EA Engineering, Science, and Technology, Inc., PBC

1311 Continental Drive, Suite K
Abingdon, MD 21009
Telephone: 410-671-6051
FAX: 410-671-6056
www.eaest.com

LETTER OF TRANSMITTAL

TO:	Brant Crumbling	DATE: 5/26/17	PROJECT NO.: 6268603
	U.S. Air National Guard	ATTENTION: Mr. Brant Crumbling	
	Registration Branch NGB/A7OR	RE: Final Groundwater Monitoring Report for Stratton	
	3501 Fetchet Avenue		
	Joint Base Andrews, Maryland 20762		

WE ARE SENDING YOU [X] Attached [ ] Under separate cover via _____ the following items:

[ ] Shop drawings [ ] Prints [X] Plans [ ] Samples [ ] Specifications

[ ] Copy of letter [ ] Change order [ ] _____

COPIES	DESCRIPTION
1	Final Groundwater Monitoring Report Emerging Contaminant – 1,4-Dioxane New York Air National Guard – Site SS-006 Stratton Air National Guard Base (hard copy and CD)

THESE ARE TRANSMITTED as checked below:

[ ] For approval [ ] Approved as submitted [ ] Resubmit _____ copies for approval

[X] For your use [ ] Approved as noted [ ] Submit _____ copies for distribution

[ ] As requested [ ] Returned for corrections [ ] Return _____ corrected prints

[ ] For review and comment [ ] _____

[ ] **FOR BIDS DUE** _____ [ ] PRINTS RETURNED AFTER LOAN TO US

REMARKS: Enclosed one copy of the Final Report with one CD. Copies have been sent to Jody Murata and Veronica Allen. Please do not hesitate to contact me with any questions at (410) 671-6057.

Thank you

COPY TO:
Veronica Allen - BB&E (1 copy and 1 CD)
Jody Murata – NGB/A7OR (1 copy and 1 CD)

SIGNED

Scott Dobson, Project Manager

If enclosures are not as noted, kindly notify us at once.

FINAL GROUNDWATER MONITORING REPORT
EMERGING CONTAMINANT - 1,4-DIOXANE

NEW YORK AIR NATIONAL GUARD—SITE SS-006
STRATTON AIR NATIONAL GUARD BASE
SCOTIA, NEW YORK

AIR NATIONAL GUARD

RESTORATION BRANCH

MAY 2017

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FINAL GROUNDWATER MONITORING REPORT
EMERGING CONTAMINANT - 1,4-DIOXANE

NEW YORK AIR NATIONAL GUARD—SITE SS-006
STRATTON AIR NATIONAL GUARD BASE
SCOTIA, NEW YORK

Prepared for

Air National Guard
Restoration Branch
NGB/A4OR
3501 Fetchet Avenue
Joint Base Andrews, Maryland 20762

Prepared by

EA Engineering, Science, and Technology, Inc., PBC
1311 Continental Drive Suite K
Abingdon, Maryland 21009

Contract No.: W9133L-14-D-0004
ANG Delivery Order: 0006
EA Project No.: 6280606

MAY 2017

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ACRONYMS AND ABBREVIATIONS

µg/L	Micrograms per liter
ANG	Air National Guard
ANGB	Air National Guard Base
ASTM	American Society for Testing and Materials
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DoDI	Department of Defense Instruction
EA	EA Engineering, Science, and Technology, Inc., PBC
ERPIMS	Environmental Resources Program Information Management System
IRP	Installation Restoration Program
NGB/A4OR	National Guard Bureau's, Operations Division, Restoration Branch
NGB/A7OR	National Guard Bureau's Environmental Restoration Branch
NY	New York
RSL	Regional Screening Level
USEPA	United States Environmental Protection Agency

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EXECUTIVE SUMMARY

The objective of the emerging contaminant assessment conducted at the Stratton Air National Guard Base (ANGB) was to sample monitoring wells at Installation Restoration Program (IRP) Site SS-006 and to assess if there are 1,4-dioxane impacts to groundwater from historical activities. EA Engineering, Science, and Technology, Inc., PBC (EA) was contracted to conduct a one-time sampling event on 22 June 2016 of the monitoring wells pre-selected by Air National Guard (ANG). A deviation from the pre-selected wells is discussed in Section 4.2. 1,4-dioxane was not detected in any of the groundwater samples from the monitoring wells. No additional sampling for 1,4-dioxane is recommended.

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1. INTRODUCTION

EA Engineering, Science, and Technology, Inc., PBC (EA) has been contracted by the National Guard Bureau's Operations Division Restoration Branch (NGB/A4OR) to perform Emerging Contaminant Assessments at the Air National Guard (ANG) Installation Restoration Program (IRP) Site SS-006 located at the Stratton ANG Base (ANGB) in Scotia, New York (NY) (Figure 1).

Consistent with the Department of Defense (DoD) Instruction 4715.18 Emerging Contaminants (DoD 2009), 1,4-dioxane is considered to be an emerging contaminant. This compound is listed as a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substance (40 Code of Federal Regulations 302.4), and thus ANG has an obligation to assess potential releases of this compound to the environment.

EA has prepared this Groundwater Monitoring Report to summarize the project objectives, scope of work, relevant background information, field sampling methodologies and analytical results from the sampling activities.

1.1 PROJECT OBJECTIVES

The objectives of the emerging contaminant assessment conducted at the Stratton ANGB were to sample pre-selected monitoring wells from IRP Site SS-006 to determine whether historical activities have resulted in 1,4-dioxane impacts to groundwater at the site. A deviation from the pre-selected wells is discussed in Section 4.2. The analytical results of the assessment will facilitate ANG decisions on a path forward at the site (e.g., no further action or recommendation of further actions). In June 2016, EA conducted a one-time sampling event of three monitoring wells.

Activities performed in the development of this Groundwater Monitoring Report included:

- Review of available information and completion of a site-specific work plan (EA 2016a)
- Collection of groundwater samples from three wells at the IRP Site SS-006
- Evaluation of analytical data.

1.2 SCOPE OF WORK

The scope of work for this project consisted of the collection of groundwater samples during a one-time sampling event conducted in June 2016 and analyzing the samples for 1,4-dioxane. Samples were collected from monitoring wells at IRP Site SS-006 (monitoring wells 6MW-24, 6MW-26, and 6MW-20). Groundwater samples for 1,4-dioxane were collected from locations representative of the source of the previously assessed plume, downgradient of the previously assessed plume, and from the downgradient limit of the previously assessed plume.

1.3 REPORT ORGANIZATION

This report is organized as follows:

- ***Chapter 1*** provides the purpose and scope of the emerging contaminant assessment.
- ***Chapter 2*** details background information for the installation and the site.
- ***Chapter 3*** details the investigation approach including synoptic groundwater-level measurements, groundwater sampling, laboratory analysis, equipment decontamination and waste management, and data validation.
- ***Chapter 4*** details the investigation results.
- ***Chapter 5*** presents a summary of the investigation and the conclusions.

2. BACKGROUND

2.1 INSTALLATION BACKGROUND

The Stratton ANGB is located in Schenectady County Airport, which is just west of the Mohawk River in Scotia, NY (Figure 1). The 109th Airlift Wing is a unit of the New York ANG that was established in 1948.

The base provides support for the operation and maintenance of the 109th Airlift Wing and houses aircraft, support personnel, vehicles, and equipment. After the attack on the World Trade Center, the 109th provided immediate support in the form of civil engineers, services and public affairs personnel. Since, the 109th continues to voluntarily deploy support for military operations in Southwest Asia and around the world.

Current and past operations at the base likely used various materials including fuels, oils, lubricants, paints and paint thinners, solvents, and other products considered to be potentially harmful to the environment.

2.2 SITE BACKGROUND

As part of previous environmental investigations, groundwater wells were installed at Site SS-006 to assess whether volatile organic compounds were present in groundwater underlying the site. The following table summarizes well construction details for the existing wells that were sampled during this emerging contaminant assessment. A deviation to the work plan is discussed in Section 4.2. Well locations are shown on Figure 2.

Table 1. Well Construction Details—Stratton ANGB.

Well Designation	Position of the Well Relative to Previously Identified Contaminant Plume	Well Depth* (feet below ground surface)	Well Diameter (inches)
6MW-24	Source	8.15	4
6MW-26	Downgradient	7.63	4
6MW-20	Limit of Plume	18.78	2

*Well depths differ from depths shown in work plan. Depths shown in table reflect the depths as sounded on 22 June 2016.

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3. INVESTIGATION APPROACH AND METHODOLOGY

This report summarizes the results of the one-time sampling event of the monitoring wells at Site 6 (6MW-24, 6MW-26, 6MW-20). Field activities included synoptic groundwater-level measurements and groundwater sampling for laboratory chemical analysis of the emerging contaminant 1,4-dioxane. All field activities were conducted in accordance with the approved work plan (EA 2016a), health and safety plan (EA 2016b) and relevant ANG protocols (ANG 2009).

3.1 SYNOPTIC GROUNDWATER LEVEL MEASUREMENTS

A round of synoptic groundwater level measurements was conducted on 22 June 2016. Static water levels were measured using a graduated electronic-sounding water level meter. The static water level was determined by lowering the meter's probe into the well until the liquid-level indicator emitted an audible tone, indicating the air/water interface. The water level was read from the probe cable and recorded to the nearest 0.01 foot as the depth to water relative to the top of the well casing. Groundwater level measurements were recorded on the purge logs included in Appendix A.

3.2 GROUNDWATER SAMPLING

Groundwater samples were collected from the above referenced wells at Site SS-006 on 22 June 2016. Monitoring wells were purged before sample collection using a submersible pump and low-flow purging techniques in accordance with the approved work plan (EA 2016a), health and safety plan (EA 2016b), and relevant ANG protocols (ANG 2009).

During groundwater purging, water level drawdown and groundwater parameters (including pH [a measure of acidity and alkalinity], temperature, specific conductance, dissolved oxygen, oxidation-reduction potential, and turbidity) were measured using an inline water quality meter and recorded every three minutes until purging was complete. Data were recorded on low-flow purge data sheets, which are included in Appendix A.

Purging was considered complete when the monitored water quality parameters stabilized. Groundwater samples were collected following purging using the same submersible pump used during purging and following low-flow-sampling protocols.

3.3 LABORATORY ANALYSES

Groundwater samples were submitted under strict chain-of-custody procedures to Eurofins Lancaster Laboratories of Lancaster, Pennsylvania for analysis. Groundwater samples were analyzed for 1,4-dioxane using U.S. Environmental Protection Agency (USEPA) Method 8260, selective ion monitoring, with isotope dilution. Quality control/quality assurance samples were also collected in the form of one duplicate sample (DP-02) and one trip blank to ensure quality of analytical data.

3.4 EQUIPMENT DECONTAMINATION AND WASTE MANAGEMENT

Re-usable sampling equipment was decontaminated between well locations in accordance with Section 2.10 of *Air National Guard Environmental Restoration Program Investigation Guidance* (ANG 2009) and the approved work plan (EA 2016a). Sampling equipment was washed with a laboratory-grade detergent (e.g., Alconox), followed by a rinse with American Society for Testing and Materials (ASTM) Type II reagent grade water (or equivalent) prior to use. It should be noted that non-ionic detergents such as Liquinox contain trace levels of 1,4-dioxane and were not used during this investigation.

Decontamination rinsate and well purge water were transferred to a properly labeled 55-gallon drum staged at a base-approved location. The purged groundwater was properly disposed offsite as non-hazardous material. The bill of lading and certificate of disposal are provided in Appendix B. Personal protective equipment (such as nitrile gloves) and disposable sampling materials (such as tubing) were disposed of as general refuse.

3.5 DATA VALIDATION

Full data validation was performed per the USEPA National Functional Guidelines for Superfund Organic Data Review (USEPA 2014) and per the ANG protocols (ANG 2009) by Environmental Data Services, Inc., of Williamsburg, VA.

The validated analytical data were uploaded to the Air Force Environmental Resources Program Information Management System (ERPIMS), in accordance with National Guard Bureau's Environmental Restoration Branch (NGB/A7OR) Memorandum dated 21 September 2010 (NGB/A7OR 2010).

4. RESULTS

The work plan (EA 2016a) identified screening levels to be used for comparison in the investigation. The screening level for 1,4-dioxane is the USEPA Regional Screening Level (RSL) of 0.46 micrograms per liter (µg/L) (USEPA 2016).

1,4-dioxane was not detected in any of the groundwater samples collected. The laboratory detection limit was 0.2 µg/L, and the limit of detection was 0.4 µg/L. These limits are less than the USEPA RSL of 0.46 µg/L. The analytical data report from the laboratory is included in Appendix C.

4.1 DATA QUALITY

Samples (including quality assurance/quality control samples) were collected, stored, and shipped in accordance with standard operating procedures and the work plan (EA 2016a). Samples were analyzed by Eurofins Lancaster Laboratories, and data full validation was performed by Environmental Data Services, Inc. The samples were received within the preservation guidelines for the associated method. Data were found to be acceptable for use as qualified. The data validation report is provided in Appendix D.

4.2 DEVIATIONS FROM THE WORK PLAN

The EA Work Plan (EA 2016a) called for 6MW-19 to be sampled as the well located near the limit of the plume. However, the EA field personnel noted the 6MW-19 well casing was bent and would not allow a pump to reach the water table. In consultation with the Environmental Manager, nearby monitoring well 6MW-20 was selected as the “Limit of Plume” well in place of 6MW-19.

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5. SUMMARY

The objective of the emerging contaminant assessment conducted at the Stratton ANGB was to sample pre-selected monitoring wells at IRP Site SS-006 and to assess if there are 1,4-dioxane impacts to groundwater from historical activities. 1,4-dioxane was not detected in any of the groundwater samples from the monitoring wells. No additional sampling for 1,4-dioxane is recommended.

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6. REFERENCES

Air National Guard (ANG). 2009. *Air National Guard Environmental Restoration Program Investigation Guidance*. September.

Department of Defense (DoD). 2009. *Department of Defense Instruction Number 4715.18 Emerging Contaminants.* June 11.

EA Engineering, Science, and Technology, Inc., PBC (EA). 2016a. *Final Work Plan/Sampling and Analysis Plan Emerging Contaminant – 1,4-Dioxane, New York Air National Guard – Site 006, New York Air National Guard Base, Schenectady, New York*. April.

_____. 2016b. *General Health and Safety Plan for Contaminant Assessments at Multiple Air National Guard Installations.* January.

National Guard Bureau's Environmental Restoration Branch (NGB/A7O). 2010. Memorandum for NGB/A7OR National Contractors: *A7O 10-01, Environmental Resources Program Information Management System (ERPIMS).* September 21.

United States Environmental Protection Agency (USEPA). 2016. *Regional Screening Level Summary Table.* *https://www.epa.gov/sites/production/files/2016-06/documents/master_sl_table_run_may2016.pdf* May.

_____. 2014. *National Functional Guidelines for Superfund Organic Methods Data Review*. August.

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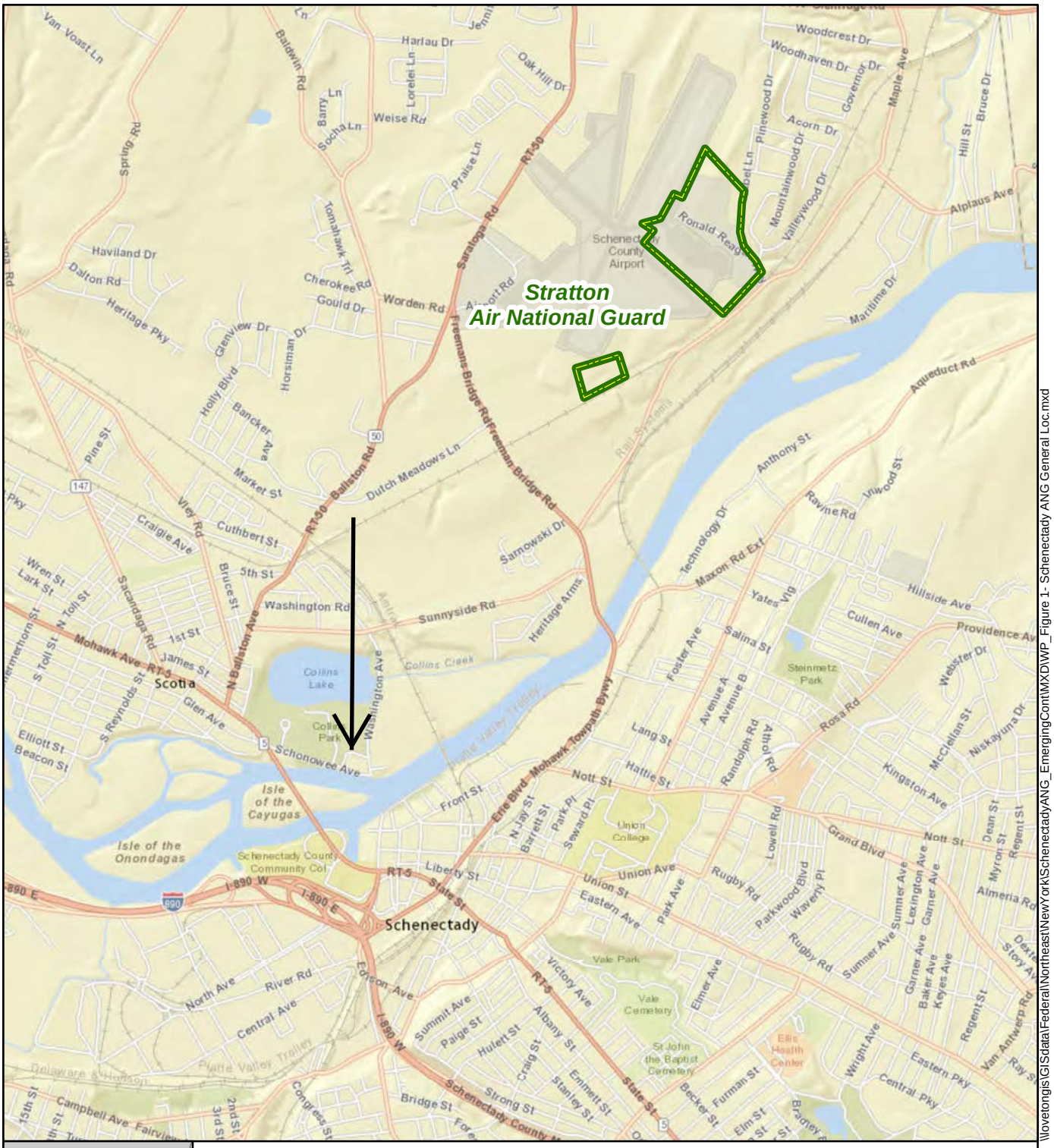
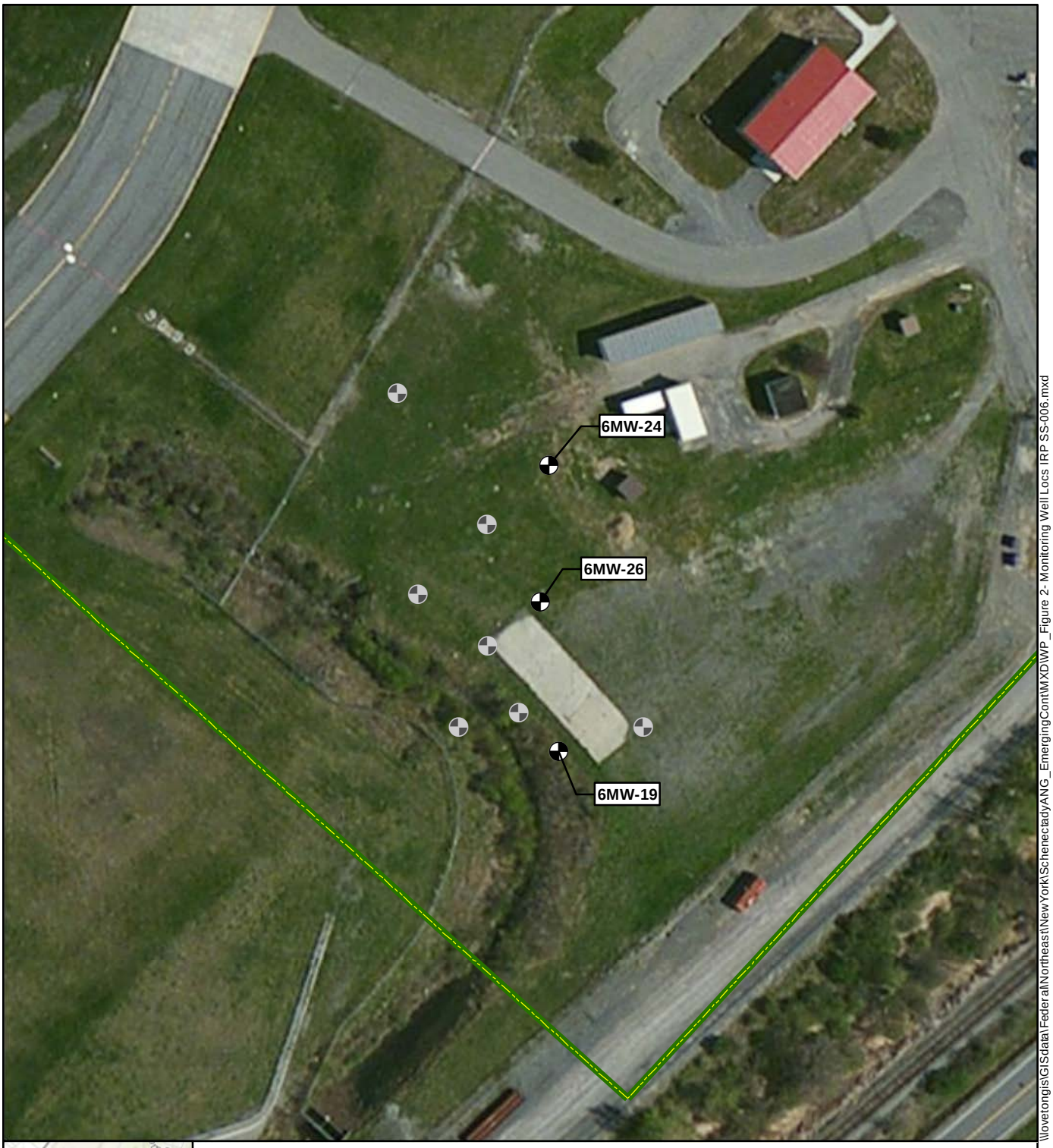
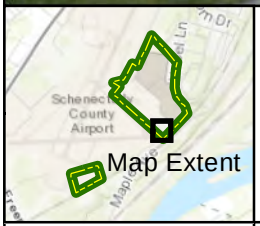


STRATTON AIR NATIONAL GUARD
SCOTIA, NEW YORK

Figure 1
Air National Guard Base
Scotia, New York
Area Map

\\lovetongis\GISdata\Federal\Northeast\NewYork\SchenectadyANG_EmergingCont\MXD\WP_Figure 1- Schenectady ANG General Loc.mxd





Legend

Monitoring Wells Installation Boundary

To be Sampled

No Sample

N
W E
S

Feet
0 25 50 100

STRATTON AIR NATIONAL GUARD
SITE-SPECIFIC WORK PLAN
SCHENECTADY, NEW YORK

Figure 2
Monitoring Well Locations
IRP Site SS-006

\\lovetongis\GISdata\Federal\Northeast\NewYork\SchenectadyANG_EmergingCont\MXD\WP_Figure 2- Monitoring Well Locs IRP SS-006.mxd

Appendix A

Purge Logs—22 June 2016 Sampling Event

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EA Engineering, Science, and Technology, Inc.

WELL PURGING AND SAMPLING RECORD

WELL ID 6MW-24 SAMPLE NO. 6MW-24

WELL/SITE DESCRIPTION IRP Site SS-006

No screws on well casing

DATE 6/22/16 TIME 0950 AIR TEMP. Overcast breezy 65°

WELL DEPTH 8.15 ft CASING HEIGHT flush ft

WATER DEPTH 7.84 ft WELL DIAMETER 4" in

WATER COL. HEIGHT ft SANDPACK DIAM. in

EQUIVALENT VOLUME OF STANDING WATER (gal) (L)

PUMP RATE .4 LPM (gpm) (LPM)

PUMP TIME 0952 min

WELL WENT DRY? (✓) Yes ( ) No PUMP TIME min

VOL. REMOVED (gal) (L) RECOVERY TIME 17 min

PURGE AGAIN? (✓) Yes ( ) No TOTAL VOL. REMOVED (gal) (L)

Date	Time	Volume Removed Unit:	pH --	Cond. µS/cm	Temp. °C	ORP mV	Turb. NTU	DO mg/L	Depth to Water from TOC	Pump Rate LPM
6/22/16	0953		6.93	158	14.71	157	68.9	5.63	7.84	0.3

COMMENTS Well purged dry after initial purge. Allowed time to recharge before sampling.

Sample Time: 1010

SAMPLER JM

EA Engineering, Science, and Technology, Inc.

WELL PURGING AND SAMPLING RECORD

WELL ID 6MW-26 SAMPLE NO. _____

WELL/SITE DESCRIPTION IRP Site SS-006

Good

DATE 6/22/16 TIME 1030 AIR TEMP. Partly Cloudy 65°

WELL DEPTH 7.63 ft CASING HEIGHT _____ ft

WATER DEPTH 5.25 ft WELL DIAMETER 4" in

WATER COL. HEIGHT _____ ft SANDPACK DIAM. _____ in

EQUIVALENT VOLUME OF STANDING WATER _____ (gal) (L)

PUMP RATE _____ (gpm) (LPM)

PUMP TIME 1036 min

WELL WENT DRY? ( ) Yes (X) No PUMP TIME 24 min

VOL. REMOVED 9.6 (gal) (L) RECOVERY TIME _____ min

PURGE AGAIN? ( )Yes (X) No TOTAL VOL. REMOVED 9.6 (gal) (L)

Date	Time	Volume Removed Unit: L	pH --	Cond. µS/cm	Temp. °C	ORP mV	Turb. NTU	DO mg/L	Depth to Water from TOC	Pump Rate LPM
6/22/16	1037	—	7.07	1.43	15.44	-117	168	6.55	5.42	.4
	1040	1.2	6.98	1.38	15.00	-77	15.8	1.92	5.43	
	1043	2.4	6.84	1.31	15.13	-27	5.4	1.55	5.44	
	1046	3.6	6.77	1.33	15.17	-18	3.4	1.31	5.43	
	1049	4.8	6.75	1.35	15.20	-20	3.8	1.10	5.43	
	1052	6.0	6.73	1.38	15.20	-22	2.5	0.93	5.43	
	1055	7.2	6.72	1.40	15.22	-22	2.1	0.81	5.44	
	1058	8.4	6.70	1.40	15.19	-21	1.7	0.75	5.44	
	1101	9.6	6.70	1.41	15.15	-21	1.0	0.74	5.44	

COMMENTS Dup-01

Sample @ 1101

Final Flow 5.31

SAMPLER JM

EA Engineering, Science, and Technology, Inc.

WELL PURGING AND SAMPLING RECORD

WELL ID 6MW-~~19~~20 SAMPLE NO. _____

WELL/SITE DESCRIPTION IRP Site SS-006

DATE 6 / 22 / 16 TIME 1155 AIR TEMP. Slightly cloudy 60's

WELL DEPTH ~~14.12~~ 18.78 ft CASING HEIGHT 2.5' ft

WATER DEPTH ~~8.44~~ 6.14 ft WELL DIAMETER 2" in

WATER COL. HEIGHT _____ ft SANDPACK DIAM. _____ in

EQUIVALENT VOLUME OF STANDING WATER _____ (gal) (L)

PUMP RATE 0.4 (gpm) (LPM)

PUMP TIME 24 / 1158 min

WELL WENT DRY? ( ) Yes ( ) No PUMP TIME _____ min

VOL. REMOVED 9.6 (gal) (L) RECOVERY TIME 24 min

PURGE AGAIN? ( ) Yes ( ) No TOTAL VOL. REMOVED 9.6 (gal) (L)

Date	Time	Volume Removed Unit: L	pH --	Cond. µS/cm	Temp. °C	ORP mV	Turb. NTU	DO mg/L	Depth to Water from TOC	Pump Rate LPM
6/22/16	1159	0	6.82	1.33	14.05	129	120	9.26	—	0.4
	1202	~~1.2~~ 1.2	6.68	1.33	14.92	128	74.7	5.17	—	
	1205	2.4	6.64	1.33	14.01	126	53.2	4.08	—	
	1208	3.6	6.63	1.33	14.51	125	43.2	3.47	—	
	1211	4.8	6.64	1.33	~~14~~ 14.53	124	37.2	3.37	—	
	1214	6.0	6.65	1.31	14.54	118	20.8	2.69	—	
	1217	7.2	6.62	1.32	15.05	50	31.3	2.32	—	
	1220	8.4	6.63	1.32	15.68	45	31.3	2.23	—	
	1223	9.6	6.63	1.32	16.14	55	37.1	2.14		

COMMENTS MW-19 well had bent PVC piping - pump could not fit down well
Had to use MW-20 ~20' NW
not enough room to gauge w/ pump down well
Sampled @ 1223
- 12.63 final DTW

SAMPLER JM

Appendix B

Documentation of Waste Disposal

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J1-010334

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
NOT REQUIRED	1		77937

5. Generator's Name and Mailing Address
Stratton Air National Guard Base
1 Air National Guard Rd, Scotia, NY 12302
Generator's Phone: (518) 344-2341 Attn: Jennifer Kotch

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: ENPRO Services of Vermont — U.S. EPA ID Number: NOT REQUIRED

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
ENPRO Services of Vermont
54 Avenue D, Williston, VT 05495
Facility's Phone: (802) 860-1200
U.S. EPA ID Number: VTR 000 517 052

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Non DOT, Non RCRA Regulated Liquid (IDW Water)	001	DM	55 gal	G	VT 99
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
1: App# VT-0816-22900
Job# WILM-KSAN-1

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Scott Dillman — Signature: Scott Dillman — Month: 09 — Day: 14 — Year: 16

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Keith Tilmont — Signature: [signature] — Month: 09 — Day: 14 — Year: 16

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month — Day — Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jeffrey A Baker — Signature: [signature] — Month: 09 — Day: 14 — Year: 16

Certificate of Disposal

ENPRO SERVICES OF VERMONT, INC.

This is to certify that all material from Stratton Air National Guard Base, 1 Air National Guard Rd, Scotia NY 12302 per Manifest Number: 77937 received by ENPRO SERVICES OF VERMONT, INC., WILLISTON VT 05495 on September 14, 2016 has been recycled/disposed of in a manner consistant with acceptable engineering standards and in compliance with applicable permits, authorizations, rules, and regulations issued or set forth by State and Federal authorities.

Waste Streams Received:

77937 Non-Hazardous IDW Ground Water

Authorization Signature

Appendix C

Laboratory Report

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Environmental Analysis Request/Chain of Custody

eurofins | Lancaster Laboratories Environmental

For Eurofins Lancaster Laboratories Environmental use only

Acct. # 4756 Group # 1676390 Sample # 8447178-96

COC # 503002

Client Information

Client: EA Engineering

Acct. #:

Project Name/#: ANG Emerging Contaminant

PWSID #:

Project Manager: Scott Dobson

P.O. #: 15311

Sampler: Justin Marra

Quote #:

State where samples were collected: NY / VT

For Compliance: Yes ☐ No ☐

Matrix

Soil ☐ Sediment ☐ Tissue ☐ Water ☑ Potable ☐ Ground ☑ NPDES ☐ Surface ☐ Other: ____

Analysis Requested

Preservation Codes: HCl | HCl | HNO3

Sample Identification	Collected Date	Collected Time	Grab	Composite	Total # of Containers	1,4-Dioxane 8260	Total VOCs 8260	TAL Metals 6010	PCB 2081	1,4 Dioxane 8270	Remarks
6MW-24	6/22/16	1010	✓		3	✓					
6MW-26		1101	✓		3	✓					
6MW-20		1223	✓		3	✓					
DUP-01		—	✓		3	✓					QC
Drum-Schenectady		1304	✓	✓	3		✓				
Drum-Schenectady		1304	✓	✓	1			✓			
Drum-Schenectady		1304	✓	✓	2				✓		
VZ-MW1	6/23/16	0950	✓		2					✓	
DUP-02		—	✓		2					✓	QC
VI-MW13L		1343	✓		2					✓	

For Lab Use Only

FSC: ____

SCR#: ____

Preservation Codes

H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 O=Other

Remarks

Turnaround Time (TAT) Requested (please circle)

Standard Rush

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: ____

E-mail address: ____

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP)

Type VI (Raw Data Only)

Type III (Reduced non-CLP)

NJ DKQP

TX TRRP-13

NYSDEC Category A or B

MA MCP

CT RCP

Relinquished by	Date	Time	Received by	Date	Time
	6/24/16	1415			
				6/25/16	0846

EDD Required? (Yes) No

If yes, format: Equis DRTMR

Site-Specific QC (MS/MSD/Dup)? (Yes) No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS ✓ FedEx ____ Other ____

Temperature upon receipt 1.7 °C

REVISED

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

EA Science & Technology
225 Schilling Circle
suite 400
Hunt Valley MD 21031

Report Date: July 22, 2016

Project: ANG Emerging Contaminants

Submittal Date: 06/25/2016
Group Number: 1676390
SDG: MRP38, MRP39, MRP40, MRP41
PO Number: 15311

Client Sample Description	Lancaster Labs (LL) #
6MW-24 Grab Groundwater	8447178
6MW-26 Grab Groundwater	8447179
6MW-20 Grab Groundwater	8447180
DUP-01 Grab Groundwater	8447181
Drum-Schenectady Composite Groundwater	8447182
Drum-Schenectady Composite Groundwater	8447183
Drum-Schenectady Composite Groundwater	8447184
V2-MW1 Grab Groundwater	8447185
DUP-02 Grab Groundwater	8447186
V1-MW13L Grab Groundwater	8447187
V2-OB5 Grab Groundwater	8447188
V2-MW50 Grab Groundwater	8447189
V1-MW8 Grab Groundwater	8447190
V1-MW11 Grab Groundwater	8447191
Drum-Burlington Composite Groundwater	8447192
Drum-Burlington Composite Groundwater	8447193
Drum-Burlington Composite Groundwater	8447194
Rinse Blank Grab Water	8447195
Trip Blank Water	8447196

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ .

Electronic Copy To EA Science & Technology Attn: Scott Dobson

REVISED

Respectfully Submitted,

Natalie R. Luciano
Senior Specialist

(717) 556-7258

Project Name: ANG Emerging Contaminants
LL Group #: 1676390

General Comments:

All analyses have been performed in accordance with DOD QSM Version 5.0 unless otherwise noted below.

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:

SW-846 8082, Pesticides/PCBs

Batch #: 161800004A (Sample number(s): 8447184, 8447194)

The relative percent difference(s) for the following analyte(s) in the LCS/LCSD were outside acceptance windows: PCB-1016

SW-846 6010B, Metals

Batch #: 161801848005 (Sample number(s): 8447183, 8447193 UNSPK: 8447193 BKG: 8447193)

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: Calcium, Magnesium, Iron

The duplicate RPD for the following analyte(s) exceeded the acceptance window: Thallium

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Analysis Report

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Sample Description: 6MW-24 Grab Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447178
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/22/2016 10:10 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

EA Science & Technology
225 Schilling Circle
suite 400
Hunt Valley MD 21031

6MW24 SDG#: MRP38-01

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Volatiles	**SW-846 8260B SIM**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00527	1,4-Dioxane	123-91-1	N.D.	0.2	0.4	0.4	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00527	1,4-Dioxane by 8260B SIM	SW-846 8260B SIM	1	E161839AA	07/01/2016 11:46	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E161839AA	07/01/2016 11:46	Jason M Long	1

*=This limit was used in the evaluation of the final result

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Analysis Report

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Sample Description: 6MW-26 Grab Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447179
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/22/2016 11:01 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

EA Science & Technology
225 Schilling Circle
suite 400
Hunt Valley MD 21031

6MW26 SDG#: MRP38-02

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Volatiles	**SW-846 8260B SIM**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00527	1,4-Dioxane	123-91-1	N.D.	0.2	0.4	0.4	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00527	1,4-Dioxane by 8260B SIM	SW-846 8260B SIM	1	E161839AA	07/01/2016 12:06	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E161839AA	07/01/2016 12:06	Jason M Long	1

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: 6MW-20 Grab Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447180
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/22/2016 12:23 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

EA Science & Technology
225 Schilling Circle
suite 400
Hunt Valley MD 21031

6MW20 SDG#: MRP38-03

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Volatiles	**SW-846 8260B SIM**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00527	1,4-Dioxane	123-91-1	N.D.	0.2	0.4	0.4	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00527	1,4-Dioxane by 8260B SIM	SW-846 8260B SIM	1	E161839AA	07/01/2016 12:26	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E161839AA	07/01/2016 12:26	Jason M Long	1

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: DUP-01 Grab Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447181
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/22/2016 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

EA Science & Technology
225 Schilling Circle
suite 400
Hunt Valley MD 21031

ECDP1 SDG#: MRP38-04FD

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Volatiles	**SW-846 8260B SIM**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00527	1,4-Dioxane	123-91-1	N.D.	0.2	0.4	0.4	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00527	1,4-Dioxane by 8260B SIM	SW-846 8260B SIM	1	E161839AA	07/01/2016 12:45	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E161839AA	07/01/2016 12:45	Jason M Long	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: Drum-Schenectady Composite Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447182
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/22/2016 13:04 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

EA Science & Technology
225 Schilling Circle
suite 400
Hunt Valley MD 21031

DRUS2 SDG#: MRP39-01

CAT No.	Analysis Name	CAS Number	Result		Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Volatiles	**SW-846 8260B**		**ug/l**		**ug/l**	**ug/l**	**ug/l**	
10335	Acetone	67-64-1	11	J	6	20	20	1
10335	Benzene	71-43-2	N.D.		0.5	1	1	1
10335	Bromodichloromethane	75-27-4	N.D.		0.5	1	1	1
10335	Bromoform	75-25-2	N.D.		0.5	1	4	1
10335	Bromomethane	74-83-9	N.D.		0.5	1	1	1
10335	2-Butanone	78-93-3	N.D.		3	8	10	1
10335	Carbon Disulfide	75-15-0	N.D.		1	2	5	1
10335	Carbon Tetrachloride	56-23-5	N.D.		0.5	1	1	1
10335	Chlorobenzene	108-90-7	N.D.		0.5	1	1	1
10335	Chloroethane	75-00-3	N.D.		0.5	1	1	1
10335	Chloroform	67-66-3	N.D.		0.5	1	1	1
10335	Chloromethane	74-87-3	N.D.		0.5	1	1	1
10335	Cyclohexane	110-82-7	N.D.		2	4	5	1
10335	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		2	4	5	1
10335	Dibromochloromethane	124-48-1	N.D.		0.5	1	1	1
10335	1,2-Dibromoethane	106-93-4	N.D.		0.5	1	1	1
10335	1,2-Dichlorobenzene	95-50-1	N.D.		1	2	5	1
10335	1,3-Dichlorobenzene	541-73-1	N.D.		1	2	5	1
10335	1,4-Dichlorobenzene	106-46-7	N.D.		1	2	5	1
10335	Dichlorodifluoromethane	75-71-8	N.D.		0.5	1	1	1
10335	1,1-Dichloroethane	75-34-3	N.D.		0.5	1	1	1
10335	1,2-Dichloroethane	107-06-2	N.D.		0.5	1	1	1
10335	1,1-Dichloroethene	75-35-4	N.D.		0.5	1	1	1
10335	cis-1,2-Dichloroethene	156-59-2	7		0.5	1	1	1
10335	trans-1,2-Dichloroethene	156-60-5	N.D.		0.5	1	1	1
10335	1,2-Dichloropropane	78-87-5	N.D.		0.5	1	1	1
10335	cis-1,3-Dichloropropene	10061-01-5	N.D.		0.5	1	1	1
10335	trans-1,3-Dichloropropene	10061-02-6	N.D.		0.5	1	1	1
10335	Ethylbenzene	100-41-4	N.D.		0.5	1	1	1
10335	Freon 113	76-13-1	N.D.		2	4	10	1
10335	2-Hexanone	591-78-6	N.D.		3	8	10	1
10335	Isopropylbenzene	98-82-8	N.D.		1	2	5	1
10335	Methyl Acetate	79-20-9	N.D.		1	2	5	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.5	1	1	1
10335	4-Methyl-2-pentanone	108-10-1	N.D.		3	8	10	1
10335	Methylcyclohexane	108-87-2	N.D.		1	2	5	1
10335	Methylene Chloride	75-09-2	N.D.		2	4	4	1
10335	Styrene	100-42-5	N.D.		1	2	5	1
10335	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		0.5	1	1	1
10335	Tetrachloroethene	127-18-4	1		0.5	1	1	1
10335	Toluene	108-88-3	N.D.		0.5	1	1	1
10335	1,2,4-Trichlorobenzene	120-82-1	N.D.		1	2	5	1
10335	1,1,1-Trichloroethane	71-55-6	N.D.		0.5	1	1	1
10335	1,1,2-Trichloroethane	79-00-5	N.D.		0.5	1	1	1
10335	Trichloroethene	79-01-6	2		0.5	1	1	1
10335	Trichlorofluoromethane	75-69-4	N.D.		0.5	1	1	1
10335	Vinyl Chloride	75-01-4	N.D.		0.5	1	1	1
10335	Xylene (Total)	1330-20-7	N.D.		0.5	1	1	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: Drum-Schenectady Composite Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447182
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/22/2016 13:04 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

EA Science & Technology
225 Schilling Circle
suite 400
Hunt Valley MD 21031

DRUS2 SDG#: MRP39-01

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL VOCs by 8260B	SW-846 8260B	1	Y161871AA	07/05/2016 16:40	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	Y161871AA	07/05/2016 16:40	Linda C Pape	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: Drum-Schenectady Composite Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447183
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/22/2016 13:04 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

EA Science & Technology
225 Schilling Circle
suite 400
Hunt Valley MD 21031

DRUS2 SDG#: MRP39-02

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
Metals	**SW-846 6010B**		mg/l	mg/l	mg/l	mg/l	
01743	Aluminum	7429-90-5	0.620	0.0868	0.200	0.200	1
07044	Antimony	7440-36-0	N.D.	0.0077	0.0200	0.0200	1
07035	Arsenic	7440-38-2	0.0102 J	0.0097	0.0200	0.0200	1
07046	Barium	7440-39-3	0.0904	0.0011	0.0025	0.0050	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0025	0.0050	1
07049	Cadmium	7440-43-9	N.D.	0.00049	0.0013	0.0050	1
01750	Calcium	7440-70-2	188	0.0382	0.200	0.200	1
07051	Chromium	7440-47-3	0.0047 J	0.0018	0.0038	0.0150	1
07052	Cobalt	7440-48-4	0.0024 J	0.0019	0.0050	0.0050	1
07053	Copper	7440-50-8	0.0068 J	0.0041	0.0100	0.0100	1
01754	Iron	7439-89-6	9.19	0.0747	0.200	0.200	1
07055	Lead	7439-92-1	N.D.	0.0062	0.0150	0.0150	1
01757	Magnesium	7439-95-4	34.0	0.0190	0.0500	0.100	1
07058	Manganese	7439-96-5	3.95	0.0018	0.0050	0.0050	1
07061	Nickel	7440-02-0	0.0082 J	0.0028	0.0050	0.0100	1
01762	Potassium	7440-09-7	5.13	0.160	0.500	0.500	1
07036	Selenium	7782-49-2	N.D.	0.0097	0.0200	0.0200	1
07066	Silver	7440-22-4	N.D.	0.0019	0.0050	0.0050	1
01767	Sodium	7440-23-5	48.7	0.173	0.500	1.00	1
07022	Thallium	7440-28-0	N.D.	0.0094	0.0150	0.0300	1
07071	Vanadium	7440-62-2	N.D.	0.0016	0.0050	0.0050	1
07072	Zinc	7440-66-6	0.0261	0.0054	0.0100	0.0200	1
	SW-846 7470A		mg/l	mg/l	mg/l	mg/l	
00259	Mercury	7439-97-6	N.D.	0.000050	0.00010	0.00020	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01743	Aluminum	SW-846 6010B	1	161801848005	06/30/2016 01:48	Matthew R Machtinger	1
07044	Antimony	SW-846 6010B	1	161801848005	06/30/2016 01:48	Matthew R Machtinger	1
07035	Arsenic	SW-846 6010B	3	161901848001	07/11/2016 20:53	Elaine F Stoltzfus	1
07046	Barium	SW-846 6010B	1	161801848005	06/30/2016 01:48	Matthew R Machtinger	1
07047	Beryllium	SW-846 6010B	1	161801848005	06/30/2016 01:48	Matthew R Machtinger	1
07049	Cadmium	SW-846 6010B	1	161801848005	06/30/2016 01:48	Matthew R Machtinger	1
01750	Calcium	SW-846 6010B	1	161801848005	06/30/2016 01:48	Matthew R Machtinger	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: Drum-Schenectady Composite Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447183
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/22/2016 13:04 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

EA Science & Technology
225 Schilling Circle
suite 400
Hunt Valley MD 21031

DRUS2 SDG#: MRP39-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07051	Chromium	SW-846 6010B	1	161801848005	06/30/2016 01:48	Matthew R Machtinger	1
07052	Cobalt	SW-846 6010B	1	161801848005	06/30/2016 01:48	Matthew R Machtinger	1
07053	Copper	SW-846 6010B	1	161801848005	06/30/2016 01:48	Matthew R Machtinger	1
01754	Iron	SW-846 6010B	1	161801848005	06/30/2016 01:48	Matthew R Machtinger	1
07055	Lead	SW-846 6010B	1	161801848005	07/01/2016 01:38	Elaine F Stoltzfus	1
01757	Magnesium	SW-846 6010B	1	161801848005	06/30/2016 01:48	Matthew R Machtinger	1
07058	Manganese	SW-846 6010B	1	161801848005	06/30/2016 01:48	Matthew R Machtinger	1
07061	Nickel	SW-846 6010B	2	161801848005	06/30/2016 01:48	Matthew R Machtinger	1
01762	Potassium	SW-846 6010B	1	161801848005	06/30/2016 01:48	Matthew R Machtinger	1
07036	Selenium	SW-846 6010B	3	161901848001	07/11/2016 11:03	Eric L Eby	1
07066	Silver	SW-846 6010B	1	161801848005	07/01/2016 01:38	Elaine F Stoltzfus	1
01767	Sodium	SW-846 6010B	1	161801848005	06/30/2016 01:48	Matthew R Machtinger	1
07022	Thallium	SW-846 6010B	1	161801848005	06/30/2016 01:48	Matthew R Machtinger	1
07071	Vanadium	SW-846 6010B	1	161801848005	07/01/2016 01:38	Elaine F Stoltzfus	1
07072	Zinc	SW-846 6010B	1	161801848005	06/30/2016 01:48	Matthew R Machtinger	1
00259	Mercury	SW-846 7470A	1	161835713008	07/06/2016 19:01	Parker D Lindstrom	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	161801848005	06/29/2016 06:24	James L Mertz	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	2	161901848001	07/08/2016 17:25	JoElla L Rice	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	161835713008	07/06/2016 01:00	Annamaria Kuhns	1

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: Drum-Schenectady Composite Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447184
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/22/2016 13:04 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

EA Science & Technology
225 Schilling Circle
suite 400
Hunt Valley MD 21031

DRUS3 SDG#: MRP39-03

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
Pesticides/PCBs	**SW-846 8082**		ug/l	ug/l	ug/l	ug/l	
10227	PCB-1016	12674-11-2	N.D.	0.083	0.25	0.41	1
10227	PCB-1221	11104-28-2	N.D.	0.083	0.25	0.41	1
10227	PCB-1232	11141-16-5	N.D.	0.17	0.33	0.41	1
10227	PCB-1242	53469-21-9	N.D.	0.083	0.25	0.41	1
10227	PCB-1248	12672-29-6	N.D.	0.083	0.25	0.41	1
10227	PCB-1254	11097-69-1	N.D.	0.083	0.25	0.41	1
10227	PCB-1260	11096-82-5	N.D.	0.12	0.25	0.41	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10227	PCBs in Water	SW-846 8082	1	161800004A	06/30/2016 05:18	Kirby B Turner	1
11117	PCB Waters Extraction	SW-846 3510C	1	161800004A	06/28/2016 16:30	Ryan A Schafran	1

*=This limit was used in the evaluation of the final result

Appendix D

Data Validation Report

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ENVIRONMENTAL
Data Services, Inc.

DATA VALIDATION SUMMARY REPORT
AIR NATIONAL GUARD EMERGING CONTAMINANTS

Client: EA Engineering, Science & Technology, Inc., Abingdon, Maryland
SDG: MRP38, MRP40
Laboratory: Eurofins Analytical, Lancaster, Pennsylvania
Site: Air National Guard, New York
Date: August 23, 2016

VOC SIM			
EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	6MW-24 GRAB GROUNDWATER	8847178	Water
2	6MW-26 GRAB GROUNDWATER	8847179	Water
3	6MW-20 GRAB GROUNDWATER	8847180	Water
4	DUP-01 GRAB GROUNDWATER	8847181	Water
5	RINSE BLANK GRAB WATER	8847195	Water

SVOC SIM			
EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
6	V2-MW1 GRAB GROUNDWATER	8447185	Water
7	DUP-02 GRAB GROUNDWATER	8447186	Water
8	V1-MW13L GRAB GROUNDWATER	8447187	Water
9	V2-OB5 GRAB GROUNDWATER	8447188	Water
10	V2-MW50 GRAB GROUNDWATER	8447189	Water
11	V1-MW8 GRAB GROUNDWATER	8447190	Water
12	V1-MW11 GRAB GROUNDWATER	8447191	Water

A full data validation was performed on the analytical data for eleven water samples and one aqueous rinsate blank sample collected on June 22-24, 2016 by EA Engineering at the Air National Guard sites in New York. The samples were analyzed under the *"Test Methods for the Evaluation of Solid Waste, USEPA SW-846, Third Edition, September 1986, with revisions" and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM), Version 5.0 (DoD 2013).*

Specific method references are as follows:

Analysis	*Method References*
VOC	USEPA SW-846 Method 8260B SIM
SVOC	USEPA SW-846 Method 8270C SIM

The data have been validated according to the protocols and quality control (QC) requirements of the analytical methods and the USEPA National Functional Guidelines for Organic Data Review as follows:

- The USEPA "Contract Laboratories Program National Functional Guidelines for Superfund Organic Methods Data Review," August 2014;
- and the reviewer's professional judgment.

The following data quality indicators were reviewed for this report:

Organics

- Holding times and sample preservation
- Gas Chromatography/Mass Spectrometry (GC/MS) Tuning
- Initial and continuing calibration summaries
- Method blank and field QC blank contamination
- Surrogate Spike recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Laboratory Control Sample (LCS) recoveries
- Internal standard area and retention time summary forms
- Target Compound Identification
- Compound Quantitation
- Field Duplicate sample precision

Data Usability Assessment

There were no rejections of data.

Overall the data are acceptable for the intended purposes. There were no qualifications.

Volatile Organic Compounds (1,4-Dioxane)

Holding Times

- All samples were analyzed within 14 days for preserved water samples.

GC/MS Tuning

- All criteria were met.

Initial Calibration

- All percent relative standard deviation (%RSD) and/or correlation coefficients and mean relative response factor (RRF) criteria were met.

Continuing Calibration

- All percent difference (%D) and RRF criteria were met.

Method Blank

- The method blanks were free of contamination.

Field QC Blank

- Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Qualifier	Affected Samples
RINSE BLANK GRAB WATER	None - ND	-	-	-

Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- MS/MSD samples were not analyzed.

Laboratory Control Samples

- The LCS samples exhibited acceptable percent recoveries (%R).

Internal Standard (IS) Area Performance

- All internal standards met response and retention time (RT) criteria.

Target Compound Identification

- All mass spectra and quantitation criteria were met.

Compound Quantitation

- All criteria were met.

Field Duplicate Sample Precision

- Field duplicate results are summarized below. The precision was acceptable.

VOCs				
Compound	6MW-26 ug/L	DUP-01 ug/L	RPD	Qualifier
None	ND	ND	-	-

Semivolatile Organic Compounds (1,4-Dioxane)

Holding Times

- All samples were extracted within 7 days for water samples and analyzed within 40 days.

GC/MS Tuning

- All criteria were met.

Initial Calibration

- All percent relative standard deviation (%RSD) and/or correlation coefficients and mean relative response factor (RRF) criteria were met.

Continuing Calibration

- All percent difference (%D) and RRF criteria were met.

Method Blank

- The method blanks were free of contamination.

Field QC Blank

- Field QC samples were not collected.

Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- MS/MSD samples were not analyzed.

Laboratory Control Samples

- The LCS samples exhibited acceptable percent recoveries (%R).

Internal Standard (IS) Area Performance

- All internal standards met response and retention time (RT) criteria.

Target Compound Identification

- All mass spectra and quantitation criteria were met.

Compound Quantitation

- All criteria were met. No action was required.

Field Duplicate Sample Precision

- Field duplicate results are summarized below. The precision was acceptable.

SVOCs				
Compound	V2-MW1 ug/L	DUP-02 ug/L	RPD	Qualifier
None	ND	ND	-	-

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Signed: Nancy Weaver Dated: 8/23/16

Nancy Weaver
Senior Chemist

Data Qualifier	Definition
U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
J	The analyte is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
NJ	The analysis has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the samples.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the samples.

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Analysis Report

REVISED

Sample Description: 6MW-24 Grab Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447178
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/22/2016 10:10 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

EA Science & Technology
225 Schilling Circle
suite 400
Hunt Valley MD 21031

6MW24 SDG#: MRP38-01

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Volatiles	**SW-846 8260B SIM**		ug/l	ug/l	ug/l	ug/l	
00527	1,4-Dioxane	123-91-1	N.D.	0.2	0.4	0.4	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00527	1,4-Dioxane by 8260B SIM	SW-846 8260B SIM	1	E161839AA	07/01/2016 11:46	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E161839AA	07/01/2016 11:46	Jason M Long	1

NW 8123116

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: 6MW-26 Grab Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447179
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/22/2016 11:01 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

EA Science & Technology
225 Schilling Circle
suite 400
Hunt Valley MD 21031

6MW26 SDG#: MRP38-02

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Volatiles	**SW-846 8260B SIM**		ug/l	ug/l	ug/l	ug/l	
00527	1,4 Dioxane	123 91-1	N.D.	0.2	0.4	0.4	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00527	1,4-Dioxane by 8260B SIM	SW-846 8260B SIM	1	E161839AA	07/01/2016 12:06	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E161839AA	07/01/2016 12:06	Jason M Long	1

NW 8123116

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Analysis Report

REVISED

Sample Description: 6MW-20 Grab Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447180
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/22/2016 12:23 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

EA Science & Technology
225 Schilling Circle
suite 400
Hunt Valley MD 21031

6MW20 SDG#: MRP38-03

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Volatiles	SW-846 8260B SIM		ug/l	ug/l	ug/l	ug/l	
00527	1,4-Dioxane	123-91-1	N.D.	0.2	0.4	0.4	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00527	1,4-Dioxane by 8260B SIM	SW 846 8260B SIM	1	E161839AA	07/01/2016 12:26	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E161839AA	07/01/2016 12:26	Jason M Long	1

MW 8123116

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Analysis Report

4

REVISED

Sample Description: DUP-01 Grab Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447181
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/22/2016 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

EA Science & Technology
225 Schilling Circle
suite 400
Hunt Valley MD 21031

ECDP1 SDG#: MRP38-04FD

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Volatiles	**SW-846 8260B SIM**		ug/l	ug/l	ug/l	ug/l	
00527	1,4-Dioxane	123-91-1	N.D.	0.2	0.4	0.4	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00527	1,4-Dioxane by 8260B SIM	SW-846 8260B SIM	1	E161839AA	07/01/2016 12:45	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E161839AA	07/01/2016 12:45	Jason M Long	1

NW 8123116

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Analysis Report

REVISED

Sample Description: Rinse Blank Grab Water
ANG Emerging Contaminant

LL Sample # WW 8447195
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/24/2016 12:35 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

EA Science & Technology
225 Schilling Circle
suite 400
Hunt Valley MD 21031

EC-RB SDG#: MRP40-08RB

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Volatiles	**SW-846 8260B SIM**		ug/l	ug/l	ug/l	ug/l	
00527	1,4-Dioxane	123-91-1	N.D.	0.2	0.4	0.4	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00527	1,4-Dioxane by 8260B SIM	SW-846 8260B SIM	1	E161839AA	07/01/2016 11:26	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E161839AA	07/01/2016 11:26	Jason M Long	1

NW 8123116

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Analysis Report

REVISED

Sample Description: V2-MW1 Grab Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447185
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/23/2016 09:50 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

EA Science & Technology
225 Schilling Circle
suite 400
Hunt Valley MD 21031

V2MW1 SDG#: MRP40-01

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Semivolatiles	**SW-846 8270C SIM**		ug/l	ug/l	ug/l	ug/l	
10137	1,4-dioxane	123-91 1	N.D.	0.046	0.19	0.19	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10137	1,4-Dioxane 8270C SIM	SW-846 8270C SIM	1	16181WAJ026	07/05/2016 11:19	Holly B Ziegler	1
10466	BNA Water Extraction SIM	SW 846 3510C	1	16181WAJ026	06/30/2016 08:00	Kate E Lutte	1

NW 8123146

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: DUP-02 Grab Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447186
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/23/2016 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

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ECDP2 SDG#: MRP40-02FD

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Semivolatiles	**SW-846 8270C SIM**		ug/l	ug/l	ug/l	ug/l	
10137	1,4-dioxane	123-91-1	N.D.	0.046	0.19	0.19	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10137	1,4-Dioxane 8270C SIM	SW-846 8270C SIM	1	16181WAJ026	07/05/2016 11:46	Holly B Ziegler	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	16181WAJ026	06/30/2016 08:00	Kate E Lutte	1

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Analysis Report

REVISED

Sample Description: V1-MW13L Grab Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447187
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/23/2016 13:43 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

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V113L SDG#: MRP40-03

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Semivolatiles SW-846 8270C SIM			ug/l	ug/l	ug/l	ug/l	
10137	1,4-dioxane	123-91-1	N.D.	0.046	0.19	0.19	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10137	1,4-Dioxane 8270C SIM	SW 846 8270C SIM	1	16181WAJ026	07/05/2016 12:13	Holly B Ziegler	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	16181WAJ026	06/30/2016 08:00	Kate E Lutte	1

NW 8123116

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Analysis Report

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REVISED

Sample Description: V2-OB5 Grab Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447188
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/23/2016 11:05 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

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V2OB5 SDG#: MRP40-04

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Semivolatiles	**SW-846 8270C SIM**		ug/l	ug/l	ug/l	ug/l	
10137	1,4-dioxane	123-91-1	N.D.	0.047	0.19	0.19	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10137	1,4-Dioxane 8270C SIM	SW 846 8270C SIM	1	16181WAJ026	07/05/2016 12:39	Holly B Ziegler	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	16181WAJ026	06/30/2016 08:00	Kate E Lutte	1

NW 8/23/16

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Analysis Report

REVISED

Sample Description: V2-MW50 Grab Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447189
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/23/2016 11:55 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

EA Science & Technology
225 Schilling Circle
suite 400
Hunt Valley MD 21031

V2M50 SDG#: MRP40-05

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Semivolatiles	SW-846 8270C SIM		ug/l	ug/l	ug/l	ug/l	
10137	1,4 dioxane	123-91-1	N.D.	0.047	0.19	0.19	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10137	1,4-Dioxane 8270C SIM	SW-846 8270C SIM	1	16181WAJ026	07/05/2016 13:06	Holly B Ziegler	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	16181WAJ026	06/30/2016 08:00	Kate E Lutte	1

NW 8/23/16

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Analysis Report

REVISED

Sample Description: V1-MW8 Grab Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447190
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/23/2016 15:00 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

EA Science & Technology
225 Schilling Circle
suite 400
Hunt Valley MD 21031

V1MW8 SDG#: MRP40-06

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Semivolatiles SW-846 8270C SIM			ug/l	ug/l	ug/l	ug/l	
10137	1,4-dioxane	123-91-1	N.D.	0.047	0.19	0.19	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10137	1,4-Dioxane 8270C SIM	SW-846 8270C SIM	1	16181WAJ026	07/05/2016 13:33	Holly B Ziegler	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	16181WAJ026	06/30/2016 08:00	Kate E Lutte	1

NW 8/23/16

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Analysis Report

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REVISED

Sample Description: V1-MW11 Grab Groundwater
ANG Emerging Contaminant

LL Sample # WW 8447191
LL Group # 1676390
Account # 04756

Project Name: ANG Emerging Contaminants

Collected: 06/23/2016 15:54 by JM

Submitted: 06/25/2016 08:40
Reported: 07/22/2016 12:17

EA Science & Technology
225 Schilling Circle
suite 400
Hunt Valley MD 21031

V1M11 SDG#: MRP40-07

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Semivolatiles SW-846 8270C SIM			ug/l	ug/l	ug/l	ug/l	
10137	1,4-dioxane	123-91-1	N.D.	0.051	0.20	0.20	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10137	1,4-Dioxane 8270C SIM	SW-846 8270C SIM	1	16181WAJ026	07/05/2016 14:00	Holly B Ziegler	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	16181WAJ026	06/30/2016 08:00	Kate E Lutte	1

NW 8/23/16

*=This limit was used in the evaluation of the final result