-24.5	-35.4	NA	-130.6
pH (units)	6.5-8.5	SU	6.27	5.99	7.25 [7.25]	7.30	NA	7.70	7.48	7.45	7.24	7.53	7.25	7.10
Specific Conductance (µmhos/cm)	NE	umhos/cm	845	872	4,574 [4.574]	5,029	NA	4,708	4,329	3,930	3,379	3,310	3,540	2,911
Temperature (°C)	NE	°C	20.06	23.62	17.65 [17.65]	37.34	NA	16.14	22.33	25.88	25.03	36.72	27.88	11.39
Turbidity	NE	NTU	NA	NA	NA	33.4	NA	33	31.6	12.6	18.5	24.3	NA	11.1
Volatile Organics														
1,1-Dichloroethane	6	ug/L	NA	NA	1 U [1 U]	0.13 U [0.13 U]	1 U	1 U [1 U]	1 U [1 U]	1 U [1 U]	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	ug/L	NA	NA	1 U [1 U]	0.15 U [0.15 U]	1 U	1 U [1 U]	1 U [1 U]	1 U [1 U]	NA	NA	NA	NA
Vinyl chloride	0.03	ug/L	NA	NA	1 U [1 U]	0.32 U [0.32 U]	1 U	1 U [1 U]	1 U [1 U]	1 U [1 U]	NA	NA	NA	NA
Semivolatile Organics														
Phenol	30	ug/L	NA	NA	10 U [10 U]	1.4 U [1.4 U]	10 U	10 U [10 U]	3 J [10 U]	10 U [10 U]	NA	NA	NA	NA
Methanol														
Methanol (by USEPA Test Method 8015C)	4	mg/L	NA	NA	1 U [0.61 J]	0.97 [1.1]	1 U	1 U [1 U]	1 U [1 U]	1 U [1 U]	NA	NA	NA	NA
Formaldehyde														
Formaldehyde (by USEPA Test Method 8315A)	0.6	mg/L	NA	NA	0.255 [0.236]	0.538J [0.482J]	0.0907 U	0.923 J [1.11]	0.157 [0.122]	0.159J [0.121J]	0.235	0.167	1.79	0.305
Miscellaneous														
Ammonia (by USEPA Test Method 350.1)	1.5	mg/L	NA	NA	450 [430]	580 [560]	550	580 [520]	550 [550]	510 [500]	390	350	330	370
Nitrate/Nitrite-N (by USEPA Test Method 353.2)	11	mg/L	NA	NA	NA	0.041 U [0.041 U]	0.1 U	0.1 U [0.1 U]	0.1 U [0.1 U]	0.1 U [0.1 U]	NA	NA	NA	NA
Nitrite-N (by USEPA Test Method 353.2)	1	mg/L	NA	NA	NA	0.017 U [0.017 U]	0.1 U	0.034J [0.1 U]	0.1 U [0.1 U]	0.1 U [0.1 U]	NA	NA	NA	NA
Nitrate-N (by USEPA Test Method 353.2)	10	mg/L	NA	NA	0.1 U [0.1 U]	0.025 U [0.025 U]	0.1 U	0.1 U [0.1 U]	0.1 U [0.1 U]	0.1 U [0.1 U]	NA	NA	NA	NA

Table 3
Groundwater Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L	Units	T-22 12/16/11	T-22 06/20/13	T-22 10/18/13	T-22 12/09/13	T-22 06/23/14	T-22 09/25/14	T-22 12/15/14	T-22 03/25/15	T-22 02/02/16	T-22 08/22/16	T-22 07/19/17	T-22 10/31/17
Field Parameters														
Dissolved Oxygen (mg/L)	NE	mg/L	0.15	0.30	NA	1.32	0.17	0.19	0.24	0.42	0.18	0.22	0.09	0.18
Oxidation-Reduction Potential (mV)	NE	mV	31.5	-25.7	NA	-40.3	-33.2	-47.6	-71.7	-52.4	-79.1	-71.9	-24.0	-69.8
pH (units)	6.5-8.5	SU	6.27	5.99	NA	6.27	6.33	6.10	6.35	6.35	6.74	6.24	5.82	6.37
Specific Conductance (µmhos/cm)	NE	umhos/cm	845	872	NA	599	856	731	656	251	687	714	697	521
Temperature (°C)	NE	°C	20.06	23.62	NA	16.76	21.33	22.20	19.11	14.28	17.66	26.10	25.31	21.91
Turbidity	NE	NTU	NA	NA	NA	NA	5.3	NA	7.96	6.84	7.26	8.65	0.7	7.37
Volatile Organics														
1,1-Dichloroethane	6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.03	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics														
Phenol	30	ug/L	NA	NA	NA	10 U	1.4 U	10 U	10 U	10 U	NA	NA	NA	NA
Methanol														
Methanol (by USEPA Test Method 8015C)	4	mg/L	1 U	1 U	1 U	NA	NA	1 U	1 U	1 U	NA	NA	NA	NA
Formaldehyde														
Formaldehyde (by USEPA Test Method 8315A)	0.6	mg/L	NA	NA	NA	0.100 J	0.0551 U	0.0922 U	0.142 UB	0.081	NA	NA	NA	NA
Miscellaneous														
Ammonia (by USEPA Test Method 350.1)	1.5	mg/L	3.6	NA	NA	8.6	12	12	11	15	9.5	5.6	6.2	6.2
Nitrate/Nitrite-N (by USEPA Test Method 353.2)	11	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite-N (by USEPA Test Method 353.2)	1	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate-N (by USEPA Test Method 353.2)	10	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 3
Groundwater Analytical Results
Hexion Inc., Fayetteville, North Carolina

Notes:

- a Title 15A North Carolina Administrative Code Subchapter 2L Groundwater Quality Standards.
- b NCAC 2L Standard not established, therefore the NCDEQ Groundwater Interim Maximum Allowable Concentration (IMAC) of 1.5 mg/L is used for comparison.
- DO Dissolved Oxygen
- mg/L Milligrams per liter
- mV Millivolts
- SU Standard Units
- µmhos/cm Micromhos per centimeter
- °C Degrees Celsius
- NTU Nephelometric Turbidity Units
- Bold** Indicates constituent was detected at a concentration at or greater than the laboratory reporting limit
- J/UJ Constituent concentration was qualified as estimated (detected/nondetected).
- J- Constituent concentration was qualified as estimated and biased low due to poor surrogate recovery during analysis.
- U Constituent was not detected above the indicated laboratory reporting limit.
- UB Constituent concentration was qualified as nondetect due to blank contamination.
- ND Not Detected
- NE Not Established
- NR Not-Representative: Stagnant groundwater was present in the sump of RW-6 but this was not considered representative of groundwater.
- NS Not Sampled
- R Rejected Data - Non-detected constituent concentration data were rejected due to poor acid surrogate recovery resulting from of matrix interference in sample.
- TKN Total Kjeldahl Nitrogen
- VOCs Volatile Organic Compounds
- SVOCs Semi-Volatile Organic Compounds
- █ Constituent concentration exceeds the NCAC 2L Standard or the IMAC if no 2L Standard is available.
- [] Value in brackets indicated duplicate sample results

Table 4
Surface Water Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2B Water Supply Standard ^b	NCAC 2B Aquatic Life Standard ^c	SWS-1 02/29/12	SWS-2 02/29/12	SWS-2 09/26/13	SWS-2 12/16/14	SWS-2 02/03/16	SWS-2 07/18/17	SWS-3 02/29/12	SWS-3 09/26/13
Field Parameters										
Dissolved Oxygen (mg/L)	NE	NE	6.77	6.53	2.77	NA	NA	NA	5.35	1.37
Oxidation-Reduction Potential (mV)	NE	NE	52.9	53.3	-2.1	NA	NA	NA	52.1	-57.4
pH (units)	NE	6.5-8.5	5.99	5.92	6.82	NA	NA	NA	6.05	6.78
Specific Conductance (µmhos/cm)	NE	NE	289	310	231	NA	NA	NA	214	316
Temperature (C°)	NE	NE	16.73	13.75	23.75	NA	NA	NA	18.28	21.01
Biogeochemical Analysis (mg/L)										
Ammonia (by USEPA Test Method 350.1)	30*	7.9**	0.91 J [0.64 J]	1.7	6.7	3.7	1.3	4.9 [4.8]	3.0	17

Notes:

- a Organic nitrogen calculated by subtracting ammonia from TKN. If ammonia concentration is greater than or equal to TKN concentration, organic nitrogen is listed as not detected.
- b North Carolina Administrative Code (NCAC) 2B Surface Water Standards for water supplies (NCDEQ 2017).
- c NCAC 2B Surface Water Standards for Freshwater Aquatic Life (NCDENR 2012).
- * NCAC 2B Standard Not Established; Deferred to the USEPA Ammonium Health Advisory (USEPA 2012) - 2012 Edition of the Drinking Water Standards and Health Advisories.
- ** NCAC 2B Standard Not Established; Deferred to USEPA Ammonium water quality criteria adjusted for pH of 6.5 and temperature of 18°C (USEPA 2009).

mg/L milligrams per liter

Bold Indicates the constituent was detected at a concentration at or greater than the laboratory reporting limit

Constituent was detected above the North Carolina Administrative Code (NCAC) 2B Water Quality Standard for Water Supply

Constituent was detected above the NCAC 2B Surface Water Standard for Freshwater Aquatic Life

TKN Total Kjeldahl Nitrogen

NA Constituent was not analyzed

NE Not Established

J Constituent concentration was qualified as estimated.

U Constituent was not detected above the indicated laboratory reporting limit

UB Constituent was qualified as not detected due to contamination in associated blank sample

[] Value in brackets indicated duplicate sample results

Table 4
Surface Water Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2B Water Supply Standard ^b	NCAC 2B Aquatic Life Standard ^c	SWS-3 12/16/14	SWS-3 02/03/16	SWS-3 07/18/17	SWS-4 02/29/12	SWS-4 09/26/13	SWS-4 12/16/14	SWS-4 02/03/16	SWS-4 07/18/17
Field Parameters										
Dissolved Oxygen (mg/L)	NE	NE	NA	NA	NA	9.36	7.15	NA	NA	NA
Oxidation-Reduction Potential (mV)	NE	NE	NA	NA	NA	30.5	165.1	NA	NA	NA
pH (units)	NE	6.5-8.5	NA	NA	NA	5.72	7.49	NA	NA	NA
Specific Conductance (µmhos/cm)	NE	NE	NA	NA	NA	300	428	NA	NA	NA
Temperature (oC)	NE	NE	NA	NA	NA	12.44	19.92	NA	NA	NA
Biogeochemical Analysis (mg/L)										
Ammonia (by USEPA Test Method 350.1)	30*	7.9**	3.6 [3.4]	1.1	0.79	0.68	34	7.6	1.1 [1.1]	9.5

Notes:

- a Organic nitrogen calculated by subtracting ammonia from TKN. If ammonia concentration is greater than or equal to TKN concentration, organic nitrogen is listed as not detected.
- b North Carolina Administrative Code (NCAC) 2B Surface Water Standards for water supplies (NCDEQ 2017).
- c NCAC 2B Surface Water Standards for Freshwater Aquatic Life (NCDENR 2012).
- * NCAC 2B Standard Not Established; Deferred to the USEPA Ammonium Health Advisory (USEPA 2012) - 2012 Edition of the Drinking Water Standards and Health Advisories.
- ** NCAC 2B Standard Not Established; Deferred to USEPA Ammonium water quality criteria adjusted for pH of 6.5 and temperature of 18°C (USEPA 2009).

mg/L milligrams per liter

Bold Indicates the constituent was detected at a concentration at or greater than the laboratory reporting limit

Constituent was detected above the North Carolina Administrative Code (NCAC) 2B Water Quality Standard for Water Supply

Constituent was detected above the NCAC 2B Surface Water Standard for Freshwater Aquatic Life

TKN Total Kjeldahl Nitrogen

NA Constituent was not analyzed

NE Not Established

J Constituent concentration was qualified as estimated.

U Constituent was not detected above the indicated laboratory reporting limit

UB Constituent was qualified as not detected due to contamination in associated blank sample

[] Value in brackets indicated duplicate sample results

Table 5
Seep Water Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L ^a	NCAC 2B Aquatic Life Standard ^c	Units	Seep-1 10/07/10	Seep-1 10/07/10	Seep-1 02/10/14	Seep-1 07/30/14	Seep-1 10/24/14	Seep-1 01/28/15	Seep-1 05/06/15	Seep-1 02/02/16	Seep-1 08/09/17
Volatile Organics												
1,1-Dichloroethane	6	NE	ug/L	NA	1 U	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	NE	ug/L	NA	1 U	NA	NA	NA	NA	NA	NA	NA
2-Butanone (Methyl ethyl ketone)	4,000	NE	ug/L	NA	5 U	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics												
3 & 4-Methylphenol	40/400	NE	ug/L	NA	10 U	10 U	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	100	NE	ug/L	NA	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA
Bis(2-ethylhexyl)phthalate	3	NE	ug/L	5 U	NA	5.6	NA	NA	NA	NA	NA	NA
Pentachlorophenol	0.3	NE	ug/L	10 U	NA	10 U	NA	NA	NA	NA	NA	NA
Phenol	30	300	ug/L	10 U	NA	10 U	1.4 J	10 U	10 U	10 U	NA	NA
Methanol												
Methanol (by USEPA Test Method 8015C)	4	NE	mg/L	1 U	NA	1 U	NA	1 U	1 U	1 U	NA	NA
Formaldehyde												
Formaldehyde (by USEPA Test Method 8315)	0.6	1.2	mg/L	2.24	NA	0.0429 U	0.0907 U	0.0922 U	0.0259 J	0.11	NA	NA
Ammonia												
Ammonia (by USEPA Test Method 350.1)	1.5 ^b	7.9 ^d	mg/L	160	NA	70	220	170	57	120	75	31

Notes:

- a Title 15A North Carolina Administrative Code Subchapter 2L Groundwater Quality Standards.
 - b NCDEQ Groundwater Interim Maximum Allowable Concentration (IMAC).
 - c NCAC 2B Surface Water Standards for Freshwater Aquatic Life (NCDENR 2012).
 - d USEPA Ammonium water quality criteria adjusted for pH of 6.5 and temperature of 18°C (USEPA 2009).
- µg/L micrograms per liter
mg/L milligrams per liter
- Bold** Constituent was detected above the laboratory reporting limit
- Constituent was detected above the NCAC 2L Standard or IMAC
- Constituent was detected above the NCAC 2B Surface Water Standard or USEPA water quality criteria
- VOCs Volatile Organic Compounds
SVOCs Semi-Volatile Organic Compounds
- NE Not Established
NA Constituent was not analyzed
DRY Seep was too dry to collect a water sample
TKN Total Kjeldahl Nitrogen
- J Constituent concentration was below the laboratory reporting limit and was qualified as estimated.
U Constituent was not detected above the indicated laboratory reporting limit
[] Value in brackets indicated duplicate sample results

Table 5
Seep Water Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L ^a	NCAC 2B Aquatic Life Standard ^c	Units	Seep-2 10/07/10	Seep-2 10/07/10	Seep-2 02/10/14	Seep-2 07/30/14	Seep-2 10/24/14	Seep-2 01/28/15	Seep-2 05/06/15	Seep-2 02/02/16	Seep-2 08/09/17
Volatile Organics												
1,1-Dichloroethane	6	NE	ug/L	1 U	NA	DRY	NA	DRY	DRY	NA	NA	NA
cis-1,2-Dichloroethene	70	NE	ug/L	1 U	NA	DRY	NA	DRY	DRY	NA	NA	NA
2-Butanone (Methyl ethyl ketone)	4,000	NE	ug/L	NA	5 U	DRY	NA	DRY	DRY	NA	NA	NA
Semivolatile Organics												
3 & 4-Methylphenol	40/400	NE	ug/L	NA	10 U	DRY	NA	DRY	DRY	NA	NA	NA
2,4-Dimethylphenol	100	NE	ug/L	NA	10 U	DRY	10 U	DRY	DRY	10 U	NA	NA
Bis(2-ethylhexyl)phthalate	3	NE	ug/L	NA	5 U	DRY	NA	DRY	DRY	NA	NA	NA
Pentachlorophenol	0.3	NE	ug/L	NA	10 U	DRY	NA	DRY	DRY	NA	NA	NA
Phenol	30	300	ug/L	NA	10 U	DRY	10 U	DRY	DRY	10 U	NA	NA
Methanol												
Methanol (by USEPA Test Method 8015C)	4	NE	mg/L	NA	1 U	DRY	0.64	DRY	DRY	1 U	NA	NA
Formaldehyde												
Formaldehyde (by USEPA Test Method 8315)	0.6	1.2	mg/L	NA	0.233 J	DRY	0.0937 U	DRY	DRY	0.549	NA	NA
Ammonia												
Ammonia (by USEPA Test Method 350.1)	1.5 ^b	7.9 ^d	mg/L	NA	49	DRY	7.3	DRY	DRY	39	55	44

Notes:

- a Title 15A North Carolina Administrative Code Subchapter 2L Groundwater Quality Standards.
 - b NCDEQ Groundwater Interim Maximum Allowable Concentration (IMAC).
 - c NCAC 2B Surface Water Standards for Freshwater Aquatic Life (NCDENR 2012).
 - d USEPA Ammonium water quality criteria adjusted for pH of 6.5 and temperature of 18°C (USEPA 2009).
- µg/L micrograms per liter
mg/L milligrams per liter
- Bold** Constituent was detected above the laboratory reporting limit
- Constituent was detected above the NCAC 2L Standard or IMAC
- Constituent was detected above the NCAC 2B Surface Water Standard or USEPA water quality criteria
- VOCs Volatile Organic Compounds
SVOCs Semi-Volatile Organic Compounds
- NE Not Established
NA Constituent was not analyzed
DRY Seep was too dry to collect a water sample
TKN Total Kjeldahl Nitrogen
- J Constituent concentration was below the laboratory reporting limit and was qualified as estimated.
U Constituent was not detected above the indicated laboratory reporting limit
[] Value in brackets indicated duplicate sample results

Table 5
Seep Water Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L ^a	NCAC 2B Aquatic Life Standard ^c	Units	Seep-3 10/07/10	Seep-3 02/10/14	Seep-3 07/30/14	Seep-3 10/24/14	Seep-3 01/28/15	Seep-3 05/06/16	Seep-3 02/02/16	Seep-3 08/09/17
Volatile Organics											
1,1-Dichloroethane	6	NE	ug/L	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
cis-1,2-Dichloroethene	70	NE	ug/L	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
2-Butanone (Methyl ethyl ketone)	4,000	NE	ug/L	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
Semivolatile Organics											
3 & 4-Methylphenol	40/400	NE	ug/L	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
2,4-Dimethylphenol	100	NE	ug/L	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
Bis(2-ethylhexyl)phthalate	3	NE	ug/L	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
Pentachlorophenol	0.3	NE	ug/L	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
Phenol	30	300	ug/L	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
Methanol											
Methanol (by USEPA Test Method 8015C)	4	NE	mg/L	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
Formaldehyde											
Formaldehyde (by USEPA Test Method 8315)	0.6	1.2	mg/L	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
Ammonia											
Ammonia (by USEPA Test Method 350.1)	1.5 ^b	7.9 ^d	mg/L	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY

Notes:

- a Title 15A North Carolina Administrative Code Subchapter 2L Groundwater Quality Standards.
 - b NCDEQ Groundwater Interim Maximum Allowable Concentration (IMAC).
 - c NCAC 2B Surface Water Standards for Freshwater Aquatic Life (NCDENR 2012).
 - d USEPA Ammonium water quality criteria adjusted for pH of 6.5 and temperature of 18°C (USEPA 2009).
- µg/L micrograms per liter
mg/L milligrams per liter
- Bold** Constituent was detected above the laboratory reporting limit
- Constituent was detected above the NCAC 2L Standard or IMAC
- Constituent was detected above the NCAC 2B Surface Water Standard or USEPA water quality criteria
- VOCs Volatile Organic Compounds
SVOCs Semi-Volatile Organic Compounds
- NE Not Established
NA Constituent was not analyzed
DRY Seep was too dry to collect a water sample
TKN Total Kjeldahl Nitrogen
- J Constituent concentration was below the laboratory reporting limit and was qualified as estimated.
U Constituent was not detected above the indicated laboratory reporting limit
[] Value in brackets indicated duplicate sample results

Table 5
Seep Water Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L ^a	NCAC 2B Aquatic Life Standard ^c	Units	Seep-4 10/07/10	Seep-4 02/10/14	Seep-4 07/30/14	Seep-4 10/24/14	Seep-4 01/28/15	Seep-4 05/06/15	Seep-4 02/02/16	Seep -4 08/09/17
Volatile Organics											
1,1-Dichloroethane	6	NE	ug/L	1 U [1 U]	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	NE	ug/L	1 U [1 U]	NA	NA	NA	NA	NA	NA	NA
2-Butanone (Methyl ethyl ketone)	4,000	NE	ug/L	5 U [5 U]	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics											
3 & 4-Methylphenol	40/400	NE	ug/L	10 U [10 U]	10 U	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	100	NE	ug/L	10 U [10 U]	10 U	10 U	10 U [10 U]	10 U [10 U]	10 U [10 U]	NA	NA
Bis(2-ethylhexyl)phthalate	3	NE	ug/L	5 U [5 U]	5 U	NA	NA	NA	NA	NA	NA
Pentachlorophenol	0.3	NE	ug/L	10 U [10 U]	10 U	NA	NA	NA	NA	NA	NA
Phenol	30	300	ug/L	10 U [10 U]	10 U	10 U	10 U [10 U]	10 U [10 U]	10 U [10 U]	NA	NA
Methanol											
Methanol (by USEPA Test Method 8015C)	4	NE	mg/L	1 U [1 U]	1 U	NA	1 U [1 U]	1 U [0.81 J]	1 U [1 U]	NA	NA
Formaldehyde											
Formaldehyde (by USEPA Test Method 8315)	0.6	1.2	mg/L	0.458 [0.454]	0.0451 U	0.0922 U	0.0864 U [0.0864 U]	0.114 [0.193]	0.0509 [0.109]	NA	NA
Ammonia											
Ammonia (by USEPA Test Method 350.1)	1.5 ^b	7.9 ^d	mg/L	3.7 [3.6]	0.83	2.7	3.3 [1.6]	1.4 [2.8]	1.5 [1.2]	1.9	1.6

Notes:

- a Title 15A North Carolina Administrative Code Subchapter 2L Groundwater Quality Standards.
- b NCDEQ Groundwater Interim Maximum Allowable Concentration (IMAC).
- c NCAC 2B Surface Water Standards for Freshwater Aquatic Life (NCDENR 2012).
- d USEPA Ammonium water quality criteria adjusted for pH of 6.5 and temperature of 18°C (USEPA 2009).
- µg/L micrograms per liter
- mg/L milligrams per liter
- Bold** Constituent was detected above the laboratory reporting limit
- Constituent was detected above the NCAC 2L Standard or IMAC
- Constituent was detected above the NCAC 2B Surface Water Standard or USEPA water quality criteria
- VOCs Volatile Organic Compounds
- SVOCs Semi-Volatile Organic Compounds
- NE Not Established
- NA Constituent was not analyzed
- DRY Seep was too dry to collect a water sample
- TKN Total Kjeldahl Nitrogen
- J Constituent concentration was below the laboratory reporting limit and was qualified as estimated.
- U Constituent was not detected above the indicated laboratory reporting limit
- [] Value in brackets indicated duplicate sample results

Table 5
Seep Water Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L ^a	NCAC 2B Aquatic Life Standard ^c	Units	Seep-5 10/07/10	Seep-5 02/10/14	Seep-5 07/30/14	Seep-5 10/24/14	Seep-5 01/28/15	Seep-5 05/06/15	Seep-5 02/02/16	Seep-5 08/09/17
Volatile Organics											
1,1-Dichloroethane	6	NE	ug/L	1 U	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	NE	ug/L	1 U	NA	NA	NA	NA	NA	NA	NA
2-Butanone (Methyl ethyl ketone)	4,000	NE	ug/L	5 U	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics											
3 & 4-Methylphenol	40/400	NE	ug/L	10 U	10 U	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	100	NE	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA
Bis(2-ethylhexyl)phthalate	3	NE	ug/L	5 U	5 U	NA	NA	NA	NA	NA	NA
Pentachlorophenol	0.3	NE	ug/L	10 U	10 U	NA	NA	NA	NA	NA	NA
Phenol	30	300	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA
Methanol											
Methanol (by USEPA Test Method 8015C)	4	NE	mg/L	1 U	1 U	NA	1 U	1 U	1 U	NA	NA
Formaldehyde											
Formaldehyde (by USEPA Test Method 8315)	0.6	1.2	mg/L	0.425 J	0.0459 J	0.0907 U	0.0922 U [0.0922 U]	0.0798 J	0.236	NA	NA
Ammonia											
Ammonia (by USEPA Test Method 350.1)	1.5 ^b	7.9 ^d	mg/L	12	0.27	2.5	1.8	0.34	0.47	1.4	0.54

Notes:

- a Title 15A North Carolina Administrative Code Subchapter 2L Groundwater Quality Standards.
 - b NCDEQ Groundwater Interim Maximum Allowable Concentration (IMAC).
 - c NCAC 2B Surface Water Standards for Freshwater Aquatic Life (NCDENR 2012).
 - d USEPA Ammonium water quality criteria adjusted for pH of 6.5 and temperature of 18°C (USEPA 2009).
- µg/L micrograms per liter
mg/L milligrams per liter
- Bold** Constituent was detected above the laboratory reporting limit
- Constituent was detected above the NCAC 2L Standard or IMAC
- Constituent was detected above the NCAC 2B Surface Water Standard or USEPA water quality criteria
- VOCs Volatile Organic Compounds
SVOCs Semi-Volatile Organic Compounds
- NE Not Established
NA Constituent was not analyzed
DRY Seep was too dry to collect a water sample
TKN Total Kjeldahl Nitrogen
- J Constituent concentration was below the laboratory reporting limit and was qualified as estimated.
U Constituent was not detected above the indicated laboratory reporting limit
[] Value in brackets indicated duplicate sample results

Table 5
Seep Water Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L ^a	NCAC 2B Aquatic Life Standard ^c	Units	Seep-6 10/07/10	Seep-6 02/10/14	Seep-6 07/30/14	Seep-6 10/24/14	Seep-6 01/28/15	Seep-6 05/06/15	Seep-6 02/02/16	Seep-6 08/09/17
Volatile Organics											
1,1-Dichloroethane	6	NE	ug/L	1 U	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	NE	ug/L	1 U	NA	NA	NA	NA	NA	NA	NA
2-Butanone (Methyl ethyl ketone)	4,000	NE	ug/L	2.2 J	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics											
3 & 4-Methylphenol	40/400	NE	ug/L	10 U	10 U	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	100	NE	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA
Bis(2-ethylhexyl)phthalate	3	NE	ug/L	5 U	5 U	NA	NA	NA	NA	NA	NA
Pentachlorophenol	0.3	NE	ug/L	10 U	10 U	NA	NA	NA	NA	NA	NA
Phenol	30	300	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA
Methanol											
Methanol (by USEPA Test Method 8015C)	4	NE	mg/L	1 U	1 U	NA	1 U	0.57 J	1 U	NA	NA
Formaldehyde											
Formaldehyde (by USEPA Test Method 8315)	0.6	1.2	mg/L	0.524	0.0451 U	0.0922 U [0.0922 U]	0.0893 U	0.156	0.0714	NA	NA
Ammonia											
Ammonia (by USEPA Test Method 350.1)	1.5 ^b	7.9 ^d	mg/L	25	2.6	7.5	6.6	4.3	3.2	1.7	4.2

Notes:

- a Title 15A North Carolina Administrative Code Subchapter 2L Groundwater Quality Standards.
- b NCDEQ Groundwater Interim Maximum Allowable Concentration (IMAC).
- c NCAC 2B Surface Water Standards for Freshwater Aquatic Life (NCDENR 2012).
- d USEPA Ammonium water quality criteria adjusted for pH of 6.5 and temperature of 18°C (USEPA 2009).
- µg/L micrograms per liter
- mg/L milligrams per liter
- Bold** Constituent was detected above the laboratory reporting limit
- Constituent was detected above the NCAC 2L Standard or IMAC
- Constituent was detected above the NCAC 2B Surface Water Standard or USEPA water quality criteria
- VOCs Volatile Organic Compounds
- SVOCs Semi-Volatile Organic Compounds
- NE Not Established
- NA Constituent was not analyzed
- DRY Seep was too dry to collect a water sample
- TKN Total Kjeldahl Nitrogen
- J Constituent concentration was below the laboratory reporting limit and was qualified as estimated.
- U Constituent was not detected above the indicated laboratory reporting limit
- [] Value in brackets indicated duplicate sample results

Table 5
Seep Water Analytical Results
Hexion Inc., Fayetteville, North Carolina

Location ID: Date Collected:	NCAC 2L ^a	NCAC 2B Aquatic Life Standard ^c	Units	Seep-7 10/07/10	Seep-7 02/10/14	Seep-7 07/30/14	Seep-7 10/24/14	Seep-7 01/28/15	Seep-7 05/06/15	Seep-7 02/02/16	Seep-7 08/09/17
Volatile Organics											
1,1-Dichloroethane	6	NE	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	NE	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone (Methyl ethyl ketone)	4,000	NE	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics											
3 & 4-Methylphenol	40/400	NE	ug/L	NA	10 U	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	100	NE	ug/L	NA	10 U	NA	NA	10 U	10 U	NA	NA
Bis(2-ethylhexyl)phthalate	3	NE	ug/L	NA	5 U	NA	NA	NA	NA	NA	NA
Pentachlorophenol	0.3	NE	ug/L	NA	10 U	NA	NA	NA	NA	NA	NA
Phenol	30	300	ug/L	NA	10 U	NA	NA	10 U	10 U	NA	NA
Methanol											
Methanol (by USEPA Test Method 8015C)	4	NE	mg/L	NA	1 U	NA	NA	1 U	1 U	NA	NA
Formaldehyde											
Formaldehyde (by USEPA Test Method 8315)	0.6	1.2	mg/L	DRY	0.0436 U	DRY	DRY	0.114	0.267	NA	NA
Ammonia											
Ammonia (by USEPA Test Method 350.1)	1.5 ^b	7.9 ^d	mg/L	NA	29	NA	NA	6.9	5.7	28	8.2

Notes:

- a Title 15A North Carolina Administrative Code Subchapter 2L Groundwater Quality Standards.
 - b NCDEQ Groundwater Interim Maximum Allowable Concentration (IMAC).
 - c NCAC 2B Surface Water Standards for Freshwater Aquatic Life (NCDENR 2012).
 - d USEPA Ammonium water quality criteria adjusted for pH of 6.5 and temperature of 18°C (USEPA 2009).
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mg/L milligrams per liter
- Bold** Constituent was detected above the laboratory reporting limit
- Constituent was detected above the NCAC 2L Standard or IMAC
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- VOCs Volatile Organic Compounds
SVOCs Semi-Volatile Organic Compounds
- NE Not Established
NA Constituent was not analyzed
DRY Seep was too dry to collect a water sample
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Table 5
Seep Water Analytical Results
Hexion Inc., Fayetteville, North Carolina

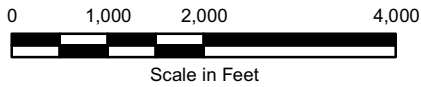
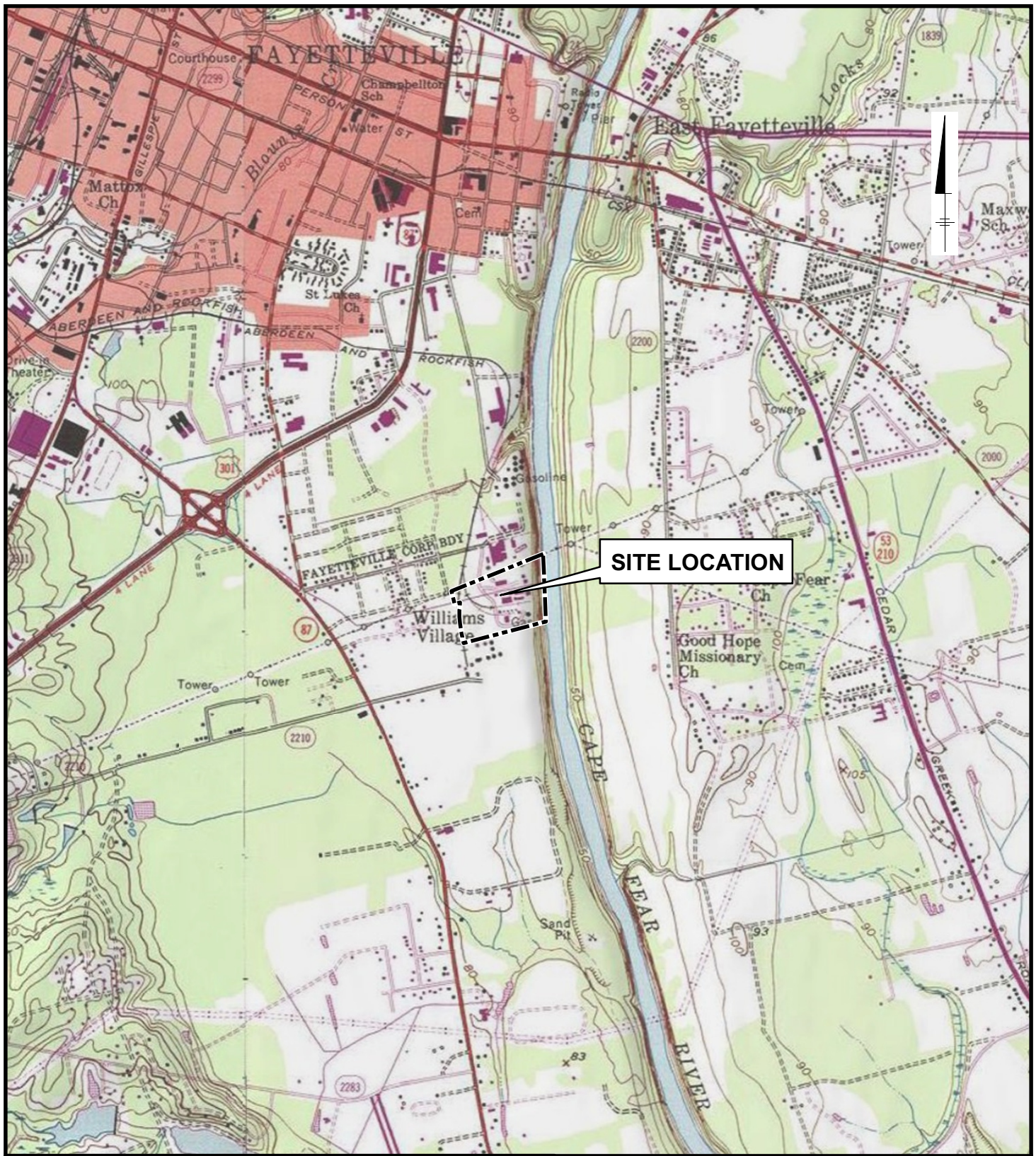
Location ID: Date Collected:	NCAC 2L ^a	NCAC 2B Aquatic Life Standard ^c	Units	Seep-8 10/07/10	Seep-8 02/10/14	Seep-8 07/30/14	Seep-8 10/24/14	Seep-8 01/28/15	Seep-8 05/06/15	Seep-8 02/02/16	Seep-8 08/09/17
Volatile Organics											
1,1-Dichloroethane	6	NE	ug/L	1 U	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	NE	ug/L	1 U	NA	NA	NA	NA	NA	NA	NA
2-Butanone (Methyl ethyl ketone)	4,000	NE	ug/L	5 U	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics											
3 & 4-Methylphenol	40/400	NE	ug/L	10 U	10 U	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	100	NE	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA
Bis(2-ethylhexyl)phthalate	3	NE	ug/L	5 U	5 U	NA	NA	NA	NA	NA	NA
Pentachlorophenol	0.3	NE	ug/L	10	10 U	10 U	10 U	10 U	10 U	NA	NA
Phenol	30	300	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA
Methanol											
Methanol (by USEPA Test Method 8015C)	4	NE	mg/L	1 U	1 U	NA	1 U	1 U	1 U	NA	NA
Formaldehyde											
Formaldehyde (by USEPA Test Method 8315)	0.6	1.2	mg/L	0.278 J	0.0451 U	0.0893 U	0.0878 U	0.174	0.0653	NA	NA
Ammonia											
Ammonia (by USEPA Test Method 350.1)	1.5 ^b	7.9 ^d	mg/L	23	14	10	18	12	12	11	13 [13]

Notes:

- a Title 15A North Carolina Administrative Code Subchapter 2L Groundwater Quality Standards.
 - b NCDEQ Groundwater Interim Maximum Allowable Concentration (IMAC).
 - c NCAC 2B Surface Water Standards for Freshwater Aquatic Life (NCDENR 2012).
 - d USEPA Ammonium water quality criteria adjusted for pH of 6.5 and temperature of 18°C (USEPA 2009).
- µg/L micrograms per liter
mg/L milligrams per liter
- Bold** Constituent was detected above the laboratory reporting limit
- Constituent was detected above the NCAC 2L Standard or IMAC
- Constituent was detected above the NCAC 2B Surface Water Standard or USEPA water quality criteria
- VOCs Volatile Organic Compounds
SVOCs Semi-Volatile Organic Compounds
- NE Not Established
NA Constituent was not analyzed
DRY Seep was too dry to collect a water sample
TKN Total Kjeldahl Nitrogen
- J Constituent concentration was below the laboratory reporting limit and was qualified as estimated.
U Constituent was not detected above the indicated laboratory reporting limit
[] Value in brackets indicated duplicate sample results

FIGURES





County Location



Source: ArcGIS Online Services Hosted by ESRI.
USGS 7.5 Minute Fayetteville, North Carolina and
Vander, North Carolina Topographic Quadrangles.

HEXION INC.
FAYETTEVILLE, NORTH CAROLINA

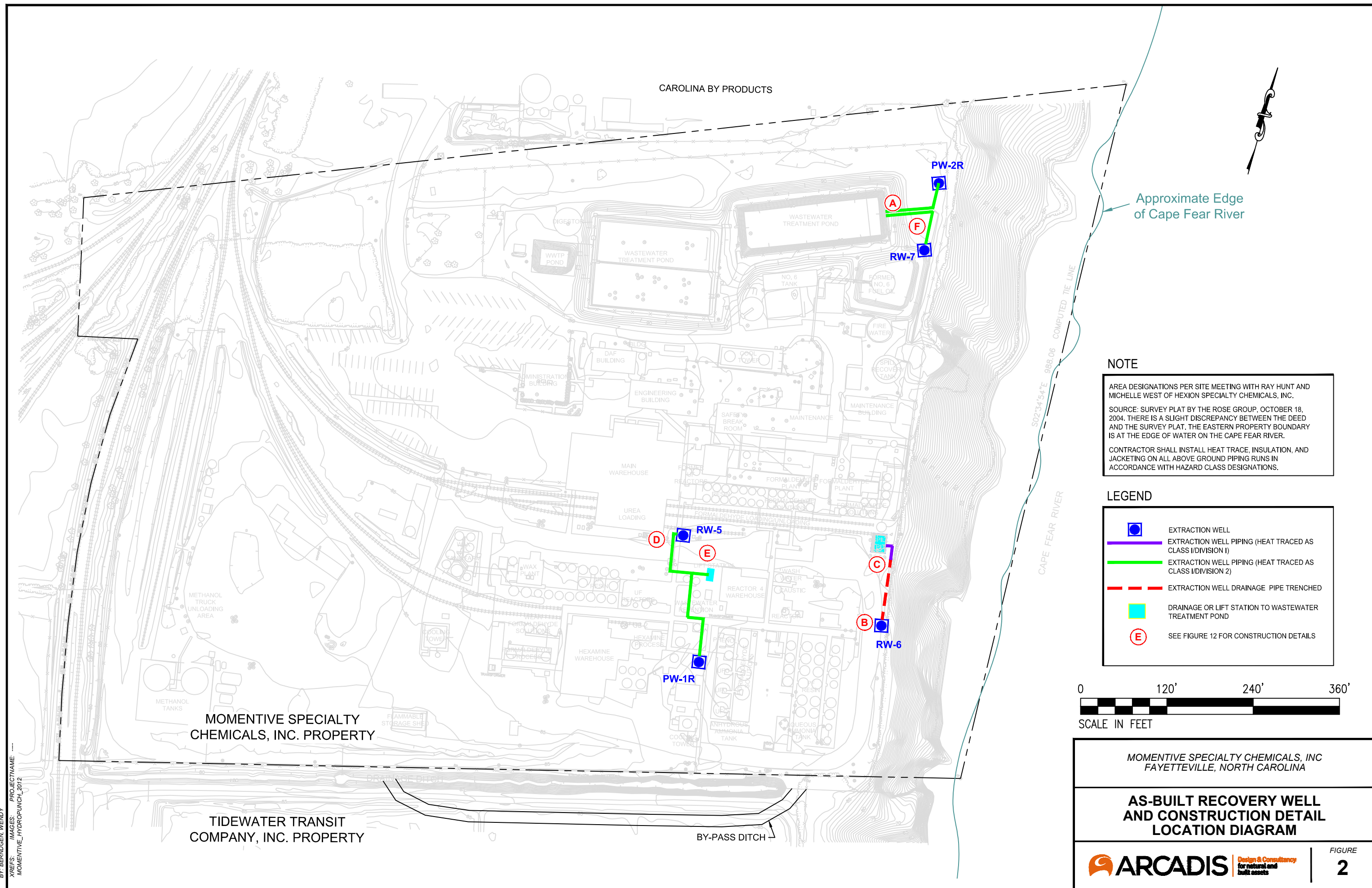
SITE LOCATION



FIGURE

1

CITY: Augusta, GA DIV/GROUP: ENV. DB: A.S. I.D.: PIC: PN: TM: L.YR: 2018
 C:\Users\berndgen\OneDrive - ARCADIS\BIM 360 Docs\HEXION\NC\2017 O&M Activities\2018\NC\10800608_003501-DWG\11_10800602.dwg LAYOUT: 2 SAVED: 2/20/2018 12:07 PM ACADVER: 18 IS (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: MONOCHROME.STB PLOTTED: 2/20/2018 12:42 PM
 BY: BERNDGEN, WENDY XREFS: IMAGES: PROJECTNAME: --- MOMENTIVE_HYDROPUNCH_2012



NOTE

AREA DESIGNATIONS PER SITE MEETING WITH RAY HUNT AND MICHELLE WEST OF HEXION SPECIALTY CHEMICALS, INC.

SOURCE: SURVEY PLAT BY THE ROSE GROUP, OCTOBER 18, 2004. THERE IS A SLIGHT DISCREPANCY BETWEEN THE DEED AND THE SURVEY PLAT. THE EASTERN PROPERTY BOUNDARY IS AT THE EDGE OF WATER ON THE CAPE FEAR RIVER.

CONTRACTOR SHALL INSTALL HEAT TRACE, INSULATION, AND JACKETING ON ALL ABOVE GROUND PIPING RUNS IN ACCORDANCE WITH HAZARD CLASS DESIGNATIONS.

LEGEND

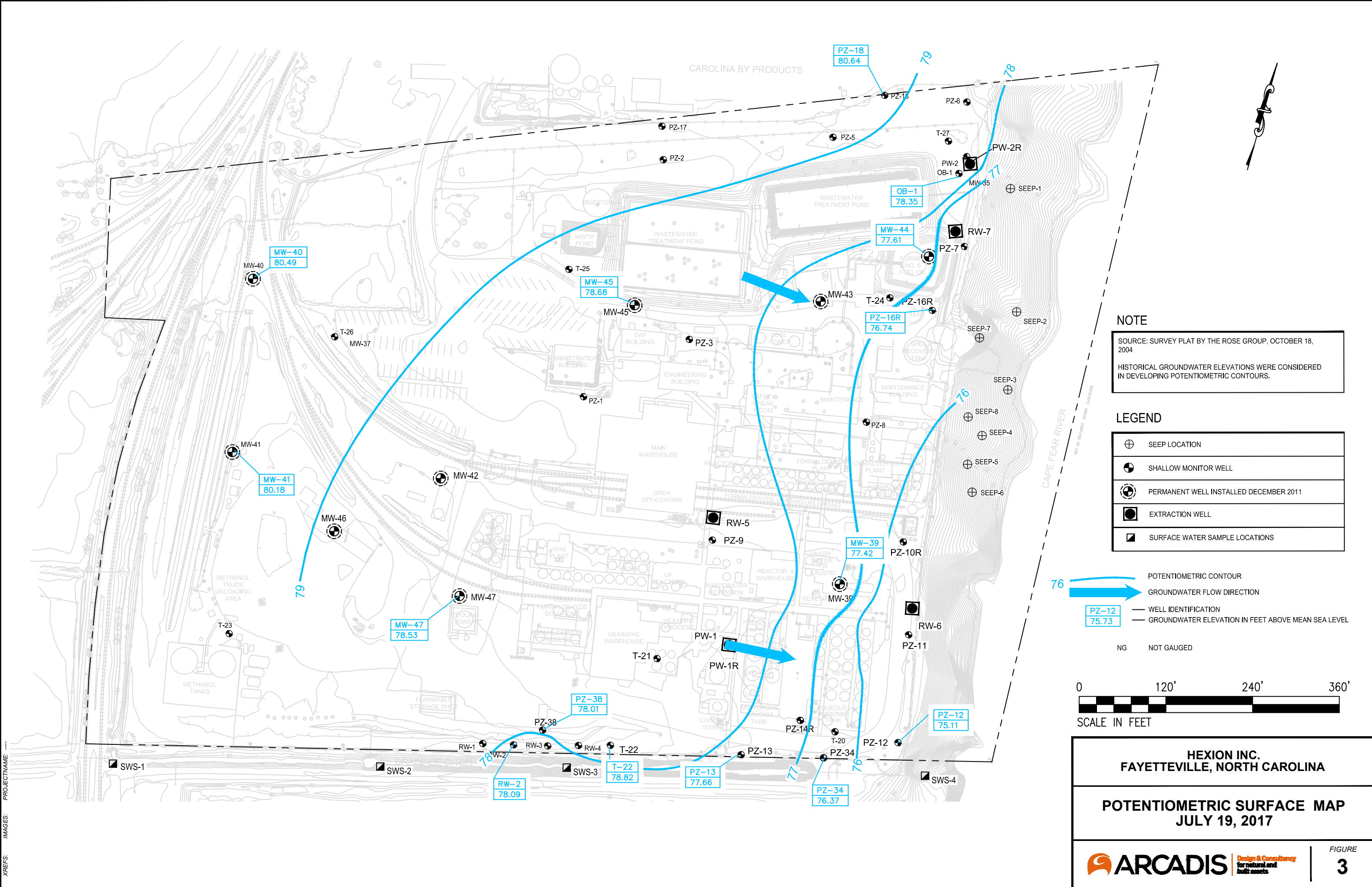
	EXTRACTION WELL
	EXTRACTION WELL PIPING (HEAT TRACED AS CLASS I/DIVISION 1)
	EXTRACTION WELL PIPING (HEAT TRACED AS CLASS I/DIVISION 2)
	EXTRACTION WELL DRAINAGE PIPE TRENCHED
	DRAINAGE OR LIFT STATION TO WASTEWATER TREATMENT POND
	SEE FIGURE 12 FOR CONSTRUCTION DETAILS



MOMENTIVE SPECIALTY CHEMICALS, INC
 FAYETTEVILLE, NORTH CAROLINA

**AS-BUILT RECOVERY WELL
 AND CONSTRUCTION DETAIL
 LOCATION DIAGRAM**

CITY: Milwaukee, WI DIV/GRUP: ENV DB: A. WarrenC. McKeough LD: PIC: PM: TM: LVR:
 C:\Users\wbernd@CapTel\OneDrive - ARCADIS\BIM 360 Decal\HEXION\NC\2017 O&M Activities\2017\BNC 080808\03501-DWG\03_108008\01 July 2017.dwg LAYOUT: 3 SAVED: 10/13/2017 3:07 PM ACAD/VER: 18.1S (LMS TECH) PAGES/SETUP: --- PLOTSTYLE/TABLE: --- PLOT/STYLE/TABLE: --- PLOTTED: 2/20/2018 12:36 PM BY: BERNDSEN, WENDY XREFS: IMAGES: PROJECTNAME: ---



NOTE
 SOURCE: SURVEY PLAT BY THE ROSE GROUP, OCTOBER 18, 2004
 HISTORICAL GROUNDWATER ELEVATIONS WERE CONSIDERED IN DEVELOPING POTENTIOMETRIC CONTOURS.

LEGEND

	SEEP LOCATION
	SHALLOW MONITOR WELL
	PERMANENT WELL INSTALLED DECEMBER 2011
	EXTRACTION WELL
	SURFACE WATER SAMPLE LOCATIONS

POTENTIOMETRIC CONTOUR
 GROUNDWATER FLOW DIRECTION
 WELL IDENTIFICATION
 GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
 NG NOT GAUGED



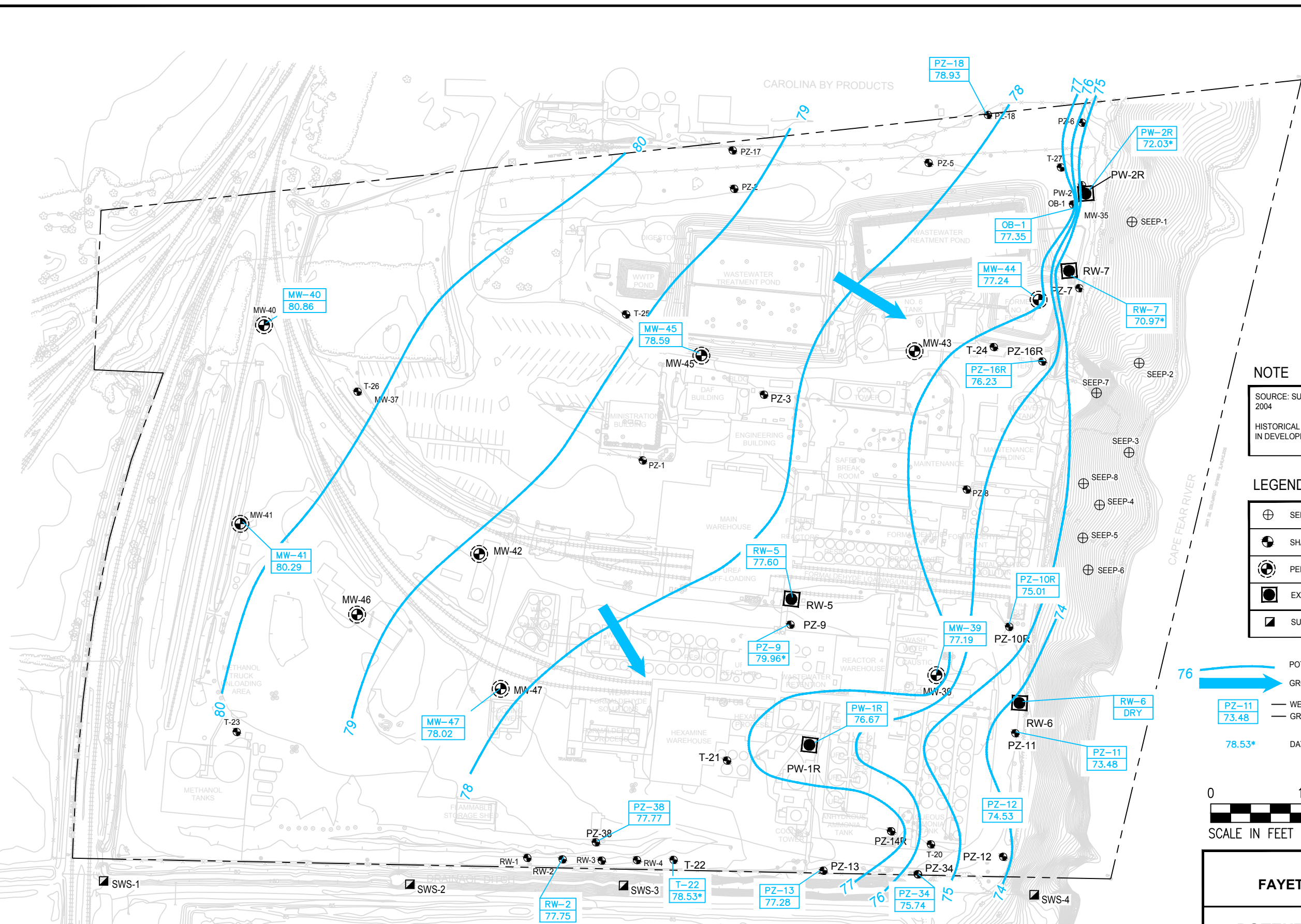
HEXION INC.
FAYETTEVILLE, NORTH CAROLINA

POTENTIOMETRIC SURFACE MAP
JULY 19, 2017

ARCADIS Design & Consultancy for natural and built assets

FIGURE
3

CITY: Milwaukee, WI DIV/GRUP: ENV DB: A. Warren, C. McKeough LD: PIC: PM: TM: LYR: B:\HEXION\INC\Fayetteville, NC\2018\10\17-DWG\03_108008W01_Oct 2017.dwg LAYOUT: 4_SAVED: 6/6/2018 10:27 AM ACADVER: 21.05 (LMS TECH) PAGES: 1 OF 4 PLOTSTYLETABLE: ... PLOT: 6/6/2018 10:42 AM BY: BERNDIGEN, WENDY



NOTE
 SOURCE: SURVEY PLAT BY THE ROSE GROUP, OCTOBER 18, 2004
 HISTORICAL GROUNDWATER ELEVATIONS WERE CONSIDERED IN DEVELOPING POTENTIOMETRIC CONTOURS.

LEGEND

	SEEP LOCATION
	SHALLOW MONITOR WELL
	PERMANENT WELL INSTALLED DECEMBER 2011
	EXTRACTION WELL
	SURFACE WATER SAMPLE LOCATIONS

POTENTIOMETRIC CONTOUR
 GROUNDWATER FLOW DIRECTION
 WELL IDENTIFICATION
 GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
 78.53* DATA NOT USED TO CONSTRUCT CONTOURS



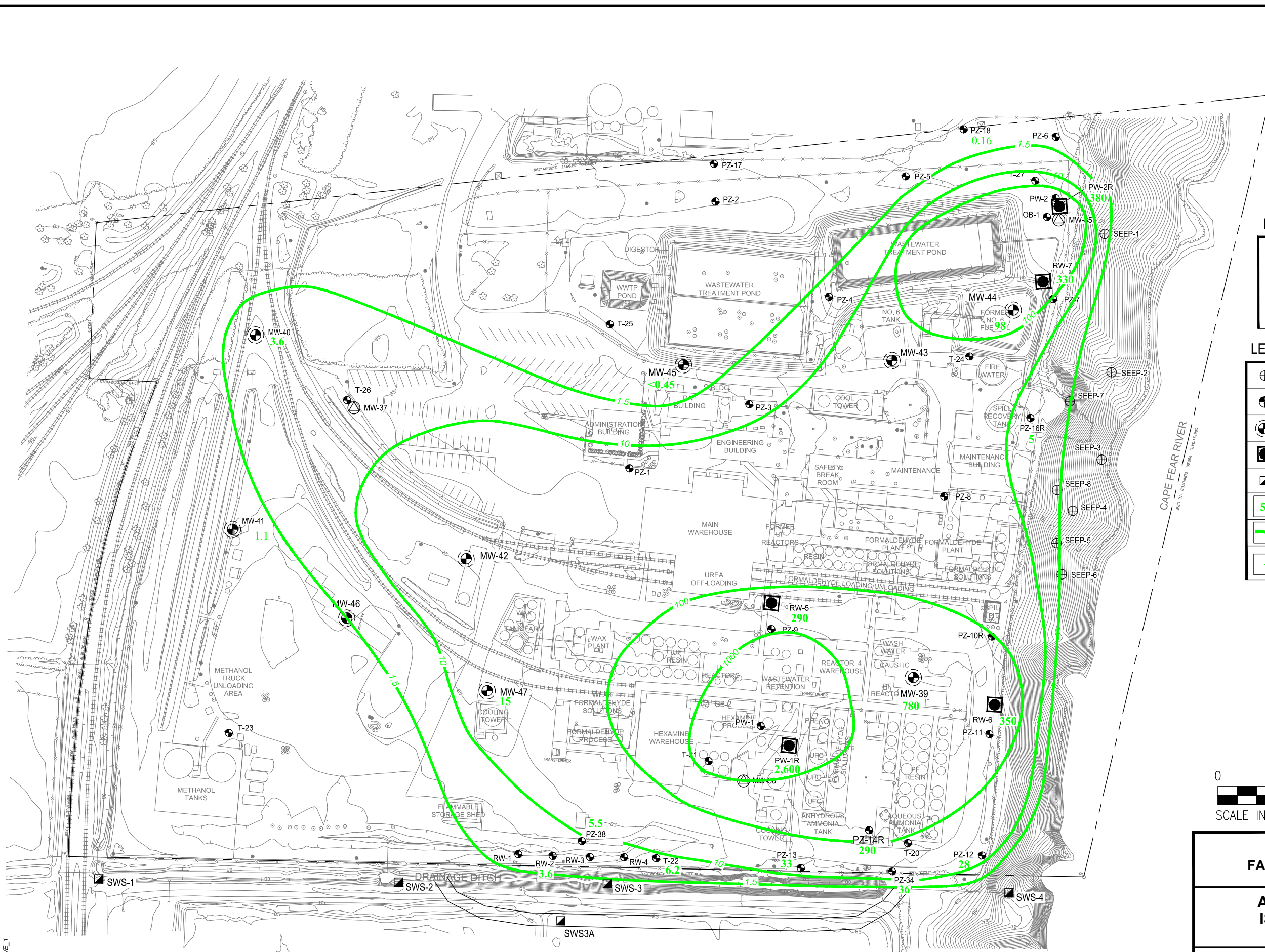
HEXION INC.
FAYETTEVILLE, NORTH CAROLINA

POTENTIOMETRIC SURFACE MAP
OCTOBER 2017

ARCADIS Design & Consultancy for natural and built assets

FIGURE
4

CITY: Augusta, GA DIV/GROUP: ENV. DB: A. Warren, LD: PIC: PH: TM: LYR: C:\Users\lrbear\OneDrive - ARCADIS\BIM 560 Docs\HEXION\NC2017 O&M Activities\2017\BNC108008.003501-DWG\04_10800801-AMMONIA\July 2017.dwg LAYOUT: 5 SAVED: 10/13/2017 2:50 PM ACADVER: 18.1.S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 2/20/2018 12:41 PM BY: BEERIDGEN, WENDY XREFS: IMAGES: PROJECTNAME: --- MOMENTIVE_1



NOTE

SOURCE: SURVEY PLAT BY THE ROSE GROUP, OCTOBER 18, 2004

NCDENR AMMONIA ACTION LEVEL IS 1.5 (mg/L)

CONCENTRATIONS EXCEEDING NC DENR ACTION LEVEL ARE SHOWN IN BOLD.

ALL CONCENTRATIONS IN MILLIGRAMS/LITER (mg/L)

LEGEND

	SEEP LOCATION
	SHALLOW MONITOR WELL
	PERMANENT WELL INSTALLED DECEMBER 2011
	EXTRACTION WELL
	SURFACE WATER SAMPLE LOCATIONS
	AMMONIA CONCENTRATION IN mg/L
	AMMONIA ISOCONCENTRATION CONTOUR
	AMMONIA WAS NOT DETECTED AT THE INDICATED REPORTING LIMIT



HEXION INC.
FAYETTEVILLE, NORTH CAROLINA

AMMONIA GROUNDWATER ISOCONCENTRATION MAP
JULY 2017

CITY: Augusta, GA DIV/GRP: ENV. DB: A. Warren, LD: PIC: PH: TM: LYR: C:\Users\lrbend\OneDrive - ARCADIS\BAM 560 Docs\HEXION\NC\2017 O&M Activities\2017\10808008.003501-DWG\04_10808001-AMMONIA Oct 2017.dwg LAYOUT: 6. SAVED: 2/14/2018 4:49 PM ACADVER: 18.1S (LMS TECH) PAGES: 1. PLOT: FULL CTB PLOTTED: 2/20/2018 12:40 PM BY: BEERIDGEN, WENDY XREFS: IMAGES: PROJECTNAME: MOMENTIVE_1



NOTE
 SOURCE: SURVEY PLAT BY THE ROSE GROUP, OCTOBER 18, 2004
 NCDENR AMMONIA ACTION LEVEL IS 1.5 (mg/L)
 CONCENTRATIONS EXCEEDING NCDENR ACTION LEVEL ARE SHOWN IN BOLD.
 ALL CONCENTRATIONS IN MILLIGRAMS/LITER (mg/L)

LEGEND

	SEEP LOCATION
	SHALLOW MONITOR WELL
	PERMANENT WELL INSTALLED DECEMBER 2011
	EXTRACTION WELL
	SURFACE WATER SAMPLE LOCATIONS
	AMMONIA CONCENTRATION IN mg/L
	AMMONIA ISOCONCENTRATION CONTOUR
	AMMONIA WAS NOT DETECTED AT THE INDICATED REPORTING LIMIT



HEXION INC.
FAYETTEVILLE, NORTH CAROLINA

AMMONIA GROUNDWATER
ISOCONCENTRATION MAP
OCTOBER 2017

ARCADIS Design & Consultancy for natural and built assets

FIGURE
6

APPENDIX A

Operations Log for Enhanced Recovery System



Appendix A. Two Year Operations Log for Enhanced Recovery System, Hexion Inc., Fayetteville, North Carolina.

Well	PW-1R	PW-1R	PW-1R	PW-1R	PW-1R	PW-1R	PW-1R	PW-1R	PW-1R	PW-1R	PW-1R	PW-1R	PW-1R	PW-1R	PW-1R	PW-1R
Date	1/13/2016	2/1/2016	3/3/2016	4/20/2016	5/27/2016	7/8/2016	8/4/2016	8/24/2016	10/6/2016	11/2/2016	12/1/2016	1/20/2017	7/18/2017	10/31/2017	12/12/2017	5/22/2018
Pressure	9	9	9	9	9	9	8	10	10	9	8	8	8	8	10	8
Total Gallons	222,089	226,679	235,562	246,215	252,145	260,004	265,094	268,593	277,470	286,400	292,756	298,546	318,372	327,745	330,993	335,986
DTW (TOC)	NM	9.68	NM	NM	NM	NM	NM	8.82	NM	NM	NM	NM	NM	11.02	NM	11.92
Static Sensor Level (ft)	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Pump RPM	5,800	5,800	5,800	5,800	5,800	5,800	5,800	5,800	5,800	5,800	5,800	5,800	5,800	5,800	5,800	5,800
Min WL Set	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Max WL Set	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Notes	7962 h, 27910 starts	78032 h, 29275 starts	8142 h, 31844 starts	8264 h, 35128 starts	8328 h, 37,041 starts	8410 h, 39,549 starts	8462 h, 41,151 starts	8496 h, 42,247 starts	8580 h, 44,966 starts	v dz	8684 h, 49,604 starts			Unable to connect to well controller. Well is functioning as normal.	8974 h, 61,791 starts	Unable to connect to well controller. Well is functioning as normal.

Well	RW-5 ^a	RW-5 ^a	RW-5 ^a	RW-5 ^a	RW-5 ^a	RW-5 ^a	RW-5 ^a	RW-5 ^a	RW-5 ^a	RW-5 ^a	RW-5 ^a	RW-5 ^a	RW-5 ^a	RW-5 ^a	RW-5 ^a	RW-5 ^a	
Date	1/13/2016	2/1/2016	3/3/2016	4/20/2016	5/27/2016	7/8/2016	8/4/2016	8/24/2016	10/6/2016	11/2/2016	12/1/2016	1/20/2017	7/18/2017	10/31/2017	12/12/2017	5/22/2018	
Pressure	2	0	0	0	0	0	0	0	0	0	2	2	2	1	2	2	
Total Gallons	391,138	407,831	407,832	407,832	407,832	407,832	407,832	407,832	407,852	431,825	449,384	479,756	574,639	622,355	648,931	709,672	
DTW (TOC)	NM	9.08	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	10.14	NM	9.62	
Static Sensor Level (ft)	NM	NM	NM	NM	NM	NM	NM	NM	9.12	NM	NM	NM	NM	NM	NM	NM	
Pump RPM	5,800	5,800	5,800	5,800	5,800	5,800	5,800	5,800	5,800	5,800	5,800	5,600	5,600	5,600	5,600	5,600	
Min WL Set	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Max WL Set	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Notes	4772 h, 15707 starts.	5226 h, 15707 starts.	5942 h, 15716 starts.*Pump not working - scaling	5942 h, 15716 starts.*Pump not working - scaling	5942 h, 15716 starts.*Pump not working - scaling	5942 h, 15716 starts.*Pump not working - scaling	5942 h, 15716 starts.*Pump not working - scaling	5942 h, 15716 starts.*Pump not working - scaling	5942 h, 15716 starts.*Pump not working - scaling	0 h, 13 starts.*Reset - New pump installed	92 h, 5972 starts.	156 h, 10,297 starts.	156 h, 10,297 starts.	156 h, 10,297 starts.	942 h, 49,542 starts.	1016 h, 53,087 starts.	1310 h starts.

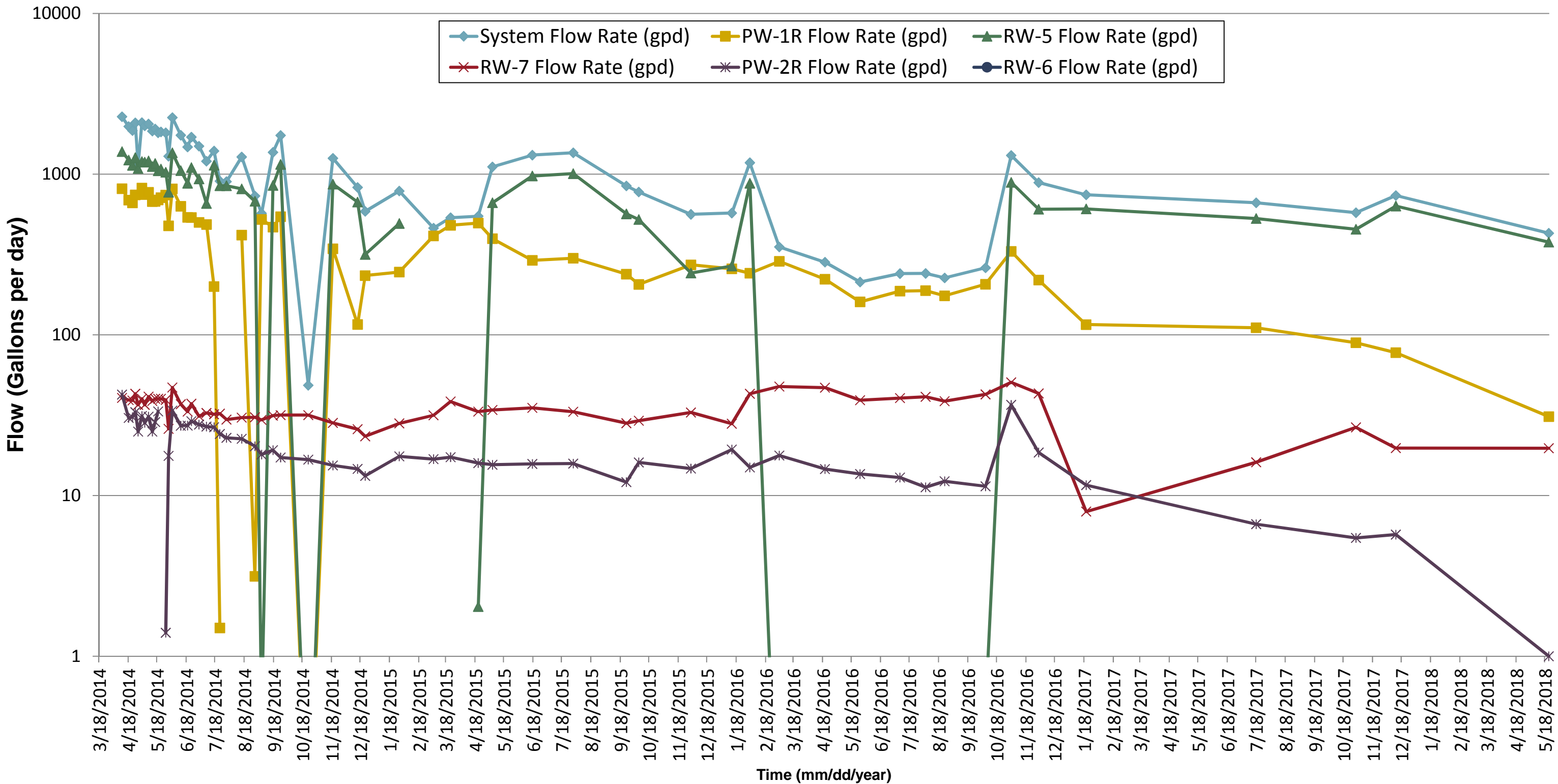
Well	RW-7	RW-7	RW-7	RW-7	RW-7	RW-7	RW-7	RW-7	RW-7	RW-7	RW-7	RW-7 ^b	RW-7 ^b	RW-7 ^b	RW-7 ^b	RW-7 ^b
Date	1/13/2016	2/1/2016	3/3/2016	4/20/2016	5/27/2016	7/8/2016	8/4/2016	8/24/2016	10/6/2016	11/2/2016	12/1/2016	1/20/2017	7/18/2017	10/31/2017	12/12/2017	5/22/2018
Pressure	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Total Gallons	21,308	22,125	23,604	25,858	27,308	29,005	30,116	30,889	32,722	34,089	35,342	35,739	38,622	41,409	42,239	45,412
DTW (TOC)	NM	15.67	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	18.07	NM	NM
Static Sensor Level (ft)	NM	NM	NM	NM	NM	NM	NM	NM	16.42	NM	NM	NM	NM	NM	NM	NM
Pump RPM	5,300	5,300	5,300	5,300	5,300	5,300	5,300	5,300	5,300	5,300	5,300	5,300	5,300	5,300	5,300	5,300
Min WL Set	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Max WL Set	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Notes	178 h, 14,255 starts.	182 h, 14,729 starts.	194 h, 15,552 starts.	210 h, 16,679 starts.	222 h, 17,615 starts.	234 h, 18,707 starts.	242 h, 19,400 starts.	248 h, 19,887 starts.	262 h, 21,045 starts.	272 h, 21,892 starts.	282 h, 22,651 starts.			1,432 h, 29,412 starts.	1,440 h, 30,240 starts.	1,556 h, 32,891 starts.

Well	PW-2R	PW-2R	PW-2R	PW-2R	PW-2R	PW-2R	PW-2R	PW-2R	PW-2R	PW-2R	PW-2R	PW-2R ^c	PW-2R ^c	PW-2R ^c	PW-2R ^c	PW-2R ^c
Date	1/13/2016	2/1/2016	3/3/2016	4/20/2016	5/27/2016	7/8/2016	8/4/2016	8/24/2016	10/6/2016	11/2/2016	12/1/2016	1/20/2017	7/18/2017	10/31/2017	12/12/2017	5/22/2018
Pressure	0	0	0	0	0	0	2	2	5	5	5	5	5	5	5	5
Total Gallons	12,515	12,799	13,349	14,051	14,555	15,099	15,403	15,648	16,139	17,128	17,665	18,245	19,433	20,005	20,245	20,312
DTW (TOC)	NM	15.04	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	15.83	NM	NM
Static Sensor Level (ft)	NM	NM	NM	NM	NM	NM	NM	NM	15.82	NM	NM	NM	NM	NM	NM	NM
Pump RPM	5,400	5,400	5,400	5,400	5,400	5,400	5,400	5,400	5,400	5,400	5,400	5,400	5,400	5,400	5,400	5,400
Min WL Set	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Max WL Set	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Notes	184 h, 5,295 starts.	188 h, 5,257 starts.	196 h, 5,568 starts.	208 h, 5,927 starts.	6,351 starts	226 h, 6675 starts	230 h, 6,667 starts	234 h, 6,831 starts	Well offline	252 h, 7,300 starts Well working properly.	258 h, 7,547 starts Well working properly.					

Well	RW-6	RW-6	RW-6	RW-6	RW-6	RW-6	RW-6	RW-6	RW-6	RW-6	RW-6	RW-6	RW-6	RW-6	RW-6	RW-6
Date	1/13/2016	2/1/2016	3/3/2016	4/20/2016	5/27/2016	7/8/2016	8/4/2016	8/24/2016	10/6/2016	11/2/2016	12/1/2016	1/20/2017	7/18/2017	10/31/2017	12/12/2017	5/22/2018
Pressure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Gallons	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
DTW (TOC)	NM	14.29	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Static Sensor Level (ft)	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Pump RPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Min WL Set	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Max WL Set	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Notes	Offline.	Offline.	Offline.	Offline.	Offline.	Offline.	Offline.	Offline.	Offline.	Offline.	Offline.	Offline.	Offline.	Offline.	Offline.	Offline.

System Summary																
Date	1/13/2016	2/1/2016	3/3/2016	4/20/2016	5/27/2016	7/8/2016	8/4/2016	8/24/2016	10/6/2016	11/2/2016	12/1/2016	1/20/2017	7/18/2017	10/31/2017	12/12/2017	5/22/2018
EPT System Total Volume Pumped (gal)	647,070	669,454	680,367	693,976	701,860	711,960	718,465	722,982	734,203	769,462	795,167	832,306	951,086	1,011,534	1,042,428	1,111,402
Cummulative Gallons Pumped During Period	24,640	47,024	57,937	13,609	21,493	31,593	6,505	11,022	22,243	35,259	25,705	37,139	118,780	60,448	30,894	68,974
Elapsed Days	43	19	31	48	37	42	27	20	43	27	29	50	179	105	42	161
Total Elapsed Days	667	686	717	765	802	844	871	891	934	961	990	1040	1219	1324	1366	1527
System Flow Rate (gpd)	573	1178	352	284	213	240	241	226	261	1306	886	743	664	576	736	428
PW-1R Flow Rate (gpd)	258	242	287	222	160	187	189	175	206	331	219	116	111	89	77	31
RW-5 Flow Rate (gpd)	268	879	0	0	0	0	0	0	888	605	607	530	454	633	377	
RW-7 Flow Rate (gpd)	28	43	48	47	39	40	41	39	43	51	43	8	16	27	20	20
PW-2R Flow Rate (gpd)	19	15	18	15	14	13	11	12	11	37	19	12	7	5	6	0.4
RW-6 Flow Rate (gpd)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure A-1. Total EPT System Flow Versus Time



APPENDIX B

Laboratory Reports



Environmental Conservation Laboratories, Inc.

102-A Woodwinds Industrial Court
Cary, NC 27511

Project #s CA01119 + CA01120

Analytical Report
(0717-107)

EPA SW-846 Method 8315A

Formaldehyde



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) and contains ??? pages.

Report Issued: xx/xx/xxxx



Summary of Results

Enthalpy Analytical

Company: Environmental Conservation Laboratories, Inc.

Job No.: 0717-107

Client No.: CA01119 + CA01120

Summary Table

Compound	Sample ID / Concentration (ug/mL)		
	CA01119 -----		
	RW-5	PW-1R	
Formaldehyde	0.223	5.23	
	CA01120 -----		
	RW-7	MW-44	PZ-16R
Formaldehyde	0.931	0.136	0.138

Results

Enthalpy Analytical

Company: Environmental Conservation Laboratories, Inc.

Job No.: 0717-107

Client No.: CA01119 + CA01120

MDL 0.150 (ug/mL)

LOQ 0.150 (ug/mL)

Lower Curve Limit 0.150 (ug/mL)

Upper Curve Limit 30.1 (ug/mL)

Compound Formaldehyde

Sample ID	Lab ID	Analysis Method	pH	Ret Time (min)	Conc (ug/mL)	DF	Extract Vol. (mL)	Catch Weight (ug)	Sample Vol. used (mL)	Sample Conc. (ug/mL)	Qual	
RW-5	031-0301.D	Bart354.M	4.99	8.03	0.402	1	14.0	5.63	25.0	0.225		
RW-5	031-0302.D	Bart354.M	4.99	7.99	0.393	1	14.0	5.50	25.0	0.220		
								average	5.57	25.0	0.223	
								difference	2.2%			
LD / RW-5	032-0401.D	Bart354.M	4.96	7.96	0.454	1	13.0	5.90	25.0	0.236		
								difference	6.0%			
PW-1R	033-0501.D	Bart354.M	4.99	8.01	8.44	1	15.5	131	25.0	5.23		
RW-7	035-0701.D	Bart354.M	4.98	8.00	1.79	1	13.0	23.3	25.0	0.931		
MW-44	036-0801.D	Bart354.M	4.98	8.01	0.271	1	12.5	3.39	25.0	0.136		
PZ-16R	037-0901.D	Bart354.M	5.00	8.01	0.222	1	15.5	3.44	25.0	0.138		
MB-1	026-0101.D	Bart354.M	5.01	NA	0.150	1	13.0	1.95	25.0	0.0780	ND	
MB-1	039-1101.D	Bart354.M	5.01	NA	0.150	1	13.0	1.95	25.0	0.0780	ND	
MS / PW-1R	034-0601.D	Bart354.M	5.02	8.02	17.5	1	15.0	262				
								Spike Amount (ug)	76.6			
								Native Amount (ug)	131			
								Spike Recovery (%)	171%			
LCS-1	038-1001.D	Bart354.M	5.03	8.01	4.47	1	15.0	67.1				
								Spike Amount (ug)	76.6			
								Spike Recovery (%)	87.5%			

Narrative Summary

Enthalpy Analytical Narrative Summary

Company	Environmental Conservation Laboratories, Inc.
Job #	0717-107 Line 1. EPA SW-846 Method 8315A
Client #	CA01119

Custody	<p>Matt Hill of Enthalpy Analytical, LLC received the samples on 7/19/2017 at 7.8 °C after being relinquished by Environmental Conservation Laboratories, Inc. The samples were received in good condition.</p> <p>Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, Inc.</p>
Analysis	<p>The samples were analyzed for formaldehyde using the analytical procedures in EPA SW-846 Method 8315A, Determination of Carbonyl Compounds by High Performance Liquid Chromatography (HPLC).</p> <p>Two 25 mL aliquots of each soil extract were removed and added to 1.5 mL of DNPH solution. The pH was measured and adjusted using acetate buffer. The samples were then allowed to derivitize by being shaken in a reciprocated shaker water bath for 1 hour with 6 mL of clean DNPH reagent. The samples were extracted 3 times, using 5 mL of methylene chloride and the final extract volume was recorded on 7/21/2017.</p> <p>The Agilent Model 1100, High Performance Liquid Chromatograph ("Bart") was equipped with an Ultraviolet (UV) Detector operating at 360 nm.</p>
Calibration	<p>The calibration curve(s) is (are) located in the back of this report and referenced in the Analysis Method column on the Detailed Results page.</p> <p>For each calibration curve used, the first page of the curve contains all method specific parameters (i.e., curve type, origin, weight, etc.) used to quantify the samples. The calibration curve section also includes a table with the Retention Time (RetTime), Level (Lvl), Amount (corresponding units), Area, Response Factor (Amt/Area) and the analyte Name. The calibration table is used to identify (by retention time) and quantify each target compound.</p>
Chromatographic Conditions	<p>The acquisition method ELIQUID_BC_NEW-Form-acrolein_D.M is included in the Raw Data section of this report.</p>

Enthalpy Analytical Narrative Summary (continued)

QC Notes

Two injections of RW-5 were made and exhibited a difference of 2.2%.
A Laboratory Duplicate analysis was performed using an aliquot of sample **RW-5**. The duplicate and original analyses differed by 6.0%.
A matrix spikes was prepared using an aliquot of sample **RW-IR** and exhibited a spike recovery values of 171%.
The analysis of **LCS-1** exhibited a spike recovery values of 87.5%.
The analyses of the method blank **MB-1** exhibited formaldehyde at concentrations below the MDL.
All sample preparation and analytical holding times specified in the method were met.

Reporting Notes

The results presented in this report are representative of the samples as provided to the laboratory.
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.

General Reporting Notes

The following are general reporting notes that are applicable to all Enthalpy Analytical, Inc. 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.
- 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).
- 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).

General Reporting Notes

(continued)

- 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.
- **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

SUBCONTRACT ORDER

ENCO Cary

CA01119

SENDING LABORATORY:

ENCO Cary
102-A Woodwinds Industrial Court
Cary, NC 27511
Phone: 919.467.3090
Fax: 919.467.3515
Project Manager: Bill Scott

RECEIVING LABORATORY:

Enthalpy Analytical, Inc.
800 Capitola Drive, Ste 1
Durham, NC 27713
Phone : (919) 850-4392
Fax: -
Project State of Origin: North Carolina

Sub Lab ID	Originating Lab ID	Client Matrix	Date Sampled	Sample Comments
	RW-5	Water	18-Jul-17 14:40	

Analysis	Due	Expires	Analysis Comments
8315A Formaldehyde	28-Jul-17 15:00	21-Jul-17 14:40	
Containers Supplied: 250mLA (A)			

Sub Lab ID	Originating Lab ID	Client Matrix	Date Sampled	Sample Comments
	PW-1R	Water	18-Jul-17 15:15	

Analysis	Due	Expires	Analysis Comments
8315A Formaldehyde	28-Jul-17 15:00	21-Jul-17 15:15	
Containers Supplied: 250mLA (C)			

Released By  Date 7-19-17 Received By  Date 7/19/17 11:45

Good condition
7.8°C (61)
mwt
7/19/17

Released By _____ Date _____ Received By _____ Date _____

SUBCONTRACT ORDER

ENCO Cary

CA01120

SENDING LABORATORY:

ENCO Cary
 102-A Woodwinds Industrial Court
 Cary, NC 27511
 Phone: 919.467.3090
 Fax: 919.467.3515
 Project Manager: Bill Scott

RECEIVING LABORATORY:

Enthalpy Analytical, Inc.
 800 Capitola Drive, Ste 1
 Durham, NC 27713
 Phone : (919) 850-4392
 Fax: -
 Project State of Origin: North Carolina

Sub Lab ID	Originating Lab ID	Client Matrix	Date Sampled	Sample Comments
	RW-7	Surface Water	18-Jul-17 12:30	

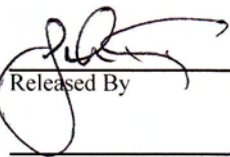
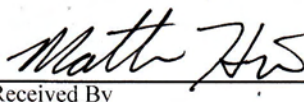
Analysis	Due	Expires	Analysis Comments
8315A Formaldehyde	28-Jul-17 15:00	21-Jul-17 12:30	
<i>Containers Supplied:</i> 250mLA (B)			

Sub Lab ID	Originating Lab ID	Client Matrix	Date Sampled	Sample Comments
	MW-44	Surface Water	18-Jul-17 13:50	

Analysis	Due	Expires	Analysis Comments
8315A Formaldehyde	28-Jul-17 15:00	21-Jul-17 13:50	
<i>Containers Supplied:</i> 250mLA (B)			

Sub Lab ID	Originating Lab ID	Client Matrix	Date Sampled	Sample Comments
	P2-16R P2-162	Surface Water	18-Jul-17 14:55	

Analysis	Due	Expires	Analysis Comments
8315A Formaldehyde	28-Jul-17 15:00	21-Jul-17 14:55	
<i>Containers Supplied:</i> 250mLA (B)			

	7-19-17		7/19/17 11:45	Good condition 7.8°C(ei) mwt 7/19/17
Released By	Date	Received By	Date	
Released By	Date	Received By	Date	

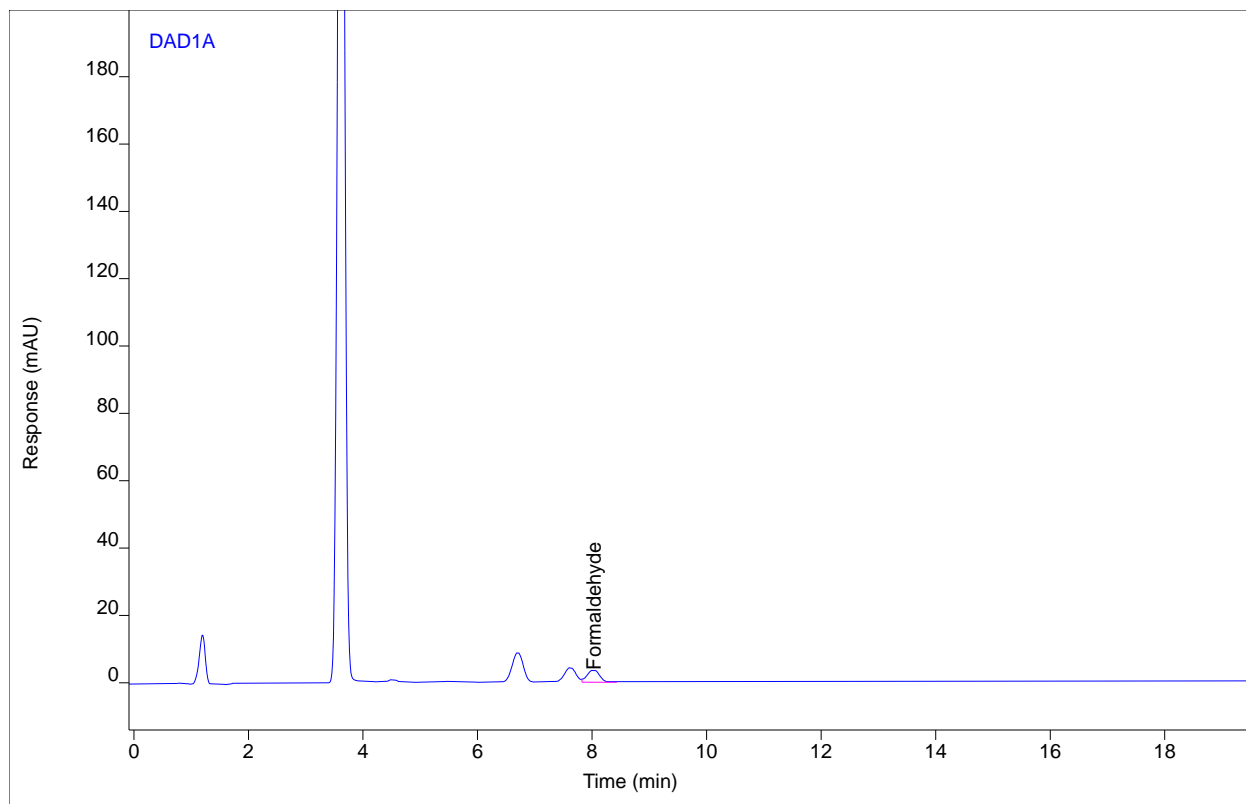
Raw Data

Chromatogram Report

Enthalpy Analytical

Sample Name RW-5 0717-107
Sequence Name Bart410 2017-07-21 16-34-27 ver.2
Inj Data File 031-0301.D
File Location HPLC/2017/Bart/Quarter 3
Injection Date 7/21/2017 5:26 PM
File Modified 7/24/2017 1:54 PM
Instrument Bart
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 31
Injection Volume 5
Injection 1 of 2
Acquisition Method ELIQUID_BC_NEW-Form-acrolein_D.M
Analysis Method Bart354.M
Method Modified 7/24/2017 1:54 PM
Printed 7/24/2017 2:35 PM



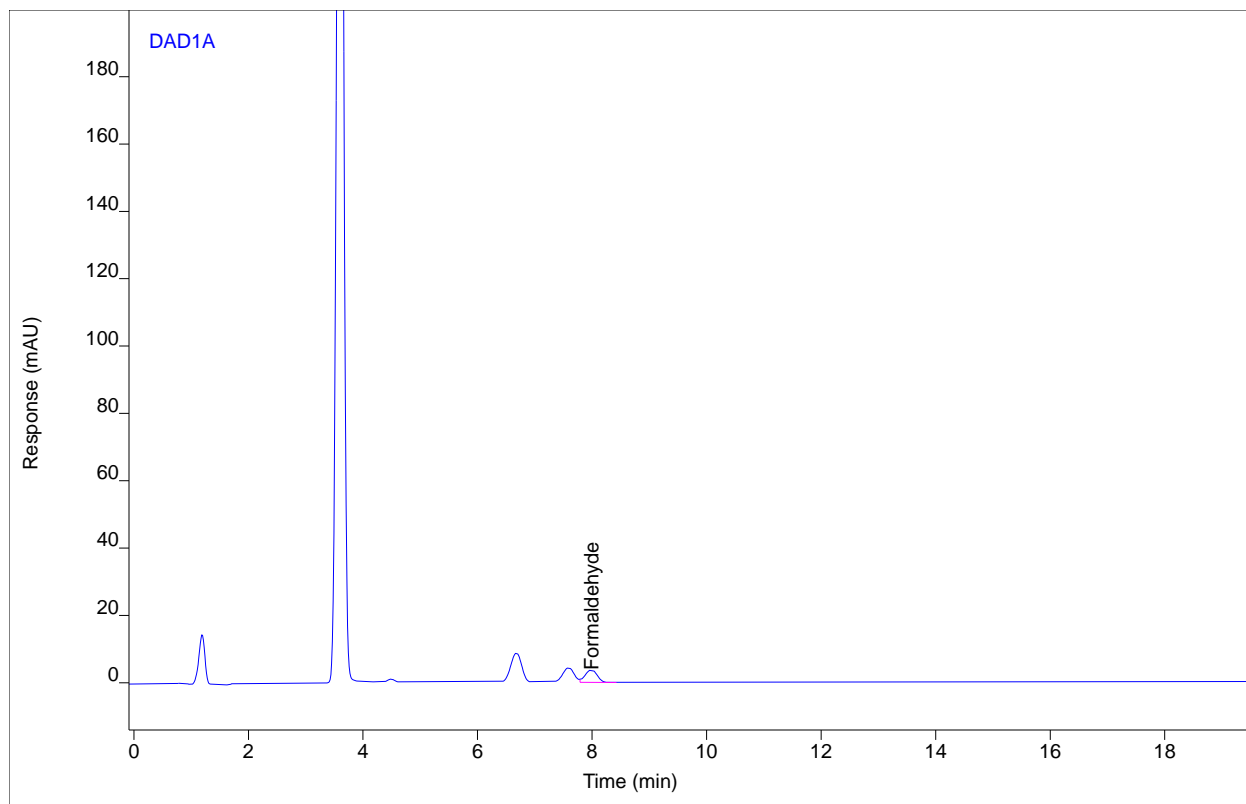
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	VB	8.03	55.1736	3.74710	0.40196	1	0.40196	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name RW-5 0717-107
Sequence Name Bart410 2017-07-21 16-34-27 ver.2
Inj Data File 031-0302.D
File Location HPLC/2017/Bart/Quarter 3
Injection Date 7/21/2017 5:52 PM
File Modified 7/24/2017 1:54 PM
Instrument Bart
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 31
Injection Volume 5
Injection 2 of 2
Acquisition Method ELIQUID_BC_NEW-Form-acrolein_D.M
Analysis Method Bart354.M
Method Modified 7/24/2017 1:54 PM
Printed 7/24/2017 2:35 PM



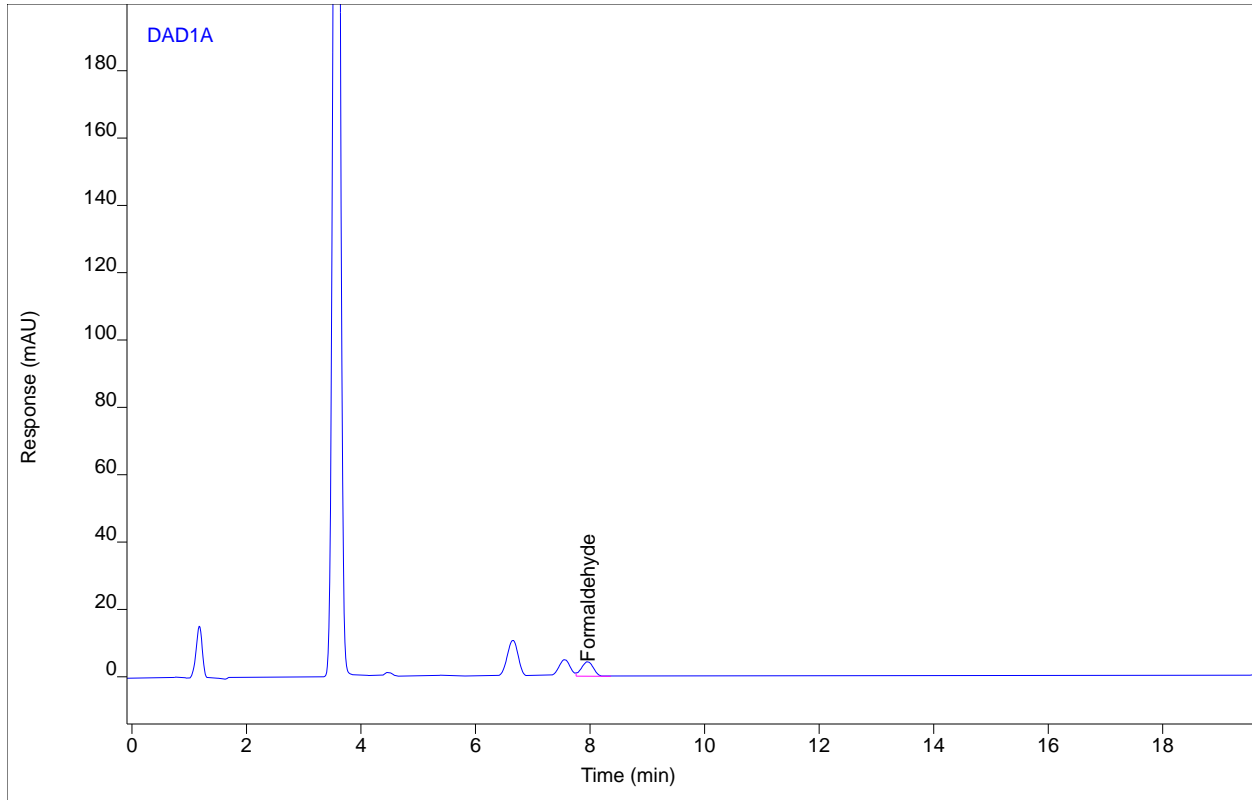
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	VB	7.99	54.0278	3.73631	0.39321	1	0.39321	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name LD/RW-5 0717-107
Sequence Name Bart410 2017-07-21 16-34-27 ver.2
Inj Data File 032-0401.D
File Location HPLC/2017/Bart/Quarter 3
Injection Date 7/21/2017 6:17 PM
File Modified 7/24/2017 1:54 PM
Instrument Bart
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 32
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW-Form-acrolein_D.M
Analysis Method Bart354.M
Method Modified 7/24/2017 1:54 PM
Printed 7/24/2017 2:35 PM



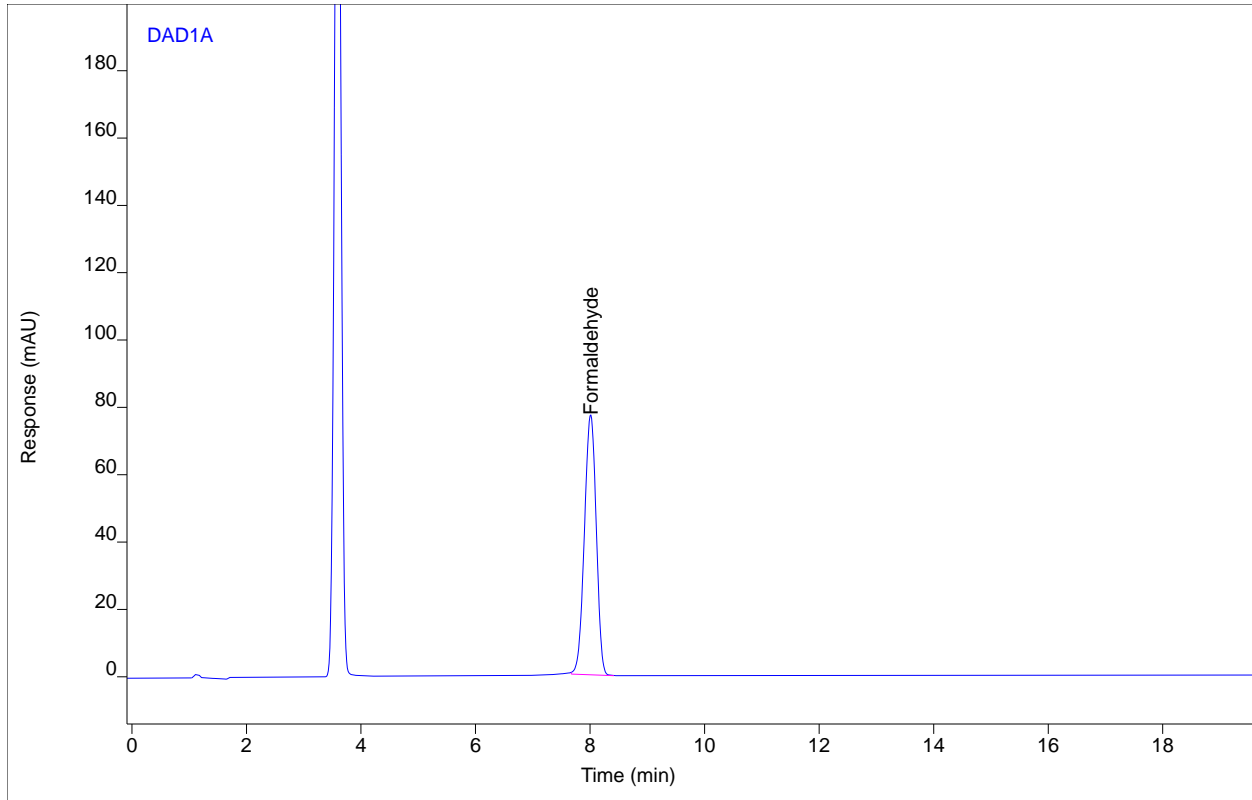
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	VB	7.96	61.9731	4.31286	0.45389	1	0.45389	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name PW-1R 0717-107
Sequence Name Bart410 2017-07-21 16-34-27 ver.2
Inj Data File 033-0501.D
File Location HPLC/2017/Bart/Quarter 3
Injection Date 7/21/2017 6:43 PM
File Modified 7/24/2017 1:54 PM
Instrument Bart
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 33
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW-Form-acrolein_D.M
Analysis Method Bart354.M
Method Modified 7/24/2017 1:54 PM
Printed 7/24/2017 2:35 PM



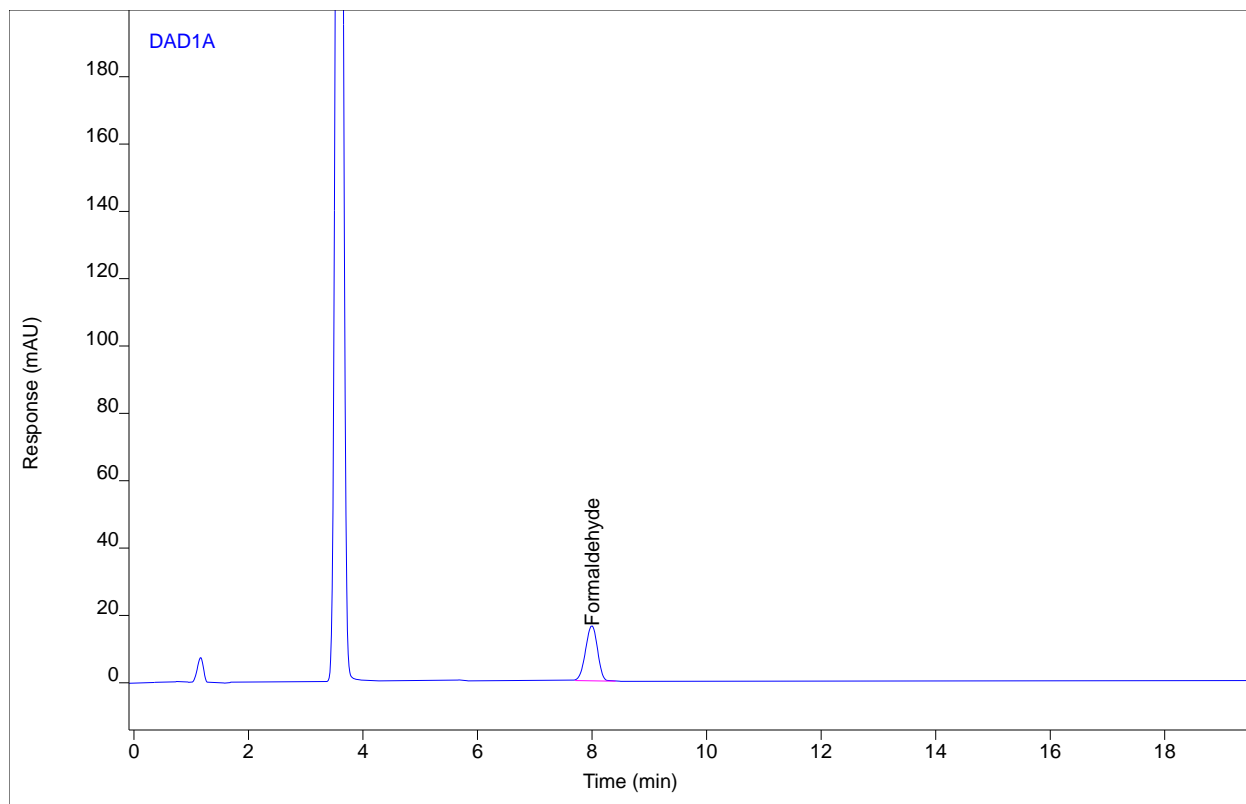
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	8.01	1108.20	77.2656	8.44352	1	8.44352	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name RW-7 0717-107
Sequence Name Bart410 2017-07-21 16-34-27 ver.2
Inj Data File 035-0701.D
File Location HPLC/2017/Bart/Quarter 3
Injection Date 7/21/2017 7:34 PM
File Modified 7/24/2017 1:54 PM
Instrument Bart
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 35
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW-Form-acrolein_D.M
Analysis Method Bart354.M
Method Modified 7/24/2017 1:54 PM
Printed 7/24/2017 2:35 PM



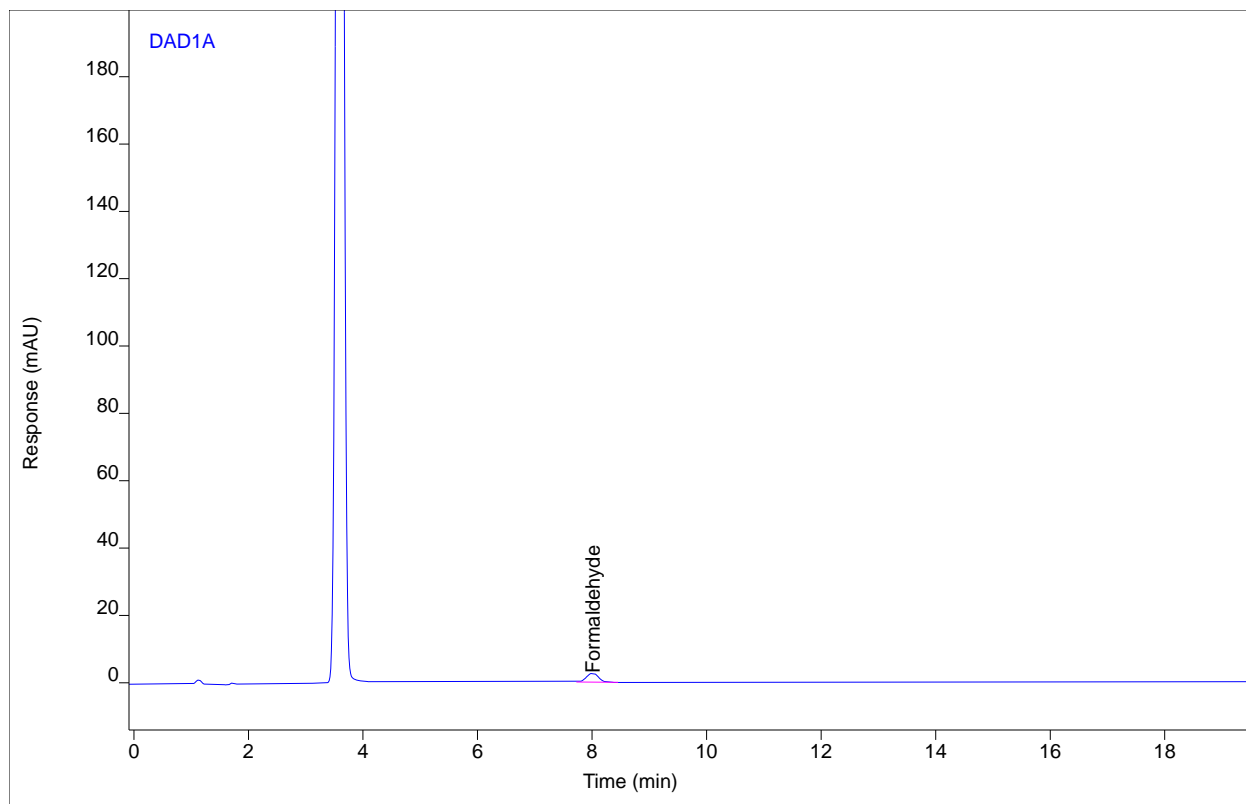
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	8.00	236.892	16.4047	1.78968	1	1.78968	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name MW-44 0717-107
Sequence Name Bart410 2017-07-21 16-34-27 ver.2
Inj Data File 036-0801.D
File Location HPLC/2017/Bart/Quarter 3
Injection Date 7/21/2017 8:00 PM
File Modified 7/24/2017 1:54 PM
Instrument Bart
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 36
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW-Form-acrolein_D.M
Analysis Method Bart354.M
Method Modified 7/24/2017 1:54 PM
Printed 7/24/2017 2:35 PM



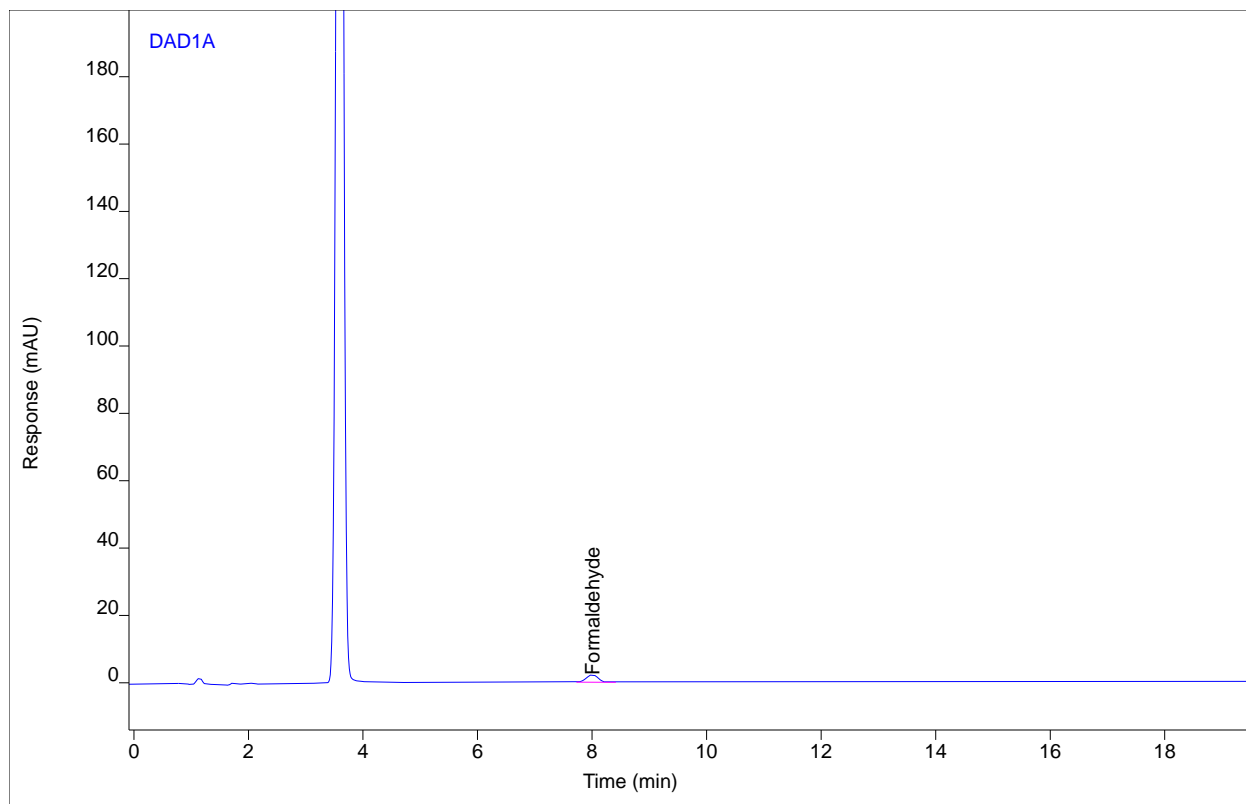
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	8.01	38.0639	2.68626	0.27130	1	0.27130	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name PZ-16R 0717-107
Sequence Name Bart410 2017-07-21 16-34-27 ver.2
Inj Data File 037-0901.D
File Location HPLC/2017/Bart/Quarter 3
Injection Date 7/21/2017 8:25 PM
File Modified 7/24/2017 1:54 PM
Instrument Bart
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 37
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW-Form-acrolein_D.M
Analysis Method Bart354.M
Method Modified 7/24/2017 1:54 PM
Printed 7/24/2017 2:35 PM



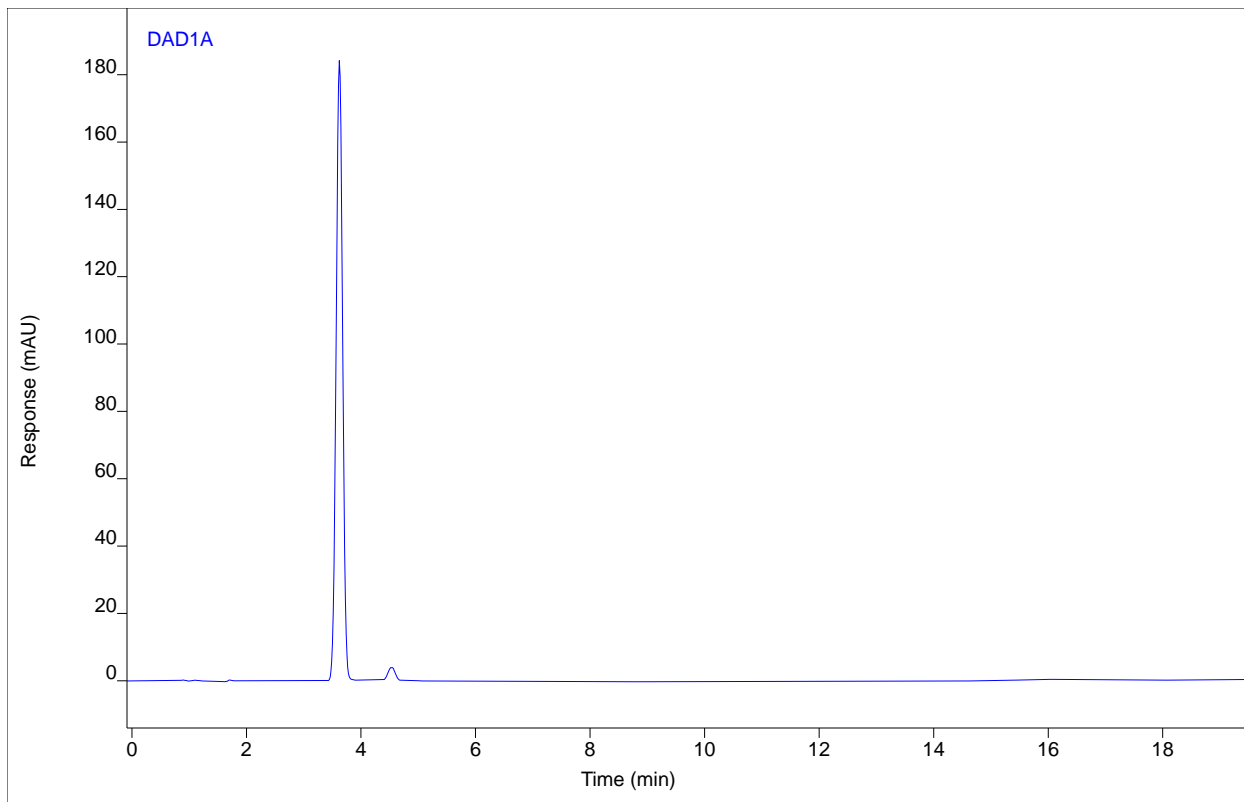
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	8.01	31.5862	2.22795	0.22183	1	0.22183	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name MB-1 0717-107
Sequence Name Bart410 2017-07-21 16-34-27 ver.2
Inj Data File 026-0101.D
File Location HPLC/2017/Bart/Quarter 3
Injection Date 7/21/2017 4:35 PM
File Modified 7/24/2017 1:54 PM
Instrument Bart
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 26
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW-Form-acrolein_D.M
Analysis Method Bart354.M
Method Modified 7/24/2017 1:54 PM
Printed 7/24/2017 2:35 PM



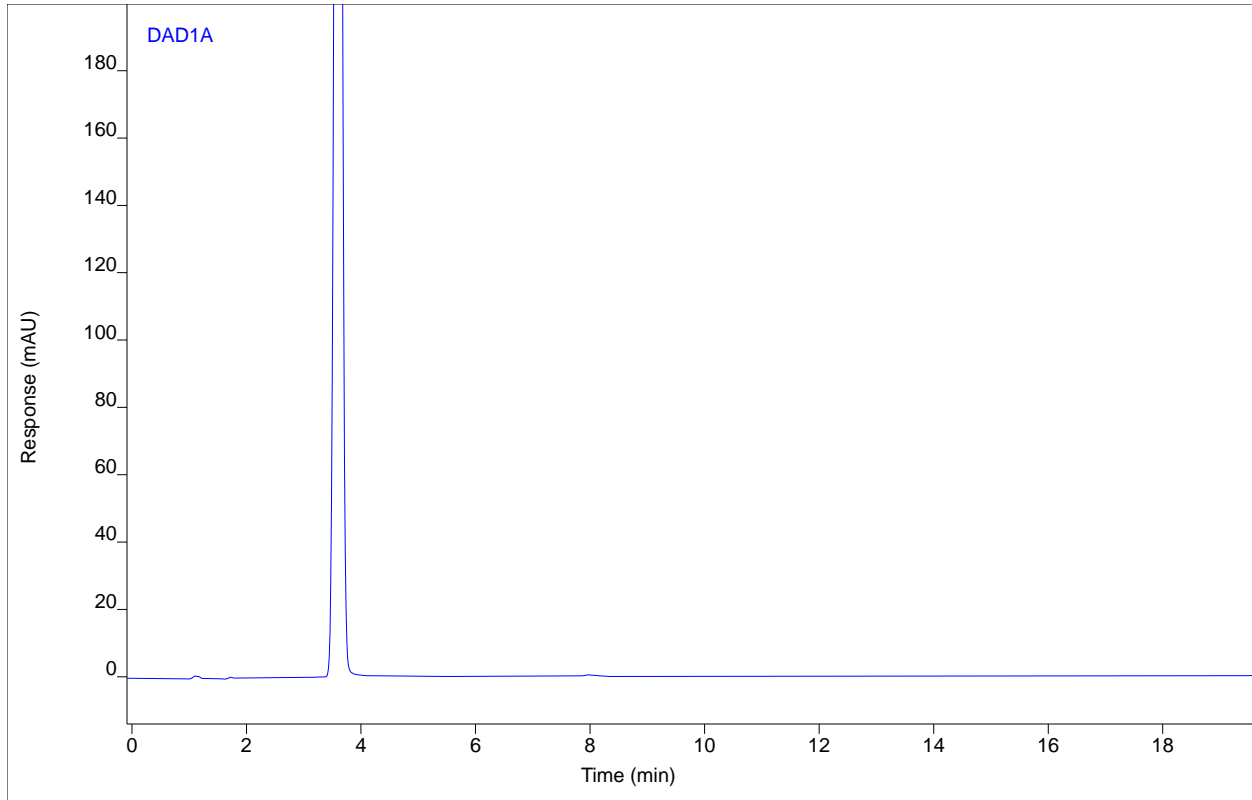
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde		(8.04)				1		ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name MB-1 0717-107
Sequence Name Bart410 2017-07-21 16-34-27 ver.2
Inj Data File 039-1101.D
File Location HPLC/2017/Bart/Quarter 3
Injection Date 7/21/2017 9:16 PM
File Modified 7/24/2017 1:54 PM
Instrument Bart
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 39
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW-Form-acrolein_D.M
Analysis Method Bart354.M
Method Modified 7/24/2017 1:54 PM
Printed 7/24/2017 2:35 PM



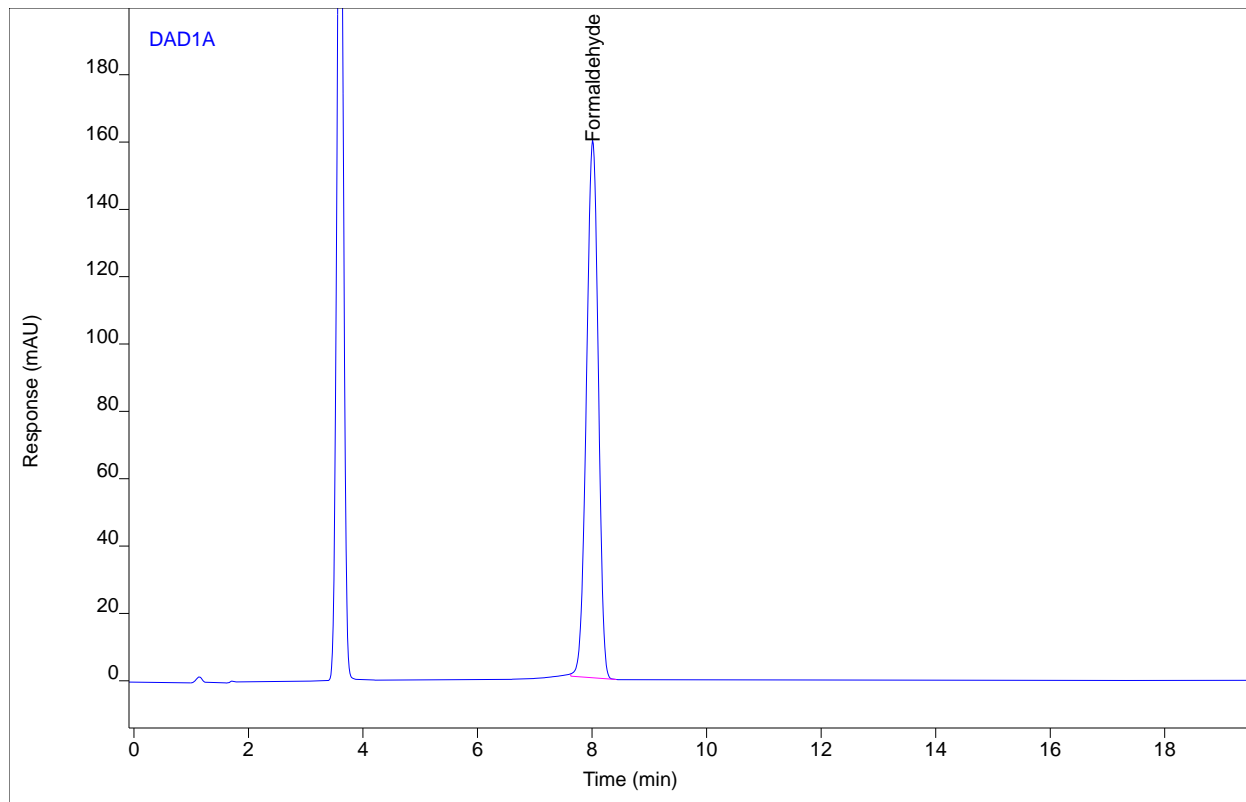
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde		(8.04)				1		ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name MS/PW-1R 0717-107
Sequence Name Bart410 2017-07-21 16-34-27 ver.2
Inj Data File 034-0601.D
File Location HPLC/2017/Bart/Quarter 3
Injection Date 7/21/2017 7:08 PM
File Modified 7/24/2017 1:54 PM
Instrument Bart
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 34
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW-Form-acrolein_D.M
Analysis Method Bart354.M
Method Modified 7/24/2017 1:54 PM
Printed 7/24/2017 2:35 PM



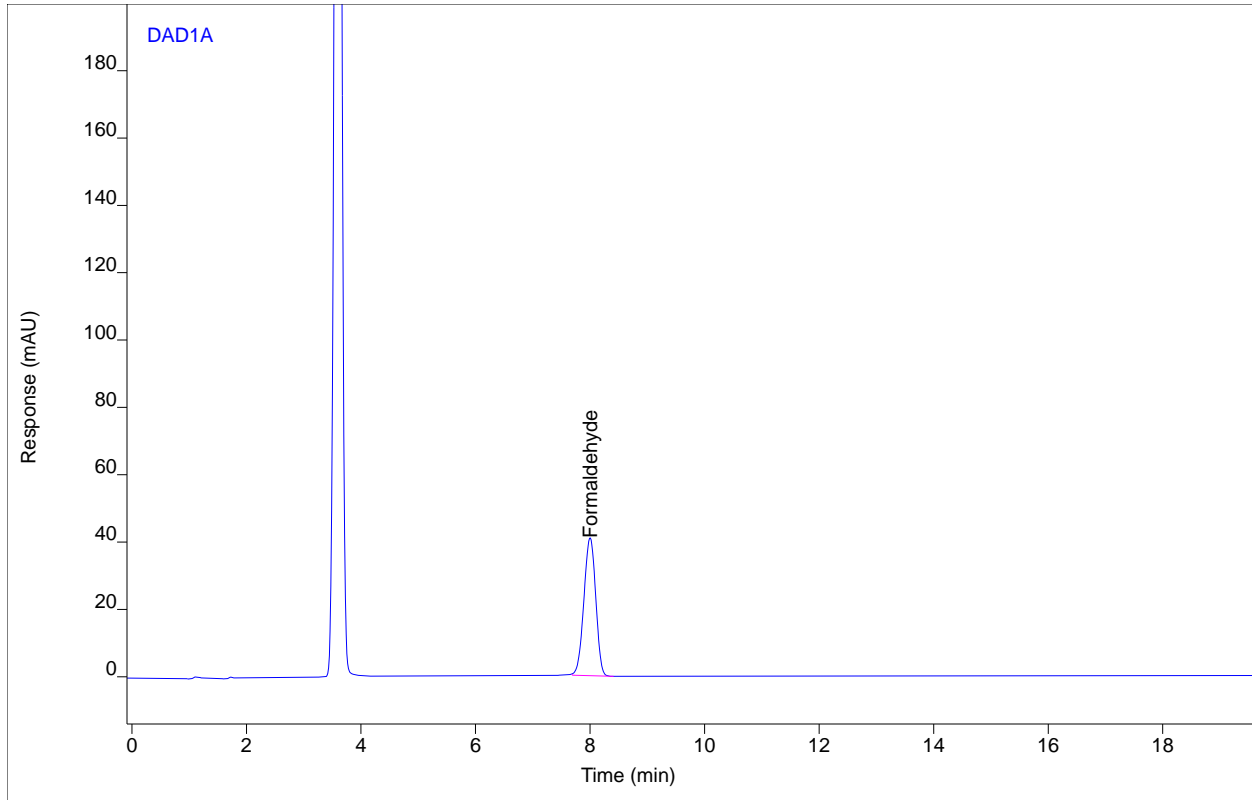
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	8.02	2287.63	159.752	17.4504	1	17.4504	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name LCS-1 0717-107
Sequence Name Bart410 2017-07-21 16-34-27 ver.2
Inj Data File 038-1001.D
File Location HPLC/2017/Bart/Quarter 3
Injection Date 7/21/2017 8:51 PM
File Modified 7/24/2017 1:54 PM
Instrument Bart
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 38
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW-Form-acrolein_D.M
Analysis Method Bart354.M
Method Modified 7/24/2017 1:54 PM
Printed 7/24/2017 2:35 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	8.00	587.935	40.9884	4.47047	1	4.47047	ug/ml

=====
 Calibration Table
 =====

 General Calibration Setting

Calib. Data Modified : 7/24/2017 1:53:59 PM
 Signals calculated separately : Yes

Rel. Reference Window : 5.000 %
 Abs. Reference Window : 0.000 min
 Rel. Non-ref. Window : 5.000 %
 Abs. Non-ref. Window : 0.000 min
 Uncalibrated Peaks : not reported
 Partial Calibration : Yes, identified peaks are recalibrated
 Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
 Origin : Ignored
 Weight : Linear (Amnt)

Recalibration Settings:
 Average Response : Average all calibrations
 Average Retention Time: Floating Average New 75%

Calibration Report Options :
 Printout of recalibrations within a sequence:
 Calibration Table after Recalibration
 Normal Report after Recalibration
 If the sequence is done with bracketing:
 Results of first cycle (ending previous bracket)

 Signal Details

Signal 1: PMP1, Pressure
 Signal 2: DAD1 A, Sig=365,8 Ref=510,100

 Overview Table

RT	Sig	Lvl	Amount [ug/ml]	Area	Rsp.Factor	Ref	ISTD #	Compound
8.040	2	1	1.50000e-1	20.80629	7.20936e-3	No	No	Formaldehyde
		2	5.90000e-1	85.42166	6.90691e-3			
		3	1.50000	198.66603	7.55036e-3			
		4	5.47000	716.98315	7.62919e-3			
		5	11.58000	1517.10779	7.63294e-3			
		6	24.08000	3194.17480	7.53872e-3			
		7	30.10000	3905.32446	7.70743e-3			

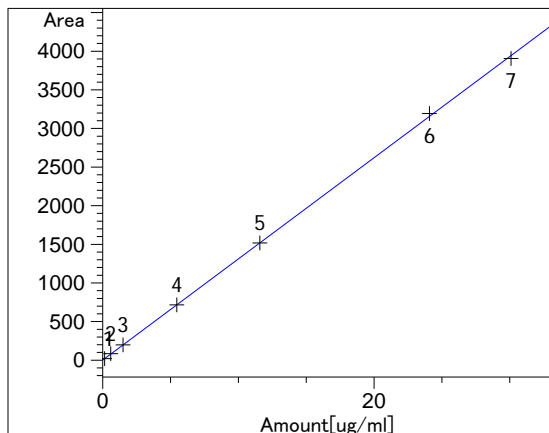
 Peak Sum Table

No Entries in table

1 Warnings or Errors :

Warning : Cal. table open and changed while report was generated.

=====
 Calibration Curves
 =====



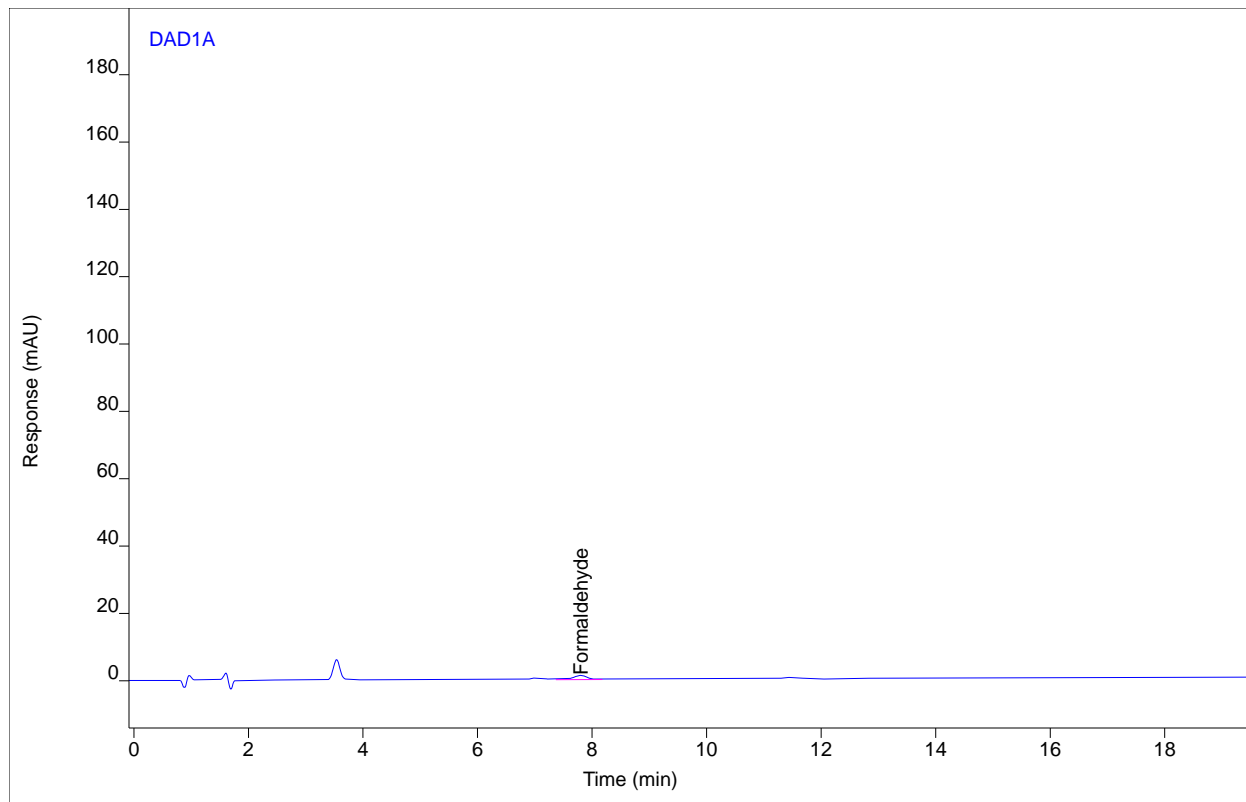
Formaldehyde at exp. RT: 8.040
 DAD1 A, Sig=365,8 Ref=510,100
 Correlation: 0.99992
 Residual Std. Dev.: 24.56315
 Formula: $y = mx + b$
 m: 130.94762
 b: 2.53749
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.254237
 Level 3 : 0.1
 Level 4 : 0.027422
 Level 5 : 0.012953
 Level 6 : 0.006229
 Level 7 : 0.004983

Chromatogram Report

Enthalpy Analytical

Sample Name TSCStd-1137-02 #1
Sequence Name Bart354 ver.2
Inj Data File 001-0201.D
File Location HPLC/2017/Bart/Quarter 1
Injection Date 2/22/2017 6:34 PM
File Modified 2/23/2017 10:00 AM
Instrument Bart
Operator Alex Pennington

Sample Type
Vial Number 1
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW.M
Analysis Method Bart354.M
Method Modified 2/23/2017 9:57 AM
Printed 7/24/2017 2:35 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	FM	7.81	20.8063	1.23886	0.13951	1	0.13951	ug/ml

Analyst Peak Integration Comments

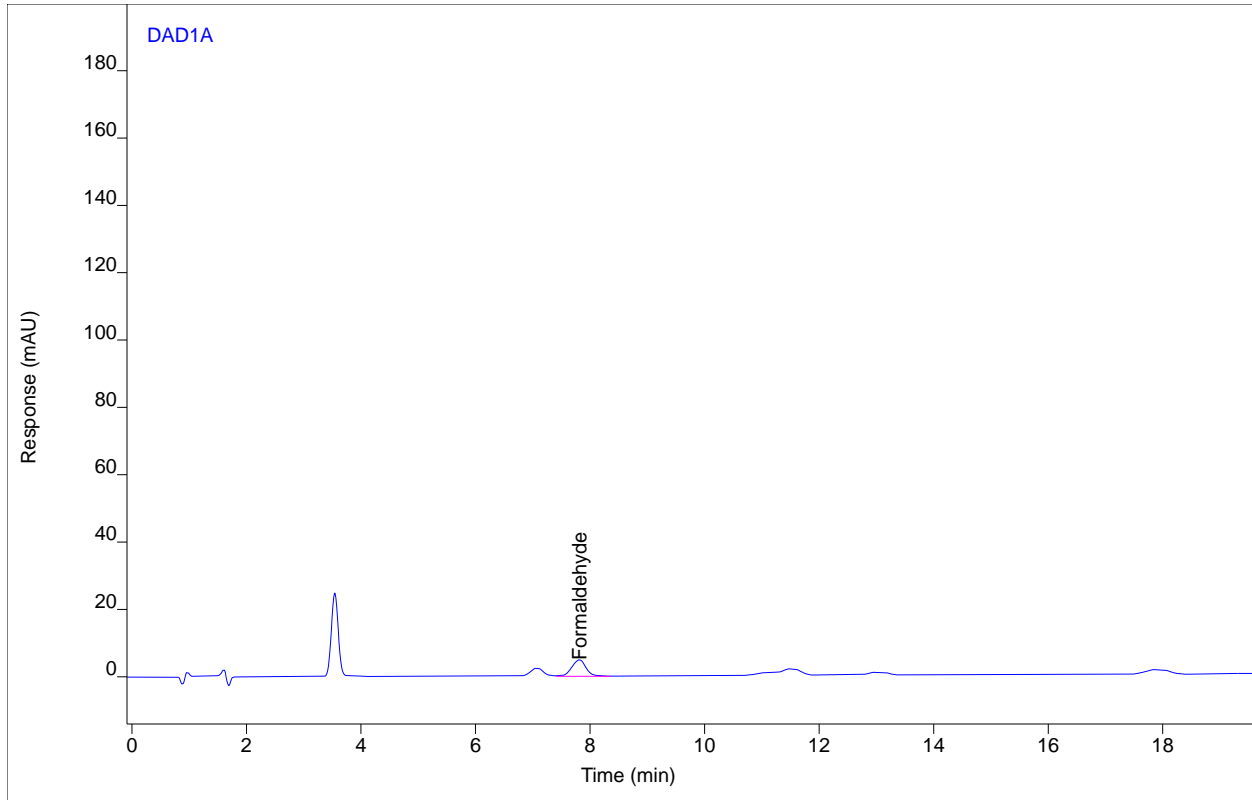
09:09:10 02/23/17 Alex Pennington II: Acetoin, Form, Acet, Diac, Acrolein, Pent

Chromatogram Report

Enthalpy Analytical

Sample Name TSCStd-1137-03 #2
Sequence Name Bart354 ver.2
Inj Data File 002-0301.D
File Location HPLC/2017/Bart/Quarter 1
Injection Date 2/22/2017 7:06 PM
File Modified 2/23/2017 10:00 AM
Instrument Bart
Operator Alex Pennington

Sample Type
Vial Number 2
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW.M
Analysis Method Bart354.M
Method Modified 2/23/2017 9:57 AM
Printed 7/24/2017 2:35 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	FM	7.82	85.4217	4.90922	0.63296	1	0.63296	ug/ml

Analyst Peak Integration Comments

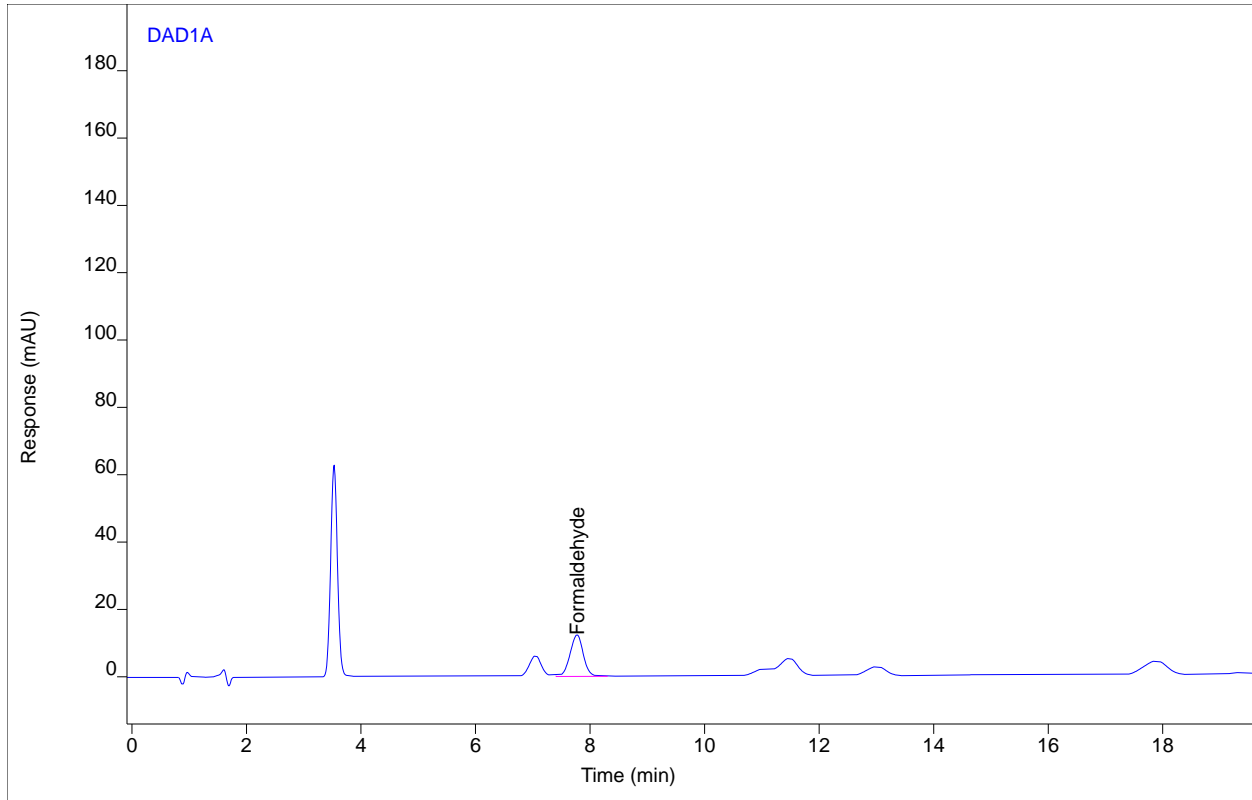
09:11:01 02/23/17 Alex Pennington II: Acetoin, Form, Acet, Diac, Acrolein, Pent

Chromatogram Report

Enthalpy Analytical

Sample Name TSCStd-1137-04 #3
Sequence Name Bart354 ver.2
Inj Data File 003-0401.D
File Location HPLC/2017/Bart/Quarter 1
Injection Date 2/22/2017 7:37 PM
File Modified 2/23/2017 10:00 AM
Instrument Bart
Operator Alex Pennington

Sample Type
Vial Number 3
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW.M
Analysis Method Bart354.M
Method Modified 2/23/2017 9:57 AM
Printed 7/24/2017 2:35 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	MF	7.78	198.666	12.3700	1.49776	1	1.49776	ug/ml

Analyst Peak Integration Comments

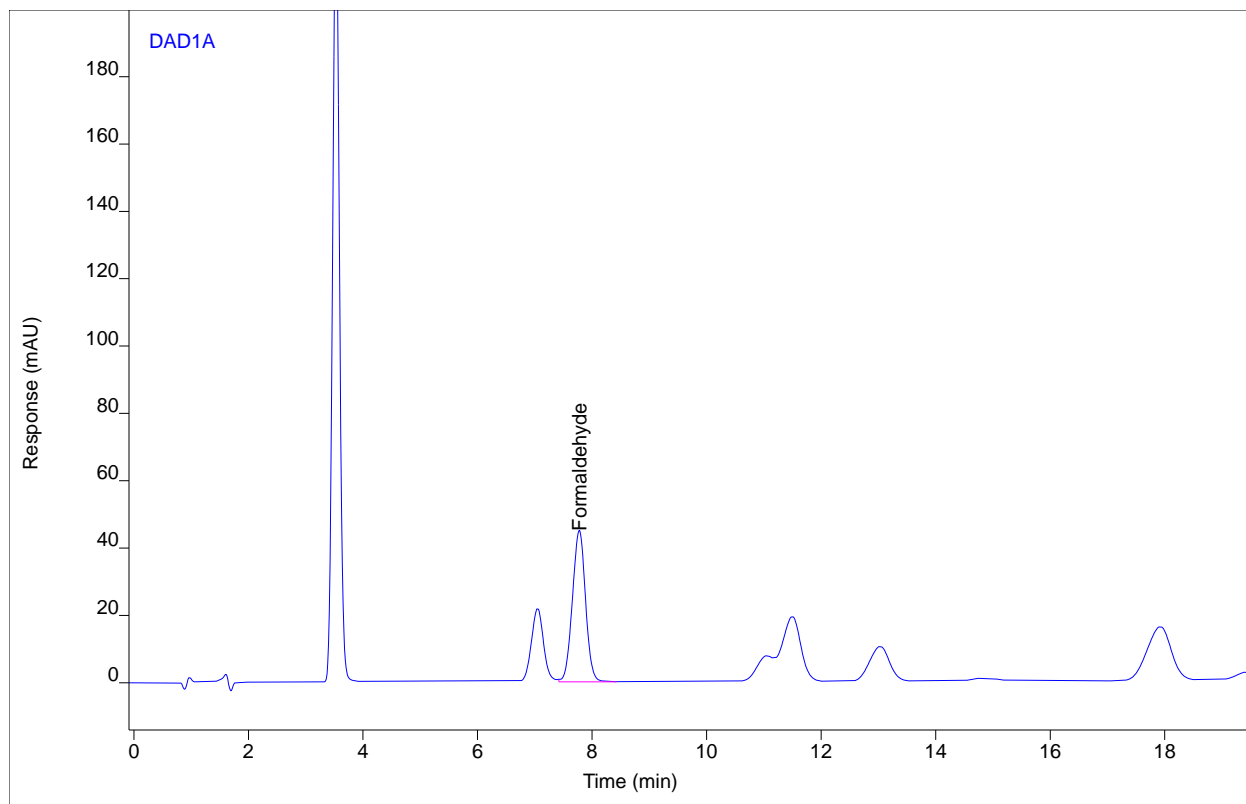
09:13:32 02/23/17 Alex Pennington II: Acetoin, Form, Acet, Diac, Acrolein, Pent

Chromatogram Report

Enthalpy Analytical

Sample Name TSCStd-1137-05 #4
Sequence Name Bart354 ver.2
Inj Data File 004-0501.D
File Location HPLC/2017/Bart/Quarter 1
Injection Date 2/22/2017 8:09 PM
File Modified 2/23/2017 10:00 AM
Instrument Bart
Operator Alex Pennington

Sample Type
Vial Number 4
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW.M
Analysis Method Bart354.M
Method Modified 2/23/2017 9:57 AM
Printed 7/24/2017 2:35 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	FM	7.78	716.983	45.0570	5.45597	1	5.45597	ug/ml

Analyst Peak Integration Comments

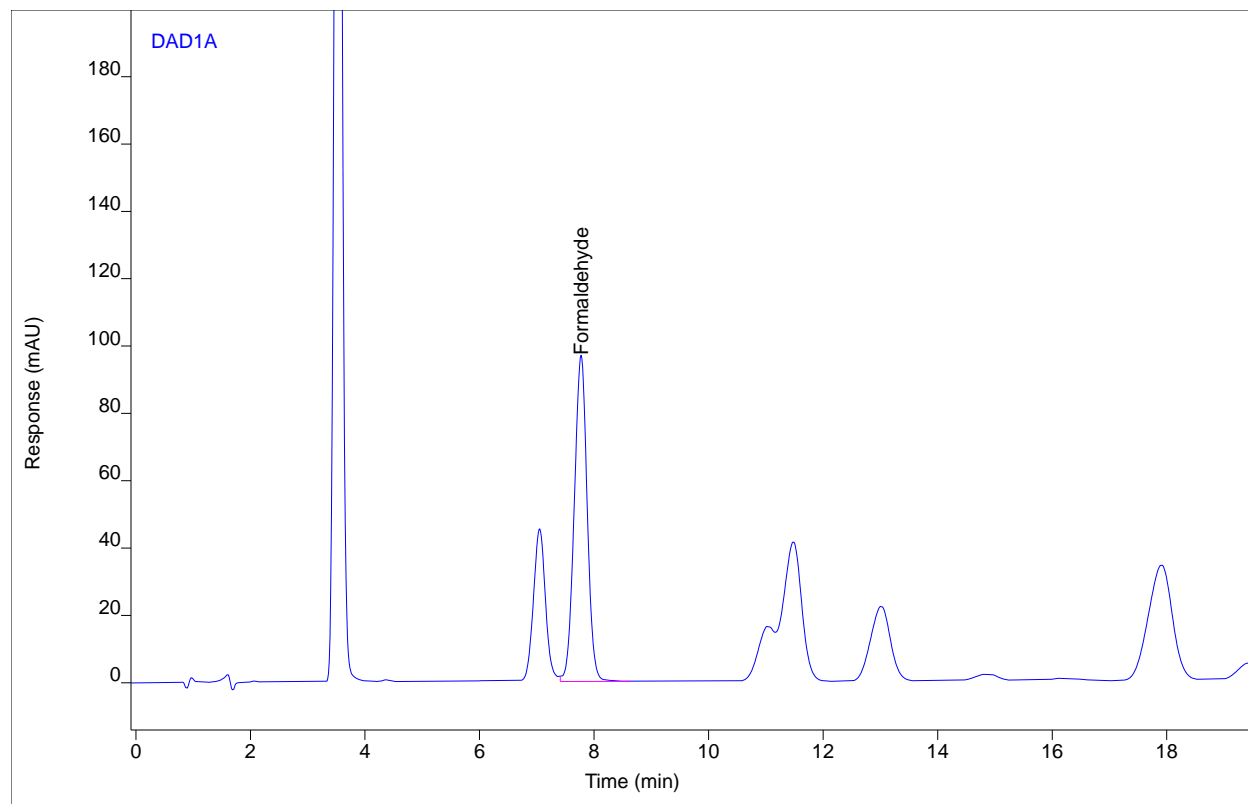
09:15:07 02/23/17 Alex Pennington II: Acetoin, Form, Acet, Diac, Acrolein, Pent

Chromatogram Report

Enthalpy Analytical

Sample Name TSCStd-1137-06 #5
Sequence Name Bart354 ver.2
Inj Data File 005-0601.D
File Location HPLC/2017/Bart/Quarter 1
Injection Date 2/22/2017 8:40 PM
File Modified 2/23/2017 10:00 AM
Instrument Bart
Operator Alex Pennington

Sample Type
Vial Number 5
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW.M
Analysis Method Bart354.M
Method Modified 2/23/2017 9:57 AM
Printed 7/24/2017 2:35 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	FM	7.78	1517.11	96.9830	11.5662	1	11.5662	ug/ml

Analyst Peak Integration Comments

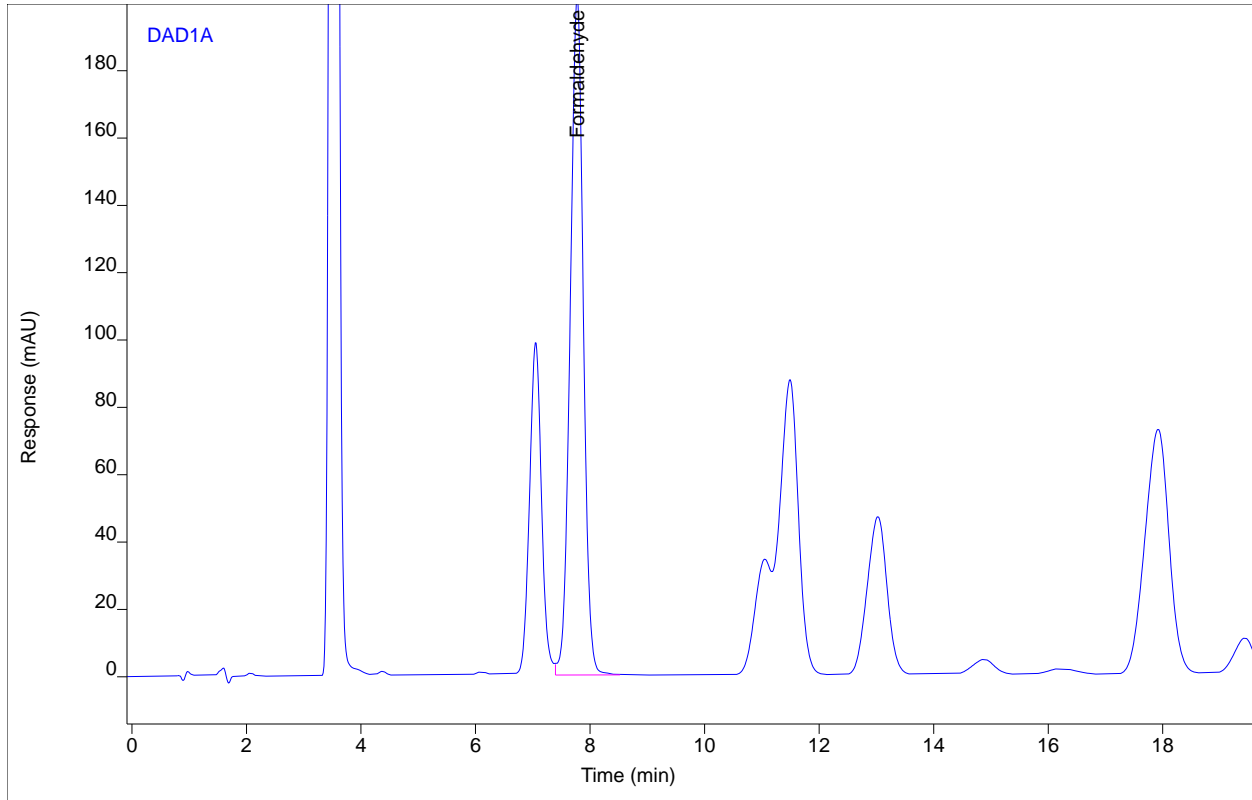
09:19:56 02/23/17 Alex Pennington II: Acetoin, Form, Acet, Diac, Acrolein, Pent

Chromatogram Report

Enthalpy Analytical

Sample Name TSCStd-1137-07 #6
Sequence Name Bart354 ver.2
Inj Data File 006-0701.D
File Location HPLC/2017/Bart/Quarter 1
Injection Date 2/22/2017 9:12 PM
File Modified 2/23/2017 10:00 AM
Instrument Bart
Operator Alex Pennington

Sample Type
Vial Number 6
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW.M
Analysis Method Bart354.M
Method Modified 2/23/2017 9:57 AM
Printed 7/24/2017 2:35 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	FM	7.78	3194.17	201.655	24.3734	1	24.3734	ug/ml

Analyst Peak Integration Comments

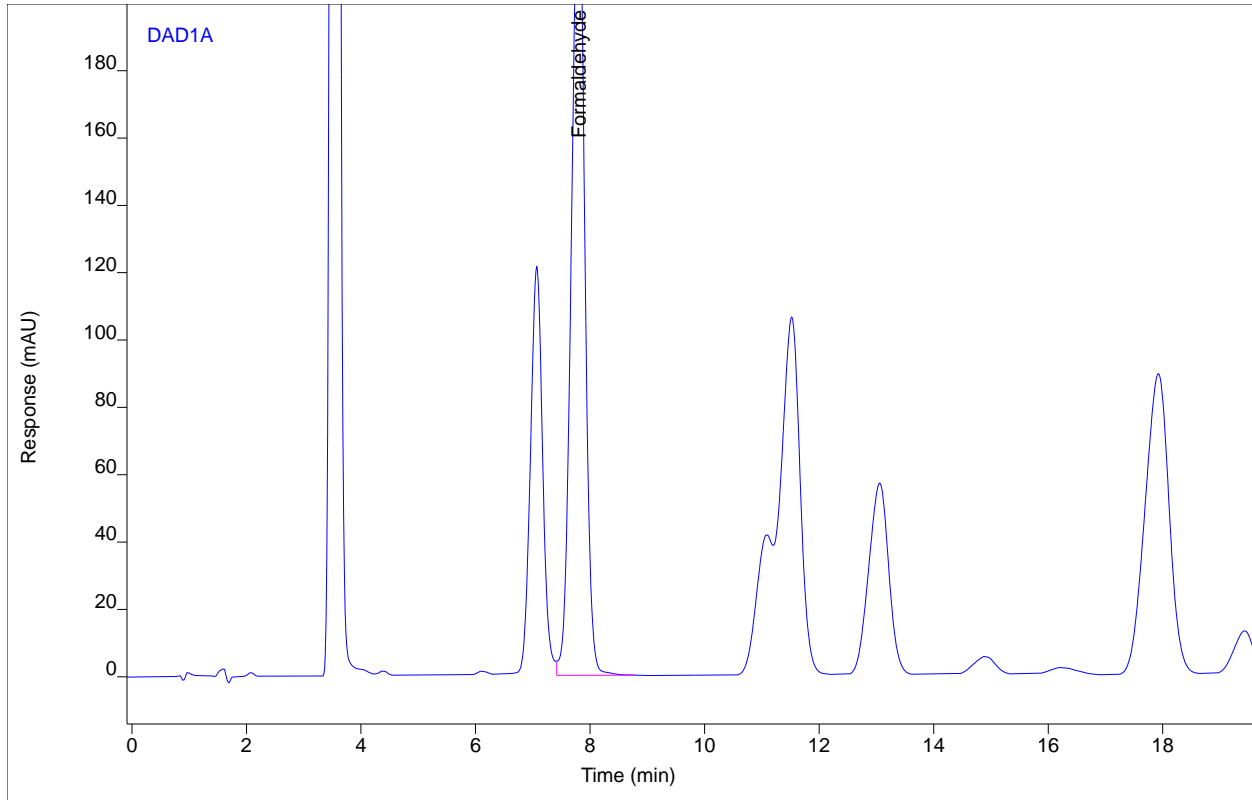
09:29:31 02/23/17 Alex Pennington II: Acetoin, Form, Acet, Diac, Acrolein, Pent

Chromatogram Report

Enthalpy Analytical

Sample Name TSCStd-1137-08 #7
Sequence Name Bart354 ver.2
Inj Data File 007-0801.D
File Location HPLC/2017/Bart/Quarter 1
Injection Date 2/22/2017 9:44 PM
File Modified 2/23/2017 10:00 AM
Instrument Bart
Operator Alex Pennington

Sample Type Calibration
Vial Number 7
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW.M
Analysis Method Bart354.M
Method Modified 2/23/2017 9:57 AM
Printed 7/24/2017 2:35 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	FM	7.80	3905.32	243.328	29.8042	1	29.8042	ug/ml

Analyst Peak Integration Comments

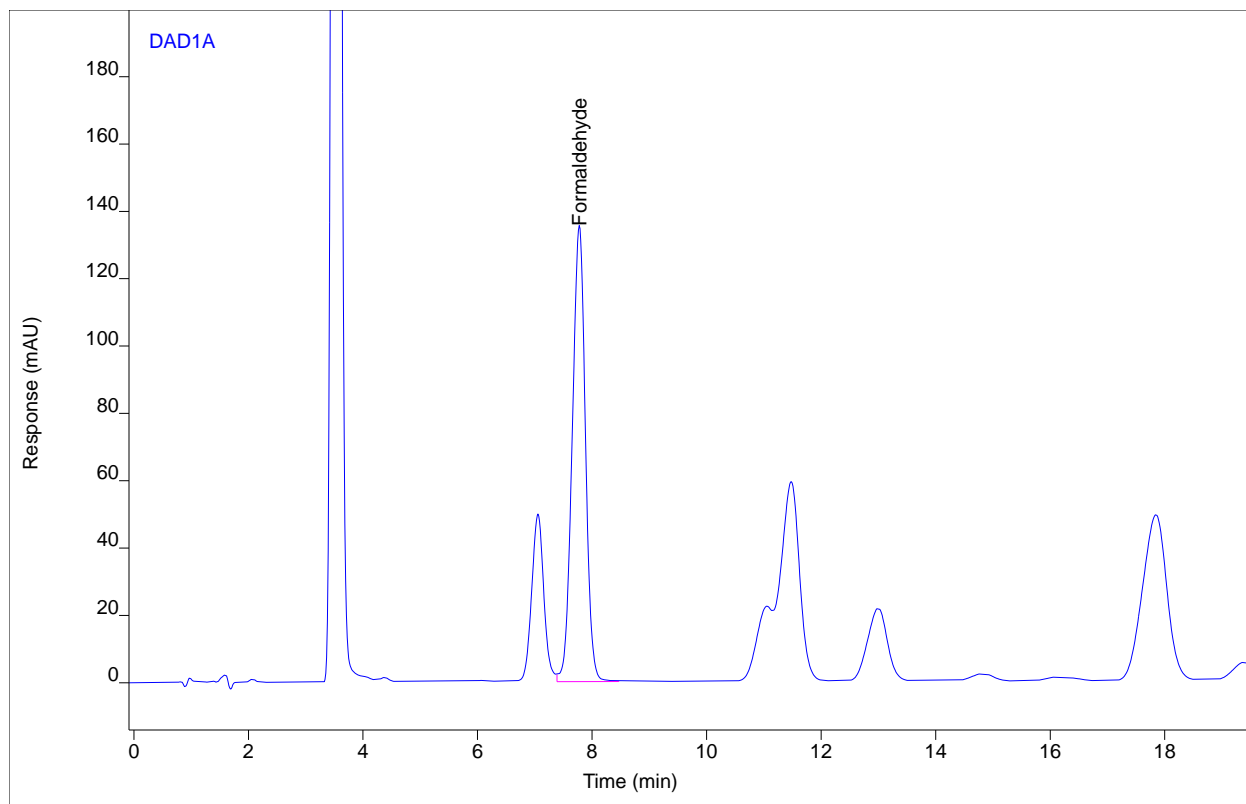
09:32:04 02/23/17 Alex Pennington II: Acetoin, Form, Acet, Diac, Acrolein, Pent

Chromatogram Report

Enthalpy Analytical

Sample Name TSCStd-1137-09 #8
Sequence Name Bart354 ver.2
Inj Data File 008-0901.D
File Location HPLC/2017/Bart/Quarter 1
Injection Date 2/22/2017 10:15 PM
File Modified 2/23/2017 10:00 AM
Instrument Bart
Operator Alex Pennington

Sample Type Control
Vial Number 8
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW.M
Analysis Method Bart354.M
Method Modified 2/23/2017 9:57 AM
Printed 7/24/2017 2:35 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	FM	7.78	2167.35	135.577	16.5319	1	16.5319	ug/ml

Analyst Peak Integration Comments

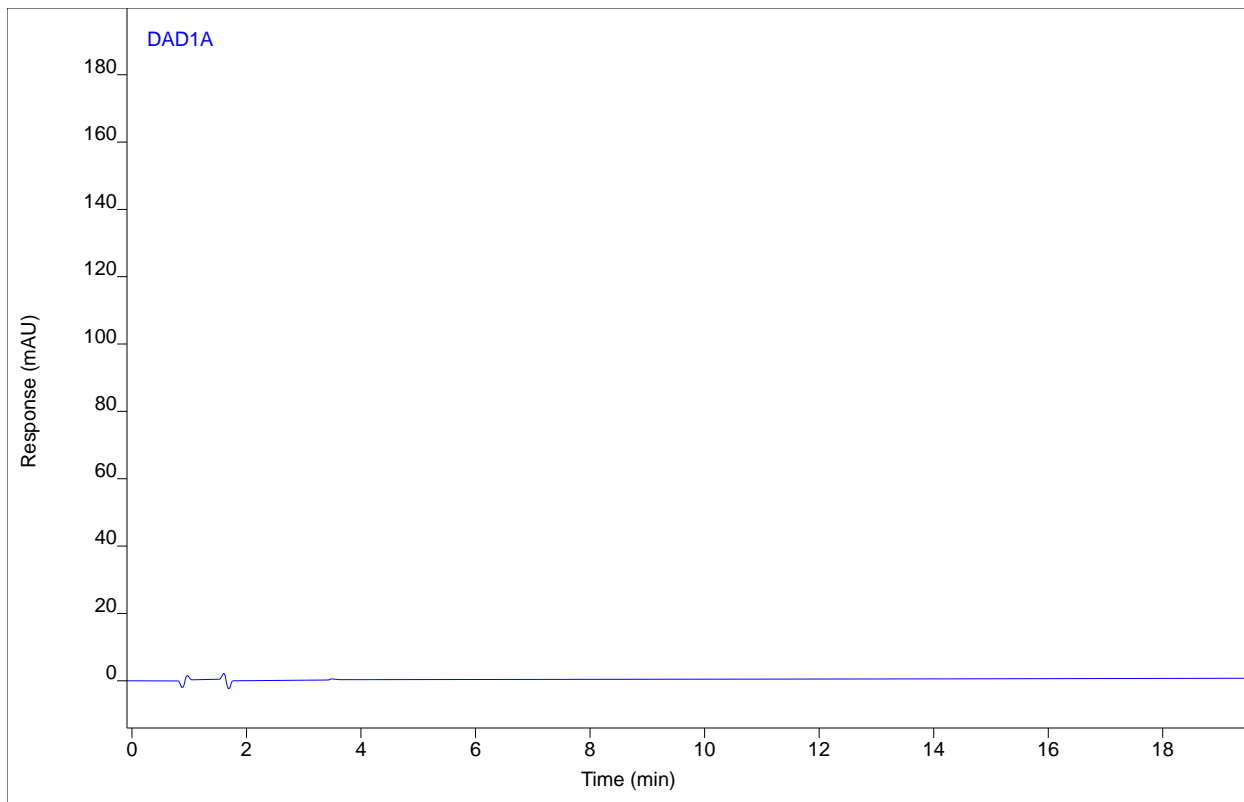
09:33:35 02/23/17 Alex Pennington II: Acetoin, Form, Acet, Diac, Acrolein, Pent
09:59:30 02/23/17 Alex Pennington II: adjusted integrations to match standards

Chromatogram Report

Enthalpy Analytical

Sample Name TSCStd-1137-B
Sequence Name Bart354 ver.2
Inj Data File 009-1001.D
File Location HPLC/2017/Bart/Quarter 1
Injection Date 2/22/2017 10:47 PM
File Modified 2/23/2017 10:00 AM
Instrument Bart
Operator Alex Pennington

Sample Type Control
Vial Number 9
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW.M
Analysis Method Bart354.M
Method Modified 2/23/2017 9:57 AM
Printed 7/24/2017 2:35 PM



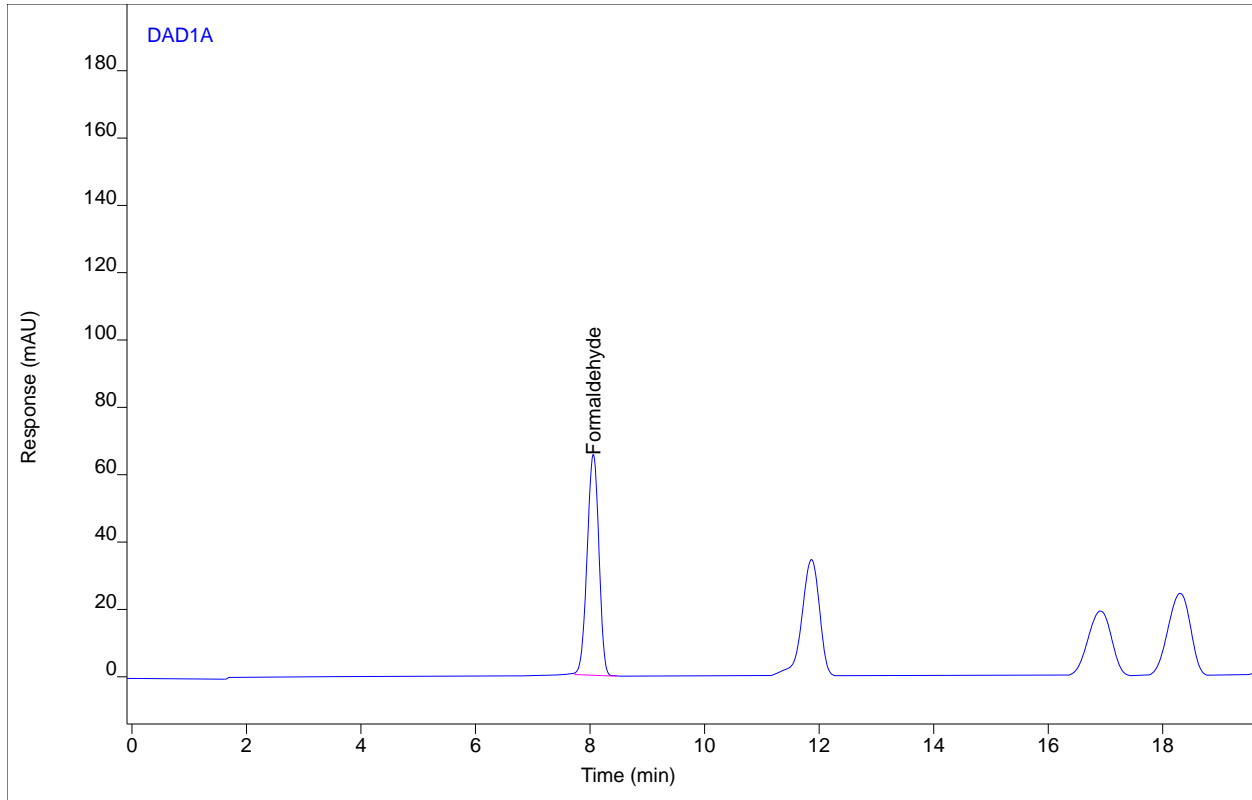
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde		(7.80)				1		ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name Bart410 #concal
Sequence Name Bart410 2017-07-21 16-34-27 ver.2
Inj Data File 001-0201.D
File Location HPLC/2017/Bart/Quarter 3
Injection Date 7/21/2017 5:01 PM
File Modified 7/24/2017 1:54 PM
Instrument Bart
Operator Amelia Paolantonio

Sample Type Control
Vial Number 1
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW-Form-acrolein_D.M
Analysis Method Bart354.M
Method Modified 7/24/2017 1:54 PM
Printed 7/24/2017 2:35 PM



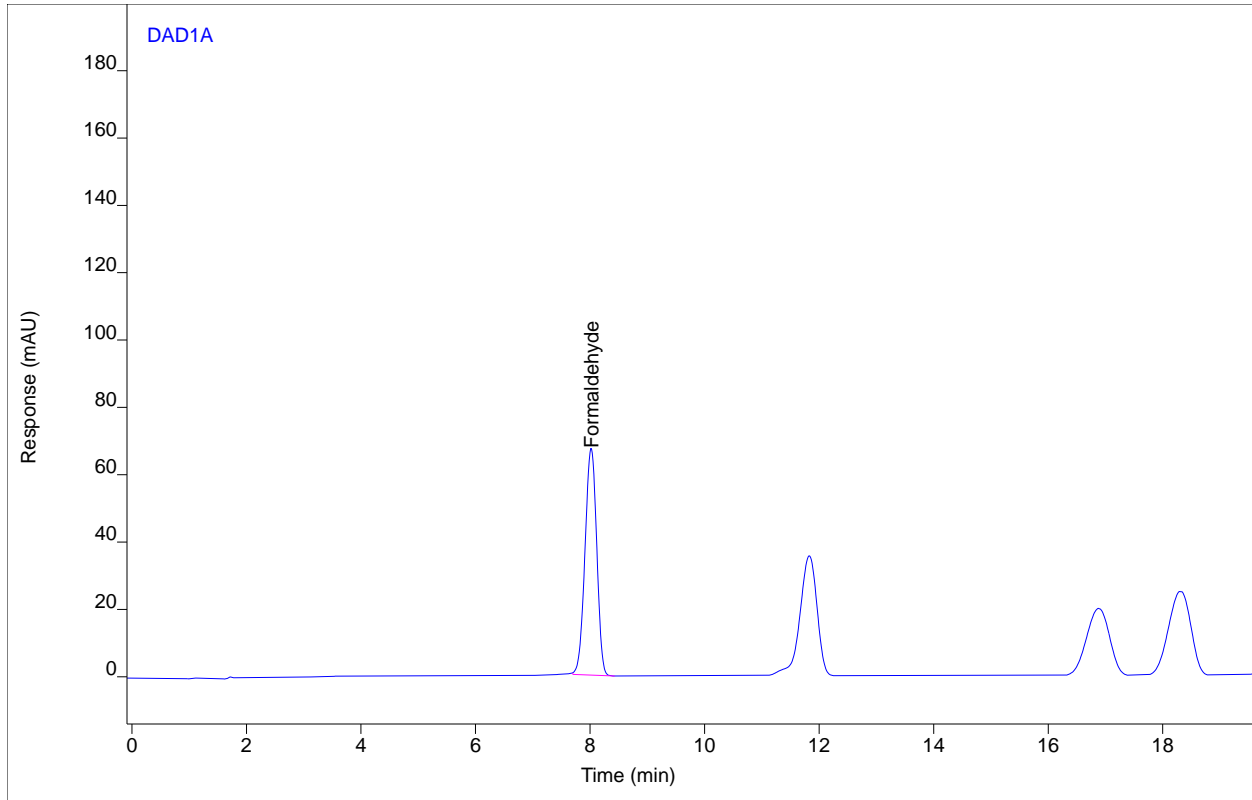
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	8.06	936.533	65.6395	7.13259	1	7.13259	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name Bart410 #concal
Sequence Name Bart410 2017-07-21 16-34-27 ver.2
Inj Data File 001-1201.D
File Location HPLC/2017/Bart/Quarter 3
Injection Date 7/21/2017 9:42 PM
File Modified 7/24/2017 1:54 PM
Instrument Bart
Operator Amelia Paolantonio

Sample Type Control
Vial Number 1
Injection Volume 5
Injection 1 of 1
Acquisition Method ELIQUID_BC_NEW-Form-acrolein_D.M
Analysis Method Bart354.M
Method Modified 7/24/2017 1:54 PM
Printed 7/24/2017 2:35 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	8.02	956.358	67.4621	7.28398	1	7.28398	ug/ml

Method Information

Method: C:\HPLC\2014\Bart\Methods\8315_T011_Waters_restek_35_Min.M
Modified: 5/7/2015 at 11:27:36 AM

Column: Waters XTerra C18 3.0 x 250mm
Mobile Phase: DIUF H2O, ACN, THF, and IPA on a gradient
Flow rate: 0.75 mL/min
UV Detection at 365 nm

Method Audit Trail

Operator : Bruce Barreto
Date : 4/9/2015 3:13:49 PM
Change Info: This method was created at 4/9/2015 3:13:49 PM and based on
method C:\HPLC\2014\BART\METHODS\8315_T011_Waters_restek_65_Min.M

Operator : Bruce Barreto
Date : 4/9/2015 3:13:50 PM
Change Info: Method saved. User comment: ""

Operator : Bruce Barreto
Date : 4/10/2015 5:55:17 PM
Change Info: Method saved. User comment: ""

Operator : Bruce Barreto
Date : 5/4/2015 5:18:39 PM
Change Info: Method saved. User comment: ""

Operator : Bruce Barreto
Date : 5/7/2015 11:27:36 AM
Change Info: Method saved. User comment: ""

Run Time Checklist

Pre-Run Cmd/Macro: off
Data Acquisition: on
Standard Data Analysis: off
Customized Data Analysis: off
Save GLP Data: off
Post-Run Cmd/Macro: on
Name: macro "postrund.mac",go
Save Method with Data: off

**This Is The Last Page
Of This Report.**



ENCO Laboratories

Accurate. Timely. Responsive. Innovative.

102-A Woodwinds Industrial Court
Cary NC, 27511

Phone: 919.467.3090 FAX: 919.467.3515

Tuesday, August 8, 2017
ARCADIS (AR017)
Attn: Ryan Gerber
801 Corporate Center Drive, Suite 300
Raleigh, NC 27607

RE: Laboratory Results for
Project Number: NC108008.0032, Project Name/Desc: Hexion- Semi-Annual
ENCO Workorder(s): CA11008

Dear Ryan Gerber,

Enclosed is a copy of your laboratory report for test samples received by our laboratory on Wednesday, July 19, 2017.

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. Results for these procedures apply only to the samples as submitted.

The analytical results contained in this report are in compliance with NELAC standards, except as noted in the project narrative. This report shall not be reproduced except in full, without the written approval of the Laboratory.

This report contains only those analyses performed by Environmental Conservation Laboratories. Unless otherwise noted, all analyses were performed at ENCO Cary. Data from outside organizations will be reported under separate cover.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Bill Scott
Project Manager
Enclosure(s)

PROJECT NARRATIVE

Client: ARCADIS (AR017)
Project: Hexion- Semi-Annual
ENCO Project ID: CA11008

Overview

All samples submitted were analyzed by Environmental Conservation Laboratories, Inc. in accordance with the methods referenced in the laboratory report. Any particular difficulties encountered during sample handling and processing will be discussed in the Remarks section below.

ENCO's North Carolina certification number is 591.

Dilutions may have been performed for high concentration of target analytes or matrix interference. See individual sample data sheets for analysis dilution factors.

Remarks

Analysis: EPA 350.1

Affected Samples: 7H07026-MS1, 7H07026-MSD1, Equip Blank[CA11008-01], PZ-34[CA11008-03], PZ-13[CA11008-04], T-22[CA11008-05], PZ-38[CA11008-06], MW-47[CA11008-07], MW-45[CA11008-09], MW-45[CA11008-09RE1], MW-40[CA11008-10]

The matrix spike and/or matrix spike duplicate had recoveries that were outside acceptance limits, but by virtue of a laboratory control sample being in control, the laboratory has demonstrated to be in control of its internal process.

Analysis: EPA 350.1

Affected Samples: 7H07036-MS2, 7H07036-MSD1, Equip Blank[CA11008-02], MW-41[CA11008-08], PZ-18[CA11008-11]

The matrix spike and/or matrix spike duplicate had recoveries that were outside acceptance limits, but by virtue of a laboratory control sample being in control, the laboratory has demonstrated to be in control of its internal process.

Bill Scott
Project Manager

SAMPLE DETECTION SUMMARY

Client ID: PZ-34		Lab ID: CA11008-03					
<u>Analyte</u>	<u>Results</u>	<u>Flag</u>	<u>MDL</u>	<u>PQL</u>	<u>Units</u>	<u>Method</u>	<u>Notes</u>
Ammonia as N	36	D	2.3	5.1	mg/L	EPA 350.1	
Client ID: PZ-13		Lab ID: CA11008-04					
<u>Analyte</u>	<u>Results</u>	<u>Flag</u>	<u>MDL</u>	<u>PQL</u>	<u>Units</u>	<u>Method</u>	<u>Notes</u>
Ammonia as N	33	D	2.3	5.1	mg/L	EPA 350.1	
Client ID: T-22		Lab ID: CA11008-05					
<u>Analyte</u>	<u>Results</u>	<u>Flag</u>	<u>MDL</u>	<u>PQL</u>	<u>Units</u>	<u>Method</u>	<u>Notes</u>
Ammonia as N	6.2	D	0.45	1.0	mg/L	EPA 350.1	
Client ID: PZ-38		Lab ID: CA11008-06					
<u>Analyte</u>	<u>Results</u>	<u>Flag</u>	<u>MDL</u>	<u>PQL</u>	<u>Units</u>	<u>Method</u>	<u>Notes</u>
Ammonia as N	5.5	D	0.45	1.0	mg/L	EPA 350.1	
Client ID: MW-47		Lab ID: CA11008-07					
<u>Analyte</u>	<u>Results</u>	<u>Flag</u>	<u>MDL</u>	<u>PQL</u>	<u>Units</u>	<u>Method</u>	<u>Notes</u>
Ammonia as N	15	D	0.45	1.0	mg/L	EPA 350.1	
Client ID: MW-41		Lab ID: CA11008-08					
<u>Analyte</u>	<u>Results</u>	<u>Flag</u>	<u>MDL</u>	<u>PQL</u>	<u>Units</u>	<u>Method</u>	<u>Notes</u>
Ammonia as N	1.1		0.045	0.10	mg/L	EPA 350.1	
Client ID: MW-40		Lab ID: CA11008-10					
<u>Analyte</u>	<u>Results</u>	<u>Flag</u>	<u>MDL</u>	<u>PQL</u>	<u>Units</u>	<u>Method</u>	<u>Notes</u>
Ammonia as N	3.6	D	0.22	0.50	mg/L	EPA 350.1	
Client ID: PZ-18		Lab ID: CA11008-11					
<u>Analyte</u>	<u>Results</u>	<u>Flag</u>	<u>MDL</u>	<u>PQL</u>	<u>Units</u>	<u>Method</u>	<u>Notes</u>
Ammonia as N	0.16		0.045	0.10	mg/L	EPA 350.1	

ANALYTICAL RESULTS

Description: Equip Blank **Lab Sample ID:** CA11008-01 **Received:** 07/19/17 17:40
Matrix: Water **Sampled:** 07/18/17 18:00 **Work Order:** CA11008
Project: Hexion- Semi-Annual **Sampled By:** Client

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
cis-1,2-Dichloroethene [156-59-2]^	ND		ug/L	1	0.15	1.0	7G25033	EPA 8260B	07/26/17 11:00	MRK	
Vinyl chloride [75-01-4]^	ND		ug/L	1	0.32	1.0	7G25033	EPA 8260B	07/26/17 11:00	MRK	

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
4-Bromofluorobenzene	55	1	50.0	110 %	53-136	7G25033	EPA 8260B	07/26/17 11:00	MRK	
Dibromofluoromethane	66	1	50.0	132 %	67-129	7G25033	EPA 8260B	07/26/17 11:00	MRK	QS-03
Toluene-d8	58	1	50.0	116 %	59-134	7G25033	EPA 8260B	07/26/17 11:00	MRK	

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Ammonia as N [7664-41-7]^	ND		mg/L	1	0.045	0.10	7H07026	EPA 350.1	08/07/17 15:13	JLJ	

Description: Equip Blank **Lab Sample ID:** CA11008-02 **Received:** 07/19/17 17:40
Matrix: Water **Sampled:** 07/19/17 12:10 **Work Order:** CA11008
Project: Hexion- Semi-Annual **Sampled By:** Client

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Ammonia as N [7664-41-7]^	ND		mg/L	1	0.045	0.10	7H07036	EPA 350.1	08/07/17 17:33	JLJ	

Description: PZ-34 **Lab Sample ID:** CA11008-03 **Received:** 07/19/17 17:40
Matrix: Water **Sampled:** 07/18/17 17:50 **Work Order:** CA11008
Project: Hexion- Semi-Annual **Sampled By:** Reggie Ricard

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Ammonia as N [7664-41-7]^	36	D	mg/L	51.43	2.3	5.1	7H07026	EPA 350.1	08/07/17 15:15	JLJ	

Description: PZ-13 **Lab Sample ID:** CA11008-04 **Received:** 07/19/17 17:40
Matrix: Water **Sampled:** 07/19/17 09:00 **Work Order:** CA11008
Project: Hexion- Semi-Annual **Sampled By:** Reggie Ricard

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Ammonia as N [7664-41-7]^	33	D	mg/L	51.43	2.3	5.1	7H07026	EPA 350.1	08/07/17 15:17	JLJ	

Description: T-22 **Lab Sample ID:** CA11008-05 **Received:** 07/19/17 17:40
Matrix: Water **Sampled:** 07/19/17 09:40 **Work Order:** CA11008
Project: Hexion- Semi-Annual **Sampled By:** Reggie Ricard

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Ammonia as N [7664-41-7]^	6.2	D	mg/L	10	0.45	1.0	7H07026	EPA 350.1	08/07/17 15:19	JLJ	



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ANALYTICAL RESULTS

Description: Trip Blank

Lab Sample ID: CA11008-12

Received: 07/19/17 17:40

Matrix: Water

Sampled: 07/18/17 18:00

Work Order: CA11008

Project: Hexion- Semi-Annual

Sampled By: ENCO

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MDL</u>	<u>PQL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
cis-1,2-Dichloroethene [156-59-2]^	ND		ug/L	1	0.15	1.0	7G25033	EPA 8260B	07/26/17 11:31	MRK	
Vinyl chloride [75-01-4]^	ND		ug/L	1	0.32	1.0	7G25033	EPA 8260B	07/26/17 11:31	MRK	

<u>Surrogates</u>	<u>Results</u>	<u>DF</u>	<u>Spike Lvl</u>	<u>% Rec</u>	<u>% Rec Limits</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
4-Bromofluorobenzene	53	1	50.0	106 %	53-136	7G25033	EPA 8260B	07/26/17 11:31	MRK	
Dibromofluoromethane	63	1	50.0	126 %	67-129	7G25033	EPA 8260B	07/26/17 11:31	MRK	
Toluene-d8	58	1	50.0	115 %	59-134	7G25033	EPA 8260B	07/26/17 11:31	MRK	

QUALITY CONTROL DATA

Volatile Organic Compounds by GCMS - Quality Control

Batch 7G25033 - EPA 5030B_MS

Blank (7G25033-BLK1)

Prepared: 07/25/2017 15:00 Analyzed: 07/26/2017 04:56

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
cis-1,2-Dichloroethene	0.15	U	1.0	ug/L							
Vinyl chloride	0.32	U	1.0	ug/L							
<i>4-Bromofluorobenzene</i>	<i>56</i>			<i>ug/L</i>	<i>50.0</i>		<i>111</i>	<i>53-136</i>			
<i>Dibromofluoromethane</i>	<i>64</i>			<i>ug/L</i>	<i>50.0</i>		<i>129</i>	<i>67-129</i>			
<i>Toluene-d8</i>	<i>65</i>			<i>ug/L</i>	<i>50.0</i>		<i>131</i>	<i>59-134</i>			

LCS (7G25033-BS1)

Prepared: 07/25/2017 15:00 Analyzed: 07/26/2017 02:54

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	23		1.0	ug/L	20.0		116	75-133			
Benzene	25		1.0	ug/L	20.0		124	81-134			
Chlorobenzene	22		1.0	ug/L	20.0		109	83-117			
cis-1,2-Dichloroethene	24		1.0	ug/L	20.0		120	69-120			
Toluene	23		1.0	ug/L	20.0		113	71-118			
Trichloroethene	23		1.0	ug/L	20.0		117	74-119			
Vinyl chloride	20		1.0	ug/L	20.0		101	49-150			
<i>4-Bromofluorobenzene</i>	<i>56</i>			<i>ug/L</i>	<i>50.0</i>		<i>112</i>	<i>53-136</i>			
<i>Dibromofluoromethane</i>	<i>64</i>			<i>ug/L</i>	<i>50.0</i>		<i>128</i>	<i>67-129</i>			
<i>Toluene-d8</i>	<i>57</i>			<i>ug/L</i>	<i>50.0</i>		<i>113</i>	<i>59-134</i>			

Matrix Spike (7G25033-MS1)

Prepared: 07/25/2017 15:00 Analyzed: 07/26/2017 03:24

Source: CA11295-08

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	23		1.0	ug/L	20.0	0.21 U	115	75-133			
Benzene	24		1.0	ug/L	20.0	0.15 U	121	81-134			
Chlorobenzene	22		1.0	ug/L	20.0	0.17 U	108	83-117			
cis-1,2-Dichloroethene	24		1.0	ug/L	20.0	0.15 U	121	69-120			
Toluene	23		1.0	ug/L	20.0	0.14 U	116	71-118			
Trichloroethene	22		1.0	ug/L	20.0	0.15 U	112	74-119			
Vinyl chloride	20		1.0	ug/L	20.0	0.32 U	99	49-150			
<i>4-Bromofluorobenzene</i>	<i>56</i>			<i>ug/L</i>	<i>50.0</i>		<i>112</i>	<i>53-136</i>			
<i>Dibromofluoromethane</i>	<i>64</i>			<i>ug/L</i>	<i>50.0</i>		<i>127</i>	<i>67-129</i>			
<i>Toluene-d8</i>	<i>56</i>			<i>ug/L</i>	<i>50.0</i>		<i>111</i>	<i>59-134</i>			

Matrix Spike Dup (7G25033-MSD1)

Prepared: 07/25/2017 15:00 Analyzed: 07/26/2017 03:55

Source: CA11295-08

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	22		1.0	ug/L	20.0	0.21 U	110	75-133	4	20	
Benzene	24		1.0	ug/L	20.0	0.15 U	121	81-134	0.2	17	
Chlorobenzene	21		1.0	ug/L	20.0	0.17 U	105	83-117	3	16	
cis-1,2-Dichloroethene	24		1.0	ug/L	20.0	0.15 U	120	69-120	0.9	18	
Toluene	22		1.0	ug/L	20.0	0.14 U	111	71-118	5	17	
Trichloroethene	23		1.0	ug/L	20.0	0.15 U	114	74-119	2	22	
Vinyl chloride	19		1.0	ug/L	20.0	0.32 U	97	49-150	2	27	
<i>4-Bromofluorobenzene</i>	<i>56</i>			<i>ug/L</i>	<i>50.0</i>		<i>111</i>	<i>53-136</i>			
<i>Dibromofluoromethane</i>	<i>65</i>			<i>ug/L</i>	<i>50.0</i>		<i>130</i>	<i>67-129</i>			QS-03
<i>Toluene-d8</i>	<i>57</i>			<i>ug/L</i>	<i>50.0</i>		<i>114</i>	<i>59-134</i>			

QUALITY CONTROL DATA

Classical Chemistry Parameters - Quality Control

Batch 7H07026 - NO PREP

Blank (7H07026-BLK1)

Prepared: 08/07/2017 14:29 Analyzed: 08/07/2017 14:29

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	0.045	U	0.10	mg/L							

LCS (7H07026-BS1)

Prepared: 08/07/2017 14:31 Analyzed: 08/07/2017 14:31

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	1.0		0.10	mg/L	0.989		103	90-110			

Matrix Spike (7H07026-MS1)

Prepared: 08/07/2017 14:33 Analyzed: 08/07/2017 14:33

Source: CA01119-03

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	400	E	20	mg/L	79.2	350	66	90-110			QM-07

Matrix Spike (7H07026-MS2)

Prepared: 08/07/2017 16:25 Analyzed: 08/07/2017 16:25

Source: CA01119-04RE1

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	4500		500	mg/L	1980	2600	95	90-110			

Matrix Spike Dup (7H07026-MSD1)

Prepared: 08/07/2017 14:42 Analyzed: 08/07/2017 14:42

Source: CA01119-03

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	410	E	20	mg/L	79.2	350	82	90-110	3	10	QM-07

Batch 7H07036 - NO PREP

Blank (7H07036-BLK1)

Prepared: 08/07/2017 16:43 Analyzed: 08/07/2017 16:43

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	0.045	U	0.10	mg/L							

LCS (7H07036-BS1)

Prepared: 08/07/2017 16:45 Analyzed: 08/07/2017 16:45

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	1.0		0.10	mg/L	0.989		104	90-110			

Matrix Spike (7H07036-MS1)

Prepared: 08/07/2017 16:47 Analyzed: 08/07/2017 16:47

Source: CA08334-01

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	0.40		0.10	mg/L	0.385	0.046	91	90-110			

Matrix Spike (7H07036-MS2)

Prepared: 08/07/2017 16:56 Analyzed: 08/07/2017 16:56

Source: CA09723-01

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	0.40		0.10	mg/L	0.385	0.064	88	90-110			QM-07

Matrix Spike Dup (7H07036-MSD1)

Prepared: 08/07/2017 16:52 Analyzed: 08/07/2017 16:52

Source: CA08334-01

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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QUALITY CONTROL DATA

Classical Chemistry Parameters - Quality Control

Batch 7H07036 - NO PREP - Continued

Matrix Spike Dup (7H07036-MSD1) Continued

Prepared: 08/07/2017 16:52 Analyzed: 08/07/2017 16:52

Source: CA08334-01

<u>Analyte</u>	<u>Result</u>	<u>Flag</u>	<u>POL</u>	<u>Units</u>	<u>Spike Level</u>	<u>Source Result</u>	<u>%REC</u>	<u>%REC Limits</u>	<u>RPD</u>	<u>RPD Limit</u>	<u>Notes</u>
Ammonia as N	0.38		0.10	mg/L	0.385	0.046	87	90-110	4	10	QM-07

FLAGS/NOTES AND DEFINITIONS

- B** The analyte was detected in the associated method blank.
- D** The sample was analyzed at dilution.
- J** The reported value is between the laboratory method detection limit (MDL) and the laboratory method reporting limit (MRL), adjusted for actual sample preparation data and moisture content, where applicable.
- U** The analyte was analyzed for but not detected to the level shown, adjusted for actual sample preparation data and moisture content, where applicable.
- E** The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate.
- MRL** Method Reporting Limit. The MRL is roughly equivalent to the practical quantitation limit (PQL) and is based on the low point of the calibration curve, when applicable, sample preparation factor, dilution factor, and, in the case of soil samples, moisture content.
- PQL** PQL: Practical Quantitation Limit.
- N** The analysis indicates the presence of an analyte for which there is presumptive evidence (85% or greater confidence) to make a "tentative identification".
- P** Greater than 25% concentration difference was observed between the primary and secondary GC column. The lower concentration is reported.
- QM-07** The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- QS-03** Surrogate recovery outside acceptance limits
- QV-01** The associated continuing calibration verification standard exhibited high bias; since the result is ND, there is no impact.



ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page ___ of ___

Lab Work Order #

Send Results to:

Contact & Company Name: Ryan Beerbar
 Address: 576.300
 805 Corporate Ctr. Dr.
 City: State: Zip:

Telephone: 919-854-1202
 Fax:

Project Name/Location (City, State): Raleigh, NC 27607
 Project #: N1008008.0032
 Sampling Site: Hoston Fayetteville Rd
 Sample Name: Reggie Brand

Client: RYAN BEERBAR & ARCADIS

Preservative: A
 Filtered (✓):
 # of Containers: 1
 Container Information: 3
PARAMETER ANALYSIS & METHOD

Preservation Key:
 A. H₂SO₄
 B. HCl
 C. HNO₃
 D. NaOH
 E. None
 F. Other:
 G. Other:
 H. Other:

Keys
 Container Information:
 1. 40 ml Vial
 2. 1 L Amber
 3. 250 ml Plastic
 4. 500 ml Plastic
 5. Erlenmeyer
 6. 2 oz Glass
 7. 4 oz Glass
 8. 8 oz Glass
 9. Other:
 10. Other:

Matrix Key:
 SO - Soil
 W - Water
 T - Tissue
 SE - Sediment
 SL - Sludge
 A - Air
 NL - NAPCOII
 SW - Sample Wipe
 Other:

Sample ID	Collection Date	Time	Type (✓)	Comp	Grab	Matrix	Remarks	
							Ammonia	350
PZ-34	7-18-17	17:50	X		W	X		
PZ-13	7-18-17	09:00	X		W	X		
T-22	7-19-17	09:40	X		W	X		
PZ-38	7-19-17	10:25	X		W	X		
MW-47	7-19-17	11:10	X		W	X		
MW-41	7-19-17	11:55	X		W	X		
MW-45	7-18-17	18:45	X		W	X		
MW-46	7-19-17	10:55	X		W	X		
DE-18	7-19-17	12:40	X		N	X		

Special Instructions/Comments:
 * per client 6/15/17

Special QA/QC Instructions (✓):

Laboratory Information and Receipt		Relinquished By		Received By		Relinquished By		Laboratory Received By	
Lab Name: ENCO	Cooler Custody Seal (✓) <input type="checkbox"/> Intact <input type="checkbox"/> Not Intact	Printed Name: Reggie Beard	Signature: Reggie Beard	Printed Name: Rachell	Signature: Rachell	Printed Name:	Signature:	Printed Name:	Signature:
Special Turnaround Requirements:	Sample Receipt	Firm: Reggie Beard	Firm/Courier:	Firm/Courier:	Firm/Courier:	Firm:	Firm/Courier:	Firm:	Firm/Courier:
Shipping Tracking #:	Condition/Cooler Temp: _____	Date/Time: 7-19-17/1500	Date/Time: 7/19/17	Date/Time: 7/19/17	Date/Time: 7/19/17	Date/Time:	Date/Time:	Date/Time:	Date/Time:



ENVIRONMENTAL CONSERVATION LABORATORIES CHAIN-OF-CUSTODY RECORD

10775 Central Port Dr.
Orlando, FL 32824
(407) 828-5314 Fax (407) 850-6945

4810 Executive Park Court, Suite 111
Jacksonville, FL 32216-6066
(904) 296-3007 Fax (904) 296-6210

102-A Woodwinds Industrial Ct.
Cary, NC 27511
(919) 467-3090 Fax (919) 467-3515

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Client Name: **ARCADIS (AR01Z)** Project Number: **NC108008 0032**

Address: **801 Corporate Center Drive, Suite 300 Raleigh, NC 27607** Project Name/Desc: **Hexion - Semi-Annual**

City/ST/Zip: **Raleigh, NC 27607** PO # / Billing Info: **NC108008.0032**

To: **(919) 854-1282** Fax: **Reporting Contact: Ryan Gerber**

Sampler(s) Name, Affiliation (Print): **Accounts Payable** Billing Contact: **Accounts Payable**

Sample(s) Signature: **Site Location / Time Zone**

Requested Analyses	8015	8015.8260B	8260B	8270D	8270D AE	8315A Formaldehyde	Ammonia 350.1	Ammonia 350.1, NOX 353.2	Nitrate Calc 353.2	Nitrite as N 353.2
Preservation (See Codes) (Combine as necessary)										
			X	X		X				
			X	X						
			X							

Item #	Sample ID (Field Identification)	Collection Date	Collection Time	Camp / Grab	Matrix (see codes)	Total # of Containers	Condition	Sample Comments
	Equip. Blank	7-18-17	1800		WA	1	X	
	Equip. Blank	7-19-17	1210		WA	2	X	
	Trip Blank				WA	2	X	
	Trip Blank				WA	2	X	

Sample Kit Prepared By: _____ Date/Time: _____

Relinquished By: **Russ Trip** Date/Time: **7-19-17 1500**

Relinquished By: _____ Date/Time: _____

Received By: **Rachon** Date/Time: **7/19/17 1740**

Condition Upon Receipt: Acceptable Unacceptable

Lab Workorder: **CA11008 EA01179**

Requested Turnaround Times: Standard Expedited

Due: ___/___/___

Page 13 of 15

Matrix: SW-Groundwater SO-Soil DW-Drinking Water SE-Sediment SW-Surface Water WW-Wastewater A-Air O-Other (detail in comments)

Preservation: H-HCl M-HNO3 S-H2SO4 NO-NO2H O-Other (detail in comments)

Note: All samples submitted to ENCO Labs are in accordance with the terms and conditions listed on the reverse of this form, unless prior written agreements exist.

Sample Preservation Verification

ENCO Cary



Work Order: CA11008
 Client: ARCADIS (AR017)
 Logged In: 20-Jul-17 09:36

Project: Hexion- Semi-Annual
 Project #: NC108008.0032
 Logged By: John C King

CA11008-01

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA11008-02

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA11008-03

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA11008-04

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA11008-05

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA11008-06

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA11008-07

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA11008-08

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA11008-09

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

Sample Preservation Verification

ENCO Cary



Work Order: CA11008
 Client: ARCADIS (AR017)
 Logged In: 20-Jul-17 09:36

Project: Hexion- Semi-Annual
 Project #: NC108008.0032
 Logged By: John C King

CA11008-10

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA11008-11

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

	Reagent Name	ID
1		
2		

	Reagent Name	ID
3		
4		

	Reagent Name	ID
5		
6		



ENCO Laboratories

Accurate. Timely. Responsive. Innovative.

102-A Woodwinds Industrial Court

Cary NC, 27511

Phone: 919.467.3090 FAX: 919.467.3515

Wednesday, August 9, 2017

ARCADIS (AR017)

Attn: Ryan Gerber

801 Corporate Center Drive, Suite 300

Raleigh, NC 27607

RE: Laboratory Results for

Project Number: NC108008.0032, Project Name/Desc: Hexion- Semi-Annual

ENCO Workorder(s): CA01119,CA01120

Dear Ryan Gerber,

Enclosed is a copy of your laboratory report for test samples received by our laboratory on Wednesday, July 19, 2017.

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. Results for these procedures apply only to the samples as submitted.

The analytical results contained in this report are in compliance with NELAC standards, except as noted in the project narrative. This report shall not be reproduced except in full, without the written approval of the Laboratory.

This report contains only those analyses performed by Environmental Conservation Laboratories. Unless otherwise noted, all analyses were performed at ENCO Cary. Data from outside organizations will be reported under separate cover.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Bill Scott

Project Manager

Enclosure(s)

PROJECT NARRATIVE

Client: ARCADIS (AR017)
Project: Hexion- Semi-Annual
ENCO Project ID: CA01119, CA01120

Overview

All samples submitted were analyzed by Environmental Conservation Laboratories, Inc. in accordance with the methods referenced in the laboratory report. Any particular difficulties encountered during sample handling and processing will be discussed in the Remarks section below.

ENCO's North Carolina certification number is 591.

Dilutions may have been performed for high concentration of target analytes or matrix interference. See individual sample data sheets for analysis dilution factors.

Remarks

Analysis: EPA 350.1, EPA 353.2
Affected Samples: PW-1R[CA01119-04]
Upon arrival at the laboratory, the pH of the sample was checked and found to not be in compliance with method limits. Preservative was added to the sample.

Analysis: EPA 353.2
Affected Samples: 7G19017-MS1, 7G19017-MS2, 7G19017-MSD1, RW-5[CA01119-02], MW-39[CA01119-05]
The matrix spike and/or matrix spike duplicate had recoveries that were outside acceptance limits, but by virtue of a laboratory control sample being in control, the laboratory has demonstrated to be in control of its internal process.

Analysis: EPA 353.2
Affected Samples: 7G19032-MSD1, RW-5[CA01119-02RE1], RW-5[CA01119-02RE2], MW-39[CA01119-05RE1]
The matrix spike and/or matrix spike duplicate had recoveries that were outside acceptance limits, but by virtue of a laboratory control sample being in control, the laboratory has demonstrated to be in control of its internal process.

Analysis: EPA 350.1
Affected Samples: 7H07020-MS1, RW-2[CA01119-01], RW-5[CA01119-02], MW-39[CA01119-05], PZ-14R[CA01119-07], DUP-1[CA01119-08]
The matrix spike and/or matrix spike duplicate had recoveries that were outside acceptance limits, but by virtue of a laboratory control sample being in control, the laboratory has demonstrated to be in control of its internal process.

Analysis: EPA 350.1
Affected Samples: 7H07026-MS1, 7H07026-MSD1, RW-6[CA01119-03], PW-1R[CA01119-04], PW-1R[CA01119-04RE1], PZ-12[CA01119-06]
The matrix spike and/or matrix spike duplicate had recoveries that were outside acceptance limits, but by virtue of a laboratory control sample being in control, the laboratory has demonstrated to be in control of its internal process.

Analysis: EPA 353.2
7G19017-MS1, 7G19017-MS2, 7G19017-MSD1, PW-2R[CA01120-07]
Nonconformance: The matrix spike and/or matrix spike duplicate had recoveries that were outside acceptance limits, but by virtue of a laboratory control sample being in control, the laboratory has demonstrated to be in control of its internal process.

Analysis: EPA 350.1
Affected Samples: 7H07020-MS1, RW-7[CA01120-05], MW-44[CA01120-06], PW-2R[CA01120-07],



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PW-2R[CA01120-07RE1], PZ-16R[CA01120-08], PZ-16R[CA01120-08RE1]

The matrix spike and/or matrix spike duplicate had recoveries that were outside acceptance limits, but by virtue of a laboratory control sample being in control, the laboratory has demonstrated to be in control of its internal process.

Analysis: EPA 350.1

Affected Samples: 7H07026-MS1, 7H07026-MSD1, SWS-2[CA01120-01], SWS-2[CA01120-01RE1], SWS-3[CA01120-02], SWS-3[CA01120-02RE1], SWS-4[CA01120-03], SWS-4[CA01120-03RE1], SWS-DUP[CA01120-04], SWS-DUP[CA01120-04RE1]

The matrix spike and/or matrix spike duplicate had recoveries that were outside acceptance limits, but by virtue of a laboratory control sample being in control, the laboratory has demonstrated to be in control of its internal process.

Bill Scott
Project Manager

SAMPLE DETECTION SUMMARY

Client ID: RW-2 **Lab ID: CA01119-01**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	3.6		0.45	1.0	mg/L	EPA 350.1	

Client ID: RW-5 **Lab ID: CA01119-02**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	290		22	50	mg/L	EPA 350.1	
Nitrate as N	55		0.025	0.10	mg/L	EPA 353.2	

Client ID: RW-5 **Lab ID: CA01119-02RE1**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Nitrate/Nitrite as N	65	D	1.6	5.0	mg/L	SM 4500NO3 H-2000	QM-07
Vinyl chloride	2.0		0.32	1.0	ug/L	EPA 8260B	

Client ID: RW-5 **Lab ID: CA01119-02RE2**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Nitrite as N	10		0.17	1.0	mg/L	EPA 353.2	

Client ID: RW-6 **Lab ID: CA01119-03**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	350		9.0	20	mg/L	EPA 350.1	

Client ID: PW-1R **Lab ID: CA01119-04**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Phenol	210	D	4.2	30	ug/L	EPA 8270D	

Client ID: PW-1R **Lab ID: CA01119-04RE1**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	2600		220	500	mg/L	EPA 350.1	
cis-1,2-Dichloroethene	120		0.15	1.0	ug/L	EPA 8260B	
Vinyl chloride	2.3		0.32	1.0	ug/L	EPA 8260B	

Client ID: MW-39 **Lab ID: CA01119-05**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	780	D	40	90	mg/L	EPA 350.1	
cis-1,2-Dichloroethene	0.83	J	0.15	1.0	ug/L	EPA 8260B	
Nitrate as N	10		0.025	0.10	mg/L	EPA 353.2	

Client ID: MW-39 **Lab ID: CA01119-05RE1**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Nitrate/Nitrite as N	15	D	0.80	2.5	mg/L	SM 4500NO3 H-2000	
Nitrite as N	4.9		0.084	0.50	mg/L	EPA 353.2	

Client ID: PZ-12 **Lab ID: CA01119-06**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	28	D	2.3	5.1	mg/L	EPA 350.1	

Client ID: PZ-14R **Lab ID: CA01119-07**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	290	D	8.1	18	mg/L	EPA 350.1	

Client ID: PZ-14R **Lab ID: CA01119-07RE1**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
cis-1,2-Dichloroethene	13		0.15	1.0	ug/L	EPA 8260B	
Vinyl chloride	6.1		0.32	1.0	ug/L	EPA 8260B	

Client ID: DUP-1 **Lab ID: CA01119-08**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	300	D	8.1	18	mg/L	EPA 350.1	
cis-1,2-Dichloroethene	13		0.15	1.0	ug/L	EPA 8260B	
Vinyl chloride	6.4		0.32	1.0	ug/L	EPA 8260B	

Client ID: SWS-2 **Lab ID: CA01120-01RE1**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	4.9	D	0.22	0.50	mg/L	EPA 350.1	

Client ID: SWS-3 **Lab ID: CA01120-02RE1**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	0.79	D	0.22	0.50	mg/L	EPA 350.1	

SAMPLE DETECTION SUMMARY

Client ID: SWS-4 **Lab ID: CA01120-03RE1**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	9.5	D	0.45	1.0	mg/L	EPA 350.1	

Client ID: SWS-DUP **Lab ID: CA01120-04RE1**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	4.8	D	0.22	0.50	mg/L	EPA 350.1	

Client ID: RW-7 **Lab ID: CA01120-05**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	330	D	8.1	18	mg/L	EPA 350.1	

Client ID: MW-44 **Lab ID: CA01120-06**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	98	D	8.1	18	mg/L	EPA 350.1	

Client ID: PW-2R **Lab ID: CA01120-07**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Nitrate/Nitrite as N	0.064		0.016	0.050	mg/L	SM 4500NO3 H-2000	
Nitrite as N	0.070	J	0.017	0.10	mg/L	EPA 353.2	

Client ID: PW-2R **Lab ID: CA01120-07RE1**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	380	D	20	45	mg/L	EPA 350.1	

Client ID: PZ-16R **Lab ID: CA01120-08RE1**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	5.0	D	0.22	0.50	mg/L	EPA 350.1	

ANALYTICAL RESULTS

Description: PW-1R **Lab Sample ID:** CA01119-04 **Received:** 07/19/17 08:20
Matrix: Water **Sampled:** 07/18/17 15:15 **Work Order:** CA01119
Project: Hexion- Semi-Annual **Sampled By:** Reggie Ricard

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
cis-1,2-Dichloroethene [156-59-2]^	120		ug/L	1	0.15	1.0	7G27010	EPA 8260B	07/27/17 19:18	REF	
Vinyl chloride [75-01-4]^	2.3		ug/L	1	0.32	1.0	7G27010	EPA 8260B	07/27/17 19:18	REF	
Surrogates											
Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes	
4-Bromofluorobenzene	47	1	50.0	94 %	53-136	7G27010	EPA 8260B	07/27/17 19:18	REF		
Dibromofluoromethane	51	1	50.0	102 %	67-129	7G27010	EPA 8260B	07/27/17 19:18	REF		
Toluene-d8	51	1	50.0	102 %	59-134	7G27010	EPA 8260B	07/27/17 19:18	REF		

Semivolatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Phenol [108-95-2]^	210	D	ug/L	3	4.2	30	7G19015	EPA 8270D	07/21/17 14:24	DFM	
Surrogates											
Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes	
2,4,6-Tribromophenol	85	1	100	85 %	10-179	7G19015	EPA 8270D	07/20/17 18:51	DFM		
2-Fluorophenol	49	1	100	49 %	10-110	7G19015	EPA 8270D	07/20/17 18:51	DFM		
Phenol-d5	63	1	100	63 %	10-88	7G19015	EPA 8270D	07/20/17 18:51	DFM		

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Ammonia as N [7664-41-7]^	2600		mg/L	5000	220	500	7H07026	EPA 350.1	08/07/17 16:22	JLJ	

Description: MW-39 **Lab Sample ID:** CA01119-05 **Received:** 07/19/17 08:20
Matrix: Water **Sampled:** 07/18/17 12:55 **Work Order:** CA01119
Project: Hexion- Semi-Annual **Sampled By:** Reggie Ricard

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
cis-1,2-Dichloroethene [156-59-2]^	0.83	J	ug/L	1	0.15	1.0	7G25033	EPA 8260B	07/26/17 06:27	MRK	
Vinyl chloride [75-01-4]^	ND		ug/L	1	0.32	1.0	7G25033	EPA 8260B	07/26/17 06:27	MRK	QV-01
Surrogates											
Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes	
4-Bromofluorobenzene	55	1	50.0	110 %	53-136	7G25033	EPA 8260B	07/26/17 06:27	MRK		
Dibromofluoromethane	63	1	50.0	127 %	67-129	7G25033	EPA 8260B	07/26/17 06:27	MRK		
Toluene-d8	57	1	50.0	115 %	59-134	7G25033	EPA 8260B	07/26/17 06:27	MRK		

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Ammonia as N [7664-41-7]^	780	D	mg/L	900	40	90	7H07020	EPA 350.1	08/07/17 11:29	JLJ	
Nitrate as N [14797-55-8]^	10		mg/L	1	0.025	0.10	7H08034	EPA 353.2	08/08/17 14:44	MKS	
Nitrite as N [14797-65-0]^	4.9		mg/L	5	0.084	0.50	7G19032	EPA 353.2	07/19/17 14:09	JLJ	

Classical Chemistry Parameters

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Nitrate/Nitrite as N	15	D	mg/L	50	0.80	2.5	7H07033	M 4500N03 H-200	08/07/17 13:12	KGonz	

ANALYTICAL RESULTS

Description: PW-2R
Matrix: Water
Project: Hexion - SW

Lab Sample ID: CA01120-07
Sampled: 07/18/17 13:57
Sampled By: Client

Received: 07/19/17 08:20
Work Order: CA01120

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Ammonia as N [7664-41-7]^	380	D	mg/L	450	20	45	7H07020	EPA 350.1	08/07/17 16:16	JLJ	
Nitrate as N [14797-55-8]^	ND		mg/L	1	0.025	0.10	7H08034	EPA 353.2	08/08/17 14:44	MKS	
Nitrite as N [14797-65-0]^	0.070	J	mg/L	1	0.017	0.10	7G19017	EPA 353.2	07/19/17 11:52	JLJ	

Classical Chemistry Parameters

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Nitrate/Nitrite as N	0.064		mg/L	1	0.016	0.050	7H07033	M 4500NO3 H-200	08/07/17 12:50	KGonz	

Description: PZ-16R
Matrix: Water
Project: Hexion - SW

Lab Sample ID: CA01120-08
Sampled: 07/18/17 14:55
Sampled By: Client

Received: 07/19/17 08:20
Work Order: CA01120

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Ammonia as N [7664-41-7]^	5.0	D	mg/L	5	0.22	0.50	7H07020	EPA 350.1	08/07/17 16:18	JLJ	

QUALITY CONTROL DATA

Volatile Organic Compounds by GCMS - Quality Control

Batch 7G25033 - EPA 5030B_MS

Blank (7G25033-BLK1)

Prepared: 07/25/2017 15:00 Analyzed: 07/26/2017 04:56

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
cis-1,2-Dichloroethene	0.15	U	1.0	ug/L							
Vinyl chloride	0.32	U	1.0	ug/L							
<i>4-Bromofluorobenzene</i>	<i>56</i>			<i>ug/L</i>	<i>50.0</i>		<i>111</i>	<i>53-136</i>			
<i>Dibromofluoromethane</i>	<i>64</i>			<i>ug/L</i>	<i>50.0</i>		<i>129</i>	<i>67-129</i>			
<i>Toluene-d8</i>	<i>65</i>			<i>ug/L</i>	<i>50.0</i>		<i>131</i>	<i>59-134</i>			

LCS (7G25033-BS1)

Prepared: 07/25/2017 15:00 Analyzed: 07/26/2017 02:54

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	23		1.0	ug/L	20.0		116	75-133			
Benzene	25		1.0	ug/L	20.0		124	81-134			
Chlorobenzene	22		1.0	ug/L	20.0		109	83-117			
cis-1,2-Dichloroethene	24		1.0	ug/L	20.0		120	69-120			
Toluene	23		1.0	ug/L	20.0		113	71-118			
Trichloroethene	23		1.0	ug/L	20.0		117	74-119			
Vinyl chloride	20		1.0	ug/L	20.0		101	49-150			
<i>4-Bromofluorobenzene</i>	<i>56</i>			<i>ug/L</i>	<i>50.0</i>		<i>112</i>	<i>53-136</i>			
<i>Dibromofluoromethane</i>	<i>64</i>			<i>ug/L</i>	<i>50.0</i>		<i>128</i>	<i>67-129</i>			
<i>Toluene-d8</i>	<i>57</i>			<i>ug/L</i>	<i>50.0</i>		<i>113</i>	<i>59-134</i>			

Matrix Spike (7G25033-MS1)

Prepared: 07/25/2017 15:00 Analyzed: 07/26/2017 03:24

Source: CA11295-08

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	23		1.0	ug/L	20.0	0.21 U	115	75-133			
Benzene	24		1.0	ug/L	20.0	0.15 U	121	81-134			
Chlorobenzene	22		1.0	ug/L	20.0	0.17 U	108	83-117			
cis-1,2-Dichloroethene	24		1.0	ug/L	20.0	0.15 U	121	69-120			
Toluene	23		1.0	ug/L	20.0	0.14 U	116	71-118			
Trichloroethene	22		1.0	ug/L	20.0	0.15 U	112	74-119			
Vinyl chloride	20		1.0	ug/L	20.0	0.32 U	99	49-150			
<i>4-Bromofluorobenzene</i>	<i>56</i>			<i>ug/L</i>	<i>50.0</i>		<i>112</i>	<i>53-136</i>			
<i>Dibromofluoromethane</i>	<i>64</i>			<i>ug/L</i>	<i>50.0</i>		<i>127</i>	<i>67-129</i>			
<i>Toluene-d8</i>	<i>56</i>			<i>ug/L</i>	<i>50.0</i>		<i>111</i>	<i>59-134</i>			

Matrix Spike Dup (7G25033-MSD1)

Prepared: 07/25/2017 15:00 Analyzed: 07/26/2017 03:55

Source: CA11295-08

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	22		1.0	ug/L	20.0	0.21 U	110	75-133	4	20	
Benzene	24		1.0	ug/L	20.0	0.15 U	121	81-134	0.2	17	
Chlorobenzene	21		1.0	ug/L	20.0	0.17 U	105	83-117	3	16	
cis-1,2-Dichloroethene	24		1.0	ug/L	20.0	0.15 U	120	69-120	0.9	18	
Toluene	22		1.0	ug/L	20.0	0.14 U	111	71-118	5	17	
Trichloroethene	23		1.0	ug/L	20.0	0.15 U	114	74-119	2	22	
Vinyl chloride	19		1.0	ug/L	20.0	0.32 U	97	49-150	2	27	
<i>4-Bromofluorobenzene</i>	<i>56</i>			<i>ug/L</i>	<i>50.0</i>		<i>111</i>	<i>53-136</i>			
<i>Dibromofluoromethane</i>	<i>65</i>			<i>ug/L</i>	<i>50.0</i>		<i>130</i>	<i>67-129</i>			QS-03
<i>Toluene-d8</i>	<i>57</i>			<i>ug/L</i>	<i>50.0</i>		<i>114</i>	<i>59-134</i>			

QUALITY CONTROL DATA

Volatile Organic Compounds by GCMS - Quality Control

Batch 7G27010 - EPA 5030B_MS

Blank (7G27010-BLK1)

Prepared: 07/27/2017 09:47 Analyzed: 07/27/2017 16:48

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
cis-1,2-Dichloroethene	0.15	U	1.0	ug/L							
Vinyl chloride	0.32	U	1.0	ug/L							
4-Bromofluorobenzene	48			ug/L	50.0		96	53-136			
Dibromofluoromethane	54			ug/L	50.0		107	67-129			
Toluene-d8	54			ug/L	50.0		107	59-134			

LCS (7G27010-BS1)

Prepared: 07/27/2017 09:47 Analyzed: 07/27/2017 14:47

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	23		1.0	ug/L	20.0		117	75-133			
Benzene	22		1.0	ug/L	20.0		108	81-134			
Chlorobenzene	21		1.0	ug/L	20.0		104	83-117			
cis-1,2-Dichloroethene	23		1.0	ug/L	20.0		115	69-120			
Toluene	22		1.0	ug/L	20.0		111	71-118			
Trichloroethene	20		1.0	ug/L	20.0		102	74-119			
Vinyl chloride	22		1.0	ug/L	20.0		111	49-150			
4-Bromofluorobenzene	48			ug/L	50.0		96	53-136			
Dibromofluoromethane	51			ug/L	50.0		101	67-129			
Toluene-d8	49			ug/L	50.0		98	59-134			

Matrix Spike (7G27010-MS1)

Prepared: 07/27/2017 09:47 Analyzed: 07/27/2017 15:18

Source: CA10528-06

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	21		1.0	ug/L	20.0	1.2	100	75-133			
Benzene	20		1.0	ug/L	20.0	0.15 U	102	81-134			
Chlorobenzene	19		1.0	ug/L	20.0	0.17 U	96	83-117			
cis-1,2-Dichloroethene	29		1.0	ug/L	20.0	7.8	109	69-120			
Toluene	20		1.0	ug/L	20.0	0.14 U	101	71-118			
Trichloroethene	38		1.0	ug/L	20.0	20	93	74-119			
Vinyl chloride	19		1.0	ug/L	20.0	0.32 U	96	49-150			
4-Bromofluorobenzene	48			ug/L	50.0		97	53-136			
Dibromofluoromethane	49			ug/L	50.0		98	67-129			
Toluene-d8	48			ug/L	50.0		97	59-134			

Matrix Spike Dup (7G27010-MSD1)

Prepared: 07/27/2017 09:47 Analyzed: 07/27/2017 15:48

Source: CA10528-06

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	22		1.0	ug/L	20.0	1.2	106	75-133	5	20	
Benzene	21		1.0	ug/L	20.0	0.15 U	107	81-134	5	17	
Chlorobenzene	20		1.0	ug/L	20.0	0.17 U	102	83-117	6	16	
cis-1,2-Dichloroethene	31		1.0	ug/L	20.0	7.8	116	69-120	5	18	
Toluene	22		1.0	ug/L	20.0	0.14 U	108	71-118	6	17	
Trichloroethene	40		1.0	ug/L	20.0	20	98	74-119	3	22	
Vinyl chloride	19		1.0	ug/L	20.0	0.32 U	96	49-150	0.9	27	
4-Bromofluorobenzene	48			ug/L	50.0		97	53-136			
Dibromofluoromethane	49			ug/L	50.0		98	67-129			
Toluene-d8	48			ug/L	50.0		96	59-134			

QUALITY CONTROL DATA

Semivolatile Organic Compounds by GCMS - Quality Control

Batch 7G19015 - EPA 3510C_MS

Blank (7G19015-BLK1)

Prepared: 07/19/2017 12:29 Analyzed: 07/20/2017 16:18

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Phenol	1.4	U	10	ug/L							
2,4,6-Tribromophenol	79			ug/L	100		79	10-179			
2-Fluorophenol	54			ug/L	100		54	10-110			
Phenol-d5	49			ug/L	100		49	10-88			

LCS (7G19015-BS1)

Prepared: 07/19/2017 12:29 Analyzed: 07/20/2017 14:14

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
2-Chlorophenol	37		10	ug/L	50.0		73	40-109			
4-Chloro-3-methylphenol	39		10	ug/L	50.0		79	58-121			
4-Nitrophenol	31		10	ug/L	50.0		61	33-105			
Pentachlorophenol	41		10	ug/L	50.0		83	51-135			
Phenol	29		10	ug/L	50.0		58	19-78			
2,4,6-Tribromophenol	98			ug/L	100		98	10-179			
2-Fluorophenol	69			ug/L	100		69	10-110			
Phenol-d5	58			ug/L	100		58	10-88			

Matrix Spike (7G19015-MS1)

Prepared: 07/19/2017 12:29 Analyzed: 07/20/2017 14:45

Source: CA10949-03

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
2-Chlorophenol	30		10	ug/L	50.0	1.2 U	60	40-109			
4-Chloro-3-methylphenol	39		10	ug/L	50.0	1.5 U	78	58-121			
4-Nitrophenol	27		10	ug/L	50.0	2.0 U	53	33-105			
Pentachlorophenol	43		10	ug/L	50.0	1.8 U	86	51-135			
Phenol	23		10	ug/L	50.0	1.4 U	45	19-78			
2,4,6-Tribromophenol	92			ug/L	100		92	10-179			
2-Fluorophenol	51			ug/L	100		51	10-110			
Phenol-d5	45			ug/L	100		45	10-88			

Matrix Spike Dup (7G19015-MSD1)

Prepared: 07/19/2017 12:29 Analyzed: 07/20/2017 15:16

Source: CA10949-03

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
2-Chlorophenol	28		10	ug/L	50.0	1.2 U	56	40-109	6	22	
4-Chloro-3-methylphenol	37		10	ug/L	50.0	1.5 U	74	58-121	5	22	
4-Nitrophenol	28		10	ug/L	50.0	2.0 U	56	33-105	5	27	
Pentachlorophenol	44		10	ug/L	50.0	1.8 U	88	51-135	3	11	
Phenol	21		10	ug/L	50.0	1.4 U	41	19-78	10	18	
2,4,6-Tribromophenol	92			ug/L	100		92	10-179			
2-Fluorophenol	48			ug/L	100		48	10-110			
Phenol-d5	44			ug/L	100		44	10-88			

Classical Chemistry Parameters - Quality Control

Batch 7G19017 - NO PREP

Blank (7G19017-BLK1)

Prepared: 07/19/2017 11:44 Analyzed: 07/19/2017 11:44

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
FINAL											

QUALITY CONTROL DATA

Classical Chemistry Parameters - Quality Control

Batch 7G19017 - NO PREP - Continued

Blank (7G19017-BLK1) Continued

Prepared: 07/19/2017 11:44 Analyzed: 07/19/2017 11:44

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrite as N	0.017	U	0.10	mg/L							

LCS (7G19017-BS1)

Prepared: 07/19/2017 11:36 Analyzed: 07/19/2017 11:36

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrite as N	0.98		0.10	mg/L	1.00		98	90-110			

Matrix Spike (7G19017-MS1)

Prepared: 07/19/2017 11:45 Analyzed: 07/19/2017 11:45

Source: CA01119-02

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrite as N	3.4	E	0.10	mg/L	1.00	3.3	11	90-110			QM-07

Matrix Spike (7G19017-MS2)

Prepared: 07/19/2017 11:51 Analyzed: 07/19/2017 11:51

Source: CA01119-05

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrite as N	3.4	E	0.10	mg/L	1.00	3.3	12	90-110			QM-07

Matrix Spike Dup (7G19017-MSD1)

Prepared: 07/19/2017 11:47 Analyzed: 07/19/2017 11:47

Source: CA01119-02

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrite as N	3.4	E	0.10	mg/L	1.00	3.3	11	90-110	0.02	10	QM-07

Batch 7G19032 - NO PREP

Blank (7G19032-BLK1)

Prepared: 07/19/2017 14:01 Analyzed: 07/19/2017 14:01

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrite as N	0.017	U	0.10	mg/L							

LCS (7G19032-BS1)

Prepared: 07/19/2017 14:00 Analyzed: 07/19/2017 14:00

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrite as N	0.99		0.10	mg/L	1.00		99	90-110			

LCS (7G19032-BS2)

Prepared: 07/19/2017 14:12 Analyzed: 07/19/2017 14:12

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrite as N	1.0		0.10	mg/L	1.00		100	90-110			

LCS (7G19032-BS3)

Prepared: 07/19/2017 14:40 Analyzed: 07/19/2017 14:40

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrite as N	0.99		0.10	mg/L	1.00		99	90-110			

LCS (7G19032-BS4)

Prepared: 07/19/2017 14:46 Analyzed: 07/19/2017 14:46

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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QUALITY CONTROL DATA

Classical Chemistry Parameters - Quality Control

Batch 7G19032 - NO PREP - Continued

LCS (7G19032-BS4) Continued

Prepared: 07/19/2017 14:46 Analyzed: 07/19/2017 14:46

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrite as N	0.99		0.10	mg/L	1.00		99	90-110			

Matrix Spike (7G19032-MS1)

Prepared: 07/19/2017 14:41 Analyzed: 07/19/2017 14:41

Source: CA01119-02RE2

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrite as N	19		1.0	mg/L	10.0	10	92	90-110			

Matrix Spike (7G19032-MS2)

Prepared: 07/19/2017 14:09 Analyzed: 07/19/2017 14:09

Source: CA01119-05RE1

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrite as N	9.4		0.50	mg/L	5.00	4.9	90	90-110			

Matrix Spike Dup (7G19032-MSD1)

Prepared: 07/19/2017 14:43 Analyzed: 07/19/2017 14:43

Source: CA01119-02RE2

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrite as N	19		1.0	mg/L	10.0	10	89	90-110	1	10	QM-07

Batch 7H07020 - NO PREP

Blank (7H07020-BLK1)

Prepared: 08/07/2017 11:11 Analyzed: 08/07/2017 11:11

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	0.045	U	0.10	mg/L							

LCS (7H07020-BS1)

Prepared: 08/07/2017 11:13 Analyzed: 08/07/2017 11:13

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	1.0		0.10	mg/L	0.989		104	90-110			

Matrix Spike (7H07020-MS1)

Prepared: 08/07/2017 11:15 Analyzed: 08/07/2017 11:15

Source: CA01119-01

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	7.1		1.0	mg/L	3.96	3.6	89	90-110			QM-07

Matrix Spike (7H07020-MS2)

Prepared: 08/07/2017 11:23 Analyzed: 08/07/2017 11:23

Source: CA01119-02

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	490		50	mg/L	198	290	102	90-110			

Matrix Spike Dup (7H07020-MSD1)

Prepared: 08/07/2017 11:19 Analyzed: 08/07/2017 11:19

Source: CA01119-01

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	7.2		1.0	mg/L	3.96	3.6	92	90-110	2	10	

Batch 7H07026 - NO PREP

QUALITY CONTROL DATA

Classical Chemistry Parameters - Quality Control

Batch 7H07026 - NO PREP - Continued

Blank (7H07026-BLK1)

Prepared: 08/07/2017 14:29 Analyzed: 08/07/2017 14:29

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	0.045	U	0.10	mg/L							

LCS (7H07026-BS1)

Prepared: 08/07/2017 14:31 Analyzed: 08/07/2017 14:31

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	1.0		0.10	mg/L	0.989		103	90-110			

Matrix Spike (7H07026-MS1)

Prepared: 08/07/2017 14:33 Analyzed: 08/07/2017 14:33

Source: CA01119-03

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	400	E	20	mg/L	79.2	350	66	90-110			QM-07

Matrix Spike (7H07026-MS2)

Prepared: 08/07/2017 16:25 Analyzed: 08/07/2017 16:25

Source: CA01119-04RE1

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	4500		500	mg/L	1980	2600	95	90-110			

Matrix Spike Dup (7H07026-MSD1)

Prepared: 08/07/2017 14:42 Analyzed: 08/07/2017 14:42

Source: CA01119-03

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	410	E	20	mg/L	79.2	350	82	90-110	3	10	QM-07

Classical Chemistry Parameters - Quality Control

Batch 7H07033 - NO PREP

Blank (7H07033-BLK1)

Prepared: 08/07/2017 12:00 Analyzed: 08/07/2017 12:22

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrate/Nitrite as N	0.016	U	0.050	mg/L							

LCS (7H07033-BS1)

Prepared: 08/07/2017 12:00 Analyzed: 08/07/2017 12:23

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrate/Nitrite as N	0.50		0.050	mg/L	0.500		99	84-116			

Duplicate (7H07033-DUP1)

Prepared: 08/07/2017 12:00 Analyzed: 08/07/2017 13:02

Source: CA01119-02

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrate/Nitrite as N	0.15		0.050	mg/L		0.016 U				200	

Matrix Spike (7H07033-MS2)

Prepared: 08/07/2017 12:00 Analyzed: 08/07/2017 12:42

Source: CA01119-02

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrate/Nitrite as N	62	D	5.0	mg/L	0.500	65	NR	84-116			QM-07

QUALITY CONTROL DATA

Classical Chemistry Parameters - Quality Control

Batch 7H07033 - NO PREP - Continued

Matrix Spike Dup (7H07033-MSD2)

Prepared: 08/07/2017 12:00 Analyzed: 08/07/2017 12:48

Source: CA01119-02

<u>Analyte</u>	<u>Result</u>	<u>Flaq</u>	<u>POL</u>	<u>Units</u>	<u>Spike Level</u>	<u>Source Result</u>	<u>%REC</u>	<u>%REC Limits</u>	<u>RPD</u>	<u>RPD Limit</u>	<u>Notes</u>
Nitrate/Nitrite as N	64	D	5.0	mg/L	0.500	65	NR	84-116	3	10	QM-07

Non-Halogenated Volatile Organics by GC - Quality Control

Batch 7G19014 - Same

Blank (7G19014-BLK1)

Prepared: 07/19/2017 16:08 Analyzed: 07/19/2017 17:01

<u>Analyte</u>	<u>Result</u>	<u>Flaq</u>	<u>POL</u>	<u>Units</u>	<u>Spike Level</u>	<u>Source Result</u>	<u>%REC</u>	<u>%REC Limits</u>	<u>RPD</u>	<u>RPD Limit</u>	<u>Notes</u>
Methanol	0.52	U	1.0	mg/L							
2-Hexanone	1.3			mg/L	1.08		125	52-153			

LCS (7G19014-BS1)

Prepared: 07/19/2017 16:08 Analyzed: 07/19/2017 17:24

<u>Analyte</u>	<u>Result</u>	<u>Flaq</u>	<u>POL</u>	<u>Units</u>	<u>Spike Level</u>	<u>Source Result</u>	<u>%REC</u>	<u>%REC Limits</u>	<u>RPD</u>	<u>RPD Limit</u>	<u>Notes</u>
Methanol	17		1.0	mg/L	20.0		86	77-123			
2-Hexanone	1.3			mg/L	1.08		120	52-153			

Matrix Spike (7G19014-MS1)

Prepared: 07/19/2017 16:08 Analyzed: 07/19/2017 18:10

Source: BA03174-01

<u>Analyte</u>	<u>Result</u>	<u>Flaq</u>	<u>POL</u>	<u>Units</u>	<u>Spike Level</u>	<u>Source Result</u>	<u>%REC</u>	<u>%REC Limits</u>	<u>RPD</u>	<u>RPD Limit</u>	<u>Notes</u>
Methanol	19		1.0	mg/L	20.0	0.92	90	77-123			
2-Hexanone	1.2			mg/L	1.08		110	52-153			

Matrix Spike Dup (7G19014-MSD1)

Prepared: 07/19/2017 16:08 Analyzed: 07/19/2017 18:34

Source: BA03174-01

<u>Analyte</u>	<u>Result</u>	<u>Flaq</u>	<u>POL</u>	<u>Units</u>	<u>Spike Level</u>	<u>Source Result</u>	<u>%REC</u>	<u>%REC Limits</u>	<u>RPD</u>	<u>RPD Limit</u>	<u>Notes</u>
Methanol	22		1.0	mg/L	20.0	0.92	105	77-123	15	25	
2-Hexanone	1.3			mg/L	1.08		121	52-153			

FLAGS/NOTES AND DEFINITIONS

- B** The analyte was detected in the associated method blank.
- D** The sample was analyzed at dilution.
- J** The reported value is between the laboratory method detection limit (MDL) and the laboratory method reporting limit (MRL), adjusted for actual sample preparation data and moisture content, where applicable.
- U** The analyte was analyzed for but not detected to the level shown, adjusted for actual sample preparation data and moisture content, where applicable.
- E** The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate.
- MRL** Method Reporting Limit. The MRL is roughly equivalent to the practical quantitation limit (PQL) and is based on the low point of the calibration curve, when applicable, sample preparation factor, dilution factor, and, in the case of soil samples, moisture content.
- PQL** PQL: Practical Quantitation Limit.
- N** The analysis indicates the presence of an analyte for which there is presumptive evidence (85% or greater confidence) to make a "tentative identification".
- P** Greater than 25% concentration difference was observed between the primary and secondary GC column. The lower concentration is reported.
- QM-07** The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- QS-03** Surrogate recovery outside acceptance limits
- QV-01** The associated continuing calibration verification standard exhibited high bias; since the result is ND, there is no impact.



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 Cary, NC 27511
 (919) 467-3090 Fax (919) 467-3515

www.encolabs.com
 Page ___ of ___
 Requested Turnaround Times
 Standard _____
 Expedited _____
 Due ___/___/___
 Lab Workorder
CA01119

Client Name: **ARCADIS (AR017)**
 Address: **801 Corporate Center Drive, Suite 300**
 City/ST/Zip: **Raleigh, NC 27607**
 Tel: **(919) 854-1282**
 Fax: _____
 Project Number: **NC108008.0032**
 Project Name/Desc: **Hexion - Semi-Annual**
 PO # / Billing Info: **NC108008.0032**
 Reporting Contact: **Ryan Gerber**
 Billing Contact: **Accounts Payable**
 Site Location / Time Zone: _____

Requested Analyses
8015
8015.8260B
8260B
8270D
8270D AE
8315A Formaldehyde
Ammonia 350.1
Ammonia 350.1, NOX 353.2
Nitrate Calc 353.2
Nitrite as N 353.2

Note: Rush requests subject to acceptance by the facility.
 Requested Turnaround Times
 Standard _____
 Expedited _____
 Due ___/___/___
 Lab Workorder
CA01119

Item #	Sample ID (Field Identification)	Collection Date	Collection Time	Comp / Grab	Matrix (see codes)	Total # of Containers	Preservation (See Codes) (Combine as necessary)
RW-2		7-18-17	1425	G	WA	4	X
RW-5		7-18-17	1440	G	WA	6	X
RW-6		7-18-17	1615	G	WA	1	X
RW-7		7-18-17	1515	G	WA	2	X
PW-1R		7-18-17	1515	G	WA	7	X
PW-2R		7-18-17	1515	G	WA	2	X
MW-39		7-18-17	1255	G	WA	5	X
MW-40					WA	1	X
MW-41					WA	1	X
MW-44					WA	2	X
MW-45					WA	1	X
MW-47					WA	1	X

Sample Kit Prepared By: _____ Date/Time: _____
 Comments/Special Reporting Requirements: _____
 Relinquished By: *Ryan Gerber* Date/Time: **7-18-17**
 Relinquished By: *Ryan Gerber* Date/Time: **7/19/17 0820**
 Relinquished By: *Ryan Gerber* Date/Time: **7/19/17 0820**
 Cooler #'s & Temps on Receipt: **D.41**
 Condition Upon Receipt: Acceptable Unacceptable
 Received By: *Ryan Gerber* Date/Time: **7/18/17**
 Received By: *Ryan Gerber* Date/Time: **7/19/17 0820**

Matrix: GW-Groundwater SO-Soil DW-Drinking Water SE-Sediment SW-Surface Water WW-Wastewater A-Air O-Other (detail in comments)
 Preservation: H-HCl N-HNO3 S-H2SO4 NO-NaOH O-Other (detail in comments)
 Note: All samples submitted to ENCO Labs are in accordance with the terms and conditions listed on the reverse of this form, unless prior written agreements exist.

Sample Preservation Verification

ENCO Cary



Work Order: CA01119
 Client: ARCADIS (AR017)
 Logged In: 19-Jul-17 08:40

Project: Hexion- Semi-Annual
 Project #: NC108008.0032
 Logged By: John C King

CA01119-01

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA01119-02

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
C	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA01119-03

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA01119-04

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
D	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA	7-19-17 10:00	+2ml H2SO4

CA01119-05

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
B	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA01119-06

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA01119-07

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA01119-08

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

	Reagent Name	ID
1	H2SO4	C7C0488
2		

	Reagent Name	ID
3		
4		

	Reagent Name	ID
5		
6		



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Cary, NC 27511
(919) 467-3090 Fax (919) 467-3515

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Client Name: ARCADIS (AR017)
Address: 801 Corporate Center Drive, Suite 300
City/ST/Zip: Raleigh, NC 27607
Tel: (919) 854-1282
Fax: (919) 854-1282
Sampler(s) Name, Affiliation (Print): Ryan Gerber
Billing Contact: Accounts Payable
Sampler(s) Signature: _____
Site Location / Time Zone: _____

Project Number: NC108008.0032
Project Name/Desc: Hexion - SW
PO # / Billing Info: NC108008.0032
Reporting Contact: Ryan Gerber

Requested Analyses
Ammonia 350.1
Formaldehyde 8315
Nitrate 353.2
Nitrite

Requested Turnaround Times: _____
Standard _____
Expedited _____
Due: ___/___/___
Lab Workorder: CA01120

Item #	Sample ID (Field Identification)	Collection Date	Collection Time	Comp / Grab	Matrix (see codes)	Total # of Containers	Preservation (See Codes) (Combine as necessary)	Sample Comments
	SWS-2	7/18/17	15:40	Grab	SW	1	X	
	SWS-3	7/18/17	16:00	Grab	SW	1	X	
	SWS-4	7/18/17	16:10	Grab	SW	1	X	
	SWS-DUP	7/18/17	-	Grab	SW	1	X	
<u>Equipment Blank</u>								
	RW-7	7/18/17	12:30	Grab	GW	2	X	
	MW-44	7/18/17	13:50	Grab	GW	2	X	
	PW-2R	7/18/17	13:57	Grab	GW	2	X	
	P2-1GR	7/18/17	14:55	Grab	GW	2	X	

Sample Kit Prepared By: _____ Date/Time: _____
Relinquished By: _____ Date/Time: 7/19/2017 8:20
Received By: _____ Date/Time: 7/19/17 08:20
Relinquished By: _____ Date/Time: _____
Received By: _____ Date/Time: _____
Condition Upon Receipt: Acceptable Unacceptable

Matrix: GW-Groundwater SO-Soil DW-Drinking Water SE-Sediment SW-Surface Water WW-Wastewater A-Air O-Other (detail in comments)
Preservation: I-Ice H-HCl N-HNO3 S-H2SO4 NO-NaOH O-Other (detail in comments)
Note: All samples submitted to ENCO Labs are in accordance with the terms and conditions listed on the reverse of this form, unless prior written agreements exist.

Sample Preservation Verification

ENCO Cary



Work Order: CA01120
 Client: ARCADIS (AR017)
 Logged In: 19-Jul-17 09:14

Project: Hexion - SW
 Project #: NC108008.0032
 Logged By: John C King

CA01120-01

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA01120-02

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA01120-03

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA01120-04

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA01120-05

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA01120-06

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA01120-07

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA01120-08

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

	Reagent Name	ID
1		
2		

	Reagent Name	ID
3		
4		

	Reagent Name	ID
5		
6		



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Tuesday, November 21, 2017

ARCADIS (AR017)

Attn: Ryan Gerber

801 Corporate Center Drive, Suite 300

Raleigh, NC 27607

RE: Laboratory Results for

Project Number: NC108008.0032, Project Name/Desc: Hexion- Semi-Annual

ENCO Workorder(s): CA16305

Dear Ryan Gerber,

Enclosed is a copy of your laboratory report for test samples received by our laboratory on Tuesday, October 31, 2017.

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. Results for these procedures apply only to the samples as submitted.

The analytical results contained in this report are in compliance with NELAC standards, except as noted in the project narrative. This report shall not be reproduced except in full, without the written approval of the Laboratory.

This report contains only those analyses performed by Environmental Conservation Laboratories. Unless otherwise noted, all analyses were performed at ENCO Cary. Data from outside organizations will be reported under separate cover.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Bill Scott

Project Manager

Enclosure(s)

PROJECT NARRATIVE

Client: ARCADIS (AR017)
Project: Hexion- Semi-Annual
ENCO Project ID: CA16305

Overview

All samples submitted were analyzed by Environmental Conservation Laboratories, Inc. in accordance with the methods referenced in the laboratory report. Any particular difficulties encountered during sample handling and processing will be discussed in the Remarks section below. ENCO's North Carolina certification number is 591.

Samples may have been diluted due to high target analyte concentrations or due to matrix interference. See individual sample data sheets for dilution factors.

Remarks

Analysis: EPA 350.1, EPA 353.2

Affected Samples: PW-1R[CA16305-04], MW-39[CA16305-06], DUP-02 (103117)[CA16305-21]

Upon arrival at the laboratory, the pH of the sample was checked and found to not be in compliance with method limits. Preservative was added to the sample.

Analysis: EPA 353.2

Affected Samples: 7K01040-MS1, 7K01040-MSD1, RW-5[CA16305-02], RW-5[CA16305-02RE1], PW-2R[CA16305-05], MW-39[CA16305-06], DUP-02 (103117)[CA16305-21], Equipment Blank (103117) [CA16305-24]

The matrix spike and/or matrix spike duplicate had recoveries that were outside acceptance limits, but by virtue of a laboratory control sample being in control, the laboratory has demonstrated to be in control of its internal process.

Analysis: EPA 353.2

Affected Samples: 7K02015-MS1, 7K02015-MS2, 7K02015-MSD1, RW-5[CA16305-02], RW-5[CA16305-02RE1], PW-2R[CA16305-05], MW-39[CA16305-06], DUP-02 (103117)[CA16305-21], Equipment Blank (103117) [CA16305-24]

The matrix spike and/or matrix spike duplicate had recoveries that were outside acceptance limits, but by virtue of a laboratory control sample being in control, the laboratory has demonstrated to be in control of its internal process.

Analysis: EPA 350.1

Affected Samples: 7K01019-MS1, 7K01019-MSD1, DUP-01 (103017)[CA16305-22], DUP-01 (103017) [CA16305-22RE1], Equip Blank (103017)[CA16305-23], Equipment Blank (103117)[CA16305-24]

The matrix spike and/or matrix spike duplicate had recoveries that were outside acceptance limits, but by virtue of a laboratory control sample being in control, the laboratory has demonstrated to be in control of its internal process.

Analysis: EPA 350.1

Affected Samples: 7K01026-MS1, 7K01026-MSD1, RW-2[CA16305-01], RW-5[CA16305-02], RW-7[CA16305-03],

PW-1R[CA16305-04], PW-2R[CA16305-05], MW-39[CA16305-06], MW-40[CA16305-07], MW-44[CA16305-09], MW-45[CA16305-10], MW-47[CA16305-11], PZ-10[CA16305-12], PZ-12[CA16305-13], PZ-13[CA16305-14], PZ-14R[CA16305-15], PZ-14R[CA16305-15RE1], PZ-16R[CA16305-16], PZ-18[CA16305-17], PZ-34[CA16305-18], PZ-34[CA16305-18RE1], PZ-38[CA16305-19], T-22[CA16305-20], DUP-02 (103117) [CA16305-21]

The matrix spike and/or matrix spike duplicate had recoveries that were outside acceptance limits, but by virtue of a laboratory control sample being in control, the laboratory has demonstrated to be in control of its internal process.

Analysis: EPA 350.1

Affected Samples: 7K01029-MS1, 7K01029-MSD1, MW-41[CA16305-08]

The matrix spike and/or matrix spike duplicate had recoveries that were outside acceptance limits, but by virtue of a laboratory control sample being in control, the laboratory has demonstrated to be in control of its internal process.

Bill Scott
Project Manager

SAMPLE SUMMARY/LABORATORY CHRONICLE

Client ID: RW-2	Lab ID: CA16305-01	Sampled: 10/30/17 16:15	Received: 10/31/17 16:27
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<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>	<u>Prep Date/Time(s)</u>	<u>Analysis Date/Time(s)</u>
EPA 350.1	NO PREP	11/27/17	11/01/17 12:42	11/01/17 12:42

Client ID: RW-5	Lab ID: CA16305-02	Sampled: 10/31/17 12:50	Received: 10/31/17 16:27
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<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>	<u>Prep Date/Time(s)</u>	<u>Analysis Date/Time(s)</u>
EPA 350.1	NO PREP	11/28/17	11/01/17 12:48	11/01/17 12:48
EPA 353.2	NO PREP	07/26/20	11/03/17 10:50	11/03/17 10:58
EPA 8260B	EPA 5030B_MS	11/14/17	11/01/17 15:47	11/02/17 16:51

Client ID: RW-5	Lab ID: CA16305-02RE1	Sampled: 10/31/17 12:50	Received: 10/31/17 16:27
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<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>	<u>Prep Date/Time(s)</u>	<u>Analysis Date/Time(s)</u>
EPA 353.2	NO PREP	11/02/17 12:50	11/01/17 16:04	11/01/17 16:04
EPA 353.2	NO PREP	11/28/17	11/02/17 13:17	11/02/17 13:17

Client ID: RW-7	Lab ID: CA16305-03	Sampled: 10/31/17 11:00	Received: 10/31/17 16:27
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<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>	<u>Prep Date/Time(s)</u>	<u>Analysis Date/Time(s)</u>
EPA 350.1	NO PREP	11/28/17	11/01/17 12:51	11/01/17 12:51

Client ID: PW-1R	Lab ID: CA16305-04	Sampled: 10/31/17 12:10	Received: 10/31/17 16:27
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<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>	<u>Prep Date/Time(s)</u>	<u>Analysis Date/Time(s)</u>
EPA 350.1	NO PREP	11/28/17	11/01/17 12:53	11/01/17 12:53
EPA 8260B	EPA 5030B_MS	11/14/17	11/01/17 15:47	11/02/17 17:21
EPA 8270D	EPA 3510C_MS	11/07/17 12/12/17	11/02/17 12:20	11/06/17 19:32

Client ID: PW-2R	Lab ID: CA16305-05	Sampled: 10/31/17 11:16	Received: 10/31/17 16:27
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<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>	<u>Prep Date/Time(s)</u>	<u>Analysis Date/Time(s)</u>
EPA 350.1	NO PREP	11/28/17	11/01/17 12:58	11/01/17 12:58
EPA 353.2	NO PREP	11/02/17 11:16	11/01/17 15:13	11/01/17 15:13
EPA 353.2	NO PREP	11/28/17	11/02/17 12:05	11/02/17 12:05
EPA 353.2	NO PREP	07/26/20	11/03/17 10:50	11/03/17 10:58

Client ID: MW-39	Lab ID: CA16305-06	Sampled: 10/31/17 13:47	Received: 10/31/17 16:27
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<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>	<u>Prep Date/Time(s)</u>	<u>Analysis Date/Time(s)</u>
EPA 350.1	NO PREP	11/28/17	11/01/17 13:00	11/01/17 13:00
EPA 353.2	NO PREP	11/02/17 13:47	11/01/17 15:15	11/01/17 15:15
EPA 353.2	NO PREP	11/28/17	11/02/17 12:07	11/02/17 12:07
EPA 353.2	NO PREP	07/26/20	11/03/17 10:50	11/03/17 10:58
EPA 8260B	EPA 5030B_MS	11/14/17	11/01/17 15:47	11/02/17 17:51

Client ID: MW-40	Lab ID: CA16305-07	Sampled: 10/30/17 14:33	Received: 10/31/17 16:27
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<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>	<u>Prep Date/Time(s)</u>	<u>Analysis Date/Time(s)</u>
EPA 350.1	NO PREP	11/27/17	11/01/17 13:02	11/01/17 13:02

Client ID: MW-41	Lab ID: CA16305-08	Sampled: 10/30/17 15:25	Received: 10/31/17 16:27
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<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>	<u>Prep Date/Time(s)</u>	<u>Analysis Date/Time(s)</u>
EPA 350.1	NO PREP	11/27/17	11/01/17 13:33	11/01/17 13:33

Client ID: MW-44	Lab ID: CA16305-09	Sampled: 10/31/17 10:46	Received: 10/31/17 16:27
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<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>	<u>Prep Date/Time(s)</u>	<u>Analysis Date/Time(s)</u>
EPA 350.1	NO PREP	11/28/17	11/01/17 13:03	11/01/17 13:03

SAMPLE SUMMARY/LABORATORY CHRONICLE

Client ID: MW-45		Lab ID: CA16305-10		Sampled: 10/31/17 09:36		Received: 10/31/17 16:27	
<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>		<u>Prep Date/Time(s)</u>		<u>Analysis Date/Time(s)</u>	
EPA 350.1	NO PREP	11/28/17		11/01/17 13:05		11/01/17 13:05	
Client ID: MW-47		Lab ID: CA16305-11		Sampled: 10/31/17 12:57		Received: 10/31/17 16:27	
<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>		<u>Prep Date/Time(s)</u>		<u>Analysis Date/Time(s)</u>	
EPA 350.1	NO PREP	11/28/17		11/01/17 13:07		11/01/17 13:07	
Client ID: PZ-10		Lab ID: CA16305-12		Sampled: 10/30/17 15:08		Received: 10/31/17 16:27	
<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>		<u>Prep Date/Time(s)</u>		<u>Analysis Date/Time(s)</u>	
EPA 350.1	NO PREP	11/27/17		11/01/17 13:09		11/01/17 13:09	
Client ID: PZ-12		Lab ID: CA16305-13		Sampled: 10/30/17 15:55		Received: 10/31/17 16:27	
<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>		<u>Prep Date/Time(s)</u>		<u>Analysis Date/Time(s)</u>	
EPA 350.1	NO PREP	11/27/17		11/01/17 13:10		11/01/17 13:10	
Client ID: PZ-13		Lab ID: CA16305-14		Sampled: 10/31/17 11:21		Received: 10/31/17 16:27	
<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>		<u>Prep Date/Time(s)</u>		<u>Analysis Date/Time(s)</u>	
EPA 350.1	NO PREP	11/28/17		11/01/17 13:12		11/01/17 13:12	
Client ID: PZ-14R		Lab ID: CA16305-15		Sampled: 10/31/17 12:07		Received: 10/31/17 16:27	
<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>		<u>Prep Date/Time(s)</u>		<u>Analysis Date/Time(s)</u>	
EPA 8260B	EPA 5030B_MS	11/14/17		11/01/17 15:47		11/02/17 18:22	
Client ID: PZ-14R		Lab ID: CA16305-15RE1		Sampled: 10/31/17 12:07		Received: 10/31/17 16:27	
<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>		<u>Prep Date/Time(s)</u>		<u>Analysis Date/Time(s)</u>	
EPA 350.1	NO PREP	11/28/17		11/01/17 14:11		11/01/17 14:11	
Client ID: PZ-16R		Lab ID: CA16305-16		Sampled: 10/31/17 10:10		Received: 10/31/17 16:27	
<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>		<u>Prep Date/Time(s)</u>		<u>Analysis Date/Time(s)</u>	
EPA 350.1	NO PREP	11/28/17		11/01/17 13:19		11/01/17 13:19	
Client ID: PZ-18		Lab ID: CA16305-17		Sampled: 10/30/17 14:26		Received: 10/31/17 16:27	
<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>		<u>Prep Date/Time(s)</u>		<u>Analysis Date/Time(s)</u>	
EPA 350.1	NO PREP	11/27/17		11/01/17 13:21		11/01/17 13:21	
Client ID: PZ-34		Lab ID: CA16305-18RE1		Sampled: 10/30/17 16:30		Received: 10/31/17 16:27	
<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>		<u>Prep Date/Time(s)</u>		<u>Analysis Date/Time(s)</u>	
EPA 350.1	NO PREP	11/27/17		11/01/17 14:13		11/01/17 14:13	
Client ID: PZ-38		Lab ID: CA16305-19		Sampled: 10/31/17 09:37		Received: 10/31/17 16:27	
<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>		<u>Prep Date/Time(s)</u>		<u>Analysis Date/Time(s)</u>	
EPA 350.1	NO PREP	11/28/17		11/01/17 13:24		11/01/17 13:24	
Client ID: T-22		Lab ID: CA16305-20		Sampled: 10/31/17 10:27		Received: 10/31/17 16:27	
<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>		<u>Prep Date/Time(s)</u>		<u>Analysis Date/Time(s)</u>	
EPA 350.1	NO PREP	11/28/17		11/01/17 13:26		11/01/17 13:26	
Client ID: DUP-02 (103117)		Lab ID: CA16305-21		Sampled: 10/31/17 00:00		Received: 10/31/17 16:27	
<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>		<u>Prep Date/Time(s)</u>		<u>Analysis Date/Time(s)</u>	
EPA 350.1	NO PREP	11/28/17		11/01/17 13:28		11/01/17 13:28	
EPA 353.2	NO PREP	11/02/17 00:00		11/01/17 15:16		11/01/17 15:16	
EPA 353.2	NO PREP	11/28/17		11/02/17 12:09		11/02/17 12:09	
EPA 353.2	NO PREP	07/26/20		11/03/17 10:50		11/03/17 10:58	
EPA 8260B	EPA 5030B_MS	11/14/17		11/01/17 13:29		11/01/17 22:34	
EPA 8270D	EPA 3510C_MS	11/07/17 12/12/17		11/02/17 12:20		11/06/17 19:58	

SAMPLE DETECTION SUMMARY

Client ID: RW-2 **Lab ID: CA16305-01**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	4.0		0.45	1.0	mg/L	EPA 350.1	

Client ID: RW-5 **Lab ID: CA16305-02**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	390		22	50	mg/L	EPA 350.1	
cis-1,2-Dichloroethene	0.69	J	0.15	1.0	ug/L	EPA 8260B	
Nitrate as N	32		0.025	0.10	mg/L	EPA 353.2	
Vinyl chloride	1.0		0.32	1.0	ug/L	EPA 8260B	

Client ID: RW-5 **Lab ID: CA16305-02RE1**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Nitrate/Nitrite as N	41		0.82	2.0	mg/L	EPA 353.2	
Nitrite as N	8.8		0.084	0.50	mg/L	EPA 353.2	

Client ID: RW-7 **Lab ID: CA16305-03**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	370	D	20	45	mg/L	EPA 350.1	

Client ID: PW-1R **Lab ID: CA16305-04**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	3000	D	100	220	mg/L	EPA 350.1	
cis-1,2-Dichloroethene	64		0.15	1.0	ug/L	EPA 8260B	
Phenol	86		1.7	10	ug/L	EPA 8270D	
Vinyl chloride	1.3		0.32	1.0	ug/L	EPA 8260B	

Client ID: PW-2R **Lab ID: CA16305-05**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	420	D	20	45	mg/L	EPA 350.1	
Nitrate as N	0.079	J	0.025	0.10	mg/L	EPA 353.2	
Nitrate/Nitrite as N	0.079	J	0.041	0.10	mg/L	EPA 353.2	

Client ID: MW-39 **Lab ID: CA16305-06**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	930	D	40	90	mg/L	EPA 350.1	
cis-1,2-Dichloroethene	2.2		0.15	1.0	ug/L	EPA 8260B	
Vinyl chloride	0.82	J	0.32	1.0	ug/L	EPA 8260B	

Client ID: MW-40 **Lab ID: CA16305-07**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	3.8	D	0.22	0.50	mg/L	EPA 350.1	

Client ID: MW-41 **Lab ID: CA16305-08**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	1.1		0.045	0.10	mg/L	EPA 350.1	

Client ID: MW-44 **Lab ID: CA16305-09**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	100	D	4.0	9.0	mg/L	EPA 350.1	

Client ID: MW-45 **Lab ID: CA16305-10**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	1.2		0.045	0.10	mg/L	EPA 350.1	

Client ID: MW-47 **Lab ID: CA16305-11**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	14	D	0.90	2.0	mg/L	EPA 350.1	

Client ID: PZ-10 **Lab ID: CA16305-12**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	79	D	4.0	9.0	mg/L	EPA 350.1	

Client ID: PZ-12 **Lab ID: CA16305-13**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	32	D	0.90	2.0	mg/L	EPA 350.1	

Client ID: PZ-13 **Lab ID: CA16305-14**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	50	D	2.3	5.1	mg/L	EPA 350.1	

SAMPLE DETECTION SUMMARY

Client ID: PZ-14R **Lab ID: CA16305-15**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
cis-1,2-Dichloroethene	19		0.15	1.0	ug/L	EPA 8260B	
Vinyl chloride	5.0		0.32	1.0	ug/L	EPA 8260B	

Client ID: PZ-14R **Lab ID: CA16305-15RE1**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	430	D	20	45	mg/L	EPA 350.1	

Client ID: PZ-16R **Lab ID: CA16305-16**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	4.5	D	0.45	1.0	mg/L	EPA 350.1	

Client ID: PZ-18 **Lab ID: CA16305-17**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	0.087	J	0.045	0.10	mg/L	EPA 350.1	

Client ID: PZ-34 **Lab ID: CA16305-18RE1**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	71	D	4.0	9.0	mg/L	EPA 350.1	

Client ID: PZ-38 **Lab ID: CA16305-19**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	3.5	D	0.22	0.50	mg/L	EPA 350.1	

Client ID: T-22 **Lab ID: CA16305-20**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	4.9	D	0.45	1.0	mg/L	EPA 350.1	

Client ID: DUP-02 (103117) **Lab ID: CA16305-21**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	3500	D	100	220	mg/L	EPA 350.1	
cis-1,2-Dichloroethene	51		0.15	1.0	ug/L	EPA 8260B	
Phenol	88		1.7	10	ug/L	EPA 8270D	
Vinyl chloride	1.5		0.32	1.0	ug/L	EPA 8260B	

Client ID: DUP-01 (103017) **Lab ID: CA16305-22RE1**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	79	D	4.0	9.0	mg/L	EPA 350.1	

ANALYTICAL RESULTS

Description: PW-1R	Lab Sample ID: CA16305-04	Received: 10/31/17 16:27
Matrix: Water	Sampled: 10/31/17 12:10	Work Order: CA16305
Project: Hexion- Semi-Annual	Sampled By: Dan Rhodes	

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
cis-1,2-Dichloroethene [156-59-2]^	64		ug/L	1	0.15	1.0	7K01046	EPA 8260B	11/02/17 17:21	MRK	
Vinyl chloride [75-01-4]^	1.3		ug/L	1	0.32	1.0	7K01046	EPA 8260B	11/02/17 17:21	MRK	

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
4-Bromofluorobenzene	53	1	50.0	106 %	53-136	7K01046	EPA 8260B	11/02/17 17:21	MRK	
Dibromofluoromethane	55	1	50.0	109 %	67-129	7K01046	EPA 8260B	11/02/17 17:21	MRK	
Toluene-d8	54	1	50.0	107 %	59-134	7K01046	EPA 8260B	11/02/17 17:21	MRK	

Semivolatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Phenol [108-95-2]^	86		ug/L	1	1.7	10	7K02020	EPA 8270D	11/06/17 19:32	DFM	

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
2,4,6-Tribromophenol	83	1	100	83 %	10-179	7K02020	EPA 8270D	11/06/17 19:32	DFM	
2-Fluorophenol	49	1	100	49 %	10-110	7K02020	EPA 8270D	11/06/17 19:32	DFM	
Phenol-d5	40	1	100	40 %	10-88	7K02020	EPA 8270D	11/06/17 19:32	DFM	

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Ammonia as N [7664-41-7]^	3000	D	mg/L	2250	100	220	7K01026	EPA 350.1	11/01/17 12:53	JLJ	

Description: PW-2R	Lab Sample ID: CA16305-05	Received: 10/31/17 16:27
Matrix: Water	Sampled: 10/31/17 11:16	Work Order: CA16305
Project: Hexion- Semi-Annual	Sampled By: Dan Rhodes	

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Ammonia as N [7664-41-7]^	420	D	mg/L	450	20	45	7K01026	EPA 350.1	11/01/17 12:58	JLJ	
Nitrate as N [14797-55-8]^	0.079	J	mg/L	1	0.025	0.10	7K03023	EPA 353.2	11/03/17 10:58	JLJ	
Nitrate/Nitrite as N^	0.079	J	mg/L	1	0.041	0.10	7K02015	EPA 353.2	11/02/17 12:05	JLJ	
Nitrite as N [14797-65-0]^	ND		mg/L	1	0.017	0.10	7K01040	EPA 353.2	11/01/17 15:13	JLJ	

ANALYTICAL RESULTS

Description: Equip Blank (103017)

Lab Sample ID: CA16305-23

Received: 10/31/17 16:27

Matrix: Water

Sampled: 10/30/17 16:40

Work Order: CA16305

Project: Hexion- Semi-Annual

Sampled By: Dan Rhodes

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Ammonia as N [7664-41-7]^	ND		mg/L	1	0.045	0.10	7K01019	EPA 350.1	11/01/17 10:58	JLJ	

Description: Equipment Blank (103117)

Lab Sample ID: CA16305-24

Received: 10/31/17 16:27

Matrix: Water

Sampled: 10/31/17 13:20

Work Order: CA16305

Project: Hexion- Semi-Annual

Sampled By: Dan Rhodes

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
cis-1,2-Dichloroethene [156-59-2]^	ND		ug/L	1	0.15	1.0	7K01036	EPA 8260B	11/01/17 23:04	MRK	
Vinyl chloride [75-01-4]^	ND		ug/L	1	0.32	1.0	7K01036	EPA 8260B	11/01/17 23:04	MRK	

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
4-Bromofluorobenzene	45	1	50.0	89 %	53-136	7K01036	EPA 8260B	11/01/17 23:04	MRK	
Dibromofluoromethane	49	1	50.0	99 %	67-129	7K01036	EPA 8260B	11/01/17 23:04	MRK	
Toluene-d8	50	1	50.0	100 %	59-134	7K01036	EPA 8260B	11/01/17 23:04	MRK	

Semivolatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Phenol [108-95-2]^	ND		ug/L	1	1.7	10	7K02020	EPA 8270D	11/06/17 20:25	DFM	

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
2,4,6-Tribromophenol	65	1	100	65 %	10-179	7K02020	EPA 8270D	11/06/17 20:25	DFM	
2-Fluorophenol	52	1	100	52 %	10-110	7K02020	EPA 8270D	11/06/17 20:25	DFM	
Phenol-d5	44	1	100	44 %	10-88	7K02020	EPA 8270D	11/06/17 20:25	DFM	

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Ammonia as N [7664-41-7]^	ND		mg/L	1	0.045	0.10	7K01019	EPA 350.1	11/01/17 11:00	JLJ	
Nitrate as N [14797-55-8]^	ND		mg/L	1	0.025	0.10	7K03023	EPA 353.2	11/03/17 10:58	JLJ	
Nitrate/Nitrite as N^	ND		mg/L	1	0.041	0.10	7K02015	EPA 353.2	11/02/17 12:14	JLJ	
Nitrite as N [14797-65-0]^	ND		mg/L	1	0.017	0.10	7K01040	EPA 353.2	11/01/17 15:16	JLJ	

Description: Trip Blank

Lab Sample ID: CA16305-25

Received: 10/31/17 16:27

Matrix: Water

Sampled: 10/30/17 14:26

Work Order: CA16305

Project: Hexion- Semi-Annual

Sampled By: ENCO

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
cis-1,2-Dichloroethene [156-59-2]^	ND		ug/L	1	0.15	1.0	7K01036	EPA 8260B	11/01/17 23:34	MRK	
Vinyl chloride [75-01-4]^	ND		ug/L	1	0.32	1.0	7K01036	EPA 8260B	11/01/17 23:34	MRK	

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
4-Bromofluorobenzene	45	1	50.0	89 %	53-136	7K01036	EPA 8260B	11/01/17 23:34	MRK	
Dibromofluoromethane	52	1	50.0	104 %	67-129	7K01036	EPA 8260B	11/01/17 23:34	MRK	
Toluene-d8	51	1	50.0	103 %	59-134	7K01036	EPA 8260B	11/01/17 23:34	MRK	

QUALITY CONTROL DATA

Volatile Organic Compounds by GCMS - Quality Control

Batch 7K01036 - EPA 5030B_MS

Blank (7K01036-BLK1)

Prepared: 11/01/2017 14:37 Analyzed: 11/01/2017 18:04

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
cis-1,2-Dichloroethene	0.15	U	1.0	ug/L							
Vinyl chloride	0.32	U	1.0	ug/L							
<i>4-Bromofluorobenzene</i>	<i>45</i>			<i>ug/L</i>	<i>50.0</i>		<i>89</i>	<i>53-136</i>			
<i>Dibromofluoromethane</i>	<i>49</i>			<i>ug/L</i>	<i>50.0</i>		<i>98</i>	<i>67-129</i>			
<i>Toluene-d8</i>	<i>50</i>			<i>ug/L</i>	<i>50.0</i>		<i>100</i>	<i>59-134</i>			

LCS (7K01036-BS1)

Prepared: 11/01/2017 14:37 Analyzed: 11/01/2017 16:03

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	19		1.0	ug/L	20.0		97	75-133			
Benzene	21		1.0	ug/L	20.0		106	81-134			
Chlorobenzene	20		1.0	ug/L	20.0		99	83-117			
cis-1,2-Dichloroethene	19		1.0	ug/L	20.0		96	69-120			
Toluene	20		1.0	ug/L	20.0		98	71-118			
Trichloroethene	23		1.0	ug/L	20.0		114	74-119			
Vinyl chloride	24		1.0	ug/L	20.0		122	49-150			
<i>4-Bromofluorobenzene</i>	<i>51</i>			<i>ug/L</i>	<i>50.0</i>		<i>102</i>	<i>53-136</i>			
<i>Dibromofluoromethane</i>	<i>49</i>			<i>ug/L</i>	<i>50.0</i>		<i>98</i>	<i>67-129</i>			
<i>Toluene-d8</i>	<i>55</i>			<i>ug/L</i>	<i>50.0</i>		<i>110</i>	<i>59-134</i>			

Matrix Spike (7K01036-MS1)

Prepared: 11/01/2017 14:37 Analyzed: 11/01/2017 16:33

Source: CA16706-10

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	19		1.0	ug/L	20.0	0.21 U	96	75-133			
Benzene	21		1.0	ug/L	20.0	0.15 U	107	81-134			
Chlorobenzene	21		1.0	ug/L	20.0	0.17 U	106	83-117			
cis-1,2-Dichloroethene	19		1.0	ug/L	20.0	0.15 U	94	69-120			
Toluene	21		1.0	ug/L	20.0	0.14 U	105	71-118			
Trichloroethene	23		1.0	ug/L	20.0	0.15 U	116	74-119			
Vinyl chloride	22		1.0	ug/L	20.0	0.32 U	112	49-150			
<i>4-Bromofluorobenzene</i>	<i>49</i>			<i>ug/L</i>	<i>50.0</i>		<i>99</i>	<i>53-136</i>			
<i>Dibromofluoromethane</i>	<i>44</i>			<i>ug/L</i>	<i>50.0</i>		<i>87</i>	<i>67-129</i>			
<i>Toluene-d8</i>	<i>51</i>			<i>ug/L</i>	<i>50.0</i>		<i>102</i>	<i>59-134</i>			

Matrix Spike Dup (7K01036-MSD1)

Prepared: 11/01/2017 14:37 Analyzed: 11/01/2017 17:03

Source: CA16706-10

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	18		1.0	ug/L	20.0	0.21 U	91	75-133	5	20	
Benzene	21		1.0	ug/L	20.0	0.15 U	103	81-134	4	17	
Chlorobenzene	20		1.0	ug/L	20.0	0.17 U	102	83-117	4	16	
cis-1,2-Dichloroethene	19		1.0	ug/L	20.0	0.15 U	93	69-120	0.4	18	
Toluene	20		1.0	ug/L	20.0	0.14 U	102	71-118	2	17	
Trichloroethene	22		1.0	ug/L	20.0	0.15 U	110	74-119	5	22	
Vinyl chloride	21		1.0	ug/L	20.0	0.32 U	105	49-150	6	27	
<i>4-Bromofluorobenzene</i>	<i>48</i>			<i>ug/L</i>	<i>50.0</i>		<i>97</i>	<i>53-136</i>			
<i>Dibromofluoromethane</i>	<i>45</i>			<i>ug/L</i>	<i>50.0</i>		<i>91</i>	<i>67-129</i>			
<i>Toluene-d8</i>	<i>51</i>			<i>ug/L</i>	<i>50.0</i>		<i>102</i>	<i>59-134</i>			

QUALITY CONTROL DATA

Volatile Organic Compounds by GCMS - Quality Control

Batch 7K01046 - EPA 5030B_MS

Blank (7K01046-BLK1)

Prepared: 11/01/2017 15:47 Analyzed: 11/02/2017 11:15

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
cis-1,2-Dichloroethene	0.15	U	1.0	ug/L							
Vinyl chloride	0.32	U	1.0	ug/L							
<i>4-Bromofluorobenzene</i>	<i>54</i>			<i>ug/L</i>	<i>50.0</i>		<i>107</i>	<i>53-136</i>			
<i>Dibromofluoromethane</i>	<i>52</i>			<i>ug/L</i>	<i>50.0</i>		<i>105</i>	<i>67-129</i>			
<i>Toluene-d8</i>	<i>54</i>			<i>ug/L</i>	<i>50.0</i>		<i>108</i>	<i>59-134</i>			

LCS (7K01046-BS1)

Prepared: 11/01/2017 15:47 Analyzed: 11/02/2017 09:13

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	22		1.0	ug/L	20.0		108	75-133			
Benzene	20		1.0	ug/L	20.0		100	81-134			
Chlorobenzene	18		1.0	ug/L	20.0		91	83-117			
cis-1,2-Dichloroethene	21		1.0	ug/L	20.0		107	69-120			
Toluene	19		1.0	ug/L	20.0		94	71-118			
Trichloroethene	20		1.0	ug/L	20.0		99	74-119			
Vinyl chloride	21		1.0	ug/L	20.0		103	49-150			
<i>4-Bromofluorobenzene</i>	<i>54</i>			<i>ug/L</i>	<i>50.0</i>		<i>109</i>	<i>53-136</i>			
<i>Dibromofluoromethane</i>	<i>54</i>			<i>ug/L</i>	<i>50.0</i>		<i>107</i>	<i>67-129</i>			
<i>Toluene-d8</i>	<i>53</i>			<i>ug/L</i>	<i>50.0</i>		<i>107</i>	<i>59-134</i>			

Matrix Spike (7K01046-MS1)

Prepared: 11/01/2017 15:47 Analyzed: 11/02/2017 09:43

Source: CA16807-02

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	23		1.0	ug/L	20.0	0.21 U	116	75-133			
Benzene	22		1.0	ug/L	20.0	0.15 U	109	81-134			
Chlorobenzene	19		1.0	ug/L	20.0	0.17 U	94	83-117			
cis-1,2-Dichloroethene	20		1.0	ug/L	20.0	0.15 U	100	69-120			
Toluene	20		1.0	ug/L	20.0	0.14 U	100	71-118			
Trichloroethene	21		1.0	ug/L	20.0	0.15 U	103	74-119			
Vinyl chloride	23		1.0	ug/L	20.0	0.32 U	115	49-150			
<i>4-Bromofluorobenzene</i>	<i>55</i>			<i>ug/L</i>	<i>50.0</i>		<i>111</i>	<i>53-136</i>			
<i>Dibromofluoromethane</i>	<i>54</i>			<i>ug/L</i>	<i>50.0</i>		<i>107</i>	<i>67-129</i>			
<i>Toluene-d8</i>	<i>54</i>			<i>ug/L</i>	<i>50.0</i>		<i>107</i>	<i>59-134</i>			

Matrix Spike Dup (7K01046-MSD1)

Prepared: 11/01/2017 15:47 Analyzed: 11/02/2017 10:14

Source: CA16807-02

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	20		1.0	ug/L	20.0	0.21 U	100	75-133	15	20	
Benzene	19		1.0	ug/L	20.0	0.15 U	97	81-134	11	17	
Chlorobenzene	18		1.0	ug/L	20.0	0.17 U	91	83-117	3	16	
cis-1,2-Dichloroethene	22		1.0	ug/L	20.0	0.15 U	108	69-120	8	18	
Toluene	18		1.0	ug/L	20.0	0.14 U	92	71-118	8	17	
Trichloroethene	19		1.0	ug/L	20.0	0.15 U	96	74-119	8	22	
Vinyl chloride	19		1.0	ug/L	20.0	0.32 U	95	49-150	19	27	
<i>4-Bromofluorobenzene</i>	<i>54</i>			<i>ug/L</i>	<i>50.0</i>		<i>108</i>	<i>53-136</i>			
<i>Dibromofluoromethane</i>	<i>55</i>			<i>ug/L</i>	<i>50.0</i>		<i>109</i>	<i>67-129</i>			
<i>Toluene-d8</i>	<i>54</i>			<i>ug/L</i>	<i>50.0</i>		<i>108</i>	<i>59-134</i>			

QUALITY CONTROL DATA

Semivolatile Organic Compounds by GCMS - Quality Control

Batch 7K02020 - EPA 3510C_MS

Blank (7K02020-BLK1)

Prepared: 11/02/2017 12:20 Analyzed: 11/06/2017 16:52

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Phenol	1.7	U	10	ug/L							
2,4,6-Tribromophenol	72			ug/L	100		72	10-179			
2-Fluorophenol	46			ug/L	100		46	10-110			
Phenol-d5	36			ug/L	100		36	10-88			

LCS (7K02020-BS1)

Prepared: 11/02/2017 12:20 Analyzed: 11/06/2017 17:18

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
2-Chlorophenol	36		10	ug/L	50.0		72	40-109			
4-Chloro-3-methylphenol	43		10	ug/L	50.0		85	58-121			
4-Nitrophenol	29		10	ug/L	50.0		59	33-105			
Pentachlorophenol	42		10	ug/L	50.0		85	51-135			
Phenol	22		10	ug/L	50.0		44	19-78			
2,4,6-Tribromophenol	83			ug/L	100		83	10-179			
2-Fluorophenol	51			ug/L	100		51	10-110			
Phenol-d5	42			ug/L	100		42	10-88			

Matrix Spike (7K02020-MS1)

Prepared: 11/02/2017 12:20 Analyzed: 11/06/2017 17:45

Source: CA16807-03

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
2-Chlorophenol	35		10	ug/L	50.0	2.2 U	71	40-109			
4-Chloro-3-methylphenol	43		10	ug/L	50.0	2.4 U	86	58-121			
4-Nitrophenol	28		10	ug/L	50.0	2.8 U	57	33-105			
Pentachlorophenol	42		10	ug/L	50.0	2.1 U	84	51-135			
Phenol	23		10	ug/L	50.0	1.7 U	46	19-78			
2,4,6-Tribromophenol	82			ug/L	100		82	10-179			
2-Fluorophenol	52			ug/L	100		52	10-110			
Phenol-d5	44			ug/L	100		44	10-88			

Matrix Spike Dup (7K02020-MSD1)

Prepared: 11/02/2017 12:20 Analyzed: 11/06/2017 18:12

Source: CA16807-03

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
2-Chlorophenol	34		10	ug/L	50.0	2.2 U	68	40-109	4	22	
4-Chloro-3-methylphenol	42		10	ug/L	50.0	2.4 U	85	58-121	2	22	
4-Nitrophenol	30		10	ug/L	50.0	2.8 U	61	33-105	6	27	
Pentachlorophenol	43		10	ug/L	50.0	2.1 U	87	51-135	3	11	
Phenol	21		10	ug/L	50.0	1.7 U	43	19-78	7	18	
2,4,6-Tribromophenol	85			ug/L	100		85	10-179			
2-Fluorophenol	50			ug/L	100		50	10-110			
Phenol-d5	42			ug/L	100		42	10-88			

Classical Chemistry Parameters - Quality Control

Batch 7K01019 - NO PREP

Blank (7K01019-BLK1)

Prepared: 11/01/2017 10:29 Analyzed: 11/01/2017 10:29

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
FINAL											

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.

QUALITY CONTROL DATA

Classical Chemistry Parameters - Quality Control

Batch 7K01019 - NO PREP - Continued

Blank (7K01019-BLK1) Continued

Prepared: 11/01/2017 10:29 Analyzed: 11/01/2017 10:29

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	0.045	U	0.10	mg/L							

LCS (7K01019-BS1)

Prepared: 11/01/2017 10:31 Analyzed: 11/01/2017 10:31

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	1.0		0.10	mg/L	0.989		104	90-110			

Matrix Spike (7K01019-MS1)

Prepared: 11/01/2017 10:34 Analyzed: 11/01/2017 10:34

Source: CA13546-02

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	19		1.0	mg/L	3.96	16	72	90-110			QM-07

Matrix Spike (7K01019-MS2)

Prepared: 11/01/2017 11:55 Analyzed: 11/01/2017 11:55

Source: CA13588-01RE1

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	27		2.0	mg/L	7.92	20	94	90-110			

Matrix Spike Dup (7K01019-MSD1)

Prepared: 11/01/2017 10:36 Analyzed: 11/01/2017 10:36

Source: CA13546-02

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	19		1.0	mg/L	3.96	16	78	90-110	1	10	QM-07

Batch 7K01026 - NO PREP

Blank (7K01026-BLK1)

Prepared: 11/01/2017 12:39 Analyzed: 11/01/2017 12:39

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	0.045	U	0.10	mg/L							

LCS (7K01026-BS1)

Prepared: 11/01/2017 12:41 Analyzed: 11/01/2017 12:41

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	1.1		0.10	mg/L	0.989		107	90-110			

Matrix Spike (7K01026-MS1)

Prepared: 11/01/2017 12:44 Analyzed: 11/01/2017 12:44

Source: CA16305-01

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	7.5		1.0	mg/L	3.96	4.0	88	90-110			QM-07

Matrix Spike (7K01026-MS2)

Prepared: 11/01/2017 12:49 Analyzed: 11/01/2017 12:49

Source: CA16305-02

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	580		50	mg/L	198	390	97	90-110			

Matrix Spike Dup (7K01026-MSD1)

Prepared: 11/01/2017 12:46 Analyzed: 11/01/2017 12:46

Source: CA16305-01

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
FINAL											

QUALITY CONTROL DATA

Classical Chemistry Parameters - Quality Control

Batch 7K01026 - NO PREP - Continued

Matrix Spike Dup (7K01026-MSD1) Continued

Prepared: 11/01/2017 12:46 Analyzed: 11/01/2017 12:46

Source: CA16305-01

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	7.6		1.0	mg/L	3.96	4.0	89	90-110	0.5	10	QM-07

Batch 7K01029 - NO PREP

Blank (7K01029-BLK1)

Prepared: 11/01/2017 13:30 Analyzed: 11/01/2017 13:30

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	0.045	U	0.10	mg/L							

LCS (7K01029-BS1)

Prepared: 11/01/2017 13:31 Analyzed: 11/01/2017 13:31

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	1.1		0.10	mg/L	0.989		107	90-110			

Matrix Spike (7K01029-MS1)

Prepared: 11/01/2017 13:34 Analyzed: 11/01/2017 13:34

Source: CA16305-08

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	1.4		0.10	mg/L	0.385	1.1	80	90-110			QM-07

Matrix Spike Dup (7K01029-MSD1)

Prepared: 11/01/2017 13:36 Analyzed: 11/01/2017 13:36

Source: CA16305-08

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	1.4		0.10	mg/L	0.385	1.1	79	90-110	0.3	10	QM-07

Batch 7K01040 - NO PREP

Blank (7K01040-BLK1)

Prepared: 11/01/2017 15:07 Analyzed: 11/01/2017 15:07

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrite as N	0.017	U	0.10	mg/L							

LCS (7K01040-BS1)

Prepared: 11/01/2017 15:24 Analyzed: 11/01/2017 15:24

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrite as N	1.0		0.10	mg/L	1.00		100	90-110			

Matrix Spike (7K01040-MS1)

Prepared: 11/01/2017 16:05 Analyzed: 11/01/2017 16:05

Source: CA16305-02RE1

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrite as N	13	E	0.50	mg/L	5.00	8.8	78	90-110			QM-07

Matrix Spike (7K01040-MS2)

Prepared: 11/01/2017 15:14 Analyzed: 11/01/2017 15:14

Source: CA16305-05

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrite as N	0.99		0.10	mg/L	1.00	0.017 U	99	90-110			

QUALITY CONTROL DATA

Classical Chemistry Parameters - Quality Control

Batch 7K01040 - NO PREP - Continued

Matrix Spike Dup (7K01040-MSD1)

Prepared: 11/01/2017 16:06 Analyzed: 11/01/2017 16:06

Source: CA16305-02RE1

<u>Analyte</u>	<u>Result</u>	<u>Flaq</u>	<u>POL</u>	<u>Units</u>	<u>Spike Level</u>	<u>Source Result</u>	<u>%REC</u>	<u>%REC Limits</u>	<u>RPD</u>	<u>RPD Limit</u>	<u>Notes</u>
Nitrite as N	13	E	0.50	mg/L	5.00	8.8	75	90-110	1	10	QM-07

Batch 7K02015 - NO PREP

Blank (7K02015-BLK1)

Prepared: 11/02/2017 11:52 Analyzed: 11/02/2017 11:52

<u>Analyte</u>	<u>Result</u>	<u>Flaq</u>	<u>POL</u>	<u>Units</u>	<u>Spike Level</u>	<u>Source Result</u>	<u>%REC</u>	<u>%REC Limits</u>	<u>RPD</u>	<u>RPD Limit</u>	<u>Notes</u>
Nitrate/Nitrite as N	0.041	U	0.10	mg/L							

LCS (7K02015-BS1)

Prepared: 11/02/2017 11:54 Analyzed: 11/02/2017 11:54

<u>Analyte</u>	<u>Result</u>	<u>Flaq</u>	<u>POL</u>	<u>Units</u>	<u>Spike Level</u>	<u>Source Result</u>	<u>%REC</u>	<u>%REC Limits</u>	<u>RPD</u>	<u>RPD Limit</u>	<u>Notes</u>
Nitrate/Nitrite as N	1.2		0.10	mg/L	1.25		100	90-110			

Matrix Spike (7K02015-MS1)

Prepared: 11/02/2017 11:58 Analyzed: 11/02/2017 11:58

Source: CA14960-01

<u>Analyte</u>	<u>Result</u>	<u>Flaq</u>	<u>POL</u>	<u>Units</u>	<u>Spike Level</u>	<u>Source Result</u>	<u>%REC</u>	<u>%REC Limits</u>	<u>RPD</u>	<u>RPD Limit</u>	<u>Notes</u>
Nitrate/Nitrite as N	260	E	10	mg/L	50.0	220	82	90-110			QM-07

Matrix Spike (7K02015-MS2)

Prepared: 11/02/2017 13:18 Analyzed: 11/02/2017 13:18

Source: CA16305-02RE1

<u>Analyte</u>	<u>Result</u>	<u>Flaq</u>	<u>POL</u>	<u>Units</u>	<u>Spike Level</u>	<u>Source Result</u>	<u>%REC</u>	<u>%REC Limits</u>	<u>RPD</u>	<u>RPD Limit</u>	<u>Notes</u>
Nitrate/Nitrite as N	51	E	2.0	mg/L	10.0	41	98	90-110			QM-07

Matrix Spike Dup (7K02015-MSD1)

Prepared: 11/02/2017 12:00 Analyzed: 11/02/2017 12:00

Source: CA14960-01

<u>Analyte</u>	<u>Result</u>	<u>Flaq</u>	<u>POL</u>	<u>Units</u>	<u>Spike Level</u>	<u>Source Result</u>	<u>%REC</u>	<u>%REC Limits</u>	<u>RPD</u>	<u>RPD Limit</u>	<u>Notes</u>
Nitrate/Nitrite as N	250	E	10	mg/L	50.0	220	72	90-110	2	10	QM-07

FLAGS/NOTES AND DEFINITIONS

- B** The analyte was detected in the associated method blank.
- D** The sample was analyzed at dilution.
- J** The reported value is between the laboratory method detection limit (MDL) and the laboratory method reporting limit (MRL), adjusted for actual sample preparation data and moisture content, where applicable.
- U** The analyte was analyzed for but not detected to the level shown, adjusted for actual sample preparation data and moisture content, where applicable.
- E** The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate.
- MRL** Method Reporting Limit. The MRL is roughly equivalent to the practical quantitation limit (PQL) and is based on the low point of the calibration curve, when applicable, sample preparation factor, dilution factor, and, in the case of soil samples, moisture content.
- PQL** PQL: Practical Quantitation Limit.
- N** The analysis indicates the presence of an analyte for which there is presumptive evidence (85% or greater confidence) to make a "tentative identification".
- P** Greater than 25% concentration difference was observed between the primary and secondary GC column. The lower concentration is reported.
- QM-07** The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.



Client Name: ARCADIS (AR017)
 Address: 801 Corporate Center Drive, Suite 300 Raleigh, NC 27607
 City/ST/Zip: Raleigh, NC 27607
 Tel: (919) 854-1282 Fax: (919) 854-1282
 Project Number: NC108008.0032
 Project Name/Desc: Hex-on - Semi-Annual
 PO # / Billing Info: NC108008.0032
 Reporting Contact: Ryan Gerber
 Billing Contact: Accounts Payable
 Sampler(s) Name, Affiliation (Print): Dan Rhodes Arcadis
 Sampler(s) Signature: [Signature]
 Site Location / Time Zone: Fayetteville NC / Eastern

Requested Analyses	Preservation (See Codes) (Combine as necessary)
8260B	
8270D AE	
8315A Formaldehyde	
Ammonia 350.1	X
Ammonia 350.1, NOX 353.2	X
Nitrate Calc 353.2	X
Nitrite as N 353.2	X

Requested Turnaround Times: Standard Expedited
 Note: Rush requests subject to acceptance by the facility.
 Lab Workorder: CA16305
 Due: ___/___/___

Item #	Sample ID (Field Identification)	Collection Date	Collection Time	Comp / Grab	Matrix (see codes)	Total # of Containers	Preservation (See Codes) (Combine as necessary)	Requested Analyses	Sample Comments
	PZ-10	10-30-17	1508	G	W/A	1	X		
	PZ-12	10-30-17	1555	G	W/A	1	X		
	PZ-13	10-31-17	1121	G	W/A	1	X		
	PZ-14R	10-31-17	1207	G	W/A	4	X		
	PZ-16R	10-31-17	1010	G	W/A	2	X		
	PZ-18	10-30-17	1426	G	W/A	1	X		
	PZ-34	10-30-17	1630	G	W/A	1	X		
	PZ-38	10-31-17	0937	G	W/A	1	X		
	T-22	10-31-17	1027	G	W/A	1	X		
	DUP-02(103017)	10-31-17	0000	G	W/A	6	X		
	DUP-01(105017)	10-30-17	0000	G	W/A	1	X		
					W/A	8	X		

Sample Kit Prepared By: [Signature] Date/Time: 10-25-17
 Relinquished By: [Signature] Date/Time: 10-31-17 / 1625
 Received By: [Signature] Date/Time: 10-31-17 / 1625
 Relinquished By: [Signature] Date/Time: 10-31-17 / 1625
 Received By: [Signature] Date/Time: 10-31-17 / 1625
 Condition Upon Receipt: Acceptable Unacceptable

Matrix: GW-Groundwater SO-Soil DW-Drinking Water SE-Sediment SW-Surface Water WW-Wastewater A-Air O-Other (detail in comments)
 Note: All samples submitted to ENCO Labs are in accordance with the terms and conditions listed on the reverse of this form, unless prior written agreements exist.



ENVIRONMENTAL CONSERVATION LABORATORIES
 10775 Central Port Dr.
 Orlando, FL 32824
 (407) 826-5314 Fax: (407) 850-6945

4810 Executive Park Court, Suite 111
 Jacksonville, FL 32216-6069
 (904) 296-3007 Fax: (904) 296-6210

102-A Woodwinds Industrial Ct.
 Cary, NC 27511
 (919) 467-3090 Fax: (919) 467-3515

www.encolabs.com
 Page 3 of 3

Client Name: **ARCADIS (AR017)** Project Number: **NC108008.0032**
 Address: **801 Corporate Center Drive, Suite 300** Project Name/Desc: **Hexion - Semi-Annual**
 City/ST/ZIP: **Raleigh, NC 27607** PO # / Billing Info: **NC108008.0032**
 Tel: **(919) 854-1282** Fax: **(919) 854-1282** Reporting Contact: **Ryan Gerber**
 Billing Contact: **Accounts Payable**
 Sample(s) Name, Affiliation (Print): **Dan Rhoads Arcadis**
 Sample(s) Signature: *[Signature]* Site Location / Time Zone: **Fayetteville NC / Eastern**

Requested Analyses
8260B
8270D AE
8315A Formaldehyde
Ammonia 350.1
Ammonia 350.1, NOX 353.2
Nitrate Calc 353.2
Nitrite as N 353.2

Requested Turnaround Times: Standard Expedited

Lab Workorder: **CA16305**

Due: ___/___/___

Note: Rush requests subject to acceptance by the facility

Item #	Sample ID (Field Identification)	Collection Date	Collection Time	Comp / Grab	Matrix (see codes)	Total # of Containers	Preservation (See Codes) (Combine as necessary)	Sample Comments
	Equip Blank (05017)	10-30-17	1640	G	W/A	1	X	
	Equip Blank				W/A	1	X	
	Equipment Blank (05319)	10-31-17	1320	G	W/A	8	X	
	Trip Blank				W/A	2	X	
	Trip Blank				W/A	2	X	

Sample Kit Prepared By: **LF** Date/Time: **10-25-17**

Relinquished By: *[Signature]* Date/Time: **10-31-17 1625**

Received By: *[Signature]* Date/Time: **10-31-17 1625**

Condition Upon Receipt: Acceptable Unacceptable

Comments/Special Reporting Requirements: **Relinquished By**

Relinquished By: *[Signature]* Date/Time: **10-31-17 1625**

Received By: *[Signature]* Date/Time: **10-31-17 1625**

Matrix: **GW-Groundwater SO-Soil DW-Drinking Water SE-Sediment SW-Surface Water WW-Wastewater A-Air O-Other (detail in comments)**

Note: All samples submitted to ENCO Labs are in accordance with the terms and conditions listed on the reverse of this form, unless prior written agreements exist.

Sample Preservation Verification

ENCO Cary



Work Order: CA16305
 Client: ARCADIS (AR017)
 Logged In: 31-Oct-17 16:48
 Preservation Check Performed By: _____

Project: Hexion- Semi-Annual
 Project #: NC108008.0032
 Logged By: John C King

Date/Time: _____

CA16305-01

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-02

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
C	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-03

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
B	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-04

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
D	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-05

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
B	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-06

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
B	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-07

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-08

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-09

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
B	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

Sample Preservation Verification

ENCO Cary



Work Order: CA16305
 Client: ARCADIS (AR017)
 Logged In: 31-Oct-17 16:48
 Preservation Check Performed By: _____

Project: Hexion- Semi-Annual
 Project #: NC108008.0032
 Logged By: John C King
 Date/Time: _____

CA16305-10

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-11

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-12

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-13

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-14

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-15

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-16

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
B	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-17

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-18

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

Sample Preservation Verification

ENCO Cary



Work Order: CA16305
 Client: ARCADIS (AR017)
 Logged In: 31-Oct-17 16:48
 Preservation Check Performed By: _____

Project: Hexion- Semi-Annual
 Project #: NC108008.0032
 Logged By: John C King

Date/Time: _____

CA16305-19

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-20

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-21

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
E	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-22

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-23

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA16305-24

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
E	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

	Reagent Name	ID
1		
2		

	Reagent Name	ID
3		
4		

	Reagent Name	ID
5		
6		

pH Strip ID: _____

Environmental Conservation Laboratories, Inc.

102-A Woodwinds Industrial Court
Cary, NC 27511

Arcadis – Hexion Semi-Annual
Project # CA16305

Analytical Report
(1117-009)

EPA SW-846 Method 8315A
Formaldehyde



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) and contains ??? pages.

Report Issued: xx/xx/xxxx



Summary of Results

Enthalpy Analytical

Company: Environmental Conservation Laboratories

Job No.: 1117-009 - EPA SW-846 Method 8315A

Client No.: CA16305

Summary - Formaldehyde

Sample Name	Sample Conc (ug/mL)
RW-5	0.0975
RW-7	0.305
PW-1R	3.45
MW-44	0.0844
PZ-16R	0.0286 J
DUP-02 (10/31/17)	3.34
Equipment Blank (10/31/17)	0.0174 J

Results

Enthalpy Analytical

Company: Environmental Conservation Laboratories

Job No.: 1117-009 - EPA SW-846 Method 8315A

Client No.: CA16305

MDL 0.0109 (ug/mL)

LOQ 0.109 (ug/mL)

Compound Formaldehyde

Lower Curve Limit 0.109 (ug/mL)

Upper Curve Limit 15.0 (ug/mL)

Sample ID	Lab ID	Analysis Method	Ret Time (min)	Conc (ug/mL)	DF	Vol (mL)	Catch Weight (ug)	Sample Vol Used (mL)	Sample Conc (ug/mL)	Qual
RW-5	003-11-RW-5 1117-009.D	Bart423.M	6.16	0.163	1	15.0	2.44	25.0	0.0975	
RW-5 - Dup Inj.	004-11-RW-5 1117-009.D	Bart423.M	6.15	0.175	1	15.0	2.63	25.0	0.105	
									% Difference	7.6%
LD / RW-5	005-12-LD_RW-5 117-009.D	Bart423.M	6.16	0.165	1	14.5	2.40	25.0	0.0959	
									% Difference	1.7%
RW-7	006-13-RW-7 1117-009.D	Bart423.M	6.18	0.545	1	14.0	7.63	25.0	0.305	
PW-1R	008-15-PW-1R 1117-009.D	Bart423.M	6.15	6.16	1	14.0	86.2	25.0	3.45	
MW-44	009-16-MW-44 1117-009.D	Bart423.M	6.16	0.151	1	14.0	2.11	25.0	0.0844	
PZ-16R	010-17-PZ-16R 1117-009.D	Bart423.M	6.17	0.0494	1	14.5	0.716	25.0	0.0286	J
DUP-02 (10/31/17)	011-18-DUP-02 1117-009.D	Bart423.M	6.14	5.97	1	14.0	83.6	25.0	3.34	
Equipment Blank (10/31/17)	012-19-Eq Blank 1117-009.D	Bart423.M	6.32	0.0289	1	15.0	0.434	25.0	0.0174	J
MB-1 (11/3/17)	015-21-MB-1 11_3_17 1117-009.D	Bart423.M	6.16	0.0444	1	13.5	0.600	25.0	0.0240	J
MB-1 (11/3/17) - Dup Inj.	016-21-MB-1 11_3_17 1117-009.D	Bart423.M	6.20	0.0530	1	13.5	0.716	25.0	0.0286	J
MS / RW-7	007-14-MS_RW-5 1117-009.D	Bart423.M	6.16	3.49	1	14.5	50.6			
							Spike Amount (ug)	54.7		
							Native Amount (ug)	7.63		
							Spike Recovery (%)	78.5%		
LCS-1 (11/3/17)	013-20-LCS-1 11_3_17 1117-009.D	Bart423.M	6.17	3.11	1	14.0	43.6			
							Spike Amount (ug)	54.7		
							Spike Recovery (%)	79.7%		

Narrative Summary

Enthalpy Analytical Narrative Summary

Company	Environmental Conservation Laboratories, Inc.
Job #	1117-009 - EPA SW-846 Method 8315A
Client #	CA16305

Custody

Matthew Hill received the samples on 11/1/17 at 2.9 °C after being relinquished by Environmental Conservation Laboratories, Inc. of Cary, NC. 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 formaldehyde using the analytical procedures in EPA SW-846 Method 8315A, Determination of Carbonyl Compounds by High Performance Liquid Chromatography (HPLC).

One 25 mL aliquot of each liquid sample was removed and added to 1.5 mL of DNPH solution. An extra 25 mL aliquot was taken from samples **RW-5** and **RW-7** to generate a Laboratory Duplicate (LD) and a Matrix Spike (MS), respectively. The pH value of each aliquot was measured and adjusted to approximately 5 using acetate buffer. The samples were then allowed to derivitize by being shaken in a reciprocating shaker water bath for 1 hour. The samples were then extracted 3 times, using 5 mL of methylene chloride each time, and the final extract volume was recorded on 11/3/17. A 1 mL aliquot of the extract was dried down and then the residue was suspended in 1 mL of acetonitrile for analysis.

The Agilent Model 1100, High Performance Liquid Chromatograph "Bart" was equipped with an Ultraviolet (UV) Detector operating at 360 nm for these analyses.

Calibration

The calibration curve is located in the back of this report and referenced in the Analysis Method column on the Detailed Results page.

For each calibration curve used, the first page of the curve contains all method specific parameters (i.e., curve type, origin, weight, etc.) used to quantify the samples. The calibration curve section also includes a table with the Retention Time (RetTime), Level (Lvl), Amount (corresponding units), Area, Response Factor (Amt/Area) and the analyte Name. The calibration table is used to identify (by retention time) and quantify each target compound.

Enthalpy Analytical Narrative Summary

(continued)

Chromatographic Conditions

The acquisition methods (8315_TO11_WATERS_XTERRA_HCHO.M and 8315_TO11_WATERS_RESTEK_45_MIN.M) are included in the Raw Data section of this report.

QC Notes

Duplicate injections were performed for **RW-5** and **MB-1**. The injections differed by 7.6% and 17.5%, respectively.

A Laboratory Duplicate preparation and analysis was performed using an additional aliquot of sample **RW-5**. The percent difference value for the pair was 1.7%.

A Matrix Spike was prepared using an aliquot of sample **RW-7** and exhibited a spike recovery value of 78.5%.

A Laboratory Control Sample (LCS) was prepared and analyzed along with the samples and exhibited a recovery of 79.7%.

The analyses of the client's blank and laboratory blank did not contain formaldehyde at concentrations greater than the LOQ.

All sample preparation and analytical holding times specified in the method were met.

Reporting Notes

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, Inc. 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.
- 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).
- 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).

General Reporting Notes

(continued)

- 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.
- **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

SUBCONTRACT ORDER

ENCO Cary

CA16305

SENDING LABORATORY:

ENCO Cary
 102-A Woodwinds Industrial Court
 Cary, NC 27511
 Phone: 919.467.3090
 Fax: 919.467.3515
 Project Manager: Bill Scott

RECEIVING LABORATORY:

Enthalpy Analytical, Inc.
 800 Capitola Drive, Ste 1
 Durham, NC 27713
 Phone : (919) 850-4392
 Fax: -
 Project State of Origin: North Carolina

Sub Lab ID	Originating Lab ID	Client Matrix	Date Sampled	Sample Comments
	RW-5	Water	31-Oct-17 12:50	

Analysis	Due	Expires	Analysis Comments
8315A Formaldehyde	09-Nov-17 15:00	03-Nov-17 12:50	
<i>Containers Supplied:</i> 250mLA (A)			

Sub Lab ID	Originating Lab ID	Client Matrix	Date Sampled	Sample Comments
	RW-7	Water	31-Oct-17 11:00	

Analysis	Due	Expires	Analysis Comments
8315A Formaldehyde	09-Nov-17 15:00	03-Nov-17 11:00	
<i>Containers Supplied:</i> 250mLA (A)			

Sub Lab ID	Originating Lab ID	Client Matrix	Date Sampled	Sample Comments
	PW-1R	Water	31-Oct-17 12:10	

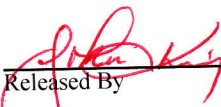
Analysis	Due	Expires	Analysis Comments
8315A Formaldehyde	09-Nov-17 15:00	03-Nov-17 12:10	
<i>Containers Supplied:</i> 250mLA (C)			

Sub Lab ID	Originating Lab ID	Client Matrix	Date Sampled	Sample Comments
	MW-44	Water	31-Oct-17 10:46	

Analysis	Due	Expires	Analysis Comments
8315A Formaldehyde	09-Nov-17 15:00	03-Nov-17 10:46	
<i>Containers Supplied:</i> 250mLA (A)			

Sub Lab ID	Originating Lab ID	Client Matrix	Date Sampled	Sample Comments
	PZ-16R	Water	31-Oct-17 10:10	

Analysis	Due	Expires	Analysis Comments
8315A Formaldehyde	09-Nov-17 15:00	03-Nov-17 10:10	
<i>Containers Supplied:</i> 250mLA (A)			

Released By 	Date <u>11-1-17</u>	Received By <u>Math Hill</u>	Date <u>11/01/17 1015</u>	<i>Good condition</i> 2.9°C(61) mwh 11/1/17
Released By	Date	Received By	Date	

SUBCONTRACT ORDER

ENCO Cary

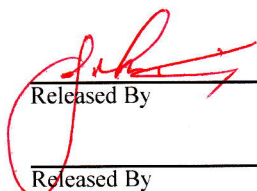
CA16305

Sub Lab ID	Originating Lab ID	Client Matrix	Date Sampled	Sample Comments
	DUP-02 (103117)	Water	31-Oct-17 00:00	

Analysis	Due	Expires	Analysis Comments
8315A Formaldehyde	09-Nov-17 15:00	03-Nov-17 00:00	
<i>Containers Supplied:</i> 250mLA (C)			

Sub Lab ID	Originating Lab ID	Client Matrix	Date Sampled	Sample Comments
	Equipment Blank (103117)	Water	31-Oct-17 13:20	

Analysis	Due	Expires	Analysis Comments
8315A Formaldehyde	09-Nov-17 15:00	03-Nov-17 13:20	
<i>Containers Supplied:</i> 250mLA (C)			

Released By:  Date: 11-1-17
Received By: Matt Hill Date: 11/01/17 1015
Crown condition 2.9°C (air) mwh 11/1/17

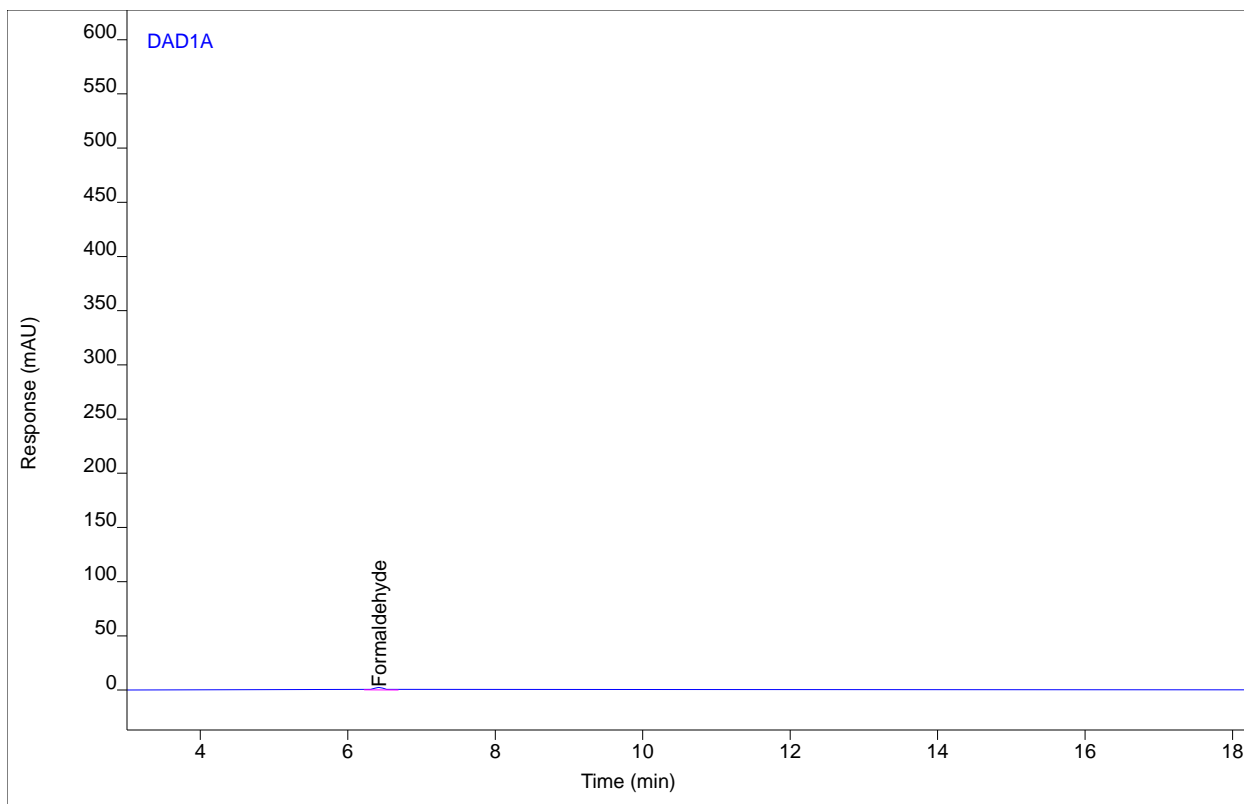
Raw Data

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-1 #1
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 005-1-HPLCStd5-526-1 #1.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/23/2017 3:39 PM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type
Vial Number 1
Injection Volume 5
Injection 1 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	6.43	22.3988	2.30766	0.11255	1	0.11255	ug/ml

Analyst Peak Integration Comments

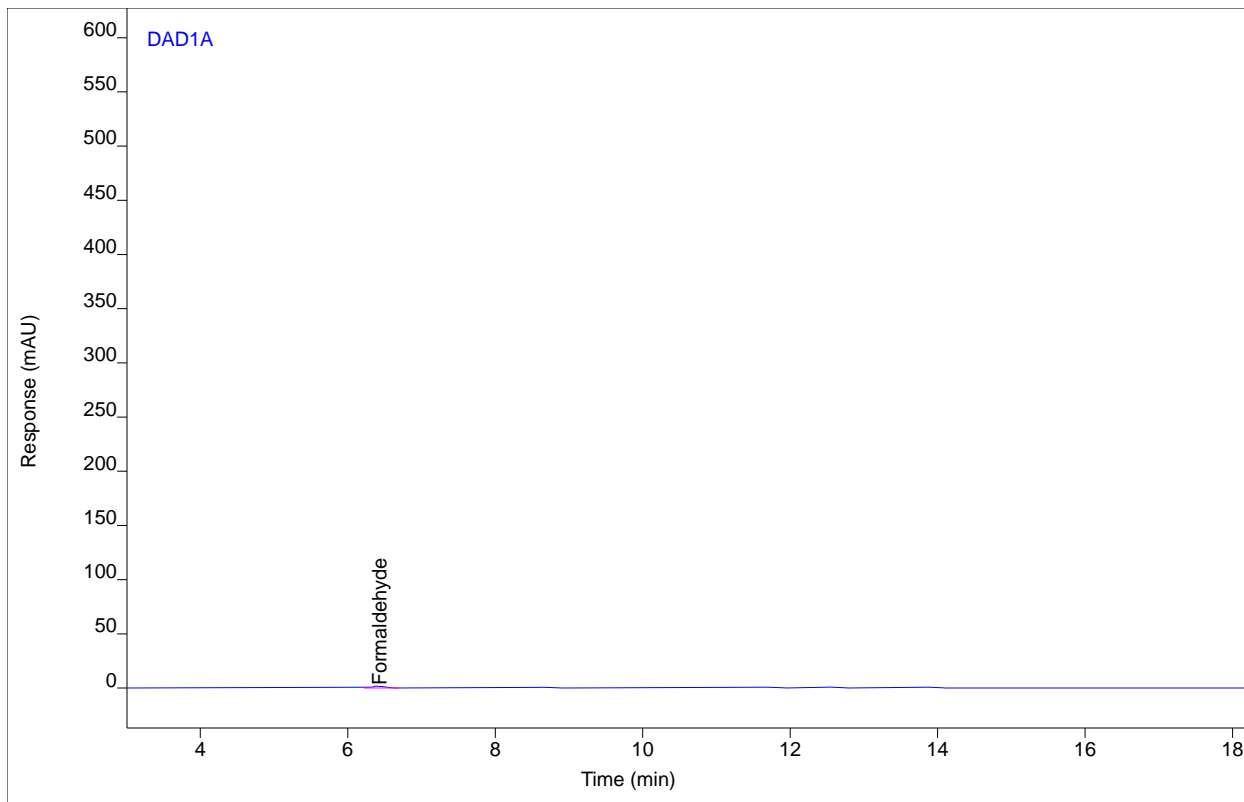
11:47:40 10/25/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-1 #1
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 006-1-HPLCStd5-526-1 #1.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/23/2017 4:31 PM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type
Vial Number 1
Injection Volume 5
Injection 2 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	6.43	22.6142	2.30964	0.11345	1	0.11345	ug/ml

Analyst Peak Integration Comments

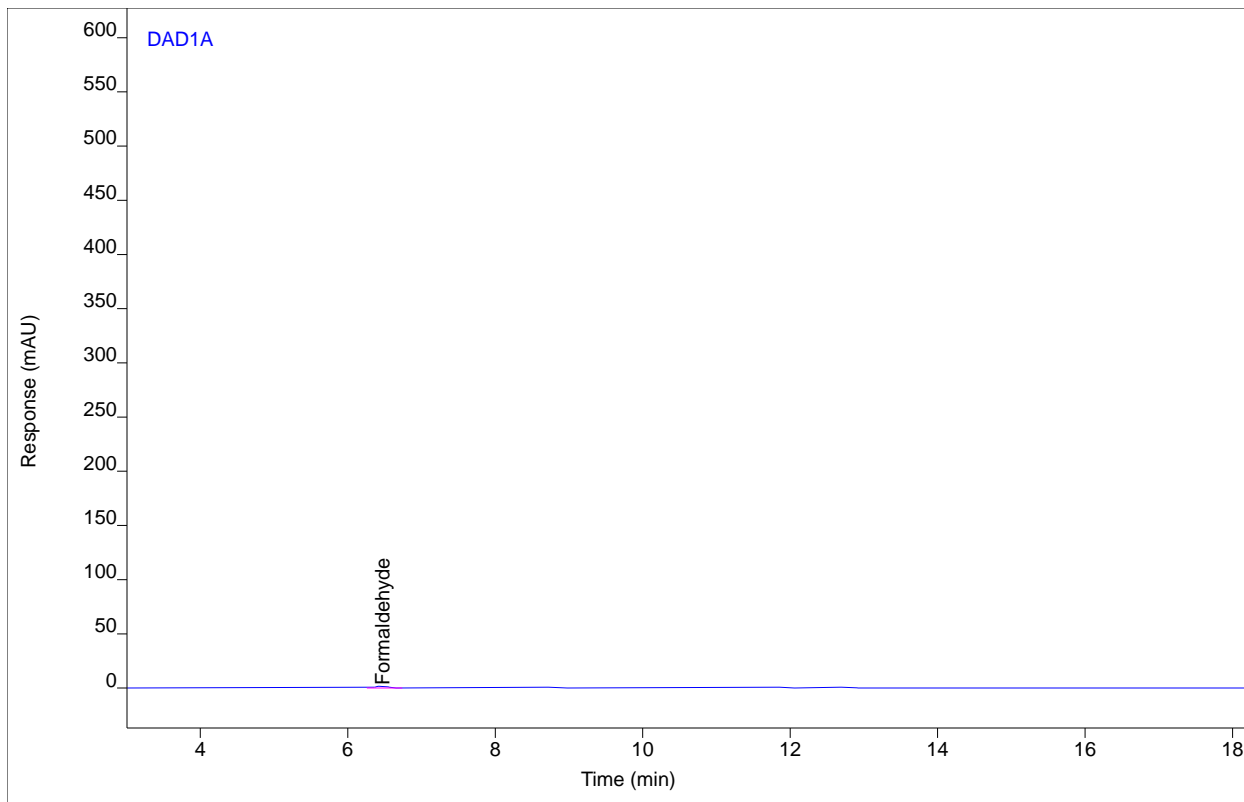
11:47:52 10/25/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-1 #1
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 007-1-HPLCStd5-526-1 #1.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/23/2017 5:23 PM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type
Vial Number 1
Injection Volume 5
Injection 3 of 3
Acquisition Method 8315_TO11_Waters_retek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	6.47	23.0795	2.30244	0.11541	1	0.11541	ug/ml

Analyst Peak Integration Comments

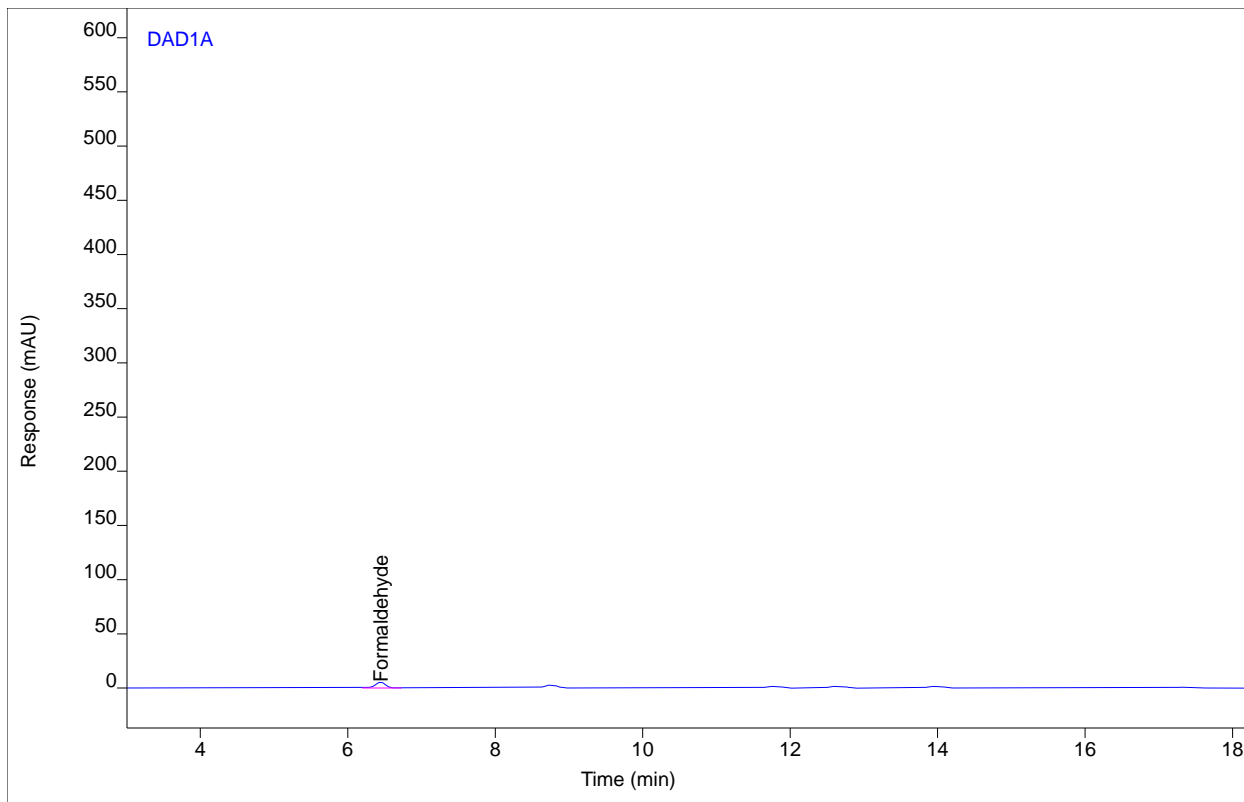
11:48:04 10/25/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-2 #2
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 008-2-HPLCStd5-526-2 #2.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/23/2017 6:15 PM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Calibration
Vial Number 2
Injection Volume 5
Injection 1 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



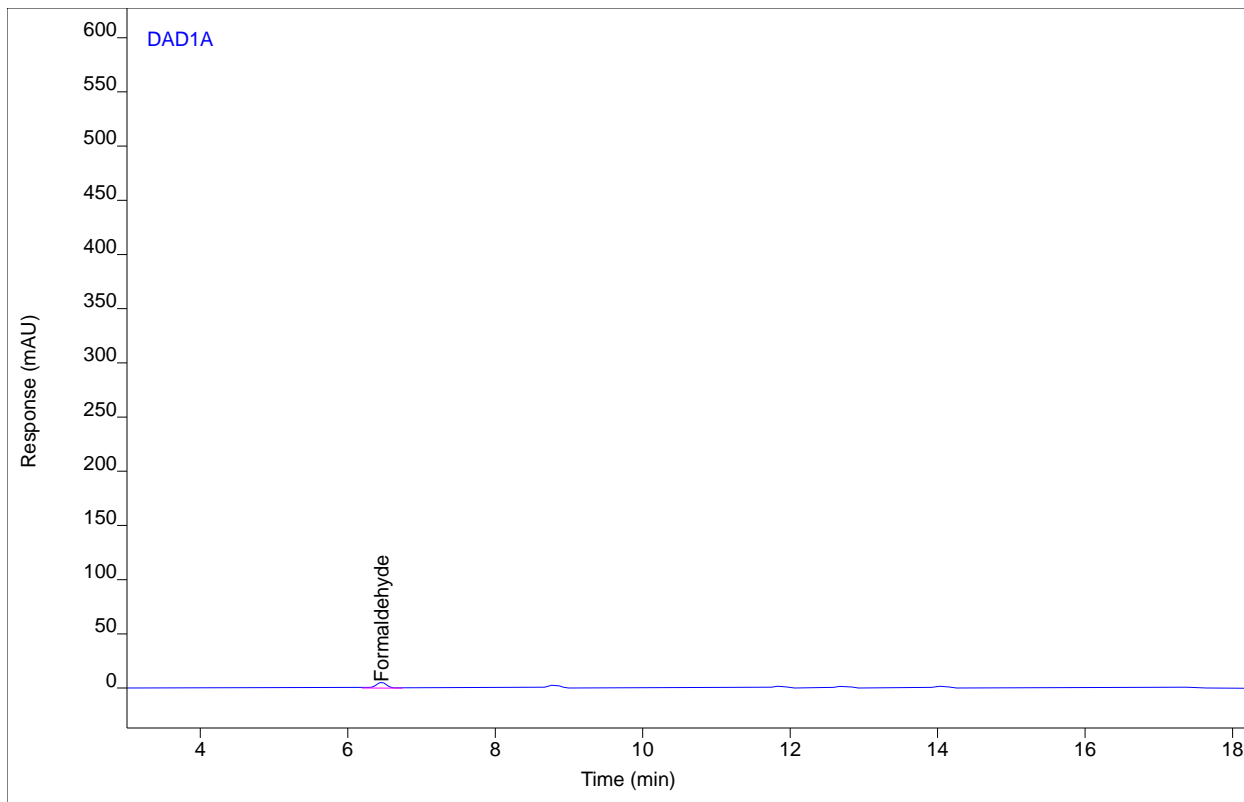
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	6.45	52.5697	5.31919	0.23944	1	0.23944	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-2 #2
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 009-2-HPLCStd5-526-2 #2.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/23/2017 7:07 PM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Calibration
Vial Number 2
Injection Volume 5
Injection 2 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



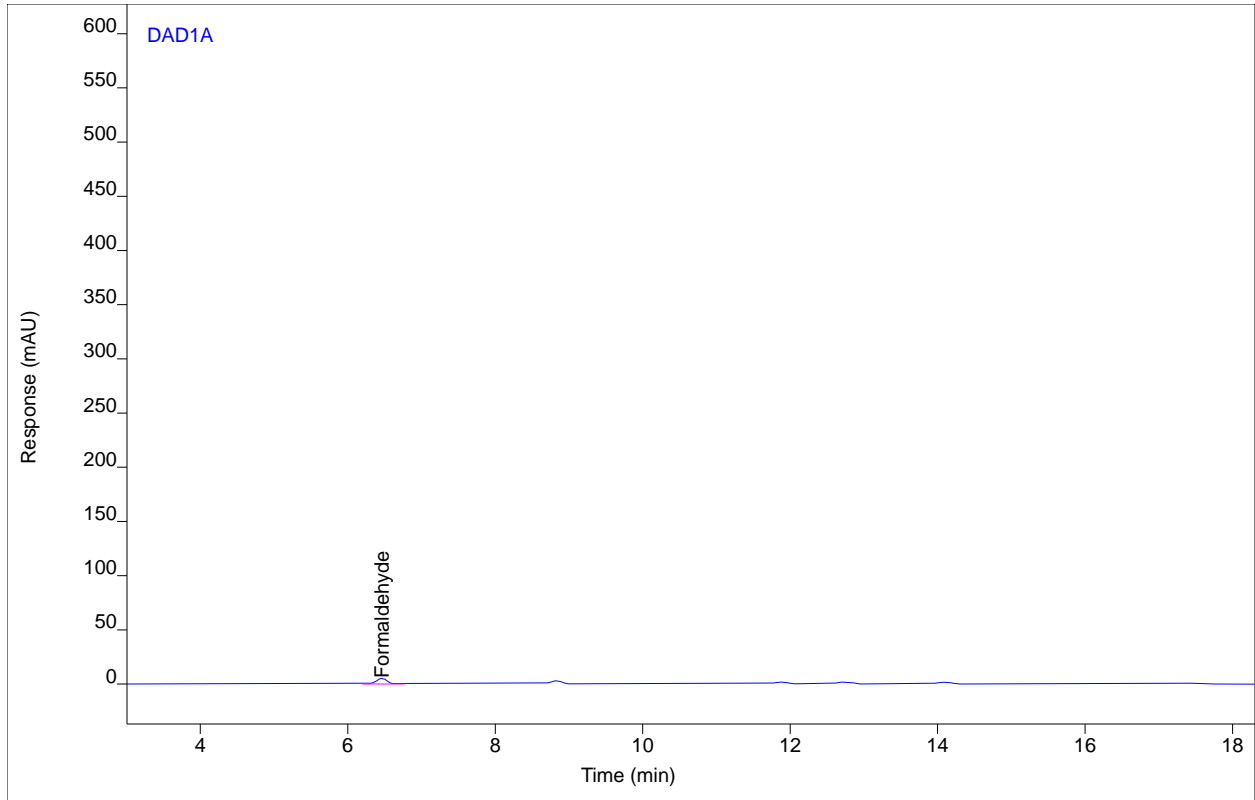
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	6.46	53.1362	5.24432	0.24182	1	0.24182	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-2 #2
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 010-2-HPLCStd5-526-2 #2.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/23/2017 7:59 PM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Calibration
Vial Number 2
Injection Volume 5
Injection 3 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



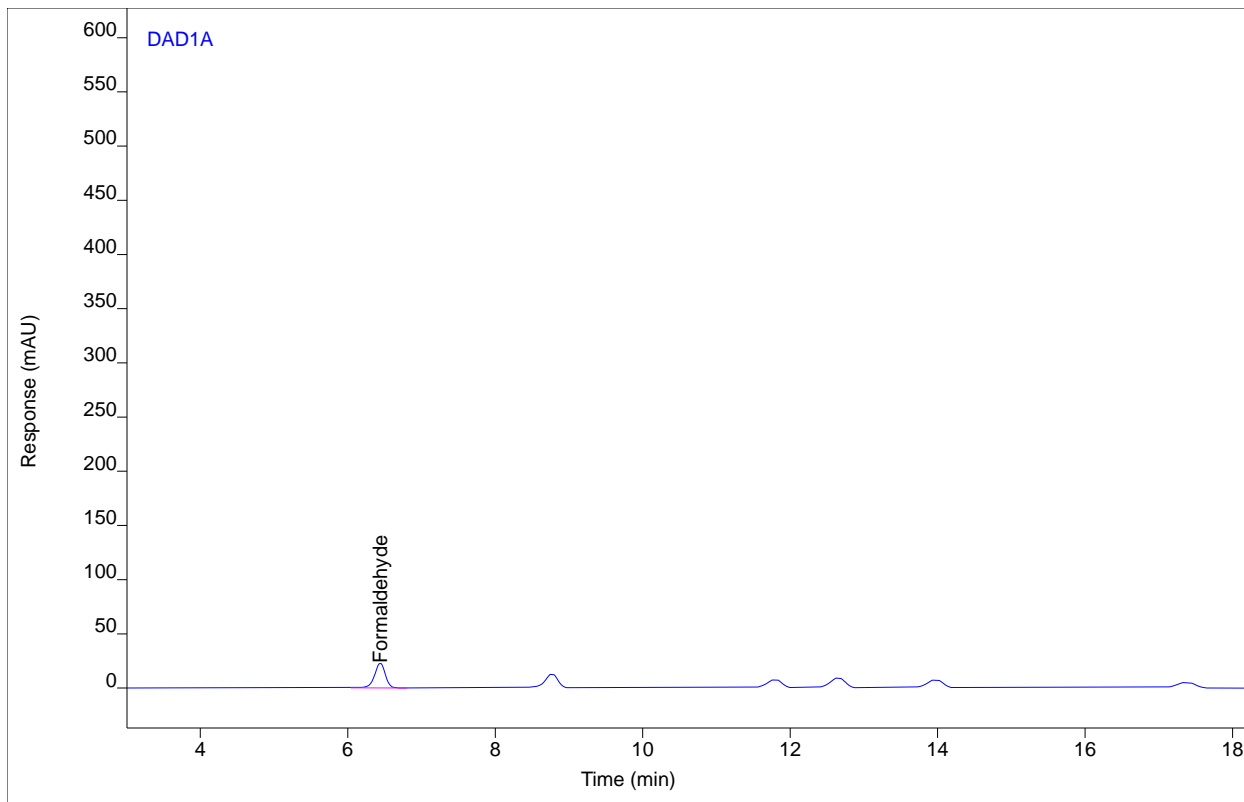
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	6.46	53.9016	5.28391	0.24504	1	0.24504	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd-526-3 #3
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 011-3-HPLCStd-526-3 #3.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/23/2017 8:51 PM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Calibration
Vial Number 3
Injection Volume 5
Injection 1 of 3
Acquisition Method 8315_TO11_Waters_retek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



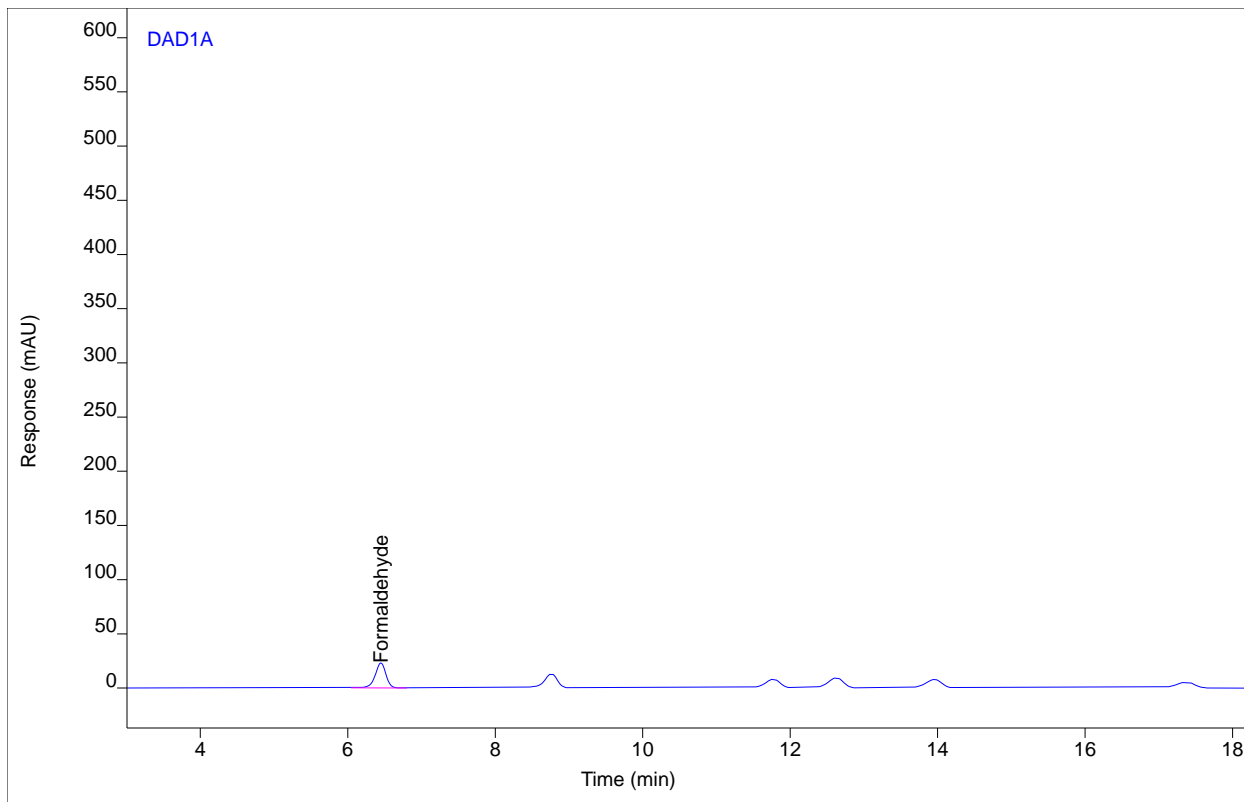
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	6.44	234.906	23.0210	1.00629	1	1.00629	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-3 #3
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 012-3-HPLCStd5-526-3 #3.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/23/2017 9:42 PM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Calibration
Vial Number 3
Injection Volume 5
Injection 2 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



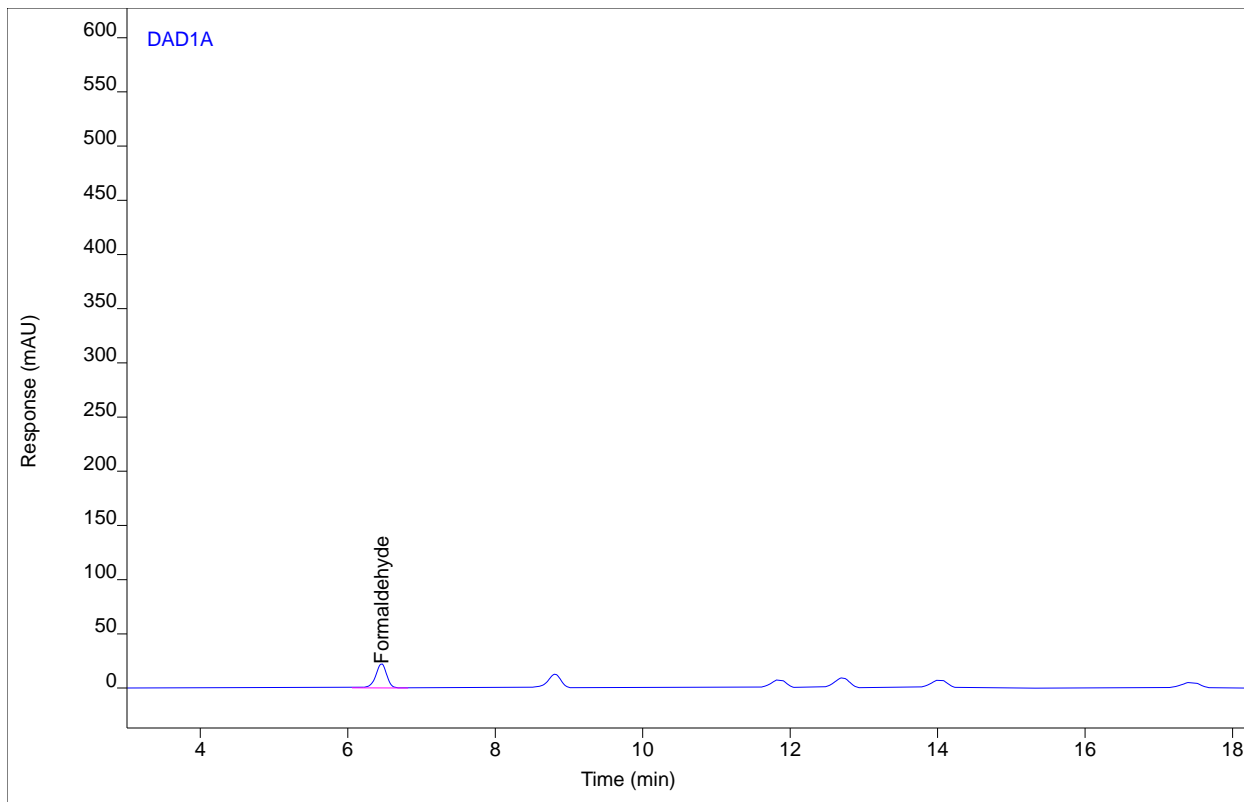
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	6.45	235.441	23.0913	1.00854	1	1.00854	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-3 #3
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 013-3-HPLCStd5-526-3 #3.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/23/2017 10:34 PM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Calibration
Vial Number 3
Injection Volume 5
Injection 3 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



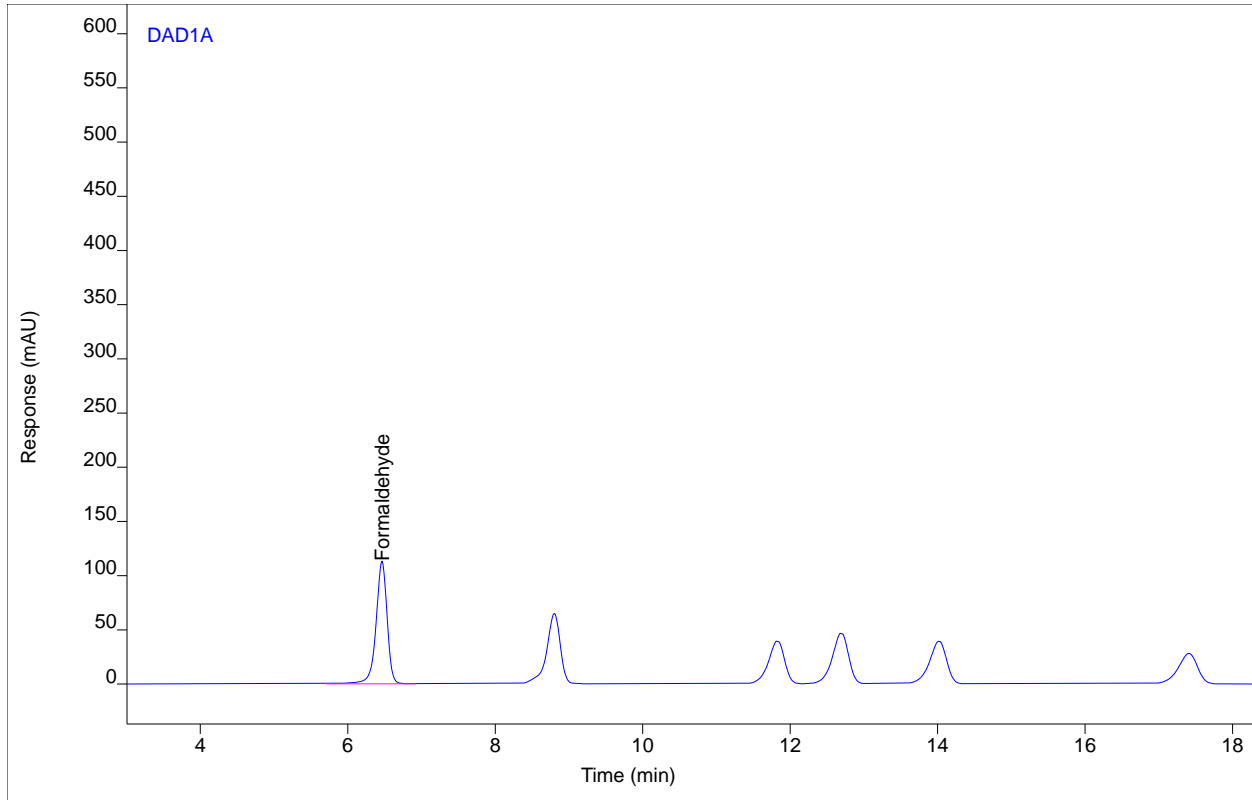
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	6.46	233.484	22.4533	1.00031	1	1.00031	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-4 #4
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 014-4-HPLCStd5-526-4 #4.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/23/2017 11:26 PM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Calibration
Vial Number 4
Injection Volume 5
Injection 1 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



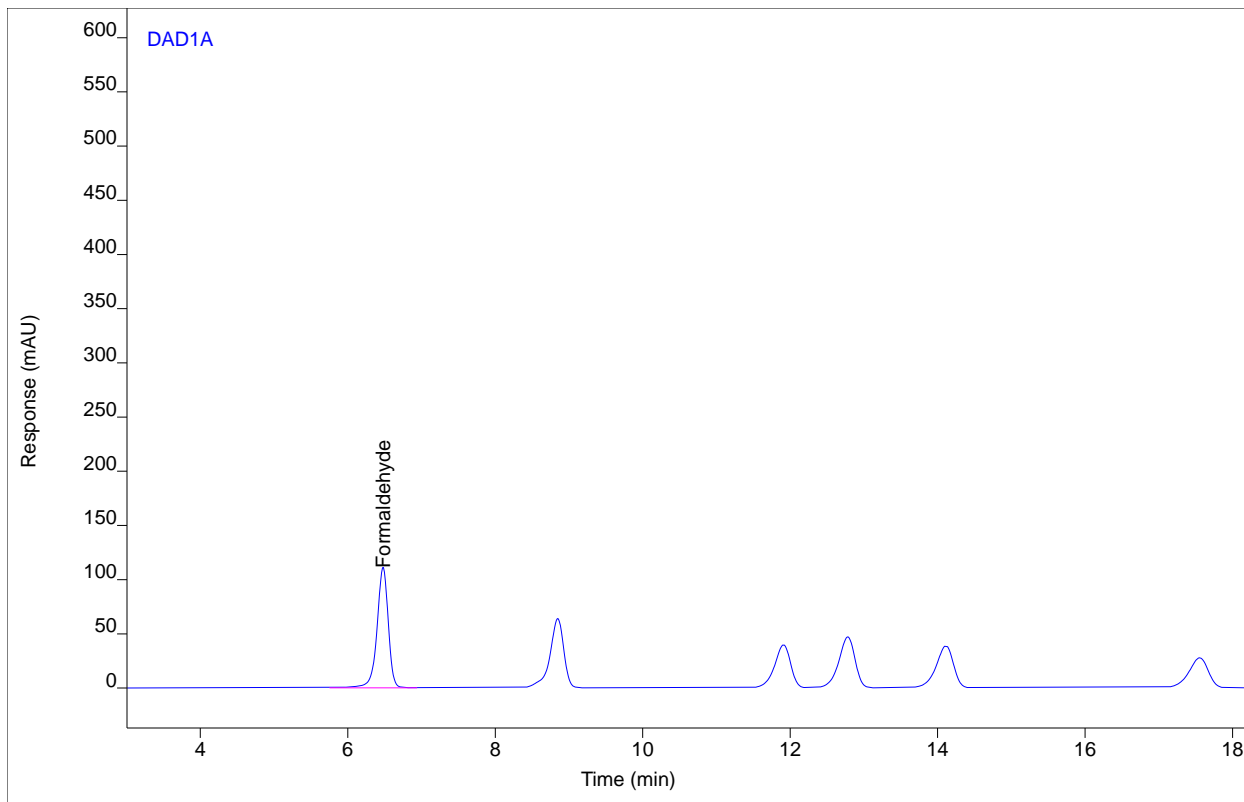
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	6.47	1186.09	113.185	5.00668	1	5.00668	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-4 #4
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 015-4-HPLCStd5-526-4 #4.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/24/2017 12:18 AM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Calibration
Vial Number 4
Injection Volume 5
Injection 2 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



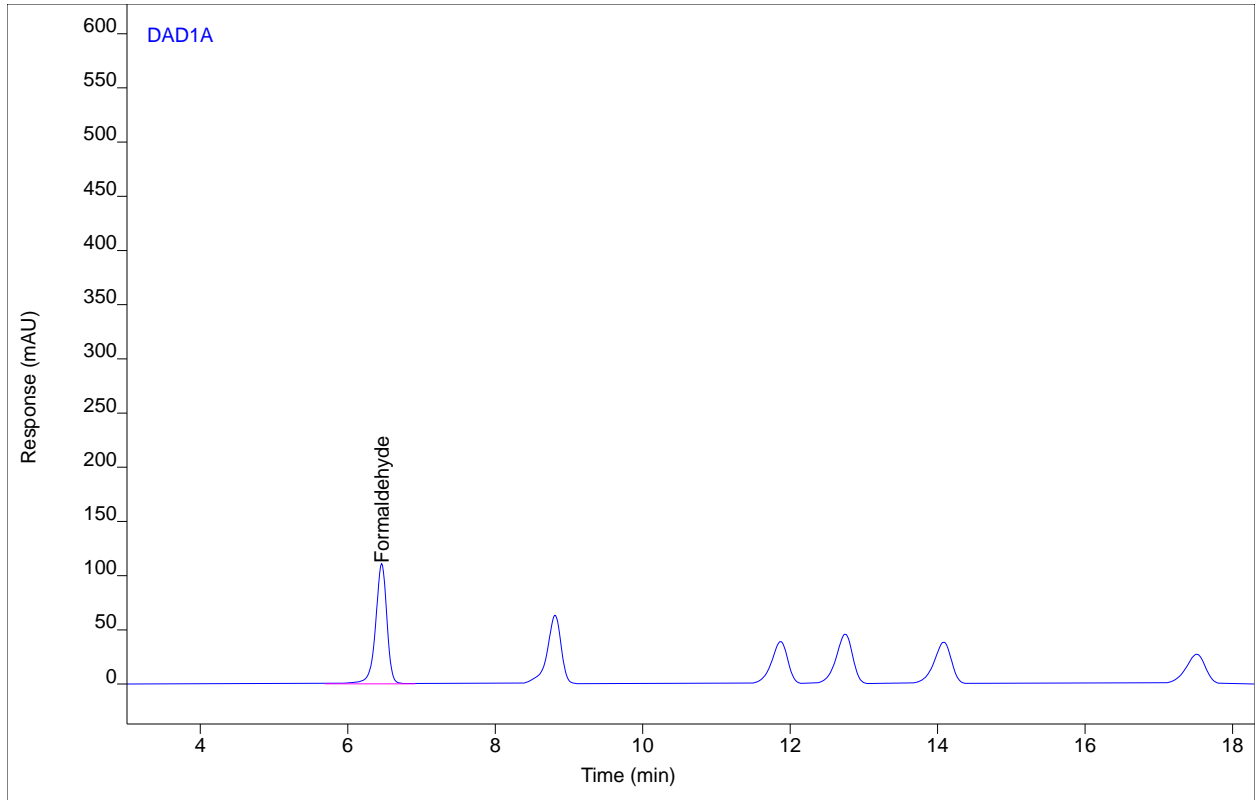
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	6.48	1184.13	111.537	4.99843	1	4.99843	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-4 #4
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 016-4-HPLCStd5-526-4 #4.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/24/2017 1:10 AM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Calibration
Vial Number 4
Injection Volume 5
Injection 3 of 3
Acquisition Method 8315_TO11_Waters_retek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



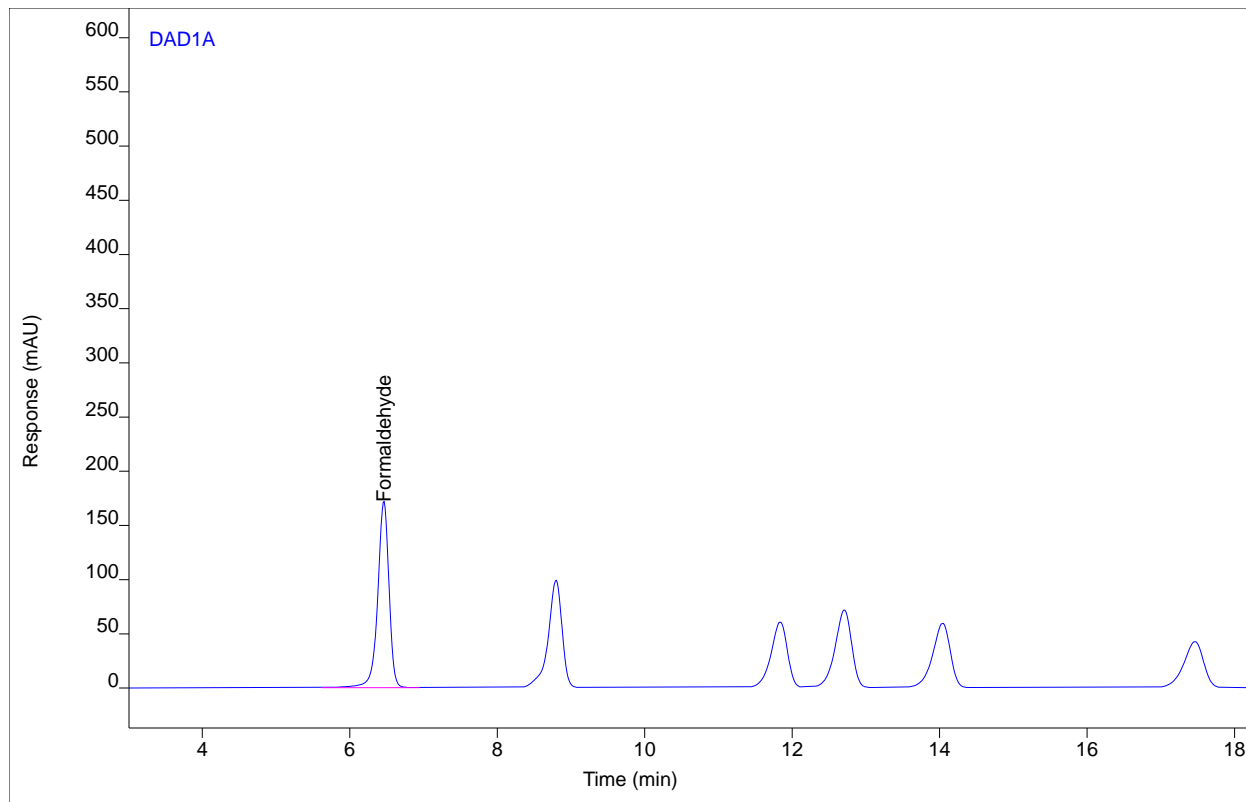
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	6.46	1185.73	111.182	5.00515	1	5.00515	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-5 #5
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 017-5-HPLCStd5-526-5 #5.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/24/2017 2:02 AM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Calibration
Vial Number 5
Injection Volume 5
Injection 1 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



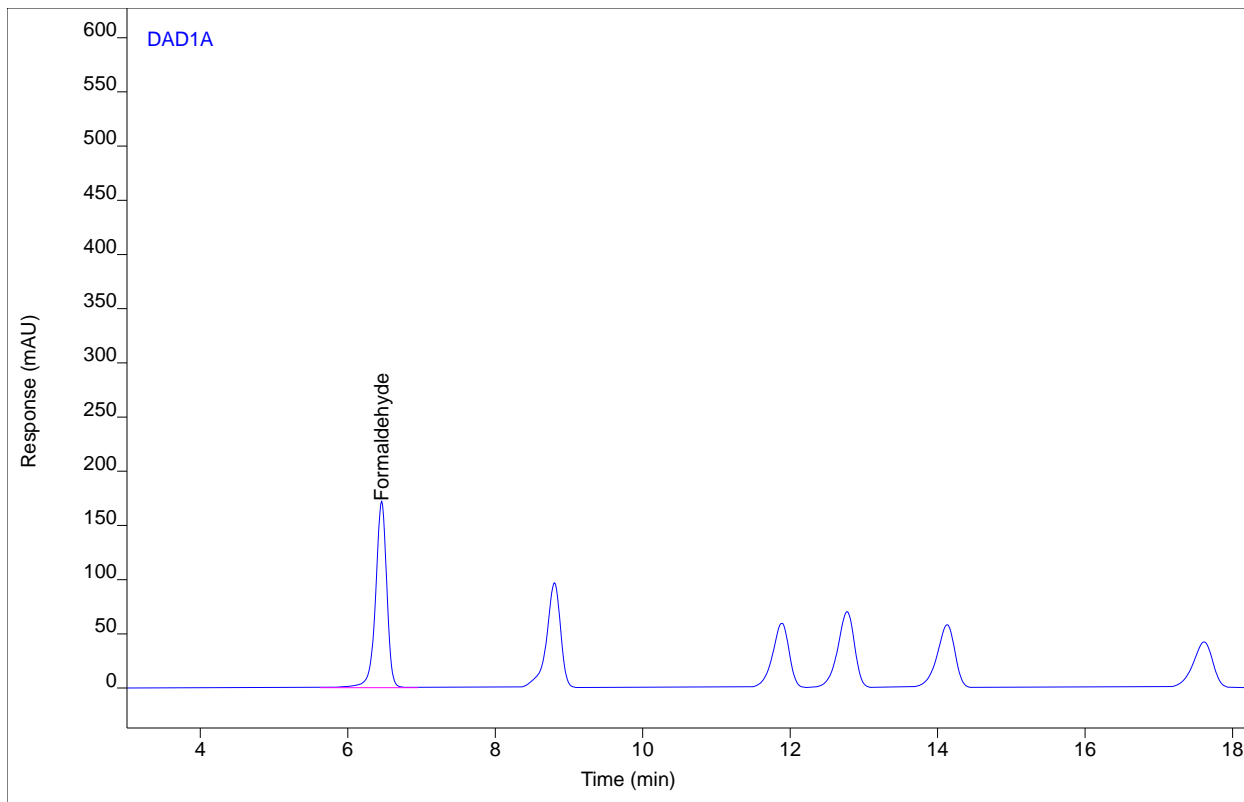
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	6.46	1838.68	172.406	7.75129	1	7.75129	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-5 #5
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 018-5-HPLCStd5-526-5 #5.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/24/2017 2:53 AM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Calibration
Vial Number 5
Injection Volume 5
Injection 2 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



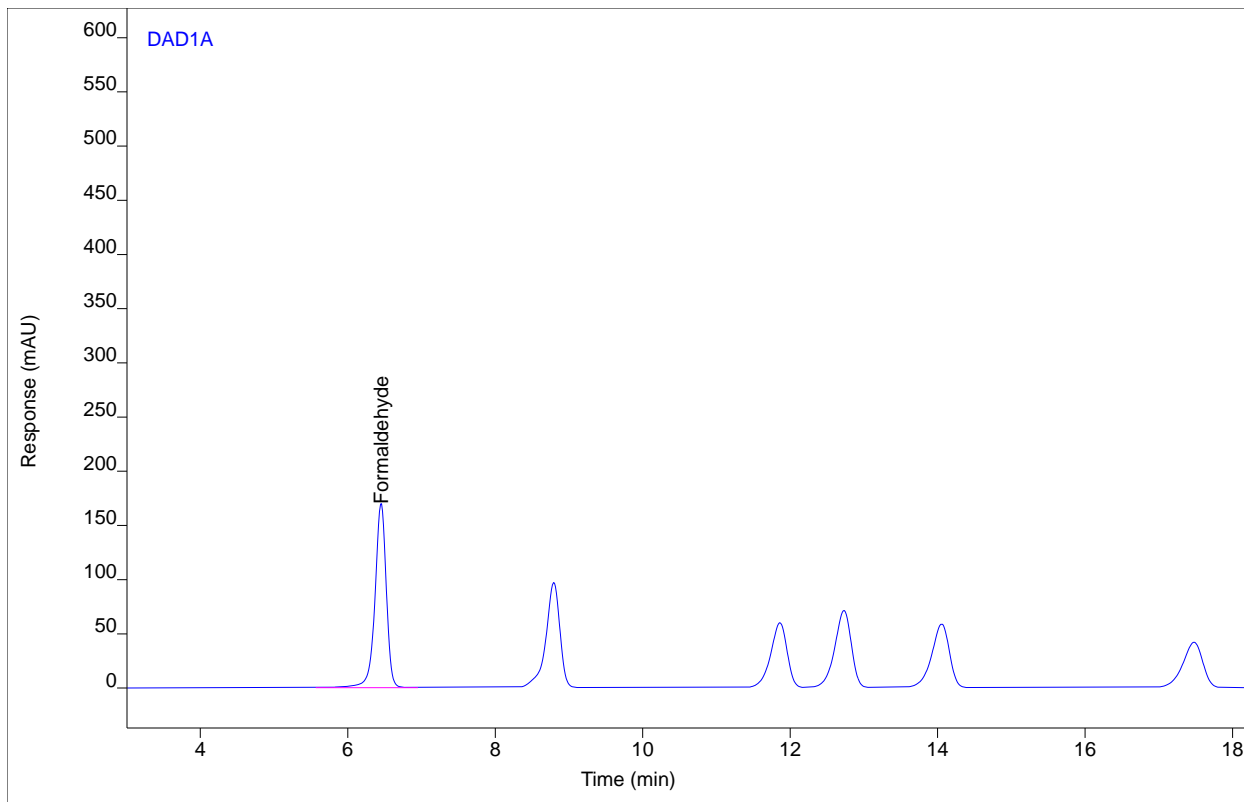
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	6.46	1825.18	172.267	7.69451	1	7.69451	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-5 #5
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 019-5-HPLCStd5-526-5 #5.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/24/2017 3:45 AM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Calibration
Vial Number 5
Injection Volume 5
Injection 3 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



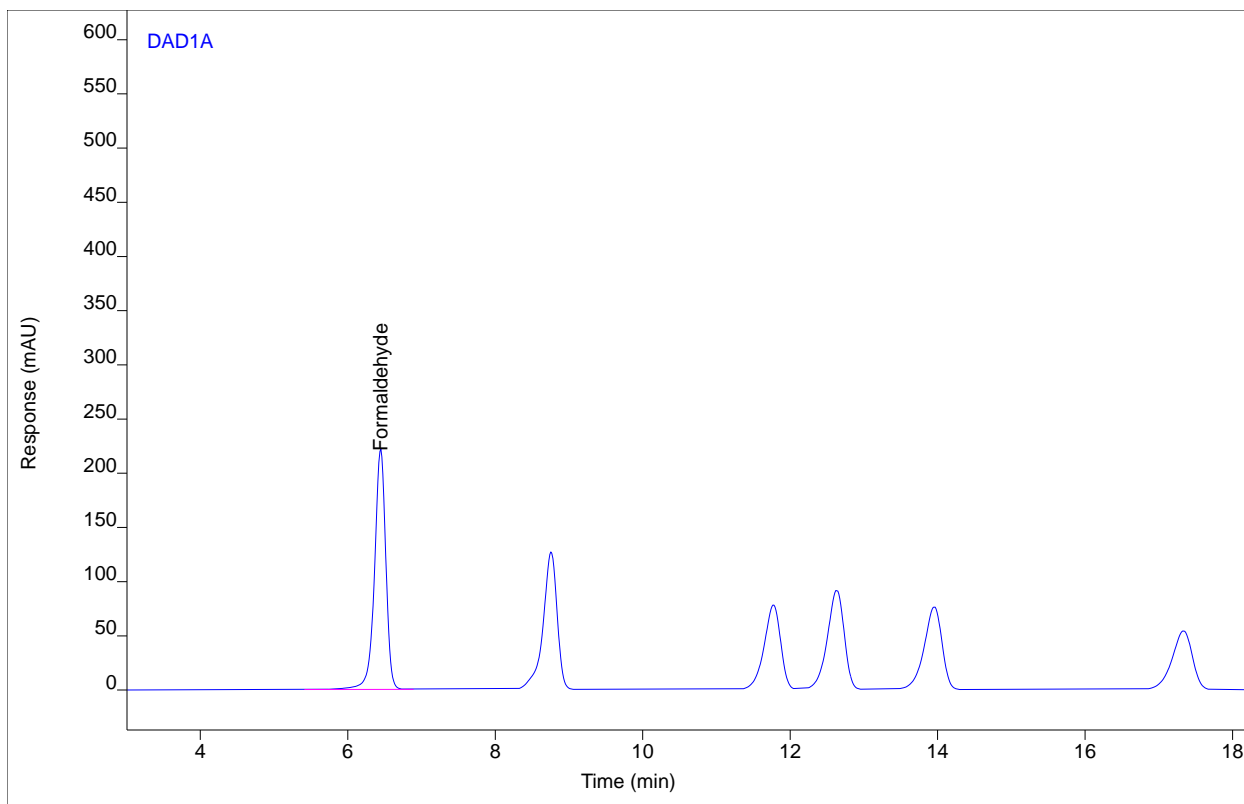
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	6.45	1824.03	170.498	7.68969	1	7.68969	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-6 #6
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 020-6-HPLCStd5-526-6 #6.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/24/2017 4:37 AM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Calibration
Vial Number 6
Injection Volume 5
Injection 1 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	MM	6.45	2372.73	222.372	9.99733	1	9.99733	ug/ml

Analyst Peak Integration Comments

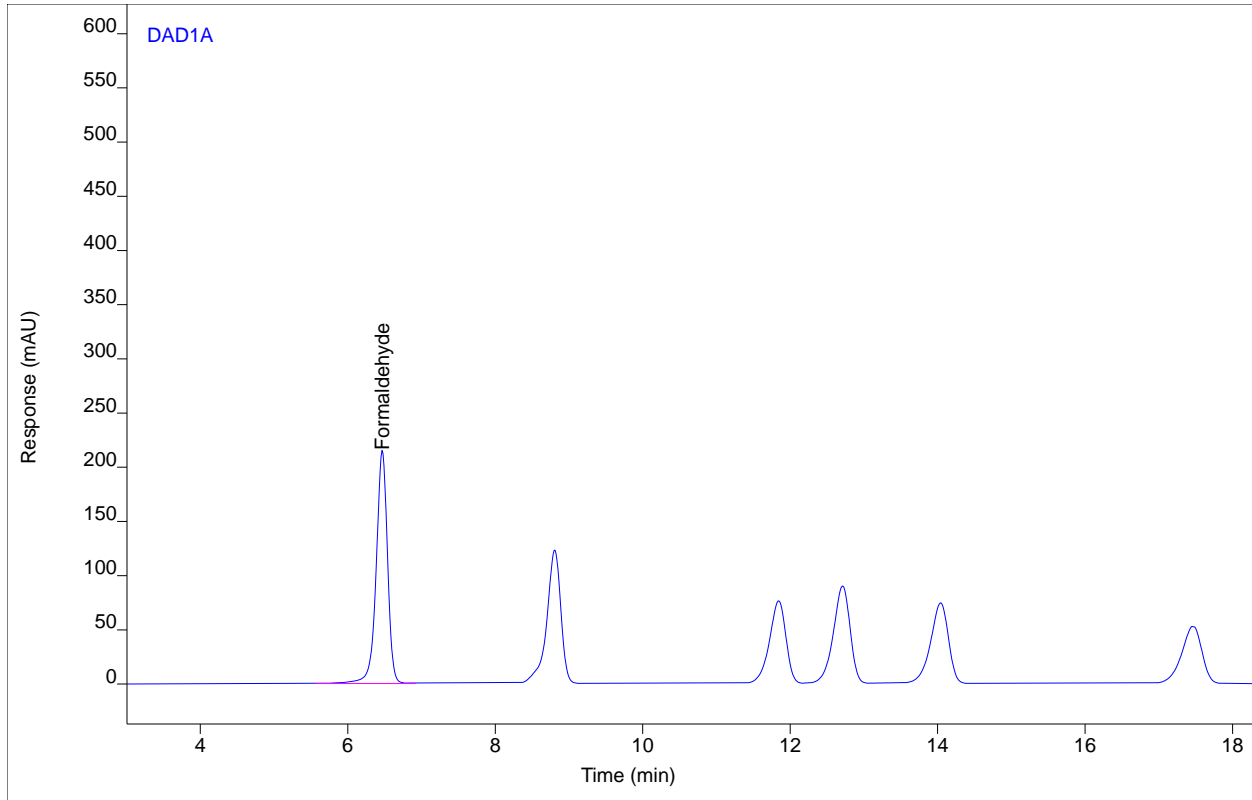
14:48:51 10/26/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd-526-6 #6
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 021-6-HPLCStd-526-6 #6.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/24/2017 5:29 AM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type
Vial Number 6
Injection Volume 5
Injection 2 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	MM	6.47	2312.66	215.608	9.74471	1	9.74471	ug/ml

Analyst Peak Integration Comments

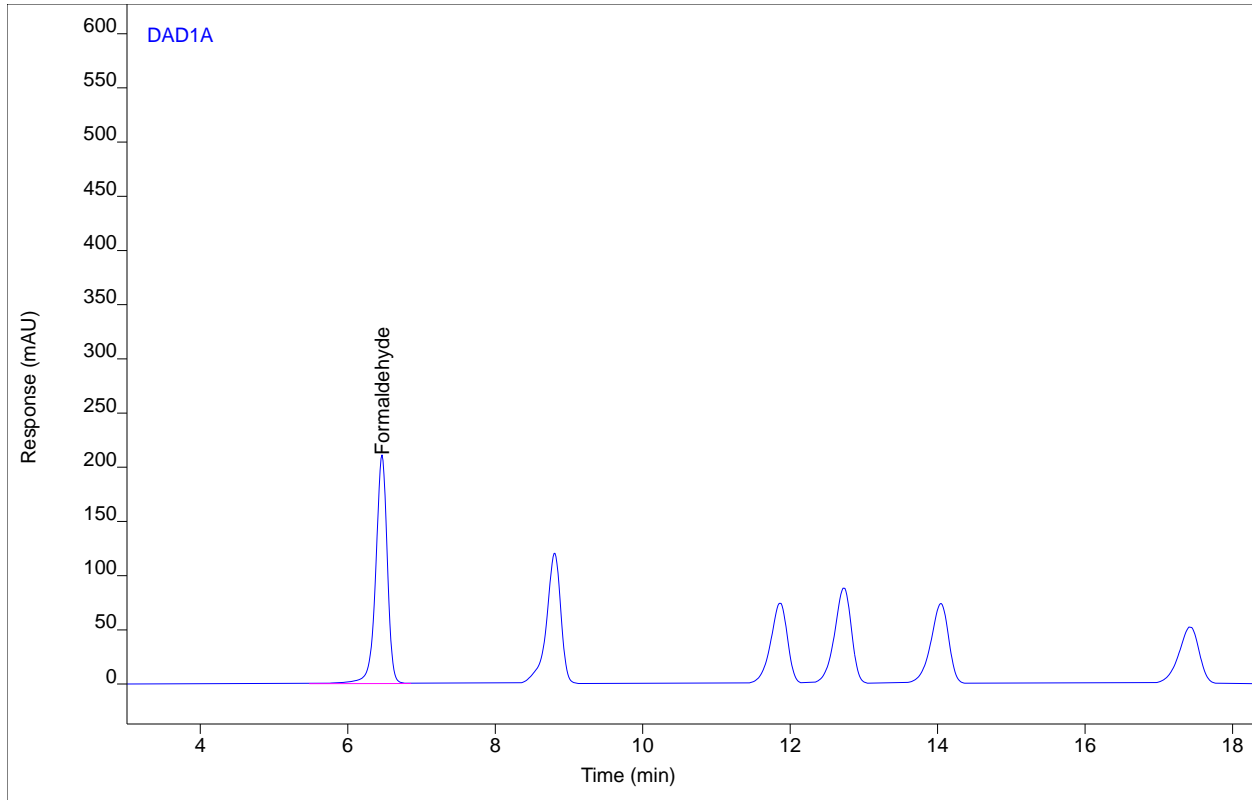
14:49:13 10/26/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-6 #6
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 022-6-HPLCStd5-526-6 #6.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/24/2017 6:21 AM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Calibration
Vial Number 6
Injection Volume 5
Injection 3 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	MM	6.47	2301.25	211.368	9.69673	1	9.69673	ug/ml

Analyst Peak Integration Comments

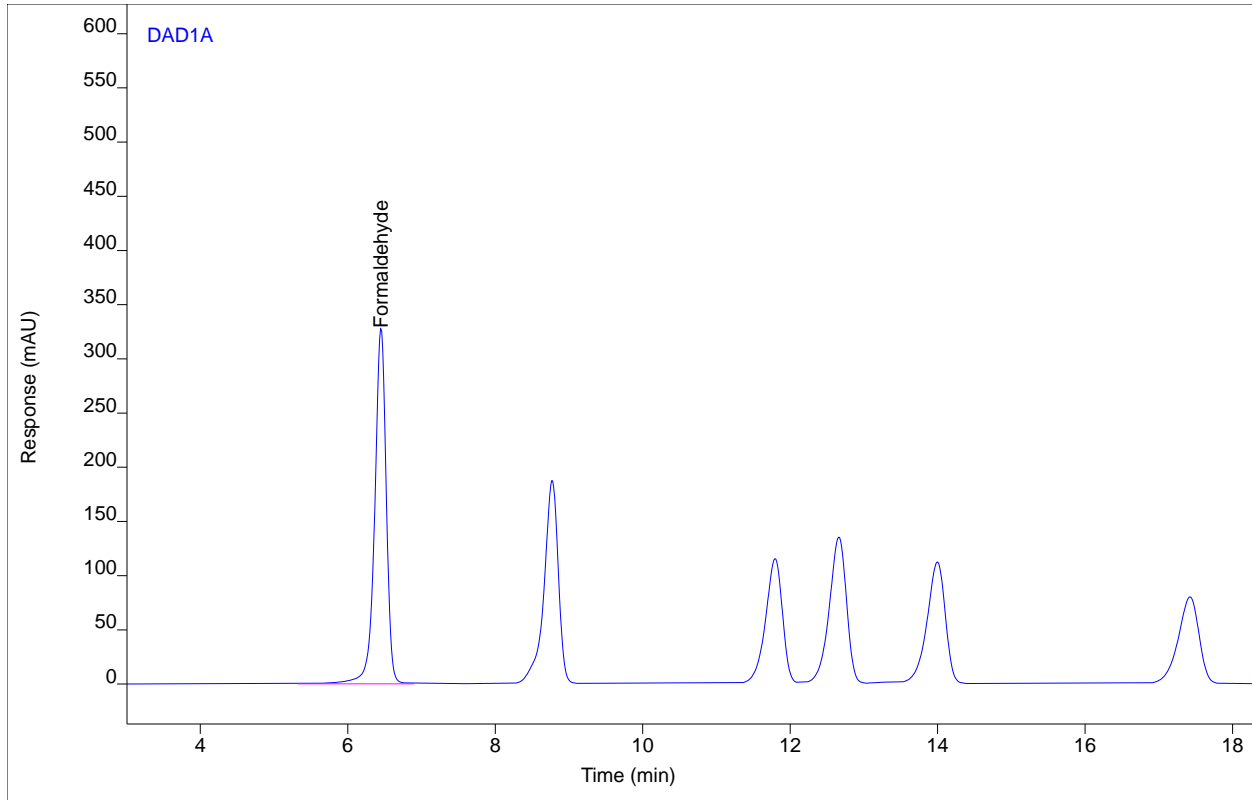
14:49:21 10/26/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-7 #7
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 023-7-HPLCStd5-526-7 #7.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/24/2017 7:12 AM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Calibration
Vial Number 7
Injection Volume 5
Injection 1 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



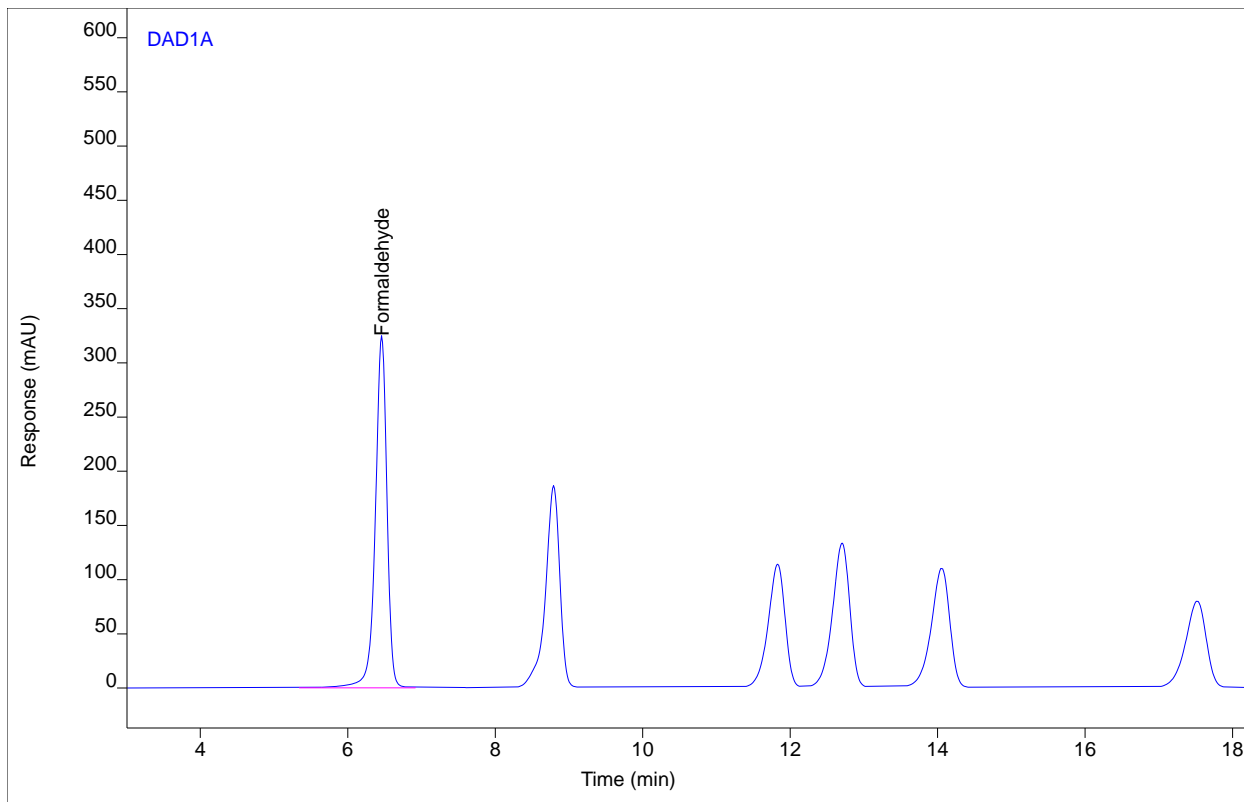
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BV	6.45	3586.92	328.554	15.1039	1	15.1039	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-7 #7
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 024-7-HPLCStd5-526-7 #7.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/24/2017 8:04 AM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Calibration
Vial Number 7
Injection Volume 5
Injection 2 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



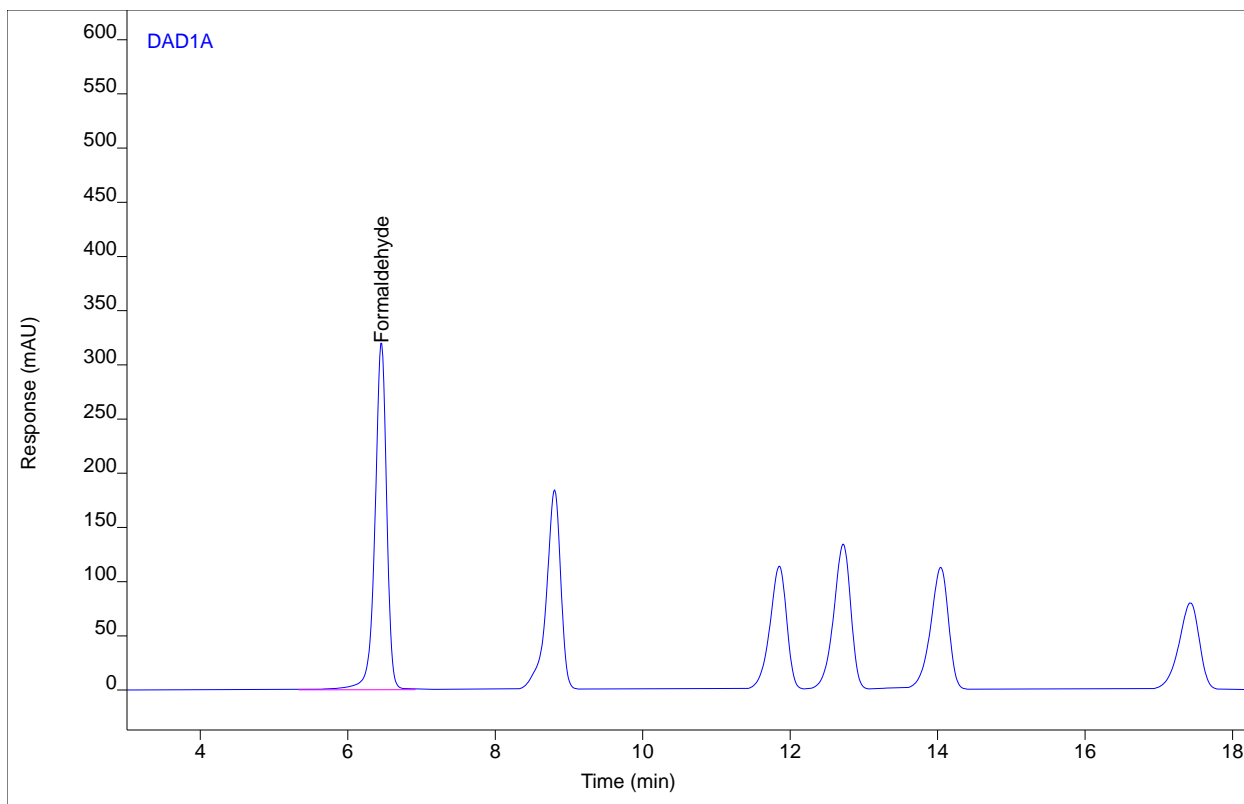
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BV	6.46	3562.90	324.885	15.0029	1	15.0029	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-7 #7
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 025-7-HPLCStd5-526-7 #7.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/24/2017 8:56 AM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Calibration
Vial Number 7
Injection Volume 5
Injection 3 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



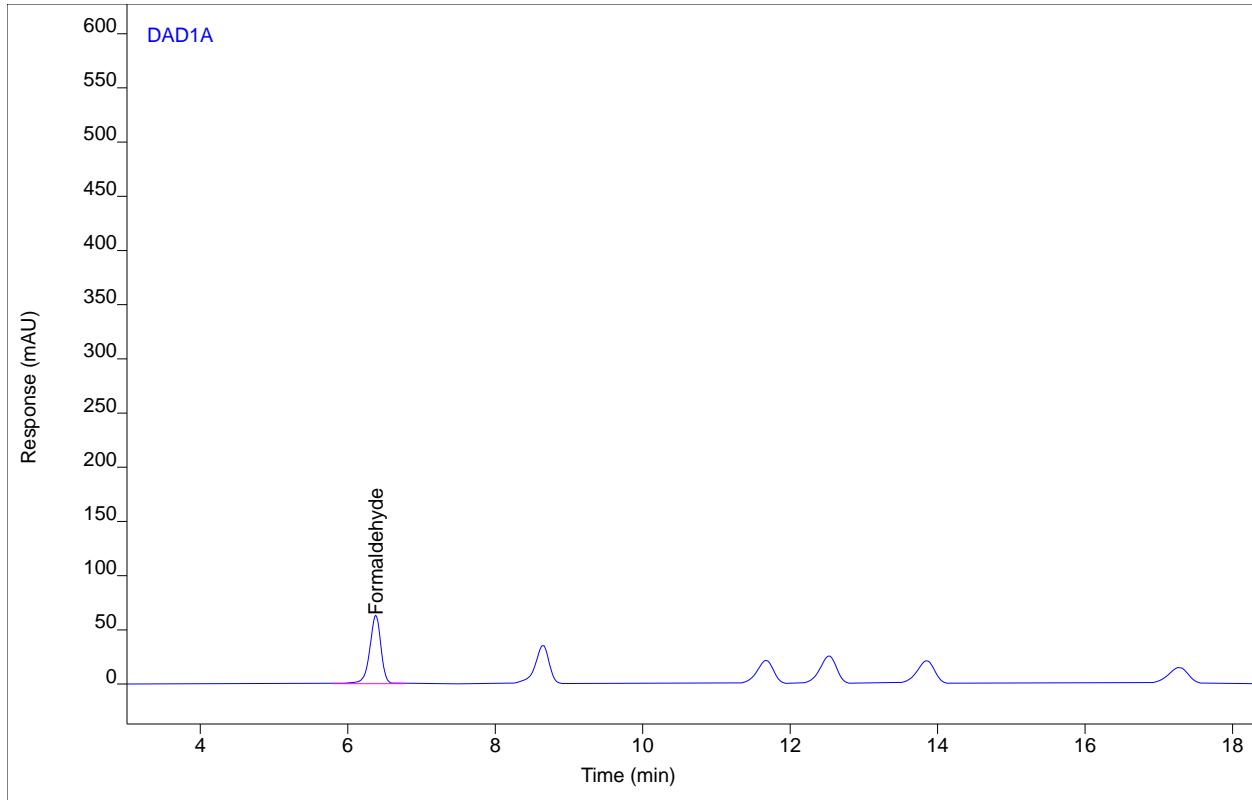
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BV	6.46	3545.62	321.154	14.9302	1	14.9302	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-SS #SS
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 026-8-HPLCStd5-526-SS #SS.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/24/2017 9:48 AM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Control
Vial Number 8
Injection Volume 5
Injection 1 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



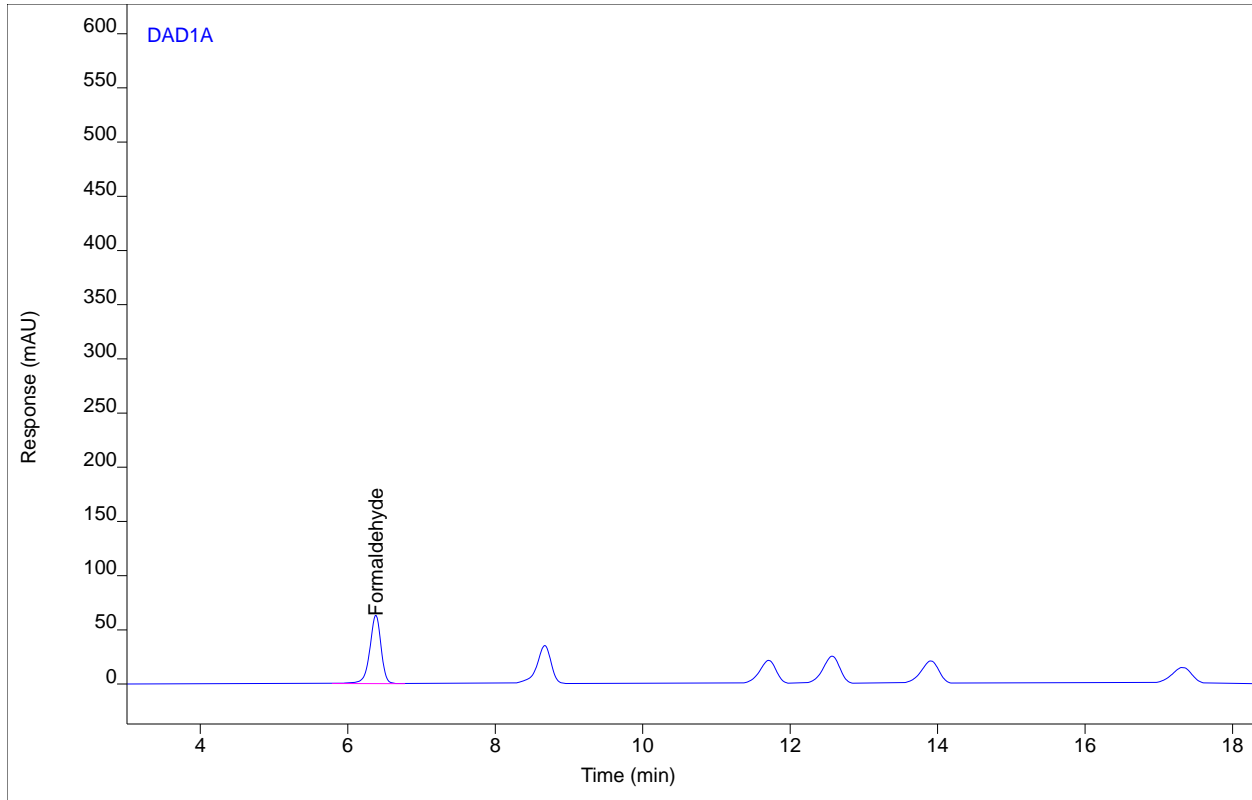
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	6.38	668.824	63.0772	2.83122	1	2.83122	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-SS #SS
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 027-8-HPLCStd5-526-SS #SS.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/24/2017 10:40 AM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Control
Vial Number 8
Injection Volume 5
Injection 2 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



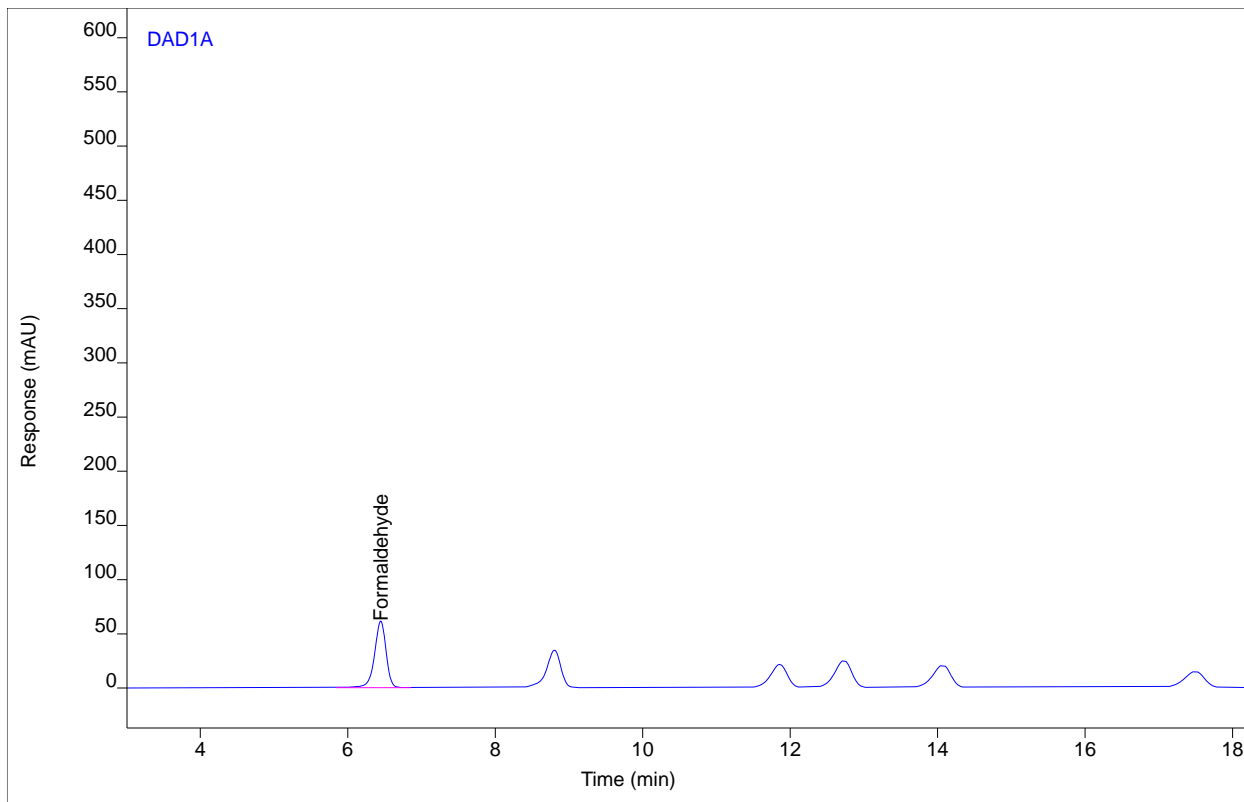
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	6.38	672.431	63.1938	2.84639	1	2.84639	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCStd5-526-SS #SS
Sequence Name Bart422 2017-10-23 12-10-50 ver.6
Inj Data File 028-8-HPLCStd5-526-SS #SS.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 10/24/2017 11:31 AM
File Modified 10/26/2017 2:50 PM
Instrument BartNew
Operator Alex Pennington

Sample Type Control
Vial Number 8
Injection Volume 5
Injection 3 of 3
Acquisition Method 8315_TO11_Waters_restek_45_Min.M
Analysis Method Bart423.M
Method Modified 10/26/2017 2:49 PM
Printed 11/6/2017 4:43 PM



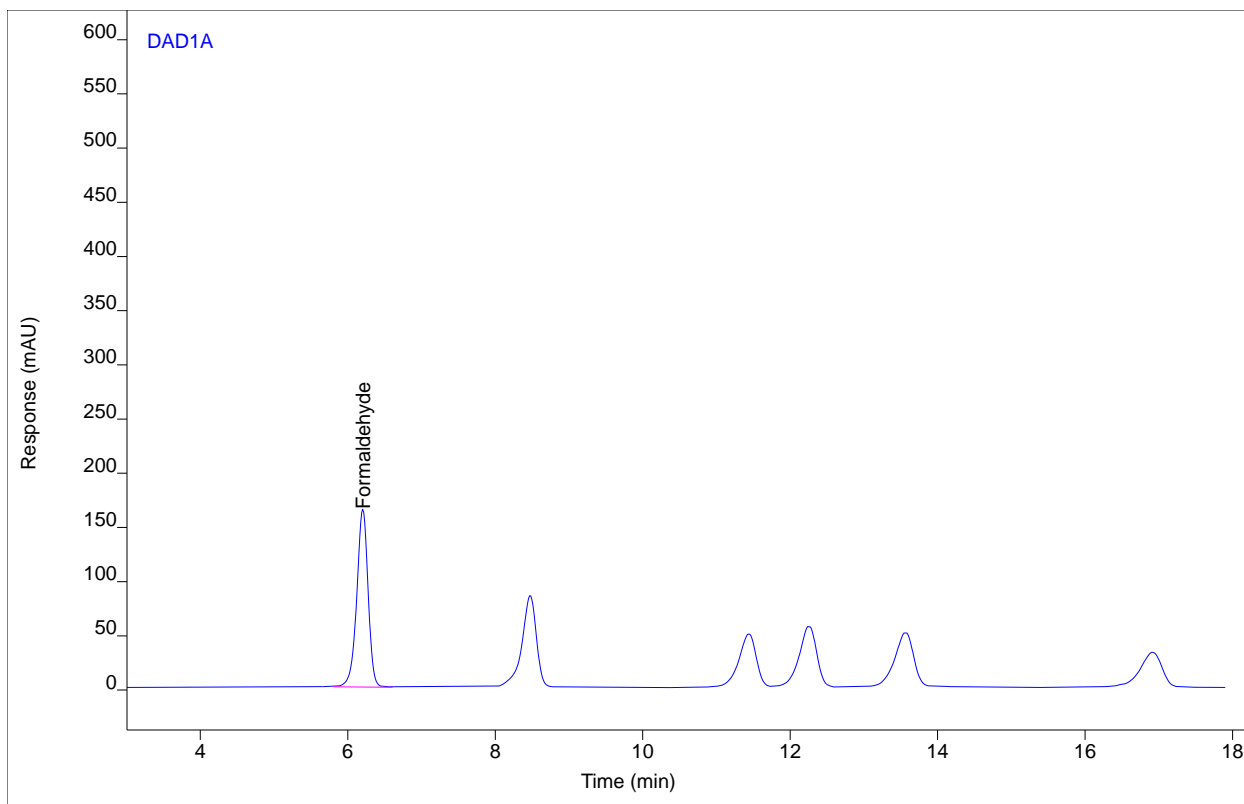
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	6.45	669.930	61.6109	2.83587	1	2.83587	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name Bart426 #concal
Sequence Name Bart426 2017-11-03 15-45-34 ver.3
Inj Data File 002-1-Bart426 #concal.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 11/3/2017 4:10 PM
File Modified 11/6/2017 4:18 PM
Instrument BartNew
Operator Amelia Paolantonio

Sample Type
Vial Number 1
Injection Volume 5
Injection 1 of 2
Acquisition Method 8315_TO11_Waters_XTerra_HCHO.M
Analysis Method Bart423.M
Method Modified 11/4/2017 4:07 PM
Printed 11/6/2017 4:43 PM



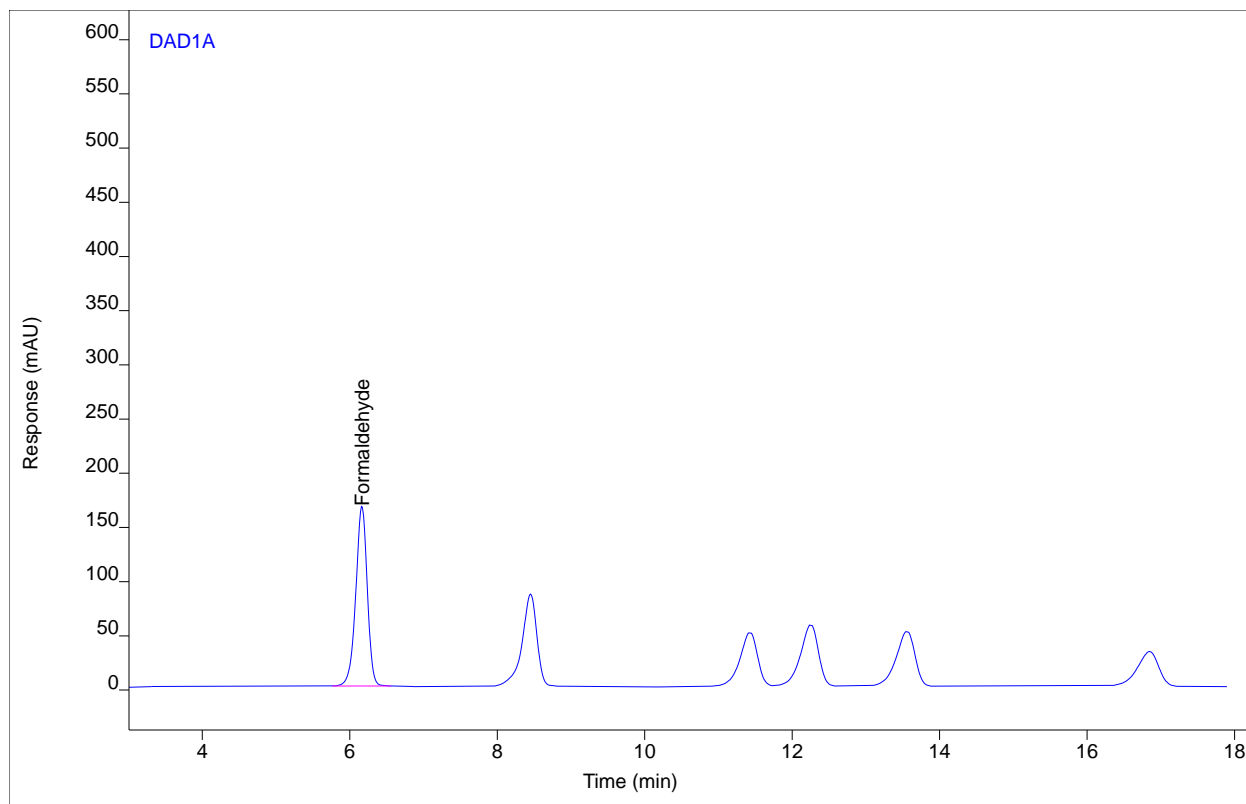
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	VV	6.21	1758.10	164.030	7.41239	1	7.41239	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name Bart426 #concal
Sequence Name Bart426 2017-11-03 15-45-34 ver.3
Inj Data File 014-1-Bart426 #concal.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 11/3/2017 8:40 PM
File Modified 11/6/2017 4:18 PM
Instrument BartNew
Operator Amelia Paolantonio

Sample Type
Vial Number 1
Injection Volume 5
Injection 1 of 1
Acquisition Method 8315_TO11_Waters_XTerra_HCHO.M
Analysis Method Bart423.M
Method Modified 11/4/2017 4:07 PM
Printed 11/6/2017 4:43 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	MM	6.17	1801.54	166.458	7.59507	1	7.59507	ug/ml

Analyst Peak Integration Comments

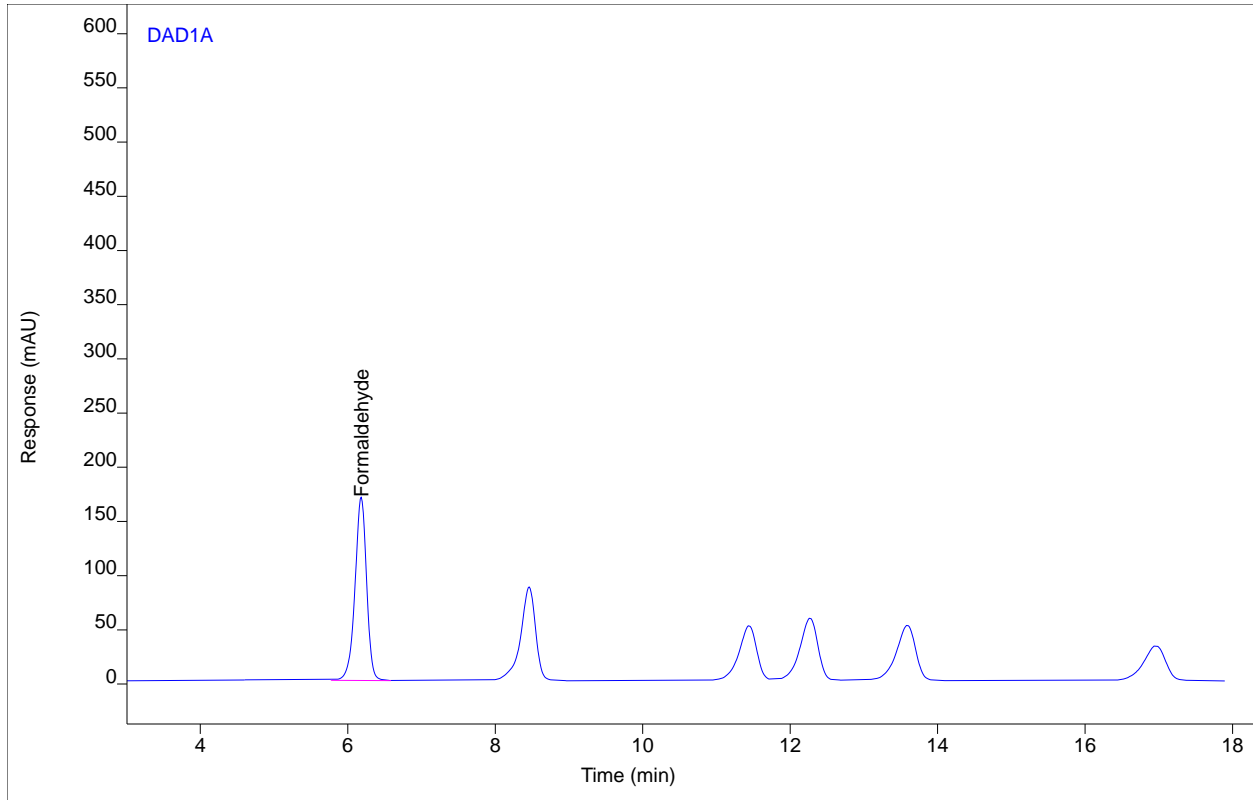
16:02:18 11/06/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name Bart426 #concal
Sequence Name Bart426 2017-11-03 15-45-34 ver.3
Inj Data File 025-1-Bart426 #concal.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 11/4/2017 12:48 AM
File Modified 11/6/2017 4:18 PM
Instrument BartNew
Operator Amelia Paolantonio

Sample Type
Vial Number 1
Injection Volume 5
Injection 1 of 1
Acquisition Method 8315_TO11_Waters_XTerra_HCHO.M
Analysis Method Bart423.M
Method Modified 11/4/2017 4:07 PM
Printed 11/6/2017 4:43 PM



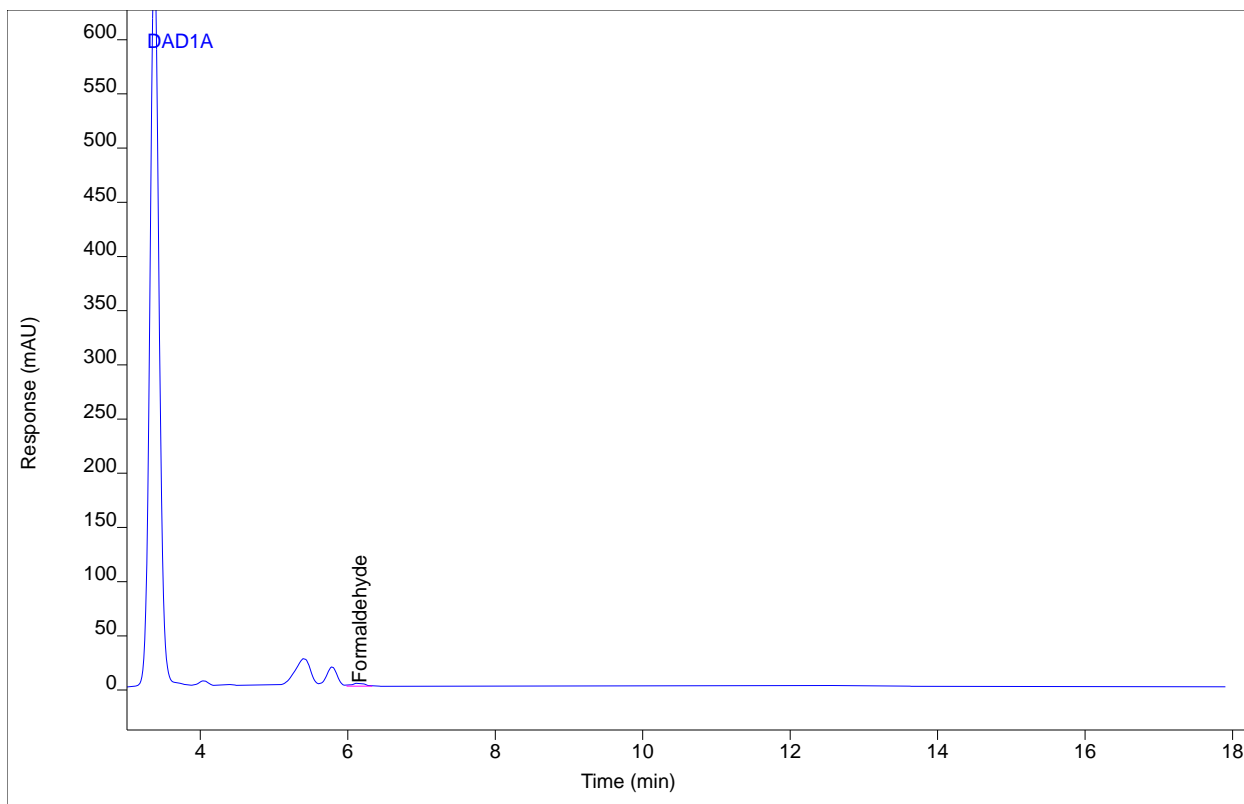
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	VV	6.19	1854.82	169.510	7.81917	1	7.81917	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name RW-5 1117-009
Sequence Name Bart426 2017-11-03 15-45-34 ver.3
Inj Data File 003-11-RW-5 1117-009.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 11/3/2017 4:32 PM
File Modified 11/6/2017 4:18 PM
Instrument BartNew
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 11
Injection Volume 5
Injection 1 of 2
Acquisition Method 8315_TO11_Waters_XTerra_HCHO.M
Analysis Method Bart423.M
Method Modified 11/4/2017 4:07 PM
Printed 11/6/2017 4:43 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	MF	6.16	34.2845	3.17770	0.16253	1	0.16253	ug/ml

Analyst Peak Integration Comments

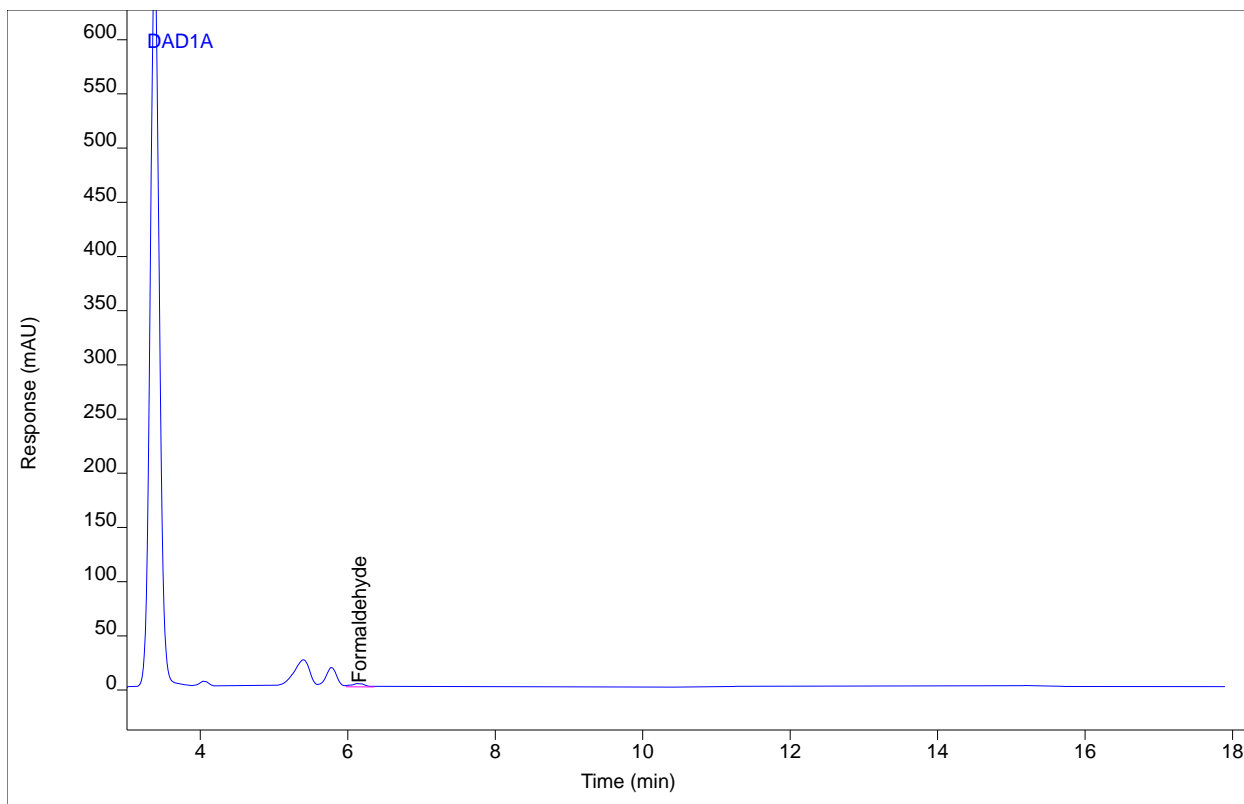
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Chromatogram Report

Enthalpy Analytical

Sample Name RW-5 1117-009
Sequence Name Bart426 2017-11-03 15-45-34 ver.3
Inj Data File 004-11-RW-5 1117-009.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 11/3/2017 4:55 PM
File Modified 11/6/2017 4:18 PM
Instrument BartNew
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 11
Injection Volume 5
Injection 2 of 2
Acquisition Method 8315_TO11_Waters_XTerra_HCHO.M
Analysis Method Bart423.M
Method Modified 11/4/2017 4:07 PM
Printed 11/6/2017 4:43 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	FM	6.15	37.3563	3.37784	0.17545	1	0.17545	ug/ml

Analyst Peak Integration Comments

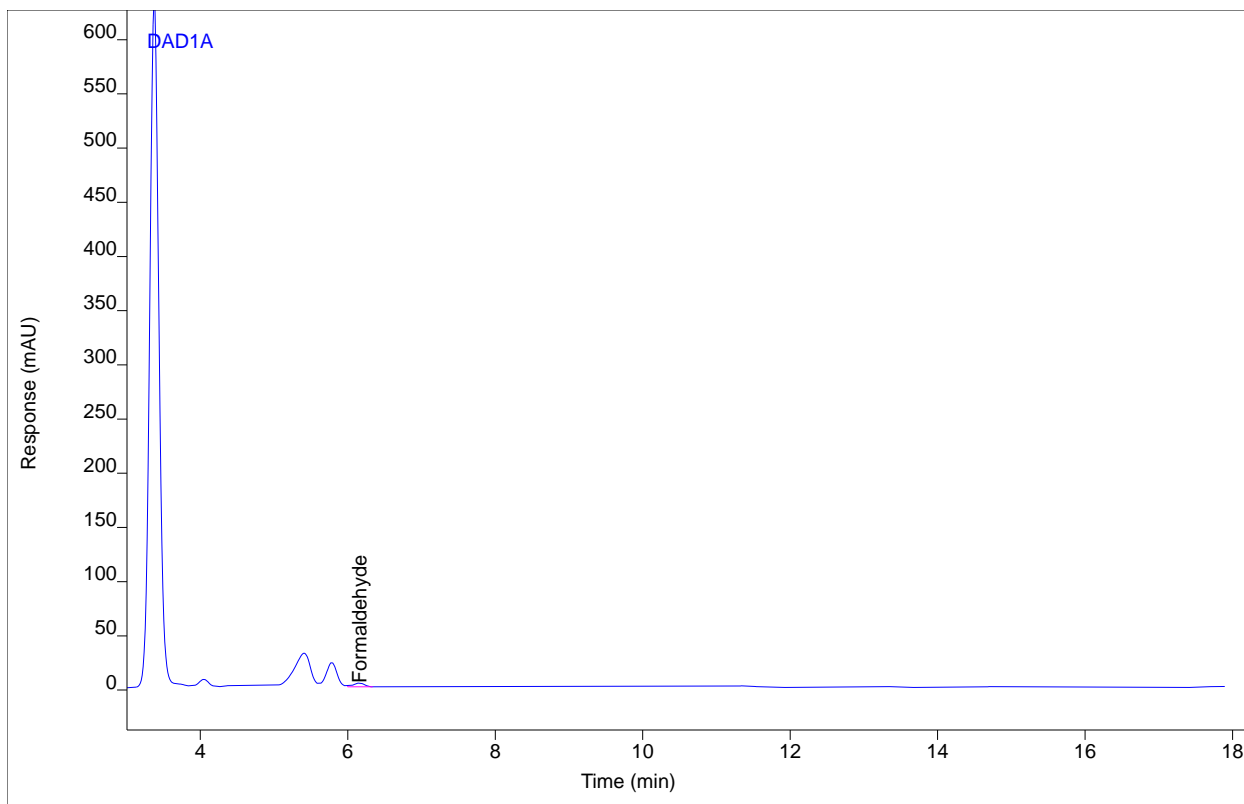
15:54:52 11/06/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name LD/RW-5 1117-009
Sequence Name Bart426 2017-11-03 15-45-34 ver.3
Inj Data File 005-12-LD_RW-5 1117-009.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 11/3/2017 5:17 PM
File Modified 11/6/2017 4:18 PM
Instrument BartNew
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 12
Injection Volume 5
Injection 1 of 1
Acquisition Method 8315_TO11_Waters_XTerra_HCHO.M
Analysis Method Bart423.M
Method Modified 11/4/2017 4:07 PM
Printed 11/6/2017 4:43 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	FM	6.16	34.9507	3.47992	0.16533	1	0.16533	ug/ml

Analyst Peak Integration Comments

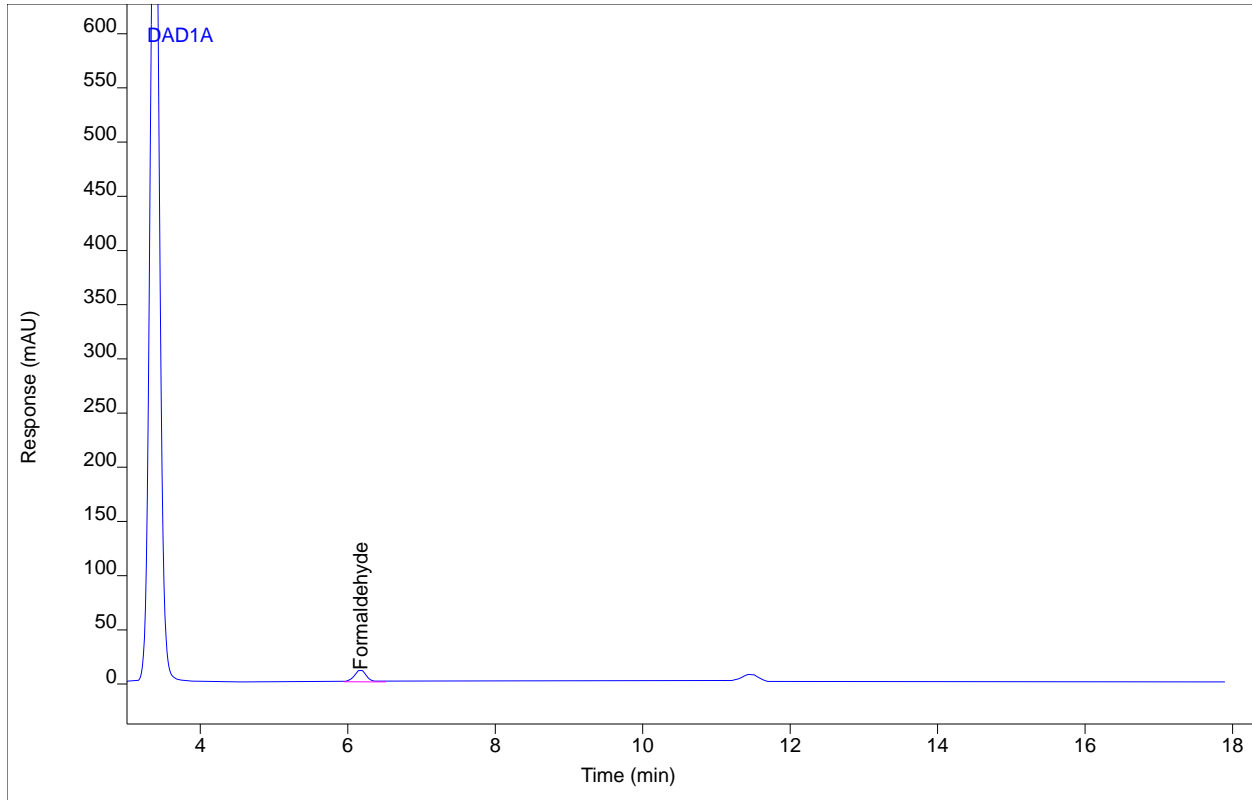
15:55:37 11/06/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name RW-7 1117-009
Sequence Name Bart426 2017-11-03 15-45-34 ver.3
Inj Data File 006-13-RW-7 1117-009.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 11/3/2017 5:40 PM
File Modified 11/6/2017 4:18 PM
Instrument BartNew
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 13
Injection Volume 5
Injection 1 of 1
Acquisition Method 8315_TO11_Waters_XTerra_HCHO.M
Analysis Method Bart423.M
Method Modified 11/4/2017 4:07 PM
Printed 11/6/2017 4:43 PM



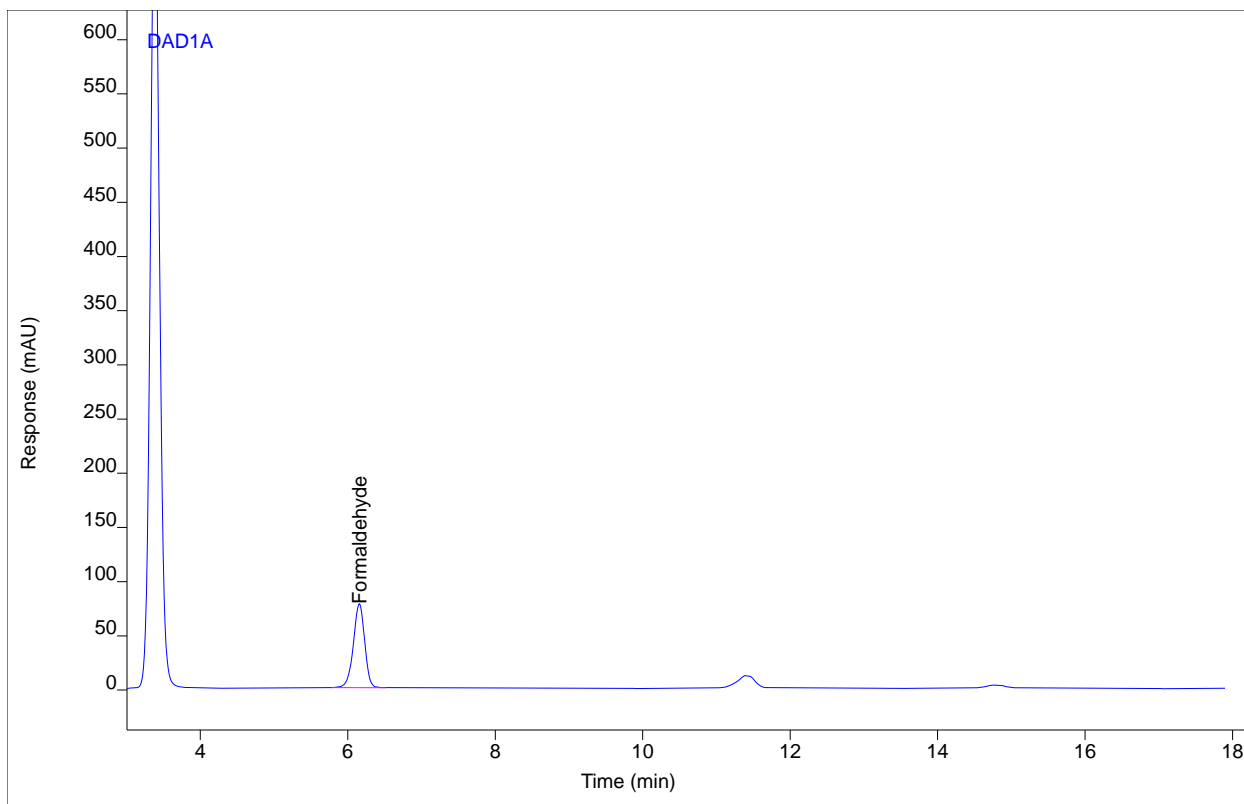
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	VV	6.18	125.159	11.1672	0.54473	1	0.54473	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name MS/RW-7 1117-009
Sequence Name Bart426 2017-11-03 15-45-34 ver.3
Inj Data File 007-14-MS_RW-5 1117-009.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 11/3/2017 6:02 PM
File Modified 11/6/2017 4:18 PM
Instrument BartNew
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 14
Injection Volume 5
Injection 1 of 1
Acquisition Method 8315_TO11_Waters_XTerra_HCHO.M
Analysis Method Bart423.M
Method Modified 11/4/2017 4:07 PM
Printed 11/6/2017 4:43 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	MM	6.16	825.673	77.6899	3.49088	1	3.49088	ug/ml

Analyst Peak Integration Comments

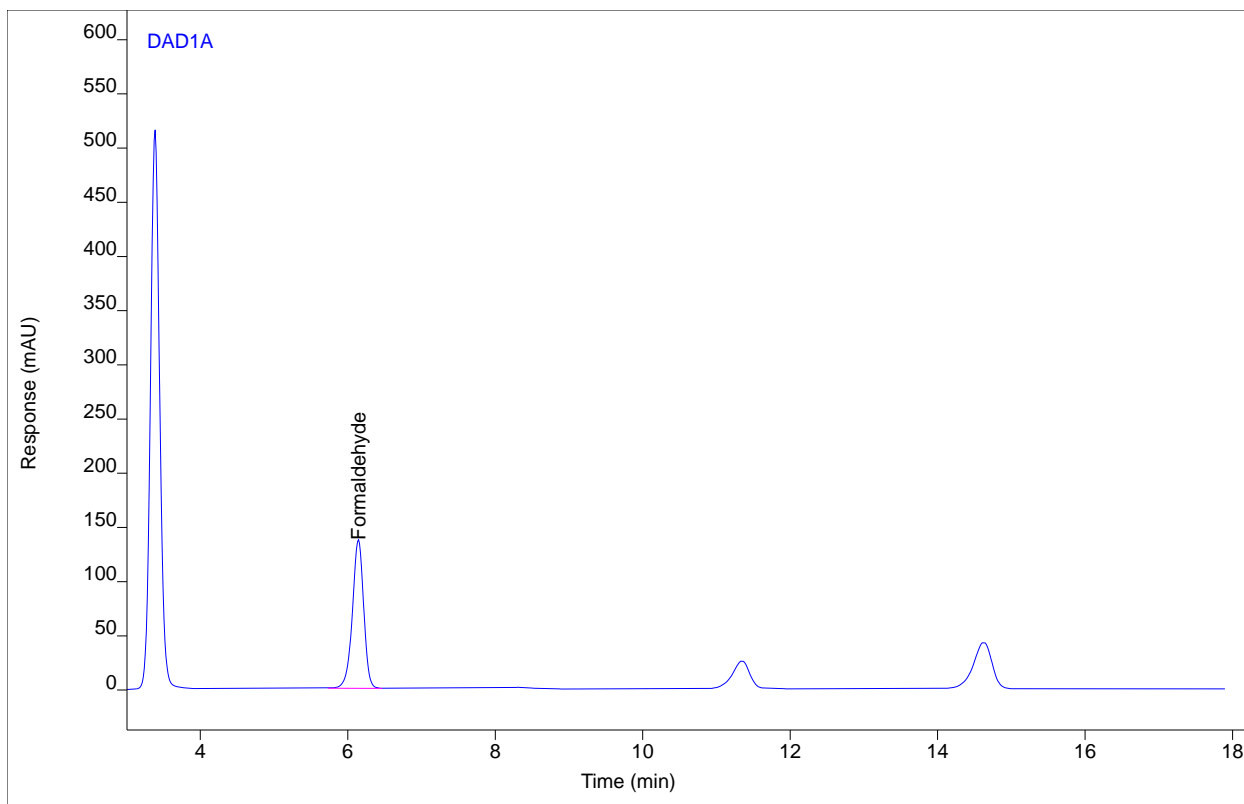
15:55:57 11/06/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name PW-1R 1117-009
Sequence Name Bart426 2017-11-03 15-45-34 ver.3
Inj Data File 008-15-PW-1R 1117-009.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 11/3/2017 6:25 PM
File Modified 11/6/2017 4:18 PM
Instrument BartNew
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 15
Injection Volume 5
Injection 1 of 1
Acquisition Method 8315_TO11_Waters_XTerra_HCHO.M
Analysis Method Bart423.M
Method Modified 11/4/2017 4:07 PM
Printed 11/6/2017 4:43 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	MM	6.15	1460.48	137.494	6.16070	1	6.16070	ug/ml

Analyst Peak Integration Comments

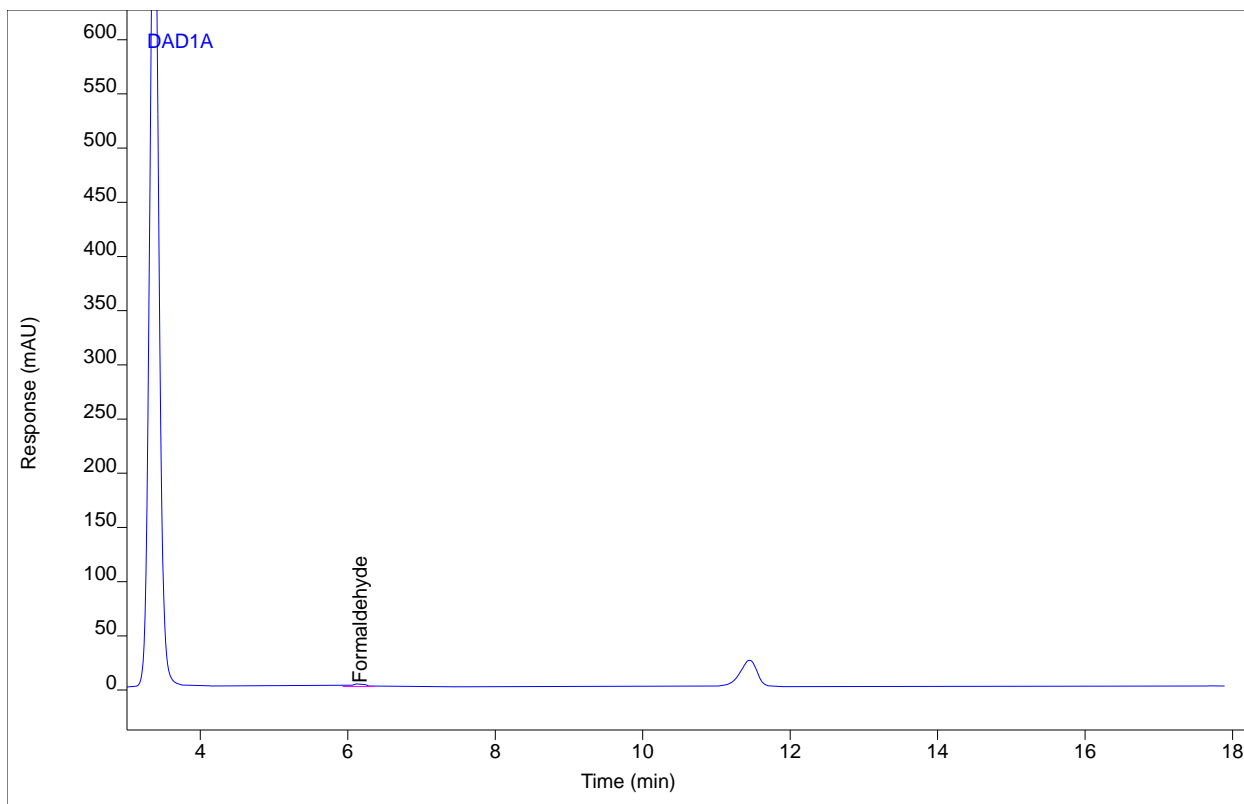
15:56:18 11/06/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name MW-44 1117-009
Sequence Name Bart426 2017-11-03 15-45-34 ver.3
Inj Data File 009-16-MW-44 1117-009.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 11/3/2017 6:48 PM
File Modified 11/6/2017 4:18 PM
Instrument BartNew
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 16
Injection Volume 5
Injection 1 of 1
Acquisition Method 8315_TO11_Waters_XTerra_HCHO.M
Analysis Method Bart423.M
Method Modified 11/4/2017 4:07 PM
Printed 11/6/2017 4:43 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	MM	6.16	31.4901	2.90746	0.15078	1	0.15078	ug/ml

Analyst Peak Integration Comments

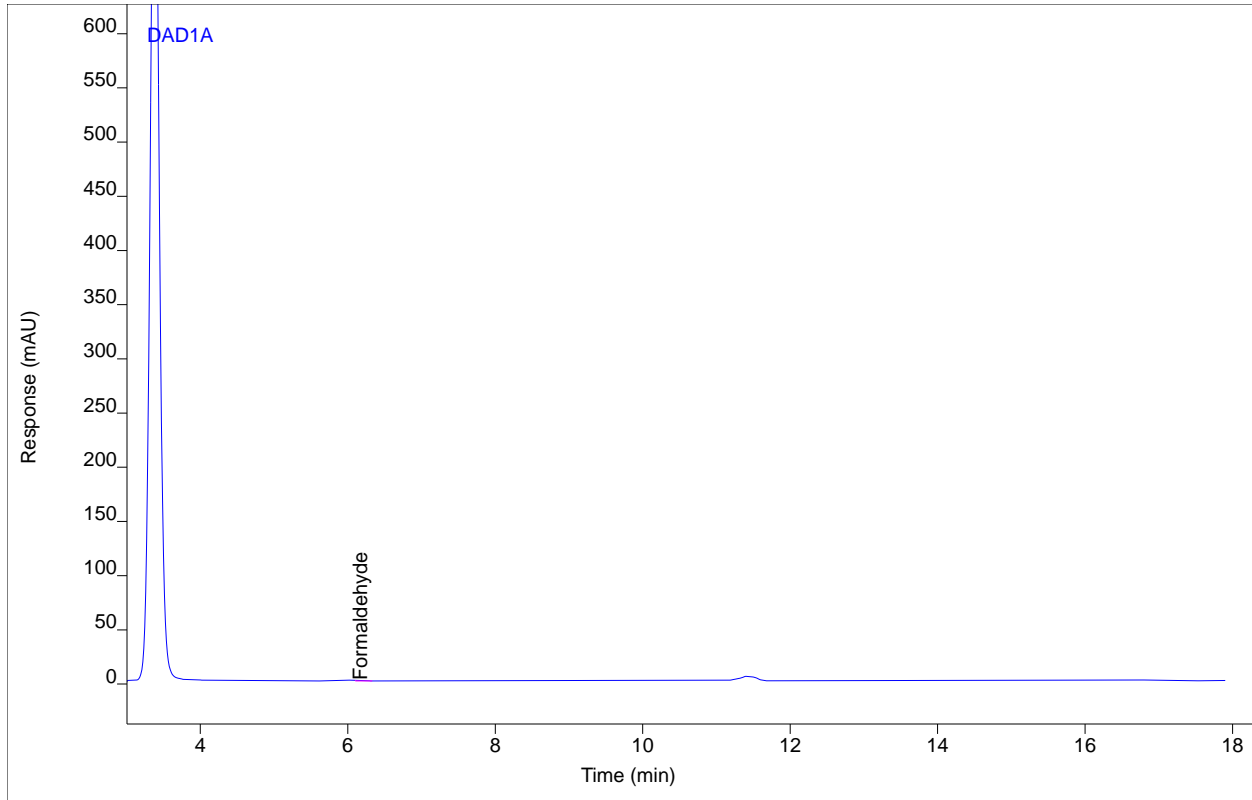
15:56:33 11/06/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name PZ-16R 1117-009
Sequence Name Bart426 2017-11-03 15-45-34 ver.3
Inj Data File 010-17-PZ-16R 1117-009.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 11/3/2017 7:10 PM
File Modified 11/6/2017 4:18 PM
Instrument BartNew
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 17
Injection Volume 5
Injection 1 of 1
Acquisition Method 8315_TO11_Waters_XTerra_HCHO.M
Analysis Method Bart423.M
Method Modified 11/4/2017 4:07 PM
Printed 11/6/2017 4:43 PM



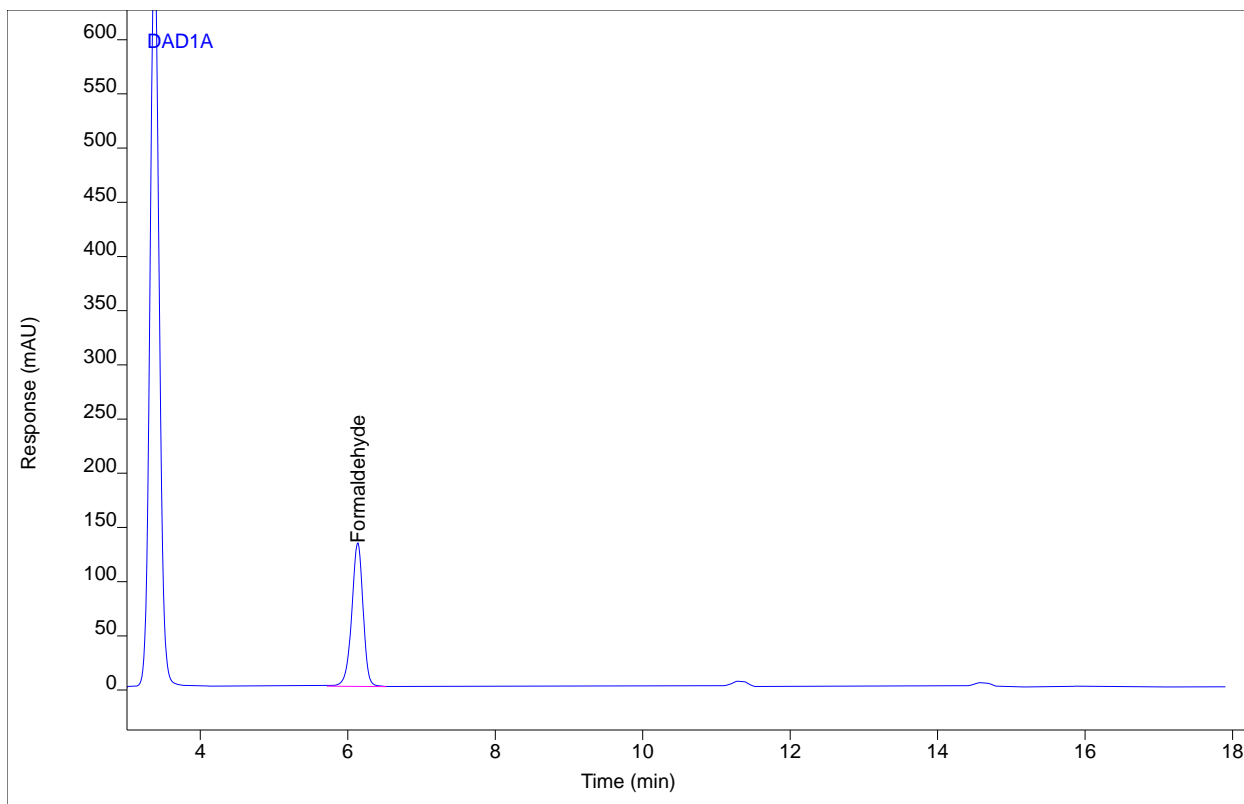
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	VV	6.17	9.76347	1.15823	0.04937	1	0.04937	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name Dup-02 1117-009
Sequence Name Bart426 2017-11-03 15-45-34 ver.3
Inj Data File 011-18-Dup-02 1117-009.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 11/3/2017 7:33 PM
File Modified 11/6/2017 4:18 PM
Instrument BartNew
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 18
Injection Volume 5
Injection 1 of 1
Acquisition Method 8315_TO11_Waters_XTerra_HCHO.M
Analysis Method Bart423.M
Method Modified 11/4/2017 4:07 PM
Printed 11/6/2017 4:43 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	MM	6.14	1414.80	132.930	5.96856	1	5.96856	ug/ml

Analyst Peak Integration Comments

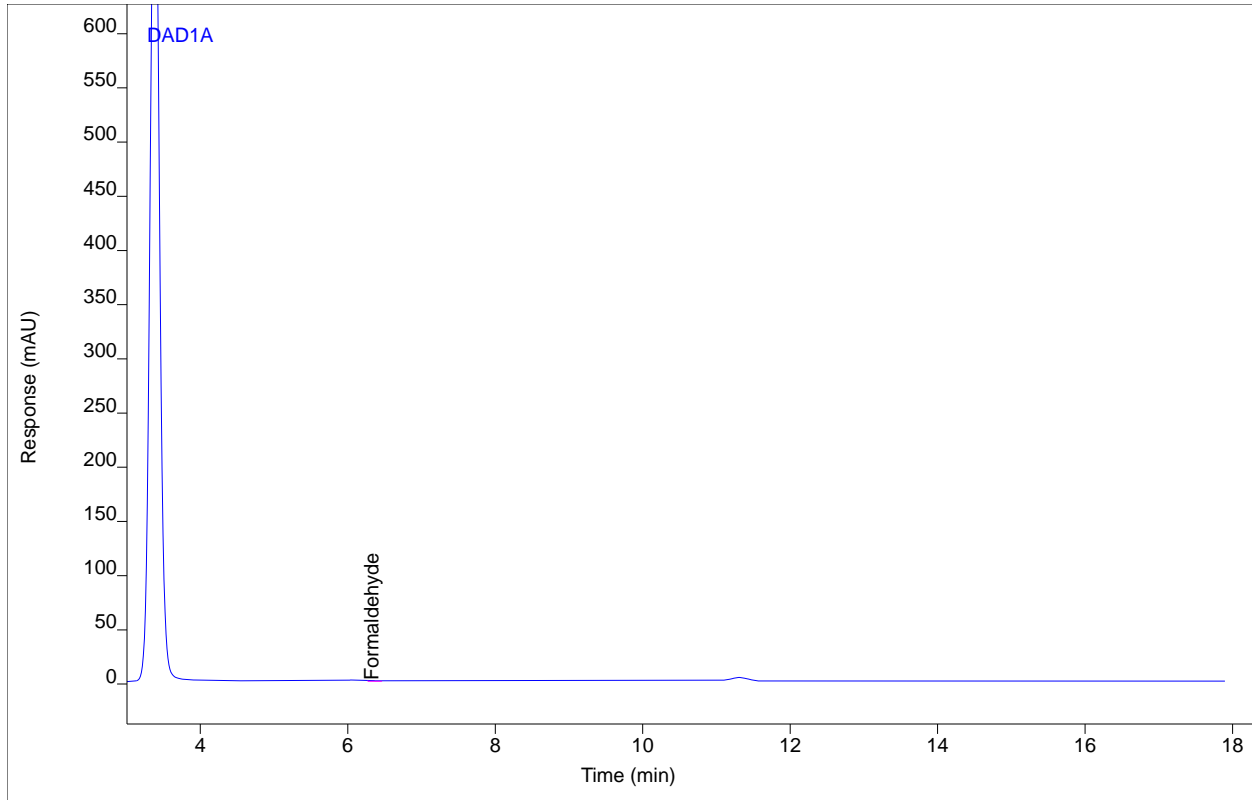
15:56:46 11/06/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name Eq Blank 1117-009
Sequence Name Bart426 2017-11-03 15-45-34 ver.3
Inj Data File 012-19-Eq Blank 1117-009.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 11/3/2017 7:55 PM
File Modified 11/6/2017 4:18 PM
Instrument BartNew
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 19
Injection Volume 5
Injection 1 of 1
Acquisition Method 8315_TO11_Waters_XTerra_HCHO.M
Analysis Method Bart423.M
Method Modified 11/4/2017 4:07 PM
Printed 11/6/2017 4:43 PM



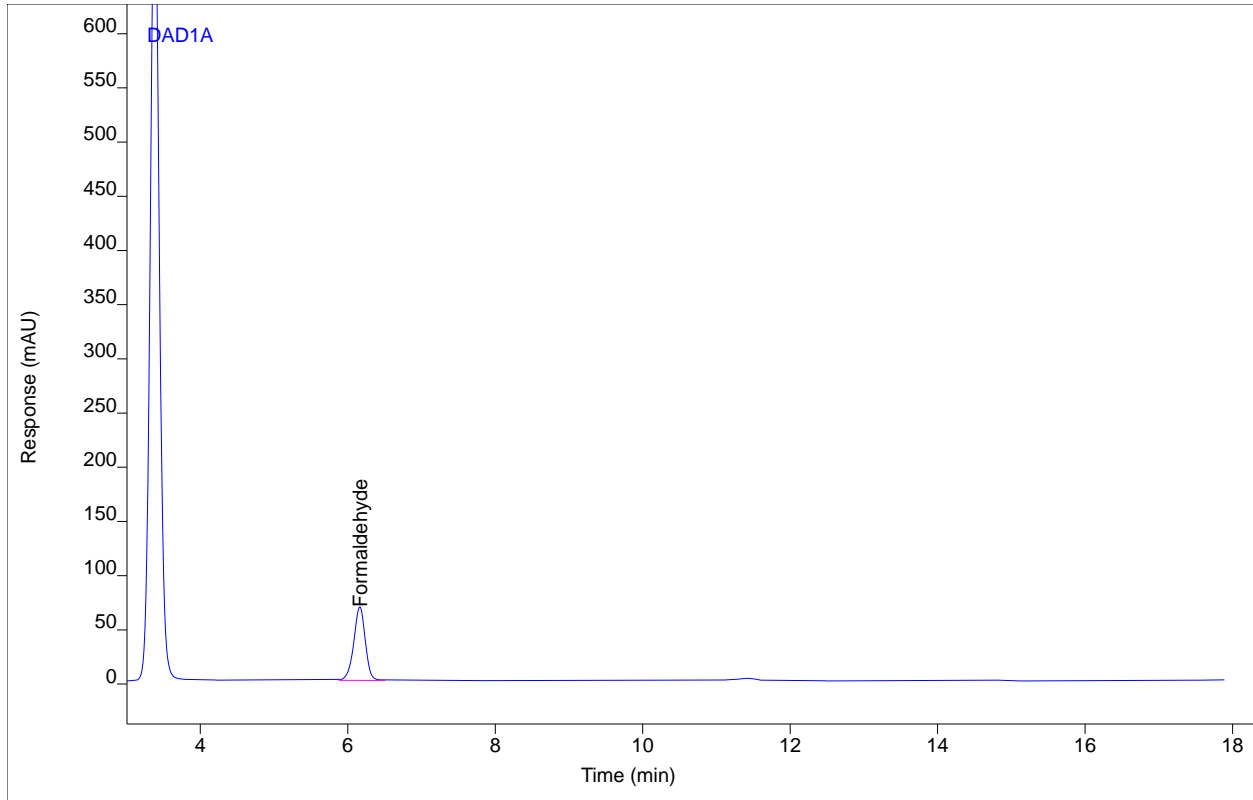
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	VV	6.32	5.72295	0.87302	0.02894	1	0.02894	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name LCS-1 11/3/17 1117-009
Sequence Name Bart426 2017-11-03 15-45-34 ver.3
Inj Data File 013-20-LCS-1 11_3_17 1117-009.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 11/3/2017 8:18 PM
File Modified 11/6/2017 4:18 PM
Instrument BartNew
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 20
Injection Volume 5
Injection 1 of 1
Acquisition Method 8315_TO11_Waters_XTerra_HCHO.M
Analysis Method Bart423.M
Method Modified 11/4/2017 4:07 PM
Printed 11/6/2017 4:43 PM



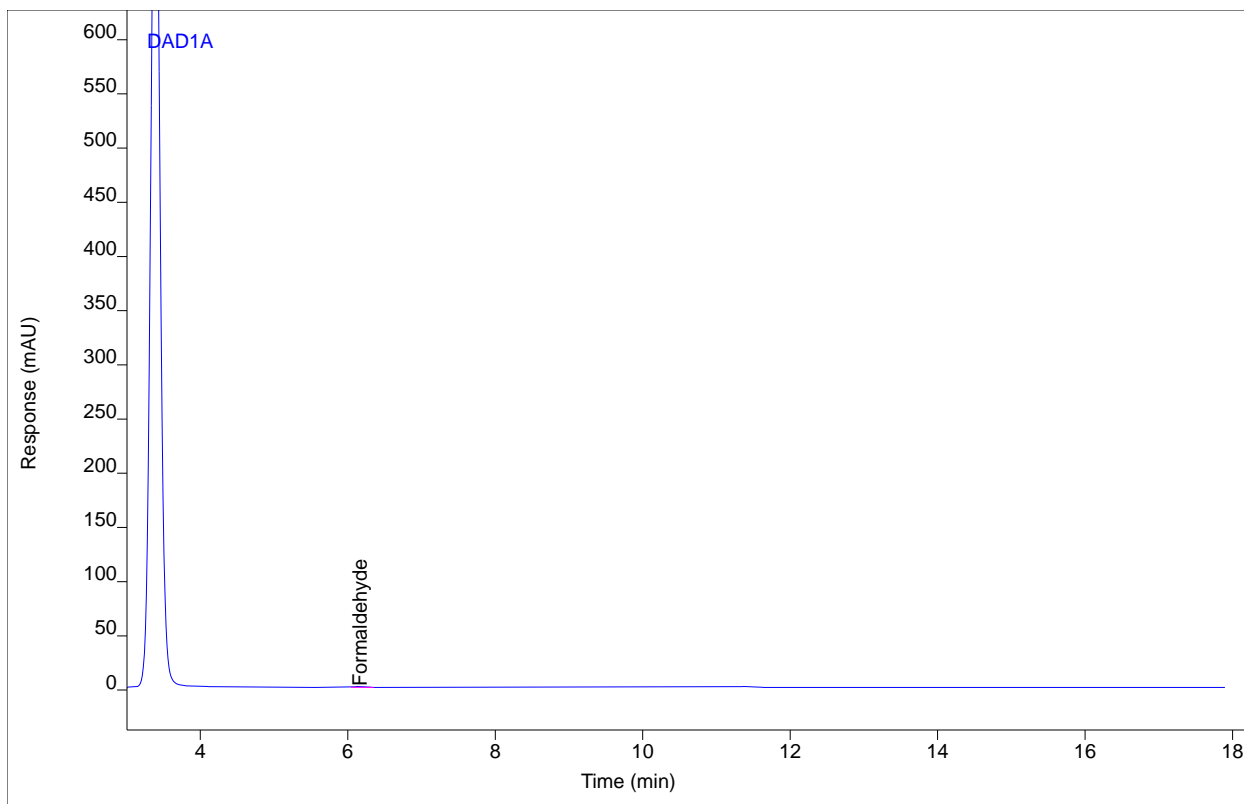
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	VV	6.17	736.243	67.8542	3.11476	1	3.11476	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name MB-1 11/3/17 1117-009
Sequence Name Bart426 2017-11-03 15-45-34 ver.3
Inj Data File 015-21-MB-1 11_3_17 1117-009.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 11/3/2017 9:03 PM
File Modified 11/6/2017 4:18 PM
Instrument BartNew
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 21
Injection Volume 5
Injection 1 of 2
Acquisition Method 8315_TO11_Waters_XTerra_HCHO.M
Analysis Method Bart423.M
Method Modified 11/4/2017 4:07 PM
Printed 11/6/2017 4:43 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	MM	6.16	8.78185	0.93988	0.04441	1	0.04441	ug/ml

Analyst Peak Integration Comments

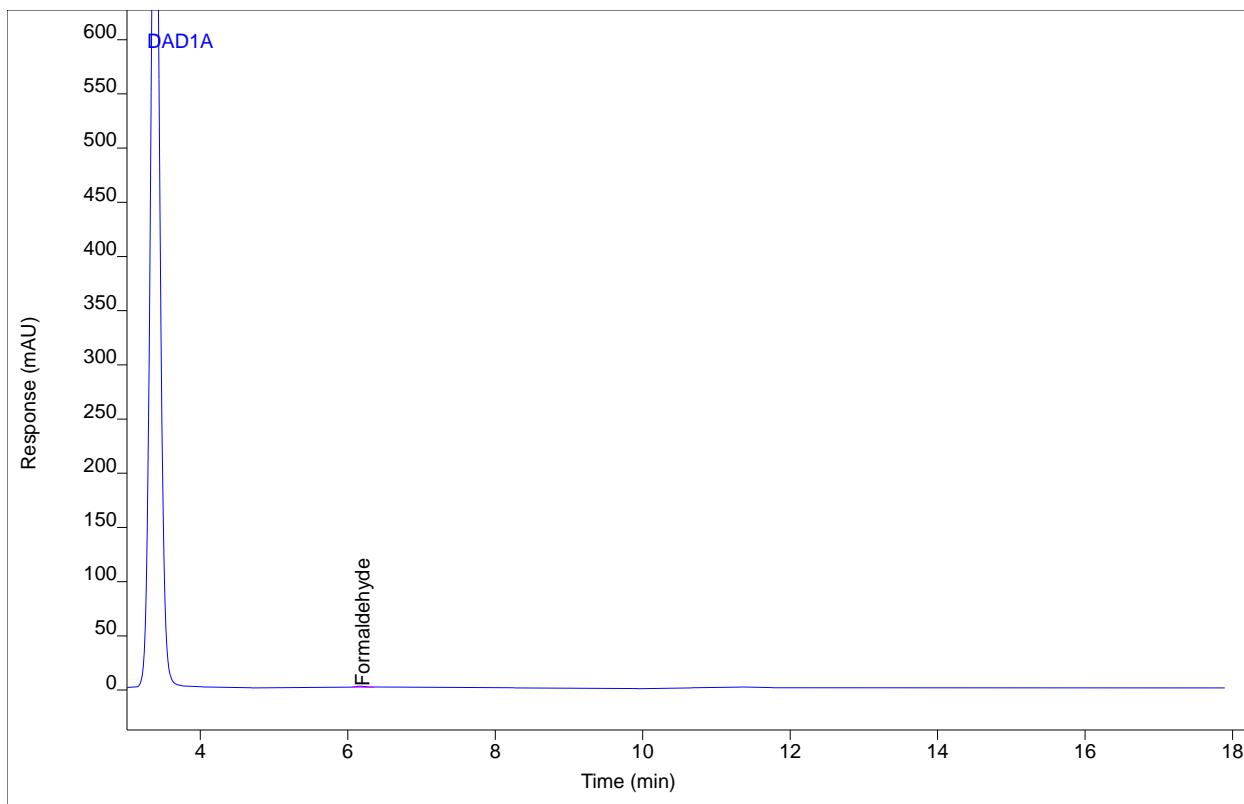
16:02:29 11/06/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name MB-1 11/3/17 1117-009
Sequence Name Bart426 2017-11-03 15-45-34 ver.3
Inj Data File 016-21-MB-1 11_3_17 1117-009.D
File Location HPLC/2017/Bart/Quarter 4
Injection Date 11/3/2017 9:25 PM
File Modified 11/6/2017 4:18 PM
Instrument BartNew
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 21
Injection Volume 5
Injection 2 of 2
Acquisition Method 8315_TO11_Waters_XTerra_HCHO.M
Analysis Method Bart423.M
Method Modified 11/4/2017 4:07 PM
Printed 11/6/2017 4:43 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	MM	6.20	10.4901	1.08297	0.05304	1	0.05304	ug/ml

Analyst Peak Integration Comments

16:02:46 11/06/17 Amelia Paolantonio II AMP

=====
 Calibration Table
 =====

 General Calibration Setting

Calib. Data Modified : Thursday, October 26, 2017 2:49:45 PM
 Signals calculated separately : Yes

Rel. Reference Window : 10.000 %
 Abs. Reference Window : 0.000 min
 Rel. Non-ref. Window : 5.000 %
 Abs. Non-ref. Window : 0.000 min
 Uncalibrated Peaks : not reported
 Partial Calibration : Yes, identified peaks are recalibrated
 Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear (some peaks differ, see below)
 Origin : Ignored (some peaks differ, see below)
 Weight : Linear (Amnt)

Recalibration Settings:
 Average Response : Average all calibrations
 Average Retention Time: Floating Average New 75%

Calibration Report Options :
 Printout of recalibrations within a sequence:
 Calibration Table after Recalibration
 Normal Report after Recalibration
 If the sequence is done with bracketing:
 Results of first cycle (ending previous bracket)

 Signal Details

Signal 1: PMP1, Pressure
 Signal 2: DAD1 A, Sig=360,16 Ref=510,100

 Overview Table

RT	Sig	Lvl	Amount [ug/ml]	Area	Rsp.Factor	Ref	ISTD #	Compound
6.465	2	1	1.09000e-1	22.69750	4.80229e-3	No	No	Formaldehyde
		2	2.45900e-1	53.20250	4.62196e-3			
		3	1.04651	234.61062	4.46062e-3			
		4	5.00000	1185.31396	4.21829e-3			
		5	7.50000	1829.29822	4.09993e-3			
		6	10.00000	2328.88135	4.29391e-3			
		7	15.00000	3565.14705	4.20740e-3			
8.805	2	1	1.09000e-1	15.50880	7.02827e-3	No	No	Acetaldehyde
		2	2.45900e-1	38.70175	6.35372e-3			

RT	Sig	Lvl	Amount [ug/ml]	Area	Rsp.Factor	Ref	ISTD #	Compound
			3 1.04651	169.43900	6.17632e-3			
			4 5.00000	843.60234	5.92696e-3			
			5 7.50000	1302.53837	5.75799e-3			
			6 10.00000	1670.08655	5.98771e-3			
12.723	2	1	1.09000e-1	14.15306	7.70152e-3	No	No	Acrolein
		2	2.45900e-1	33.26057	7.39314e-3			
		3	1.04651	146.00925	7.16742e-3			
		4	5.00000	732.33085	6.82752e-3			
		5	7.50000	1132.08012	6.62497e-3			
		6	10.00000	1450.76876	6.89290e-3			
		7	15.00000	2200.94255	6.81526e-3			
17.432	2	1	1.09000e-1	10.27969	1.06034e-2	No	No	Crotonaldehyde
		2	2.45900e-1	23.05334	1.06666e-2			
		3	1.04651	103.79320	1.00826e-2			
		4	5.00000	522.52730	9.56888e-3			
		5	7.50000	806.79569	9.29603e-3			
		6	10.00000	1035.48315	9.65733e-3			
		7	15.00000	1572.70227	9.53772e-3			

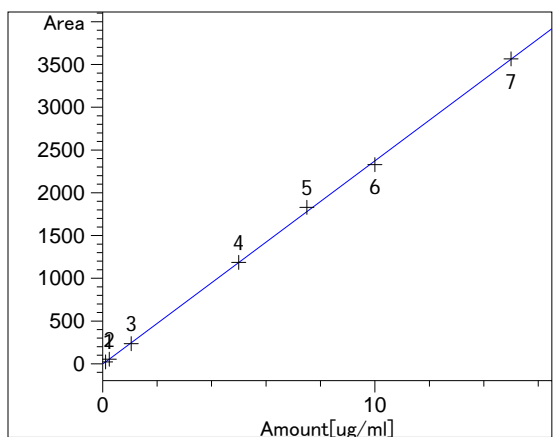
More compound-specific settings

- Compound: Formaldehyde
 - Curve Type : Linear
 - Origin : Connected
- Compound: Acetaldehyde
 - Curve Type : Linear
 - Origin : Connected
- Compound: Acrolein
 - Curve Type : Linear
 - Origin : Connected
- Compound: Crotonaldehyde
 - Curve Type : Linear
 - Origin : Connected

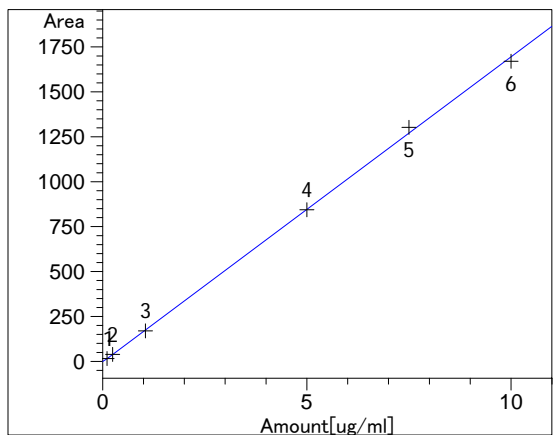
Peak Sum Table

No Entries in table

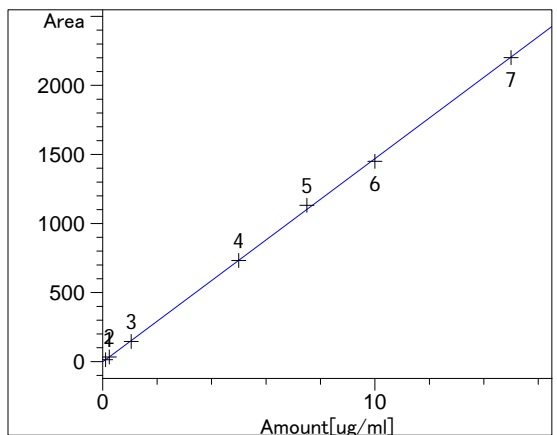
=====
 Calibration Curves
 =====



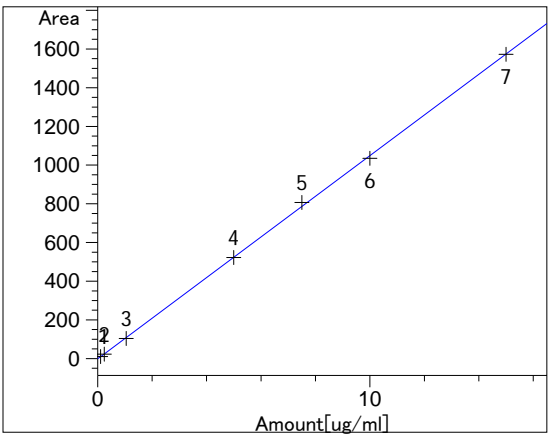
Formaldehyde at exp. RT: 6.465
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99984
 Residual Std. Dev.: 30.41021
 Formula: $y = mx + b$
 m: 237.77237
 b: -4.36134
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.44327
 Level 3 : 0.104156
 Level 4 : 0.0218
 Level 5 : 0.014533
 Level 6 : 0.0109
 Level 7 : 0.007267



Acetaldehyde at exp. RT: 8.805
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99982
 Residual Std. Dev.: 20.51214
 Formula: $y = mx + b$
 m: 169.84800
 b: -3.28831
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.44327
 Level 3 : 0.104156
 Level 4 : 0.0218
 Level 5 : 0.014533
 Level 6 : 0.0109



Acrolein at exp. RT: 12.723
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99987
 Residual Std. Dev.: 16.37642
 Formula: $y = mx + b$
 m: 147.21885
 b: -2.49651
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.44327
 Level 3 : 0.104156
 Level 4 : 0.0218
 Level 5 : 0.014533
 Level 6 : 0.0109
 Level 7 : 0.007267



Crotonaldehyde at exp. RT: 17.432
DAD1 A, Sig=360,16 Ref=510,100
Correlation: 0.99987
Residual Std. Dev.: 11.20161
Formula: $y = mx + b$
m: 105.08387
b: -1.89660
x: Amount[ug/ml]
y: Area

Calibration Level Weights:
Level 1 : 1
Level 2 : 0.44327
Level 3 : 0.104156
Level 4 : 0.0218
Level 5 : 0.014533
Level 6 : 0.0109
Level 7 : 0.007267

=====

Method Information

Method: C:\Chem32\1\Methods\8315_TO11_Waters_XTerra_HCHO.M
Modified: 10/25/2017 at 2:59:42 PM

Column: Waters XTerra C18 3.0 x 250mm
Mobile Phase: DIUF H2O, ACN, THF, and IPA on a gradient
Flow rate: 0.75 mL/min
UV Detection at 365 nm

Method Audit Trail

Operator : System
Date : 10/25/2017 2:57:41 PM
Change Info: Audit Trail for this method has been enabled due to global enable flag

Operator : Amelia Paolantonio
Date : 10/25/2017 2:59:37 PM
Change Info: This method was created at 10/25/2017 2:59:37 PM and based on method C:\Chem32\1\Methods\8315_TO11_Waters_restek_45_Min.M, the original method was overwritten.

Operator : Amelia Paolantonio
Date : 10/25/2017 2:59:42 PM
Change Info: Method saved. User comment: "sace"

Operator : System
Date : 10/25/2017 2:59:42 PM
Change Info: Audit Trail for this method has been enabled due to global enable flag

Run Time Checklist

Pre-Run Cmd/Macro: off
Data Acquisition: on
Standard Data Analysis: off
Customized Data Analysis: off
Save GLP Data: off
Post-Run Cmd/Macro: on
Name: macro "postrund.mac",go
Save Method with Data: off

Method Information

Method: C:\Chem32\1\Methods\8315_TO11_Waters_restek_45_Min.M
Modified: 10/6/2017 at 4:05:02 PM

Column: Waters XTerra C18 3.0 x 250mm
Mobile Phase: DIUF H2O, ACN, THF, and IPA on a gradient
Flow rate: 0.75 mL/min
UV Detection at 365 nm

Method Audit Trail

Operator : Amelia Paolantonio
Date : 6/23/2017 2:44:12 PM
Change Info: This method was created at 6/23/2017 2:44:12 PM and based on
method C:\HPLC\2014\Bart\Methods\8315_TO11_Waters_restek_65_Min.M

Operator : Amelia Paolantonio
Date : 6/23/2017 2:44:13 PM
Change Info: Method saved. User comment: ""

Operator : Alex Pennington
Date : 10/6/2017 4:05:02 PM
Change Info: Method saved. User comment: "update"

Run Time Checklist

Pre-Run Cmd/Macro: off
Data Acquisition: on
Standard Data Analysis: off
Customized Data Analysis: off
Save GLP Data: off
Post-Run Cmd/Macro: on
Name: macro "postrund.mac",go
Save Method with Data: off

**This Is The Last Page
Of This Report.**



ENCO Laboratories

Accurate. Timely. Responsive. Innovative.

102-A Woodwinds Industrial Court

Cary NC, 27511

Phone: 919.467.3090 FAX: 919.467.3515

Wednesday, August 23, 2017

ARCADIS (AR017)

Attn: Ryan Gerber

801 Corporate Center Drive, Suite 300

Raleigh, NC 27607

RE: Laboratory Results for

Project Number: NC108008.0032, Project Name/Desc: Hexion- SEEP Sampling Event

ENCO Workorder(s): CA12127

Dear Ryan Gerber,

Enclosed is a copy of your laboratory report for test samples received by our laboratory on Wednesday, August 9, 2017.

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. Results for these procedures apply only to the samples as submitted.

The analytical results contained in this report are in compliance with NELAC standards, except as noted in the project narrative. This report shall not be reproduced except in full, without the written approval of the Laboratory.

This report contains only those analyses performed by Environmental Conservation Laboratories. Unless otherwise noted, all analyses were performed at ENCO Cary. Data from outside organizations will be reported under separate cover.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Bill Scott

Project Manager

Enclosure(s)

PROJECT NARRATIVE

Client: ARCADIS (AR017)
Project: Hexion- SEEP Sampling Event
ENCO Project ID: CA12127

Overview

All samples submitted were analyzed by Environmental Conservation Laboratories, Inc. in accordance with the methods referenced in the laboratory report. Any particular difficulties encountered during sample handling and processing will be discussed in the Remarks section below.

ENCO's North Carolina certification number is 591.

Dilutions may have been performed on samples due to high concentration of target analyte or matrix interference. See individual sample data sheets for dilution factors.

Remarks

Analysis: EPA 350.1

Affected Samples: 7H14023-MS1, 7H14023-MSD1, Seep-2[CA12127-02], Seep-2[CA12127-02RE1],
Seep-4[CA12127-03], Seep-5[CA12127-04], Seep-5[CA12127-04RE1], Seep-6[CA12127-05],
Seep-7[CA12127-06], Seep-8[CA12127-07], DUP-1 (080917) [CA12127-08]

The matrix spike and/or matrix spike duplicate had recoveries that were outside acceptance limits, but by virtue of a laboratory control sample being in control, the laboratory has demonstrated to be in control of its internal process.

Bill Scott
Project Manager

SAMPLE DETECTION SUMMARY

Client ID: Seep-1		Lab ID: CA12127-01RE1					
Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	31	D	2.3	5.1	mg/L	EPA 350.1	
Client ID: Seep-2		Lab ID: CA12127-02RE1					
Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	44	D	4.0	9.0	mg/L	EPA 350.1	
Client ID: Seep-4		Lab ID: CA12127-03					
Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	1.6	D	0.45	1.0	mg/L	EPA 350.1	
Client ID: Seep-5		Lab ID: CA12127-04RE1					
Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	0.54		0.045	0.10	mg/L	EPA 350.1	
Client ID: Seep-6		Lab ID: CA12127-05					
Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	4.2	D	0.45	1.0	mg/L	EPA 350.1	
Client ID: Seep-7		Lab ID: CA12127-06					
Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	8.2	D	0.45	1.0	mg/L	EPA 350.1	
Client ID: Seep-8		Lab ID: CA12127-07					
Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	13	D	0.45	1.0	mg/L	EPA 350.1	
Client ID: DUP-1 (080917)		Lab ID: CA12127-08					
Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Ammonia as N	13	D	0.45	1.0	mg/L	EPA 350.1	

QUALITY CONTROL DATA

Classical Chemistry Parameters - Quality Control

Batch 7H14023 - NO PREP

Blank (7H14023-BLK1)

Prepared: 08/14/2017 11:27 Analyzed: 08/14/2017 11:27

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	0.045	U	0.10	mg/L							

LCS (7H14023-BS1)

Prepared: 08/14/2017 11:29 Analyzed: 08/14/2017 11:29

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	1.0		0.10	mg/L	0.989		102	90-110			

Matrix Spike (7H14023-MS1)

Prepared: 08/14/2017 11:31 Analyzed: 08/14/2017 11:31

Source: CA08165-01

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	160		10	mg/L	39.6	120	88	90-110			QM-07

Matrix Spike (7H14023-MS2)

Prepared: 08/14/2017 11:39 Analyzed: 08/14/2017 11:39

Source: CA09949-02

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	0.37		0.10	mg/L	0.385	0.045 U	96	90-110			

Matrix Spike Dup (7H14023-MSD1)

Prepared: 08/14/2017 11:35 Analyzed: 08/14/2017 11:35

Source: CA08165-01

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	160		10	mg/L	39.6	120	86	90-110	0.5	10	QM-07

Batch 7H14024 - NO PREP

Blank (7H14024-BLK1)

Prepared: 08/14/2017 12:27 Analyzed: 08/14/2017 12:27

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	0.045	U	0.10	mg/L							

LCS (7H14024-BS1)

Prepared: 08/14/2017 12:29 Analyzed: 08/14/2017 12:29

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	1.1		0.10	mg/L	0.989		109	90-110			

Matrix Spike (7H14024-MS1)

Prepared: 08/14/2017 12:31 Analyzed: 08/14/2017 12:31

Source: CA09954-02

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	0.38		0.10	mg/L	0.385	0.045 U	100	90-110			

Matrix Spike (7H14024-MS2)

Prepared: 08/14/2017 12:44 Analyzed: 08/14/2017 12:44

Source: CA09958-02

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Ammonia as N	0.38		0.10	mg/L	0.385	0.045 U	99	90-110			

Matrix Spike Dup (7H14024-MSD1)

Prepared: 08/14/2017 12:35 Analyzed: 08/14/2017 12:35

Source: CA09954-02

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
FINAL											



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QUALITY CONTROL DATA

Classical Chemistry Parameters - Quality Control

Batch 7H14024 - NO PREP - Continued

Matrix Spike Dup (7H14024-MSD1) Continued

Prepared: 08/14/2017 12:35 Analyzed: 08/14/2017 12:35

Source: CA09954-02

<u>Analyte</u>	<u>Result</u>	<u>Flag</u>	<u>POL</u>	<u>Units</u>	<u>Spike Level</u>	<u>Source Result</u>	<u>%REC</u>	<u>%REC Limits</u>	<u>RPD</u>	<u>RPD Limit</u>	<u>Notes</u>
Ammonia as N	0.37		0.10	mg/L	0.385	0.045 U	95	90-110	4	10	

FLAGS/NOTES AND DEFINITIONS

- B** The analyte was detected in the associated method blank.
- D** The sample was analyzed at dilution.
- J** The reported value is between the laboratory method detection limit (MDL) and the laboratory method reporting limit (MRL), adjusted for actual sample preparation data and moisture content, where applicable.
- U** The analyte was analyzed for but not detected to the level shown, adjusted for actual sample preparation data and moisture content, where applicable.
- E** The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate.
- MRL** Method Reporting Limit. The MRL is roughly equivalent to the practical quantitation limit (PQL) and is based on the low point of the calibration curve, when applicable, sample preparation factor, dilution factor, and, in the case of soil samples, moisture content.
- PQL** PQL: Practical Quantitation Limit.
- N** The analysis indicates the presence of an analyte for which there is presumptive evidence (85% or greater confidence) to make a "tentative identification".
- P** Greater than 25% concentration difference was observed between the primary and secondary GC column. The lower concentration is reported.
- QM-07** The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Sample Preservation Verification

ENCO Cary



Work Order: CA12127
 Client: ARCADIS (AR017)
 Logged In: 09-Aug-17 14:43

Project: Hexion- SEEP Sampling Event
 Project #: NC108008.0032
 Logged By: John C King

CA12127-01

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA12127-02

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA12127-03

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA12127-04

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA12127-05

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA12127-06

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA12127-07

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

CA12127-08

Cont	Type	Pres (pH) Requirement	pH Checked / In Control	pH Adjusted	Date/Time Adjusted	Reagent Used/Comments
A	250mLP+H2SO4	<2	Y / N / NA	Y / N / NA		

	Reagent Name	ID
1		
2		

	Reagent Name	ID
3		
4		

	Reagent Name	ID
5		
6		

Arcadis G&M of North Carolina, Inc.

801 Corporate Center Drive

Suite 300

Raleigh, North Carolina 27607

Tel 919 854 1282

Fax 919 854 5448

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A decorative graphic consisting of three thin orange lines: one horizontal line extending across the width of the page, and two parallel diagonal lines extending from the bottom left towards the top right.

APPENDIX A

Operations Log for Enhanced Recovery System



APPENDIX B

Laboratory Reports



Arcadis G&M of North Carolina, Inc.

801 Corporate Center Drive

Suite 300

Raleigh, North Carolina 27607

Tel 919 854 1282

Fax 919 854 5448

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A decorative graphic consisting of three thin orange lines. One line is horizontal, extending across the width of the page. Two other lines are diagonal, starting from the bottom left and extending towards the top right, crossing the horizontal line.