



HARGIS + ASSOCIATES, INC.

HYDROGEOLOGY • ENGINEERING

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January 20, 2020

VIA FEDERAL EXPRESS STANDARD

Mr. Steve Rounds
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
DEPARTMENT OF TOXIC SUBSTANCES CONTROL
Southern California Region
9211 Oakdale Avenue
Chatsworth, CA 91311-6520

Re: Data Submittal for Groundwater Monitoring and Groundwater Extraction
and Treatment Pilot Testing, Fourth Quarter 2019, Raytheon Company (Former
Hughes Aircraft Company) Facility, 1901 West Malvern Avenue, Fullerton, California

Dear Mr. Rounds:

This letter has been prepared for the submittal of groundwater monitoring and groundwater treatment pilot testing data collected during the fourth quarter 2019 for the former Raytheon Company site located at 1901 West Malvern Avenue, Fullerton, California (the Site) (Figure 1). Groundwater monitoring activities were completed in general accordance with the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC)-approved Groundwater Monitoring Work Plan and Sampling and Analysis Plan (GMWPSAP) and subsequent addenda (DTSC, 2003 and 2011; Hargis + Associates, Inc. [H+A], 2003, 2011a, and 2011b). Groundwater treatment pilot testing continued throughout the fourth quarter 2019 in general accordance with the DTSC-approved Groundwater Extraction and Treatment System (GETS) Pilot Testing, Corrective Measures Study Work Plan Addendum No. 6 (DTSC, 2013; H+A, 2013). The results of the fourth quarter 2019 groundwater monitoring and pilot GETS operation from September through November 2019 are included in this data submittal.

GROUNDWATER MONITORING

Groundwater monitoring consists of measuring groundwater levels and collecting groundwater samples from monitor wells and piezometers at the Site (Figure 2). Quarterly water level measurements were taken at all wells and piezometers, and groundwater samples were collected from extraction wells and select monitor wells in November 2019 in general accordance with the GMWPSAP and Addendum No.1 (H+A, 2003 and 2011a) (Table 1).

Water Level Measurement and Groundwater Sample Collection

Groundwater monitoring included water level measurements in all Site monitor wells, piezometers, and extraction wells (Figures 2 and 3). Quarterly groundwater levels were measured in all wells on November 18, 2019 (Table 2).

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Folsom, CA
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Groundwater samples were collected during the period from November 19 through November 21, 2019 (Appendix A). Analytical results are summarized in Table 3 and provided in Appendix B. Additional groundwater monitoring was conducted as part of routine operation and monitoring of the pilot GETS. A summary of the pilot GETS operation and monitoring is provided below.

Original and field-duplicate groundwater samples were analyzed by Advanced Technology Laboratories, Inc., Signal Hill, California (ATL) (Appendix B). Laboratory split groundwater samples were analyzed by Eurofins Calscience, Garden Grove, California (Appendix B). Chain-of-custody documentation was enclosed with each sample shipment. Results of groundwater sample volatile organic compound (VOC) and 1,4-dioxane analyses have been summarized (Table 3).

Additionally, samples also were collected after two screen volumes were purged from three of the large-volume monitor wells during this event; these additional samples were collected to compare results between the two-screen-volume purge method to the conventional three-screen-volume purge method which has been used historically at the Site for the large-volume monitor wells. Groundwater samples were collected after both two- and three-screen volumes had been purged from monitor wells MW-32B, MW-33, and MW-36 (Table 3; Appendix B).

Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) samples collected in November 2019 consisted of trip blanks, field duplicates, equipment rinsate blanks, and laboratory split samples. Trip blanks were provided by ATL. Field duplicate samples were collected for analysis of VOCs and 1,4-dioxane from monitor wells MW-08 and MW-31 in November 2019 (Table 3). Split samples were collected for analysis of VOCs and 1,4-dioxane from monitor wells MW-08 and MW-31 in November 2019 (Table 3).

The relative percent difference (RPD) was calculated between the results of each field duplicate and each laboratory split sample with its corresponding original sample. The RPD for 1,4-dioxane between the original and laboratory split groundwater samples collected from monitor well MW-31 is slightly outside of acceptable limits, however, the 1,4-dioxane result for this well is within the range expected based on data trending, therefore the data was not qualified. All other results for groundwater samples collected from monitor wells MW-08 and MW-31 are within quality control criteria. The following table summarizes the principal Site compounds, 1,1-dichloroethylene (1,1-DCE), trichloroethylene (TCE) and 1,4-dioxane, results in the original, field duplicate and laboratory split groundwater samples, as well as the calculated RPDs and assigned qualifier flag, if any.

Well ID / Collection Date	Compound	Original (ug/l)	Duplicate (ug/l)	RPD (percent)	Split (ug/l)	RPD (percent)	Qualifier Flag
MW-08 11/19/19	1,1-DCE	39	39	0	33	17	
	TCE	78	78	0	76	2.6	
	1,4-dioxane	2.7	2.7	0	2.7	0	
MW-31 11/19/19	1,1-DCE	330	320	3.1	230	36	
	TCE	11	11	0	11	0	
	1,4-dioxane	13	15	14	9.5	31	

ug/l = micrograms per liter

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The following table summarizes H+A project QA/QC criteria for field duplicate and laboratory split RPDs.

Range of detection	RPD Criteria (percent)	Project Qualifier Flag	Note
PQL to 10x PQL	< 100	E (estimated) or U (unusable)	Project qualifier flag may be assigned if RPD criteria is not met and/or result is not consistent with data trending
10x PQL to 100x PQL	< 30		
>100x PQL	< 50		

PQL = practical quantitation limit (undiluted)

< = less than

> = greater than

There were no detections of 1,4-dioxane or VOCs in the trip blanks and/or laboratory method blanks analyzed with groundwater samples collected during the November 2019 groundwater monitoring event (Table 3; Appendix B). Additionally, there were no detections of 1,4-dioxane or VOCs in the equipment rinsate blanks analyzed with groundwater samples collected during the November 2019 groundwater monitoring event.

The data quality assessment also included review of laboratory QA/QC results. Laboratory QA/QC results are within acceptable criteria.

GROUNDWATER EXTRACTION AND TREATMENT PILOT STUDY

This section summarizes the pilot GETS operation within the three-month period of monitoring conducted September to November 2019. The pilot GETS consists of four groundwater extraction wells, the treatment system, and the disposal system; however, the current phase of pilot testing is operating using only two extraction wells, EW-02 and MW-29. Current extraction rates are nominally 40 gallons per minute (gpm) from extraction well EW-02 and nominally 10 gpm from extraction well MW-29. The treatment system processes extracted groundwater through an advanced oxidation unit that utilizes ultraviolet (UV) light and hydrogen peroxide (UV Ox), followed by a granular activated carbon polish prior to disposal to the sanitary sewer.

Initial startup of the pilot GETS took place in July 2008. From July 2008 through November 2009, the pilot GETS was operated with extraction wells EW-01 and MW-21 operating at approximately 10 gpm each. Pilot GETS expansion took place between November 2009 and March 2010 in order to incorporate extraction well EW-02 into the extraction well network. The system maximum flowrate was also increased from 20 gpm to 50 gpm to utilize the maximum local sewer capacity. Beginning in March 2010, the pilot GETS was operated at 50 gpm, entirely from extraction well EW-02. In December 2011, a synthetic media pilot test was started. The purpose of the synthetic media pilot test was to evaluate the efficacy of treating water collected from extraction well MW-21 (a relatively high-concentration extraction well) using a synthetic media for contaminant removal. In order to conduct the synthetic media pilot test, extraction wells EW-02 and MW-21 were operated at approximately 40 gpm and 10 gpm, respectively. The synthetic media pilot test was completed in March 2012, and operation of the pilot GETS was restored to 50 gpm entirely from extraction well EW-02. A second phase of pilot GETS expansion took place between March 2014 and August 2014 in order to incorporate extraction well MW-29 into the extraction well network as well as replacing an advanced oxidation unit that used ozone and hydrogen peroxide with a UV Ox system. Extraction wells EW-01 and MW-21 are on standby for the current phase of pilot testing, but are planned to be used as part of the full scale pump-and-treat system.

During the fourth quarter of 2019, the pilot GETS was operational approximately 91 percent of the available runtime and approximately 4.5 million gallons of groundwater were treated and discharged to the sanitary sewer (Table 4). Downtime during the fourth quarter of 2019 was associated with operations and maintenance activities.

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The average operational monthly discharge flowrate to the sanitary sewer from September to November 2019 was approximately 35.4 gpm. Since startup of the pilot GETS, approximately 188 million gallons of groundwater have been treated at an average operational flowrate of 41 gpm through the end of November 2019 (Table 4).

Current monthly and quarterly pilot GETS monitoring activities include collecting groundwater samples from extraction wells EW-02 and MW-29 in addition to collecting samples at treatment system sampling ports: Influent, Post-Particulate-Filter, Post-UV-Ox, Carbon-Breakthrough, and Carbon-Effluent (Tables 5 and 6; Figures 4 and 5). Samples collected during these activities were transmitted to ATL for analysis in accordance with chain-of-custody procedures. Analytical results of the extraction wells and treatment system sampling have been summarized (Table 6; Appendix B).

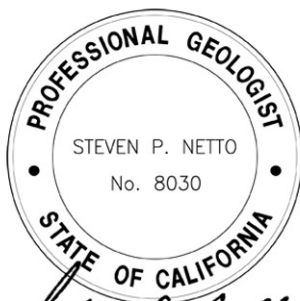
The UV Ox advanced oxidation treatment unit is designed to remove 1,4-dioxane and most VOCs in groundwater. The carbon adsorption units provide a polish following the UV Ox treatment and remove possible low-level VOCs remaining in groundwater post UV Ox (principally low-level ethanes). The UV Ox advanced oxidation and carbon adsorption treatment units effectively removed VOCs and 1,4-dioxane from extracted groundwater in the fourth quarter of 2019. The samples collected from the effluent of the UV Ox treatment unit (Post-UV-Ox) were analyzed for VOCs and 1,4-dioxane, and resulted in non-detect values (Table 6).

The pilot GETS continues to remove VOCs and 1,4-dioxane from extracted groundwater. During the fourth quarter of 2019, the pilot GETS removed approximately 2.0 pounds of VOCs and 1.4 pounds of 1,4-dioxane from extracted groundwater. Since startup of the pilot GETS in July 2008, approximately 175 pounds of VOCs and 43 pounds of 1,4-dioxane have been removed from groundwater through November 2019 (Figure 7). Operation of the pilot GETS continues to be optimized to maximize the treatment of 1,4-dioxane and VOCs in extracted groundwater.

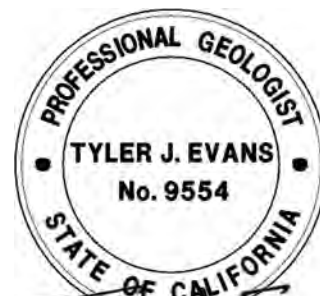
If you have any questions or require additional information, please contact us at 858-455-6500.

Sincerely,

HARGIS + ASSOCIATES, INC.



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Tyler J. Evans
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Ross H. Horton
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SPN/TJE/RHH/jak

532_H01_2019_06_4Q2019_GWMon & GETS Ops DataSbmtl

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REFERENCES

- California Environmental Protection Agency, Department of Toxic Substances Control (DTSC), 2003. Letter to P. Brewer, Raytheon Systems Company, from A. Plaza, DTSC, re: Review of Additional Groundwater Assessment Workplan and Groundwater Monitoring Workplan and Sampling and Analysis Plan. May 20, 2003.
- _____, 2011. Email from W. Jeffers, DTSC, re: Conditional Approval of Addendum No. 1 to the Ground Water Monitoring Work Plan, Raytheon Fullerton, dated June 7, 2011.
- _____, 2013. Email from W. Jeffers, DTSC, re: Groundwater Extraction and Treatment System Pilot Testing Corrective Measures Study Workplan, Addendum #6, dated April 16, 2013.
- Hargis + Associates, Inc. (H+A), 2003. Groundwater Monitoring Work Plan and Sampling and Analysis Plan (Revision 1.0), Raytheon Company (former Hughes Aircraft Company), 1901 West Malvern Avenue, Fullerton, California. April 25, 2003.
- _____, 2011a. Letter to W. Jeffers, DTSC, re: Addendum No. 1 to the *Groundwater Monitoring Work Plan and Sampling and Analysis Plan (Revision 1.0)*, by Hargis + Associates, Inc., dated April 25, 2003, for the Raytheon Company, (Former Hughes Aircraft Company), 1901 West Malvern Avenue, Fullerton, California. February 11, 2011.
- _____, 2011b. Letter to W. Jeffers, DTSC, re: Amendment A, Addendum No. 1 to the *Groundwater Monitoring Work Plan and Sampling and Analysis Plan (Revision 1.0)*, by Hargis + Associates, Inc., dated April 25, 2003, for the Raytheon Company, (Former Hughes Aircraft Company), 1901 West Malvern Avenue, Fullerton, California. June 16, 2011.
- _____, 2013. Groundwater Extraction and Treatment System Pilot Testing, Corrective Measures Study Workplan Addendum No. 6, Raytheon Company (former Hughes Aircraft Company), 1901 West Malvern Avenue, Fullerton, California. February 27, 2013.

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Enclosures

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Appendices

Appendix A	Groundwater Sampling Field Forms (provided on CD in hard copy)
Appendix B	Laboratory Analytical Reports (provided on CD in hard copy)

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cc w/encl: (1 copy w-CD)

Mr. Steve Rounds, Department of Toxic Substances Control, Chatsworth
Mr. Paul Pongetti, Department of Toxic Substances Control, Cypress
Mr. Dave Mark, Orange County Water District
Mr. Eric Silvers, Regency Centers

(2 copies w-CD)

Mr. Louis Gonzales, City of Fullerton

(via CD)

Ms. Tiffany Foo, City of Fullerton
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Mr. Paul Rodolf, Hydraflow
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TABLE 1
GROUNDWATER MONITORING PROGRAM

WELL IDENTIFIER	HYDROGEOLOGIC ZONE	SAMPLED NOV 2019	SAMPLING FREQUENCY			
			QUARTERLY	SEMIANNUAL	ANNUAL	BIENNIAL
			FEB, MAY, AUG, NOV	FEBRUARY, AUGUST	FEBRUARY	FEB (EVEN YEARS)
P-07	Perched				VOCs; 1,4-Dioxane	
P-09	Perched				VOCs; 1,4-Dioxane	
MW-35A	Other					VOCs; 1,4-Dioxane
MW-17	A		PIEZOMETER - WATER LEVEL MEASUREMENT ONLY			
MW-18	A			VOCs; 1,4-Dioxane		
MW-19	A					VOCs
MW-22	A					VOCs; 1,4-Dioxane
MW-23	A					VOCs
MW-34A	A			VOCs; 1,4-Dioxane		
MW-35B	A					VOCs; 1,4-Dioxane
MW-38	A				VOCs; 1,4-Dioxane	
MW-13	AB				VOCs; 1,4-Dioxane	
MW-15	AB			VOCs		
MW-26A	AB		PIEZOMETER - WATER LEVEL MEASUREMENT ONLY			
MW-26B	AB		PIEZOMETER - WATER LEVEL MEASUREMENT ONLY			
MW-32A	AB			VOCs; 1,4-Dioxane		
EW-01	B	✗	VOCs; 1,4-Dioxane			
EW-02*	B	✗	VOCs; 1,4-Dioxane			
MW-16	B			VOCs; 1,4-Dioxane		
MW-26C	B	✗	VOCs; 1,4-Dioxane			
MW-27	B				VOCs; 1,4-Dioxane	
MW-28	B	✗	VOCs; 1,4-Dioxane			
MW-29*	B	✗	VOCs; 1,4-Dioxane			
MW-30A	B	✗	VOCs; 1,4-Dioxane			
MW-31	B	✗	VOCs; 1,4-Dioxane			
MW-32B	B	✗	VOCs; 1,4-Dioxane			
MW-33	B	✗	VOCs; 1,4-Dioxane			
MW-34B	B	✗	VOCs; 1,4-Dioxane			
MW-35C	B	✗	VOCs; 1,4-Dioxane			
MW-36	B	✗	VOCs; 1,4-Dioxane			
MW-39	B	✗	VOCs; 1,4-Dioxane			
MW-40	B	✗	VOCs; 1,4-Dioxane			
MW-41	B	✗	VOCs; 1,4-Dioxane			
MW-42	B	✗	VOCs; 1,4-Dioxane			
MW-43	B	✗	VOCs; 1,4-Dioxane			
MW-21	BC	✗	VOCs; 1,4-Dioxane			
MW-08	BC	✗	VOCs; 1,4-Dioxane			
MW-30B	BC	✗	VOCs; 1,4-Dioxane			
MW-34C	BC			VOCs; 1,4-Dioxane		
MW-09	C			VOCs; 1,4-Dioxane		
MW-24	C				VOCs; 1,4-Dioxane	
MW-32C	C			VOCs; 1,4-Dioxane		
MW-06	D				VOCs	
MW-20	D			VOCs; 1,4-Dioxane		
MW-25	D		WATER LEVEL MEASUREMENT ONLY			
MW-37	D				VOCs; 1,4-Dioxane	

FOOTNOTES

Groundwater Monitoring Program 2014/2015 Letter (Hargis + Associates, Inc., 2015)

* = Extraction well monitored monthly as part of the Groundwater Extraction and Treatment System Pilot Testing

VOCs = volatile organic compounds

TABLE 2
GROUNDWATER LEVELS
FOURTH QUARTER 2019

Well Identifier	Date Measured	Reference Point Elevation (a) (feet msl)	Depth to Water (feet btoc)	Water Level Elevation (feet msl)	Remediation System On
Regional Groundwater System Monitor and Extraction Wells					
MW-06	11/18/19	184.70	162.42	22.28	
MW-08	11/18/19	155.91	134.96	20.95	
MW-09	11/21/19	180.10	160.68	19.42	
MW-13	11/18/19	141.84	128.66	13.18	
MW-15	11/18/19	144.95	130.51	14.44	
MW-16	11/18/19	142.40	130.84	11.56	
MW-17	11/18/19	142.70	131.38	11.32	
MW-18	11/18/19	142.32	129.95	12.37	
MW-19	11/18/19	142.06	131.48	10.58	
MW-20	11/18/19	184.19	157.35	26.84	
MW-21	11/18/19	141.18	120.11	21.07	
MW-22	11/18/19	138.65	127.90	10.75	
MW-23	11/18/19	137.33	128.36	8.97	
MW-24	11/18/19	142.83	125.52	17.31	
MW-25	11/18/19	142.64	125.03	17.61	
MW-26A	11/18/19	137.04	123.52	13.52	
MW-26B	11/18/19	137.05	122.50	14.55	
MW-26C	11/18/19	137.22	127.11	10.11	
MW-27	11/18/19	137.16	126.64	10.52	
MW-28	11/18/19	140.77	130.80	9.97	
MW-29	09/05/19	139.81	178.91	-39.10	Pilot GETS
MW-29	09/19/19	139.81	181.62	-41.81	Pilot GETS
MW-29	10/04/19	139.81	176.64	-36.83	Pilot GETS
MW-29	10/21/19	139.81	171.49	-31.68	Pilot GETS
MW-29	11/06/19	139.81	175.98	-36.17	Pilot GETS
MW-29	11/18/19	139.81	174.53	-34.72	Pilot GETS
MW-29	11/21/19	139.81	179.41	-39.60	Pilot GETS
MW-30A	11/18/19	129.44	120.31	9.13	
MW-30B	11/18/19	129.39	116.81	12.58	
MW-31	11/18/19	119.60	109.48	10.12	
MW-32A	11/18/19	92.88	84.69	8.19	
MW-32B	11/18/19	92.89	83.95	8.94	
MW-32C	11/18/19	92.88	77.67	15.21	
MW-33	11/18/19	83.19	75.91	7.28	

TABLE 2
GROUNDWATER LEVELS
FOURTH QUARTER 2019

Well Identifier	Date Measured	Reference Point Elevation (a) (feet msl)	Depth to Water (feet btoc)	Water Level Elevation (feet msl)	Remediation System On
<u>Regional Groundwater System Monitor and Extraction Wells (continued)</u>					
MW-34A	11/18/19	153.25	149.58	3.67	
MW-34B	11/18/19	153.11	143.92	9.19	
MW-34C	11/18/19	153.29	142.72	10.57	
MW-35A	11/18/19	93.57	83.17	10.40	
MW-35B	11/18/19	93.56	88.40	5.16	
MW-35C	11/18/19	93.55	85.68	7.87	
MW-36	11/18/19	86.65	79.64	7.01	
MW-37	11/18/19	155.60	143.20	12.40	
MW-38	11/18/19	154.90	153.76	1.14	
MW-39	11/18/19	84.25	77.74	6.51	
MW-40	11/18/19	123.40	112.04	11.36	
MW-41	11/18/19	155.60	146.03	9.57	
MW-42	11/18/19	82.80	76.63	6.17	
MW-43	11/18/19	76.64	70.74	5.90	
EW-01	11/18/19	141.07	129.26	11.81	
EW-02	09/05/19	132.97	125.62	7.35	Pilot GETS
EW-02	09/19/19	132.97	126.51	6.46	Pilot GETS
EW-02	10/04/19	132.97	127.46	5.51	Pilot GETS
EW-02	10/21/19	132.97	127.44	5.53	Pilot GETS
EW-02	11/06/19	132.97	127.37	5.60	Pilot GETS
EW-02	11/18/19	132.97	127.81	5.16	Pilot GETS
EW-02	11/21/19	132.97	128.26	4.71	Pilot GETS
<u>Perched Zone Water Levels</u>					
P-07	11/18/19	142.31	113.51	28.80	
P-09	11/18/19	183.86	120.65	63.21	

FOOTNOTES

(a) Reference point elevations are relative to City of Fullerton datum.

btoc = Below top of casing

msl = Mean sea level

Pilot GETS = Pilot Groundwater Extraction and Treatment System On

TABLE 3

**PREVALENT VOLATILE ORGANIC COMPOUNDS AND 1,4-DIOXANE IN GROUNDWATER
FOURTH QUARTER 2019**

			Concentration (micrograms per liter).....													
			VOLATILE ORGANIC COMPOUNDS (FEDERAL MCL/CALIFORNIA MCL)											Semi-VOCs		
Well Identifier / Sample Identifier	Date Sampled	QA Code	Benzene (5/1)	Carbon Tetrachloride (5/0.5)	Chloroform (80/80)	1,1-DCA (--/5)	1,2-DCA (5/0.5)	1,1-DCE (7/6)	cis-1,2-DCE (70/6)	PCE (5/5)	1,1,1-TCA (200/200)	1,1,2-TCA (5/5)	TCE (5/5)	TCFM (--/150)	Toluene (1,000/150)	1,4-Dioxane (3*/1**)
Regional Groundwater System Monitor and Extraction Wells																
MW-08	11/19/19	ORG	< 0.50	< 0.50	0.31 J	< 0.50	< 0.50	39	3.2	< 0.50	< 0.50	< 0.50	78	< 0.50	< 0.50	2.7
MW-0800	11/19/19	FD	< 0.50	< 0.50	0.31 J	< 0.50	< 0.50	39	3.2	< 0.50	< 0.50	< 0.50	78	< 0.50	< 0.50	2.7
MW-08	11/19/19	SPT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	33	3.6	< 0.50	< 0.50	< 0.50	76	< 0.50	< 0.50	2.7
MW-08 Historical Range***			< 0.50 - 0.95	< 0.50 - 0.50	< 0.50 - 0.86	< 0.50 - 5.1	< 0.50 - 0.99	< 0.50 - 500	< 0.50 - 13	< 0.50 - 1.3	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - 480	< 0.50 - 1.0	< 0.50 - 2.3	< 0.20 - 130
MW-21	11/20/19	ORG	< 0.50	< 0.50	0.70	9.3	< 0.50	450	1.1	2.0	< 0.50	4.0	20	< 0.50	< 0.50	360
MW-21 Historical Range***			< 0.50 - < 25	< 0.50 - 1.9	< 0.50 - 4.6	< 0.50 - 71	< 0.50 - 8.9	200 - 4,900	< 0.50 - 2.4	< 0.50 - 12	< 0.50 - 2.0	< 0.50 - 27	0.96 - 46	< 0.50 - 0.53	< 0.50 - < 10	11 - 1,100
MW-26C	11/19/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.05 J
MW-26C Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50 - 1.7	< 0.50	< 0.50 - 120	< 0.50	< 0.50 - 0.79	< 0.50	< 0.50 - 0.77	< 0.50	< 0.50	< 0.50 - 22	< 0.20 - 57
MW-28	11/19/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.19 J
MW-28 Historical Range***			< 0.50	< 0.50	< 0.50 - 0.20 J	< 0.50 - 0.94	< 0.50	< 0.50 - 76 E	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20 - 19
MW-29	09/05/19	ORG	< 0.50	< 0.50	< 0.50	3.9	< 0.50	220	< 0.50	< 0.50	< 0.50	< 0.50	4.2	< 0.50	< 0.50	130
MW-29	09/19/19	ORG	< 0.50	< 0.50	< 0.50	1.9	< 0.50	150	< 0.50	< 0.50	< 0.50	< 0.50	1.7	0.64	< 0.50	120
MW-29	10/04/19	ORG	< 0.50	< 0.50	< 0.50	2.2	< 0.50	140	< 0.50	< 0.50	< 0.50	< 0.50	1.9	0.62	< 0.50	110
MW-29	10/21/19	ORG	< 0.50	< 0.50	< 0.50	1.3	< 0.50	150	< 0.50	0.55	< 0.50	0.56	1.8	< 0.50	< 0.50	86
MW-29	11/06/19	ORG	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	140	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	100
MW-29	11/21/19	ORG	< 0.50	< 0.50	< 0.50	2.0	< 0.50	180	< 0.50	0.57	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	130
MW-29 Historical Range***			< 0.50 - 0.57	< 0.50 - < 5.0	< 0.50 - 0.80	< 0.50 - 9.2	< 0.50 - 1.4	99 - 900 E	< 0.50 - 0.61	< 0.50 - 6.6	< 0.50 - < 5.0	< 0.50 - 2.3	< 0.50 - 8.3	< 0.50 - 2.2	< 0.50 - < 5.0	26 BE - 301
MW-30A	11/20/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
MW-30A Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50 - 2.9	< 0.50 - 0.67	< 0.50 - 270	< 0.50	< 0.50 - 0.58	< 0.50	< 0.50 - 1.1	< 0.50 - 1.9	< 0.50	< 0.50	< 0.20 - 95
MW-30B	11/20/19	ORG	< 0.50	< 0.50	0.41 J	< 0.50	< 0.50	20	4.3	< 0.50	< 0.50	< 0.50	92	< 0.50	< 0.50	0.78
MW-30B Historical Range***			< 0.50	< 0.50	< 0.50 - 0.77	< 0.50	< 0.50	< 0.50 - 28	< 0.50 - 8.2	< 0.50	< 0.50	< 0.50	< 0.50 - 110	< 0.50	< 0.50 - 4.5	< 0.20 - 28 E
MW-31	11/19/19	ORG	< 0.50	< 0.50	< 0.50	2.4	< 0.50	330	0.76	< 0.50	< 0.50	< 0.50	11	< 0.50	0.20 J	13
MW-3100	11/19/19	FD	< 0.50	< 0.50	< 0.50	2.4	< 0.50	320	0.67	< 0.50	< 0.50	< 0.50	11	< 0.50	0.15 J	15
MW-31	11/19/19	SPT	< 0.50	< 0.50	< 0.50	2.5	< 0.50	230	0.75	0.54	< 0.50	< 0.50	11	< 0.50	< 0.50	9.5
MW-31 Historical Range***			< 0.50	< 0.50	< 0.50-0.58	< 0.50 - 5.0	< 0.50-0.51	25 - 430	< 0.50 - 3.0E	< 0.50 - 2.4E	< 0.50	< 0.50 - 1.2	0.50 - 21	< 0.50	< 0.50 - 1.0	< 0.20 - 16
MW-32B_2SV	11/21/19	ORG	< 0.50	< 0.50	< 0.50	1.9	< 0.50	260	4.8	< 0.50	< 0.50	< 0.50	55	< 0.50	< 0.50	7.9
MW-32B	11/21/19	ORG	< 0.50	< 0.50	< 0.50	2.0	< 0.50	290	5.1	< 0.50	< 0.50	< 0.50	59	< 0.50	< 0.50	8.0
Historical High/Low								High								High
MW-32B Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50 - 3.6	< 0.50	16 - 230	1.9 - 7.9	< 0.50	< 0.50	< 0.50	20 - 75	< 0.50	< 0.50	< 2.0 - 7.6

TABLE 3

**PREVALENT VOLATILE ORGANIC COMPOUNDS AND 1,4-DIOXANE IN GROUNDWATER
FOURTH QUARTER 2019**

.....Concentration (micrograms per liter).....																
VOLATILE ORGANIC COMPOUNDS (FEDERAL MCL/CALIFORNIA MCL)															Semi-VOCs	
Well Identifier / Sample Identifier	Date Sampled	QA Code	Benzene (5/1)	Carbon Tetrachloride (5/0.5)	Chloroform (80/80)	1,1-DCA (~5)	1,2-DCA (5/0.5)	1,1-DCE (7/6)	cis-1,2-DCE (70/6)	PCE (5/5)	1,1,1-TCA (200/200)	1,1,2-TCA (5/5)	TCE (5/5)	TCFM (~150)	Toluene (1,000/150)	1,4-Dioxane (3*/1**)
Regional Groundwater System Monitor and Extraction Wells (cont'd)																
MW-33_2SV	11/19/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	2.2	< 0.50	< 0.50	< 0.50	< 0.50	0.24 J	< 0.50	< 0.50	0.13 J
MW-33	11/19/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.13 J
MW-33 Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 - 12	< 0.50	< 0.50 - 0.32 J	< 0.50	< 0.50	< 0.50 - 2.0	< 0.50	< 0.50 - 1.4	< 0.20 - < 2.0
MW-34B	11/20/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	47	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	20
MW-34B Historical Range***			< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - 0.50	< 0.50 - 9.8	< 0.50 - 1.4	20 E - 1,100	< 0.50 - < 5.0	< 0.50 - 1.1	< 0.50 - 1.0	< 0.50 - 2.6	< 0.50 - 2.1	< 0.50 - < 5.0	< 0.50 - 2.6	< 2.0 E - 196
MW-35C	11/19/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.06 J
MW-35C Historical Range***			< 0.50	< 0.50	< 0.50 - 120	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20 - < 2.0
MW-36_2SV	11/20/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	76	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	8.6
MW-36	11/20/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	80	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	8.0
MW-36 Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50 - 1.9	< 0.50	2.9 - 220	< 0.50	< 0.50	< 0.50	< 0.50 - 0.24 J	< 0.50	< 0.50	< 0.50 - 5.9	< 0.20 - 15
MW-39	11/20/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
MW-39 Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 - 1.4	< 0.20 - < 2.0
MW-40	11/20/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
MW-40 Historical Range***			< 0.50	< 0.50	< 0.50 - 0.60	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20 - < 2.0
MW-41	11/20/19	ORG	< 0.50	< 0.50	0.59	< 0.50	< 0.50	2.3	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
MW-41 Historical Range***			< 0.50	< 0.50	< 0.50 - 0.86	< 0.50 - 1.3	< 0.50	< 0.50 - 130	< 0.50	< 0.50 - 0.20 J	< 0.50	< 0.50 - 0.39 J	< 0.50 - 110	< 0.50	< 0.50	< 0.20 - 18
MW-42	11/20/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	13	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.74
Historical High/Low								High								High
MW-42 Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.41 J - 4.6	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20 - 0.25
MW-43	11/20/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
MW-43 Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
EW-01	11/20/19	ORG	< 0.50	< 0.50	< 0.50	1.0	< 0.50	99	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	41
EW-01 Historical Range***			< 0.50 - 2.0	< 0.50 - 0.55	< 0.50 - 1.2	< 0.50 - 16	< 0.50 - 4.0	< 0.50 - 1,600 E	< 0.50 - 0.52	< 0.50 - 4.3	< 0.50 - < 2.5	< 0.50 - 10	< 0.50 - 3.3	< 0.50 - 0.61	< 0.50 - 4.6	< 2.0 - 990 E
EW-02	09/05/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	20	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	10
EW-02	09/19/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	19	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	10
EW-02	10/04/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	14	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	8.8
EW-02	10/21/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	9.2	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	5.6
EW-02	11/06/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	3.3	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	9.4
EW-02	11/21/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	18	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	11
EW-02 Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50 - 1.5	< 0.50	2.3 - 160	< 0.50	< 0.50	< 0.50	< 0.50 - 0.59	< 0.50	< 0.50	< 0.50 - 0.85	< 2.0 - 48

TABLE 3

**PREVALENT VOLATILE ORGANIC COMPOUNDS AND 1,4-DIOXANE IN GROUNDWATER
FOURTH QUARTER 2019**

.....Concentration (micrograms per liter).....																
Well Identifier / Sample Identifier	Date Sampled	QA Code	Benzene (5/1)	VOLATILE ORGANIC COMPOUNDS (FEDERAL MCL/CALIFORNIA MCL)										Semi-VOCs		
				Carbon Tetrachloride (5/0.5)	Chloroform (80/80)	1,1-DCA (--/5)	1,2-DCA (5/0.5)	1,1-DCE (7/6)	cis-1,2-DCE (70/6)	PCE (5/5)	1,1,1-TCA (200/200)	1,1,2-TCA (5/5)	TCE (5/5)	TCFM (--/150)	Toluene (1,000/150)	1,4-Dioxane (3*/1**)
QUALITY ASSURANCE/QUALITY CONTROL SAMPLES																
TB-090519	09/05/19	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
TB-091919	09/19/19	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
TB-100419	10/04/19	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
TB-102119	10/21/19	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
TB-110619	11/06/19	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
TB-111919A	11/19/19	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
TB-111919B	11/19/19	TB-SPT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
RB-111919	11/19/19	RB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
TB-112019A	11/20/19	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
TB-112019-B	11/20/19	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
TB-112119		TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA

NOTE: Detections are shown in **BOLD** type.

FOOTNOTES

1,1-DCA = 1,1-Dichloroethane
 1,2-DCA = 1,2-Dichloroethane
 1,1-DCE = 1,1-Dichloroethene
 cis-1,2-DCE = cis-1,2-Dichloroethene
 PCE = Tetrachloroethene
 1,1,1-TCA = 1,1,1-Trichloroethane
 1,1,2-TCA = 1,1,2-Trichloroethane

TCE = Trichloroethene
 TCFM = Trichlorofluoromethane
 (<) = Less than; the value is the Limit of Detection for that compound
 * = 1,4-Dioxane Action Level of 3 ug/l
 ** = California Notification Level for 1,4-Dioxane of 1 ug/l
 *** = Historical Range determined using original samples exclusively
 Semi-VOCs = Semivolatile organic compounds

NA = Not analyzed for constituent
 FD = Field duplicate sample
 ORG = Original sample
 E = Data qualified as Estimated in accordance with quality control criteria.
 TB = Trip blank sample
 RB = Rinsate blank sample
 ug/l = Micrograms per liter
 MCL = Maximum Contaminant Level
 QA = Quality Assurance
 SPT = Split sample
 ug/l = micrograms per liter

TABLE 4
PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM OPERATIONAL SUMMARY

OPERATIONAL PERIOD (MONTH/QUARTER/YEAR)	WELLFIELD PRODUCTION ^(a) (gallons)	AVERAGE DISCHARGE RATE ^(b) (gpm)	AVERAGE OPERATIONAL DISCHARGE RATE ^(c) (gpm)	OPERATIONAL HOURS DURING OPERATIONAL PERIOD	HOURS IN OPERATIONAL PERIOD	% OPERATIONAL
2008^(d)	3,659,562	13.8	18.2	3,358	4,416	76%
2009	5,787,848	11.0	18.1	5,319	8,760	61%
2010	14,295,261	27.2	46.4	5,131	8,760	59%
2011	20,456,899	38.9	45.8	7,442	8,760	85%
2012^(e)	19,378,122	40.2	47.2	6,850	8,040	85%
2013^(f)	21,148,029	40.2	45.7	7,713	8,760	88%
2014^(g)	7,690,471	14.6	46.8	2,740	8,760	31%
2015^(h)	18,019,312	34.3	47.9	6,275	8,760	72%
2016⁽ⁱ⁾	21,977,404	41.8	44.2	8,284	8,736	95%
2017^(j)	18,364,603	34.6	39.8	7,684	8,835	87%
2018^(k)	18,144,835	34.5	38.3	7,889	8,760	90%
Dec-18	1,691,132	39.1	40.5	696	721	97%
Jan-19	1,071,270	21.2	40.7	439	840	52%
Feb-19	1,139,085	30.6	41.8	454	621	73%
1Q2019	3,901,487	29.8	40.9	1,589	2,183	73%
Mar-19	1,433,449	33.1	42.2	567	721	79%
Apr-19	1,677,379	41.8	41.9	668	669	100%
May-19	2,045,093	40.5	41.5	822	841	98%
2Q2019	5,155,921	38.5	41.8	2,057	2,232	92%
June 2019	1,497,093	38.5	39.3	635	649	98%
July 2019	1,675,835	40.0	40.1	696	698	100%
August 2019	2,004,100	39.9	39.9	836	837	100%
3Q 2019	5,177,028	39.5	39.8	2,167	2,183	99%
September 2019	1,607,887	38.5	39.9	672	695	97%
October 2019	1,568,699	33.0	38.7	676	792	85%
November 2019	1,314,376	35.0	38.1	575	625	92%
4Q 2019	4,490,962	35.4	38.9	1,924	2,113	91%
SINCE INCEPTION	187,647,744	31.3	40.9	76,422	100,057	76%

Notes:

- (a) Based on Effluent totalizer readings from CEFF, which also includes relatively small amounts of monitor well purge water from quarterly sampling events, well installations, and aquifer testing.
- (b) Total volume of water treated during the operational period divided by the total number of minutes in that operational period.
- (c) Total volume of water treated during the operational period divided by the minutes of operation in that operational period.
- (d) Operational period beginning 7/1/2008 (first month of system operation).
- (e) 2012 Calendar year is from 1/1/2012 through 11/30/2012.
- (f) 2013 Calendar year is from 12/1/2012 through 11/30/2013.
- (g) 2014 Calendar year is from 12/1/2013 through 11/30/2014.
- (h) 2015 Calendar year is from 12/1/2014 through 11/30/2015
- (i) 2016 Calendar year is from 12/1/2014 through 11/30/2015
- (j) 2017 Calendar year is from 12/1/2014 through 11/30/2015
- (k) 2018 Calendar year is from 12/1/2017 through 11/30/2018

gpm = gallons per minute

Refer to previous quarterly reports for detail of 2008 thru 2014 operational summary

Treatment of groundwater from EW-02 initiated in 2010

Treatment of groundwater from MW-29 initiated in 2014

CEFF = Carbon effluent

TABLE 5

PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM SAMPLING SCHEDULE

				SAMPLE FREQUENCY AND LOCATION																		
				Daily Samples ¹ : Days 1-5					Weekly Samples ¹ : Weeks 1-4					Monthly Samples: Week 5+					Quarterly Samples: Week 1+			
				System Influent (INF)	Post-Filter (PF)	Post-Oxidation (POX)	Carbon Breakthrough (CBT) ³	Post-Carbon (CEFF)	System Influent (INF)	Post-Filter (PF)	Post-Oxidation (POX)	Carbon Breakthrough (CBT) ³	Post-Carbon (CEFF)	Extraction Wells (Well ID) ²	System Influent (INF)	Post-Filter (PF)	Post-Oxidation (POX)	Carbon Breakthrough (CBT) ³	Post-Carbon (CEFF)	Extraction Wells (Well ID) ²	System Influent (INF)	Post-Oxidation (POX)
COMPOUND(S) / CONSITITUENT	ANALYTICAL METHOD	SAMPLE CONTAINER	REPORTING DETECTION LIMITS (milligrams per liter)																			
COMPOUNDS/CONSTITUENTS NORMALLY REQUIRED AS PART OF NPDES OR WDR PERMITS, PURSUANT TO CRWQCB REGION 8 ORDER NO. R8-2003-0085																						
Volatile Organic Compounds	EPA 8260B	3 - 40 mL VOA, HCl	QAPP ⁴	X		X	X	X		X		X	X	X		X	X		X	X	X	
1,4-Dioxane	EPA 8270 Modified	1 L Amber	0.002	X						X						X	X					
1,4-Dioxane	EPA 8270 SIM	1 L Amber	0.0002			X						X						X	X	X		
Total Suspended Solids	SM2540D	250 mL poly	10														X					
Total Dissolved Solids	SM2540C	250 mL poly	10																			
SELECTED METALS																						
Dissolved Metals (Iron, Manganese, Calcium, Sodium, Magnesium)	EPA 6010B	500 mL poly	QAPP ⁴	(a)																X	X	
Selenium	EPA 6010B	500 mL poly, HNO ₃	QAPP ⁴																	X	X	
SELECTED INORGANIC CONSTITUENTS																						
Hydroxide Alkalinity	SM2320B	250 mL poly	2.0	(a)													X	X			X	X
Bicarbonate Alkalinity	SM2320B	250 mL poly	2.0	(a)														X	X			X
Carbonate Alkalinity	SM2320B	250 mL poly	2.0	(a)														X	X			X
Total Alkalinity	SM2320B	250 mL poly	2.0	(a)														X	X			X
BROMATE EVALUATION																						
Bromate	EPA 317.0	125 mL poly	0.0005			X						X					X		X			
Bromide	EPA 300.0	125 mL poly	0.05	(a)						(a)							X	X				
OTHER CONSTITUENTS/COMPOUNDS																						
Total Organic Carbon	SM5310B	3 - 40 mL VOA, HCl	3.0	(a)													X	X			X	X
Anions (Chloride, Sulfate, Nitrate, Nitrite, and Phosphate)	EPA 300.0	500 mL poly	Varies	(a)																X	X	X
Chemical Oxygen Demand	EPA 410.4	125 mL poly, H ₂ SO ₄	5.0	(a)																X	X	X
UV Absorption (UVA) @254nm	EPA 415.3	250 mL Amber	N/A		(a)												X				X	X
Field Parameters																						
Dissolve Oxygen (DO)	N/A	N/A	N/A	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	
Electrical Conductance (EC)	N/A	N/A	N/A	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	
Redox Potential	N/A	N/A	N/A	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	
Temperature	N/A	N/A	N/A	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	
pH	N/A	N/A	N/A	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	
Turbidity	N/A	N/A	N/A	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	
Flow-Meter	N/A	N/A	N/A	X						X						X	X				X	
Residual Hydrogen Peroxide	N/A	N/A	N/A			(a)	(a)	(a)				X	X	X				X	X	X	X	

TABLE 5

PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM SAMPLING SCHEDULE

FOOTNOTES

(a) Only one sample to be collected during sampling period.

1 Daily and weekly samples collected during the first month of operation will be repeated after major modifications to system equipment or operating parameters, as detailed in the Workplan.

2 If more than one extraction well is in operation, combined influent samples will be collected in addition to extraction wellhead samples, with the same sampling schedule as the extraction wellheads.

3 Carbon breakthrough will be collected from the effluent of the first carbon unit in series; when breakthrough of the first unit is detected, the breakthrough sample will be collected from the effluent of the second carbon unit in series.

4 QAPP, Quality Assurance Project Plan, Appendix B of Additional Groundwater Assessment Workplan, Hargis + Associates, Inc., April 25, 2003.

CRWQCB = California Regional Water Quality Control Board, Santa Ana Region 8

NPDES = National Pollutant Discharge Elimination System

WDR = Waste Discharge Requirement

N/A = Not applicable

mL = Milliliter

VOA = Volatile organic analysis

HCl = Hydrochloric acid

HNO₃ = Nitric acid

H₂SO₄ = Sulfuric acid

nm = Nanometers

EPA = U.S. Environmental Protection Agency

SIM = Selected ion monitoring

SM = Standard Method

L = Liter

poly = High density polyethylene bottle

Amber = Amber glass bottle

TABLE 6
SELECT COMPOUNDS MONITORED IN
PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM SAMPLES
FOURTH QUARTER 2019

Compound	Date	Units	MW-21 ^(a)	MW-29	EW-01 ^(a)	EW-02	INF*	PF	POX	CBT	CEFF
Extraction Rate	09/01/19-11/30/19	GPM	--	10	--	33	--	--	--	--	--
1,1,2-Trichloroethane (5 ug/L MCL)	09/05/19	ug/L	--	< 0.50	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	09/19/19	ug/L	--	< 0.50	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	10/04/19	ug/L	--	< 0.50	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	10/21/19	ug/L	--	0.56	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	11/06/19	ug/L	--	< 5.0	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	11/21/19	ug/L	--	< 0.50	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
1,1-Dichloroethane (5 ug/L MCL)	09/05/19	ug/L	--	3.9	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	09/19/19	ug/L	--	1.9	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	10/04/19	ug/L	--	2.2	--	< 0.50	0.59	--	< 0.50	< 0.50	< 0.50
	10/21/19	ug/L	--	1.3	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	11/06/19	ug/L	--	< 0.50	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	11/21/19	ug/L	--	2	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
1,1-Dichloroethene (6 ug/L MCL)	09/05/19	ug/L	--	220	--	20	58	--	< 0.50	< 0.50	< 0.50
	09/19/19	ug/L	--	150	--	19	65	--	< 0.50	< 0.50	< 0.50
	10/04/19	ug/L	--	140	--	14	42	--	< 0.50	< 0.50	< 0.50
	10/21/19	ug/L	--	150	--	9.2	36	--	< 0.50	< 0.50	< 0.50
	11/06/19	ug/L	--	140	--	3.3	4.5	--	< 0.50	< 0.50	< 0.50
	11/21/19	ug/L	--	180	--	18	59	--	< 0.50	< 0.50	< 0.50
1,2-Dichloroethane (0.5 ug/L MCL)	09/05/19	ug/L	--	< 0.50	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	09/19/19	ug/L	--	< 0.50	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	10/04/19	ug/L	--	< 0.50	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	10/21/19	ug/L	--	< 0.50	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	11/06/19	ug/L	--	< 5.0	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	11/21/19	ug/L	--	< 0.50	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
cis-1,2-Dichloroethene (6 ug/L MCL)	09/05/19	ug/L	--	< 0.50	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	09/19/19	ug/L	--	< 0.50	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	10/04/19	ug/L	--	< 0.50	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	10/21/19	ug/L	--	< 0.50	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	11/06/19	ug/L	--	< 5.0	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	11/21/19	ug/L	--	< 0.50	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50

TABLE 6
SELECT COMPOUNDS MONITORED IN
PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM SAMPLES
FOURTH QUARTER 2019

Compound	Date	Units	MW-21 ^(a)	MW-29	EW-01 ^(a)	EW-02	INF*	PF	POX	CBT	CEFF
Tetrachloroethene (5 ug/L MCL)	09/05/19	ug/L	--	< 0.50	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	09/19/19	ug/L	--	< 0.50	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	10/04/19	ug/L	--	< 0.50	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	10/21/19	ug/L	--	0.55	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	11/06/19	ug/L	--	< 5.0	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	11/21/19	ug/L	--	0.57	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
Trichloroethene (5 ug/L MCL)	09/05/19	ug/L	--	4.2	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	09/19/19	ug/L	--	1.7	--	< 0.50	0.67	--	< 0.50	< 0.50	< 0.50
	10/04/19	ug/L	--	1.9	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	10/21/19	ug/L	--	1.8	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	11/06/19	ug/L	--	< 5.0	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
	11/21/19	ug/L	--	< 0.50	--	< 0.50	< 0.50	--	< 0.50	< 0.50	< 0.50
1,4-Dioxane (1 ug/L California Notification Level)	09/05/19	ug/L	--	130	--	10	37	--	< 0.20	< 0.20	< 0.20
	09/19/19	ug/L	--	120	--	10	34	--	< 0.20	< 0.20	< 0.20
	10/04/19	ug/L	--	110	--	8.8	29	--	< 0.20	0.41	0.42
	10/21/19	ug/L	--	86	--	5.6	22	--	< 0.20	0.54	1.1
	11/06/19	ug/L	--	100	--	9.4	28	--	< 0.20	< 0.20	< 0.20
	11/21/19	ug/L	--	130	--	11	36	--	< 0.20	< 0.20	< 0.20
Bromide	09/05/19	mg/L	--	0.45	--	0.26	0.31	--	--	--	--
	10/04/19	mg/L	--	0.45	--	0.25	0.29	--	--	--	--
	11/06/19	mg/L	--	0.64	--	0.34	0.39	--	--	--	--
Bromate	09/05/19	ug/L	--	--	--	--	< 0.5	--	< 0.5	--	--
	10/04/19	ug/L	--	--	--	--	< 0.5	--	< 0.5	--	--
	11/06/19	ug/L	--	--	--	--	< 0.5	--	< 0.5	--	--
Total Non-Filterable-Residue (10 ug/L MCL)	09/05/19	mg/L	--	--	--	--	--	< 1.0	--	--	--
	10/04/19	mg/L	--	--	--	--	--	< 5.0	--	--	--
	11/06/19	mg/L	--	--	--	--	--	< 1.0	--	--	--
Total Filterable Residue (500 mg/L MCL)	09/05/19	mg/L	--	830	--	660	690	--	700	--	700

NOTE: Detections are shown in **BOLD** type.

TABLE 6

**SELECT COMPOUNDS MONITORED IN
PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM SAMPLES
FOURTH QUARTER 2019**

Compound	Date	Units	MW-21 ^(a)	MW-29	EW-01 ^(a)	EW-02	INF*	PF	POX	CBT	CEFF
----------	------	-------	----------------------	-------	----------------------	-------	------	----	-----	-----	------

FOOTNOTES:

^(a) = inactive extraction wells; extraction wells MW-21 and EW-01 operated from July 2008 to November 2009
MCL = Maximum Contaminant Level or Drinking Water Action Level, if applicable
ug/L = micrograms per liter
mg/L = milligrams per liter
gpm = gallon per minute
(--)= Not scheduled for performance monitoring
(<) = Less than; the numerical value is the Limit of Detection for that compound
INF* = Influent (extraction wells EW-02 and MW-29)
PF = Post Particulate Filter
POX = Post UV/Chem-Ox
CBT = Carbon Breakthrough
CEFF = Carbon Effluent

Dec 23, 2019 - 2:58pm ESS - T: \\2019\\500-599\\532 Raytheon\\Hydrogeology\\H+A Basemaps\\410-10166.dwg

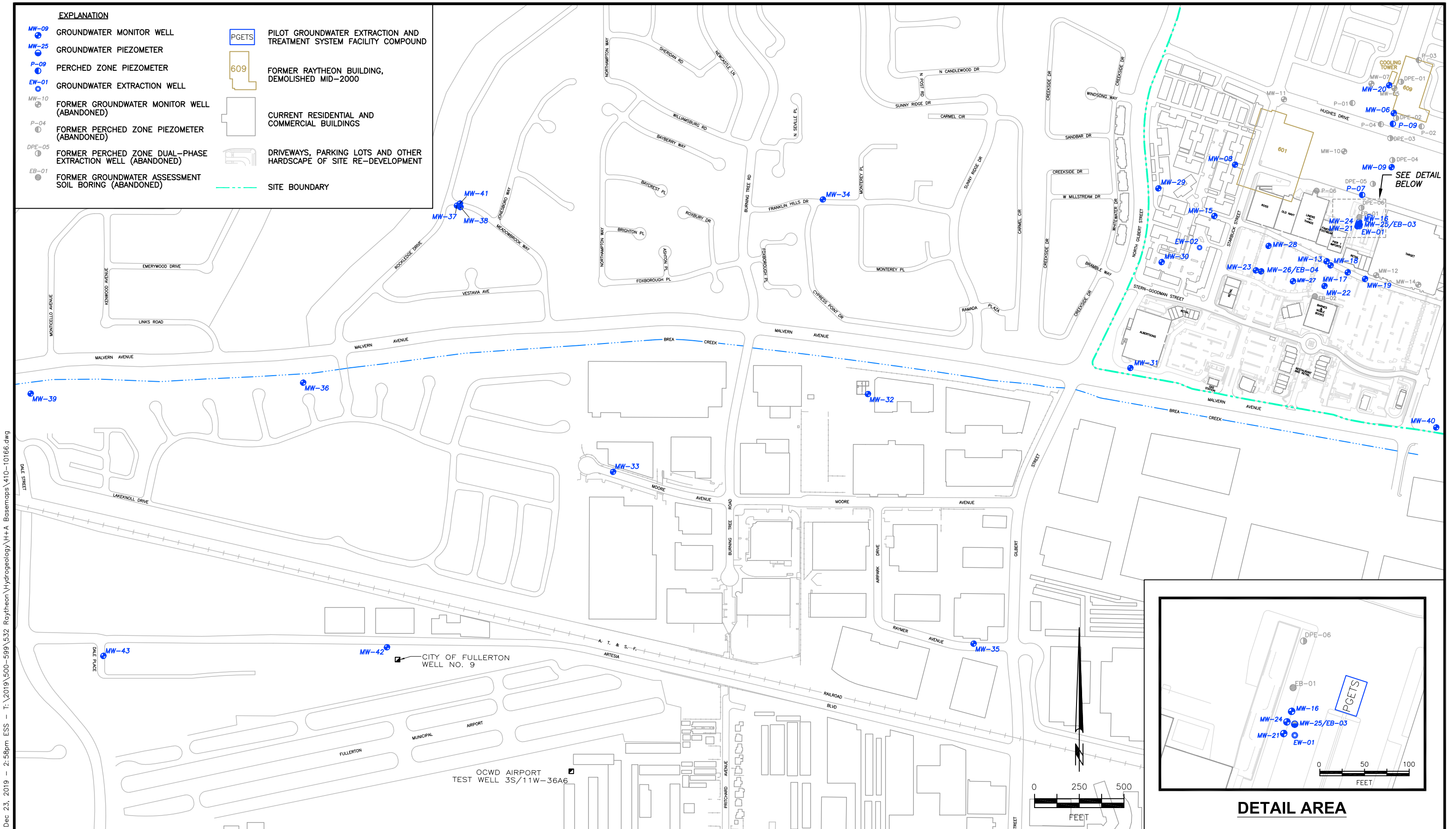
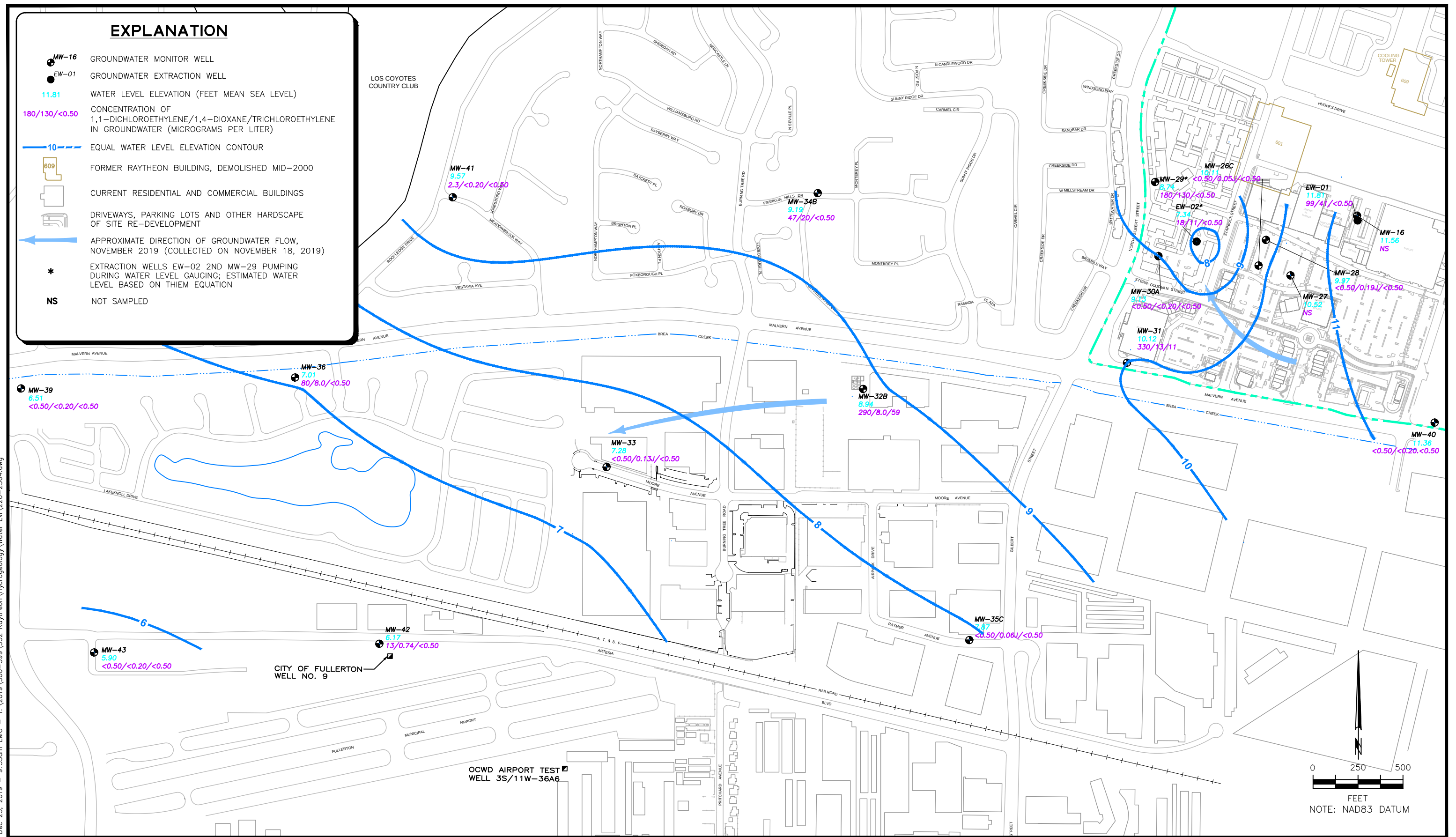


FIGURE 2.
WELL AND PIEZOMETER LOCATIONS



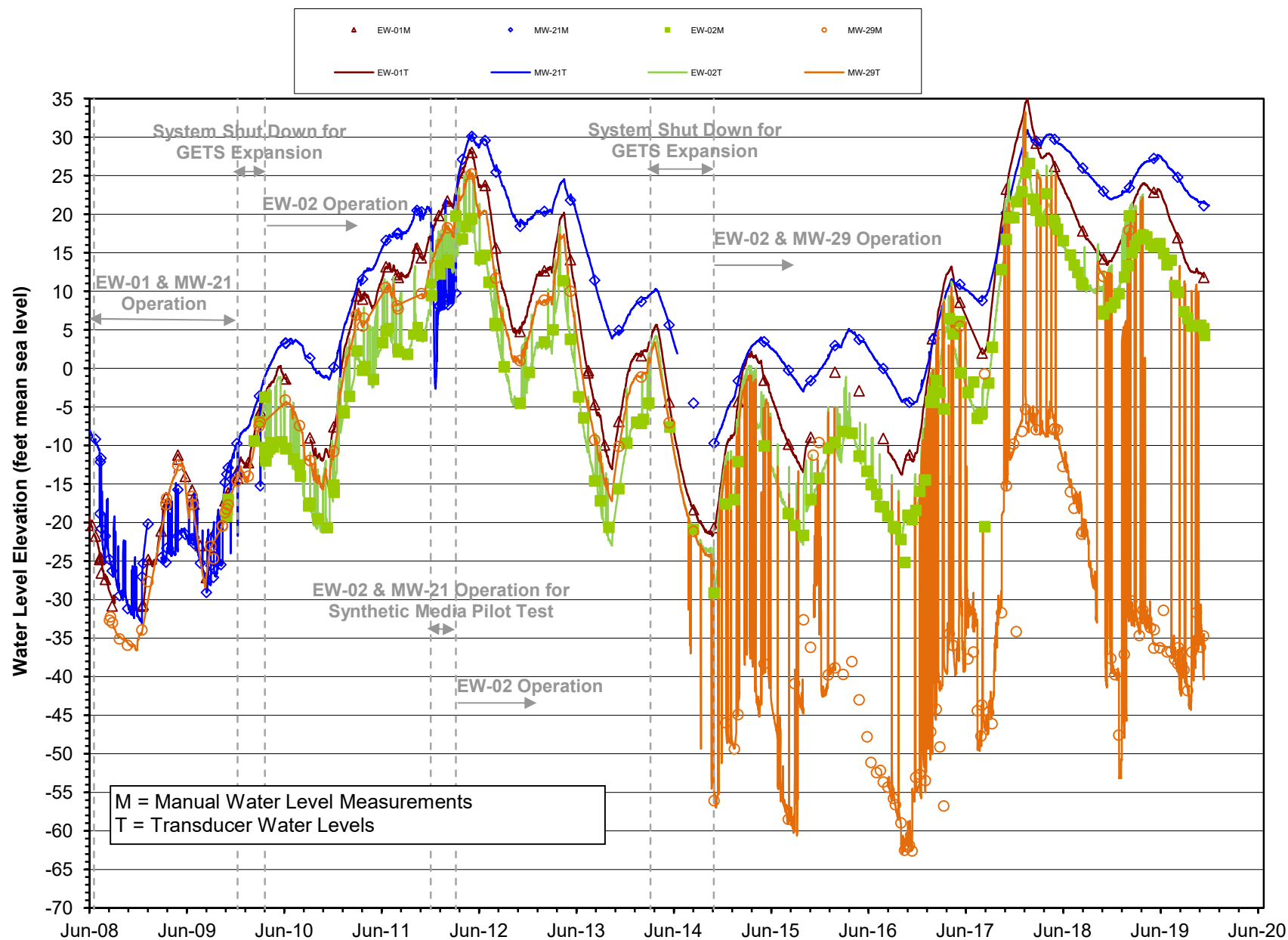


FIGURE 4.
PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM OPERATION
AND EXTRACTION WELL WATER LEVELS

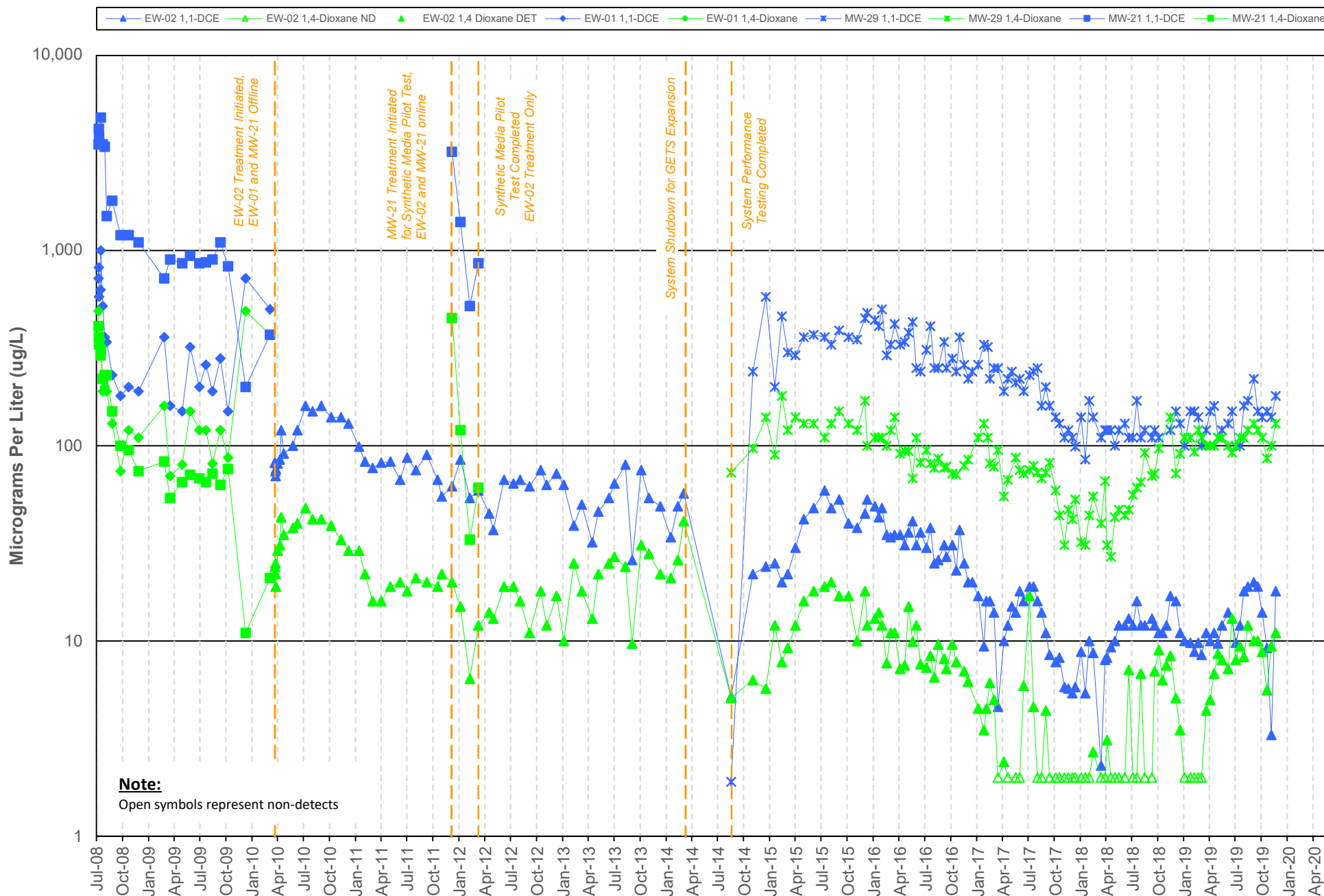


FIGURE 5.
1,1-DICHLOROETHYLENE AND 1,4-DIOXANE CONCENTRATIONS IN EXTRACTION WELLS

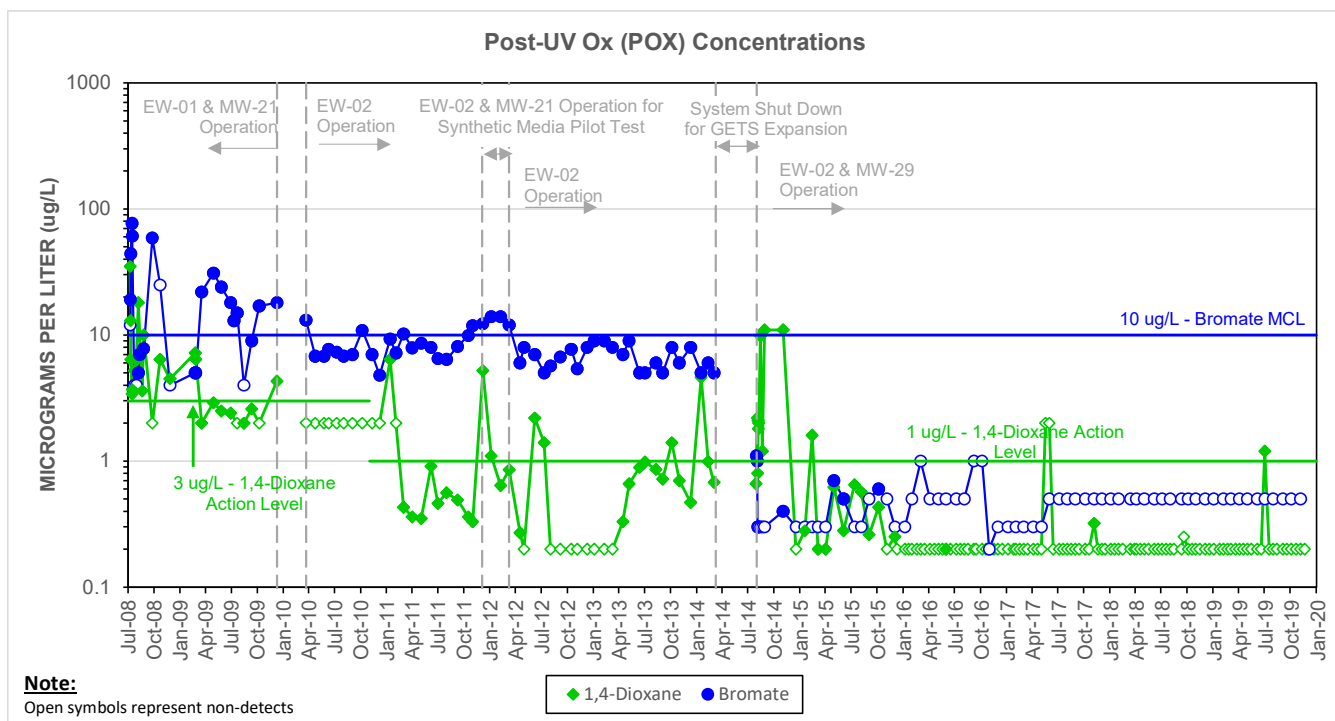
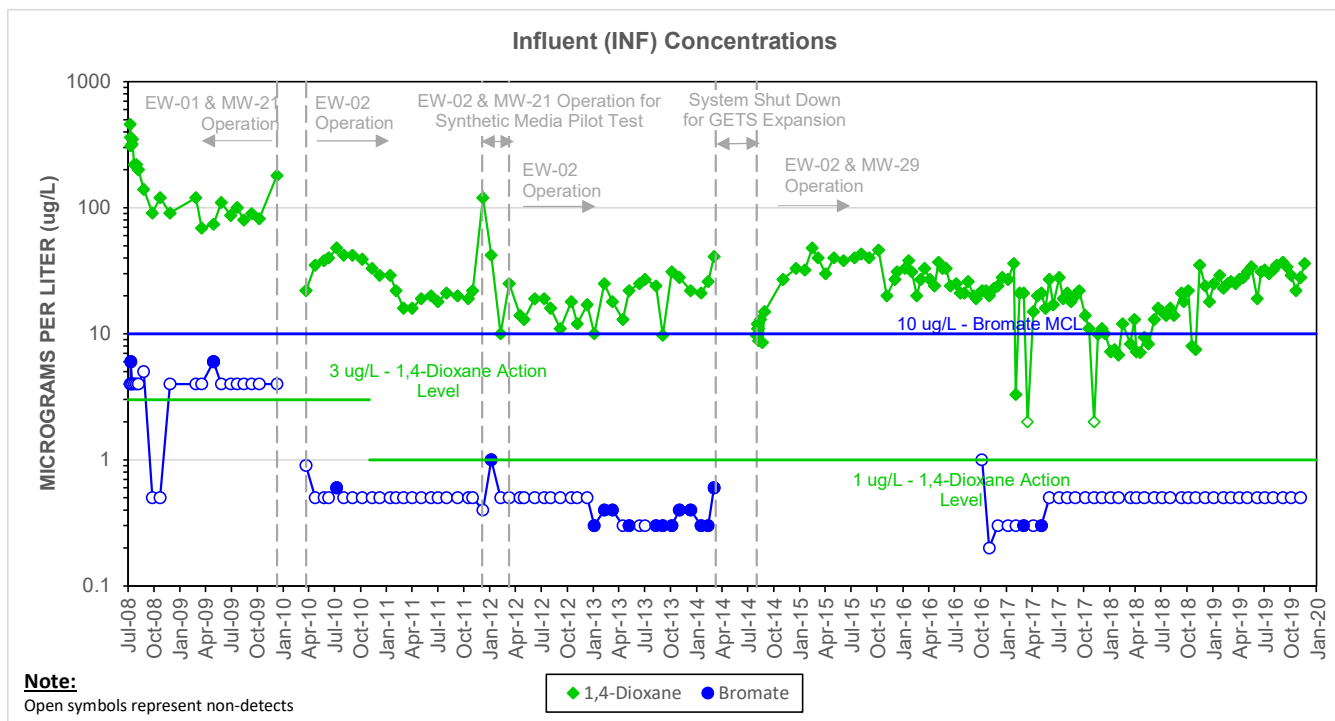


FIGURE 6.
1,4-DIOXANE AND BROMATE IN INFLUENT AND POST-OXIDATION SAMPLES

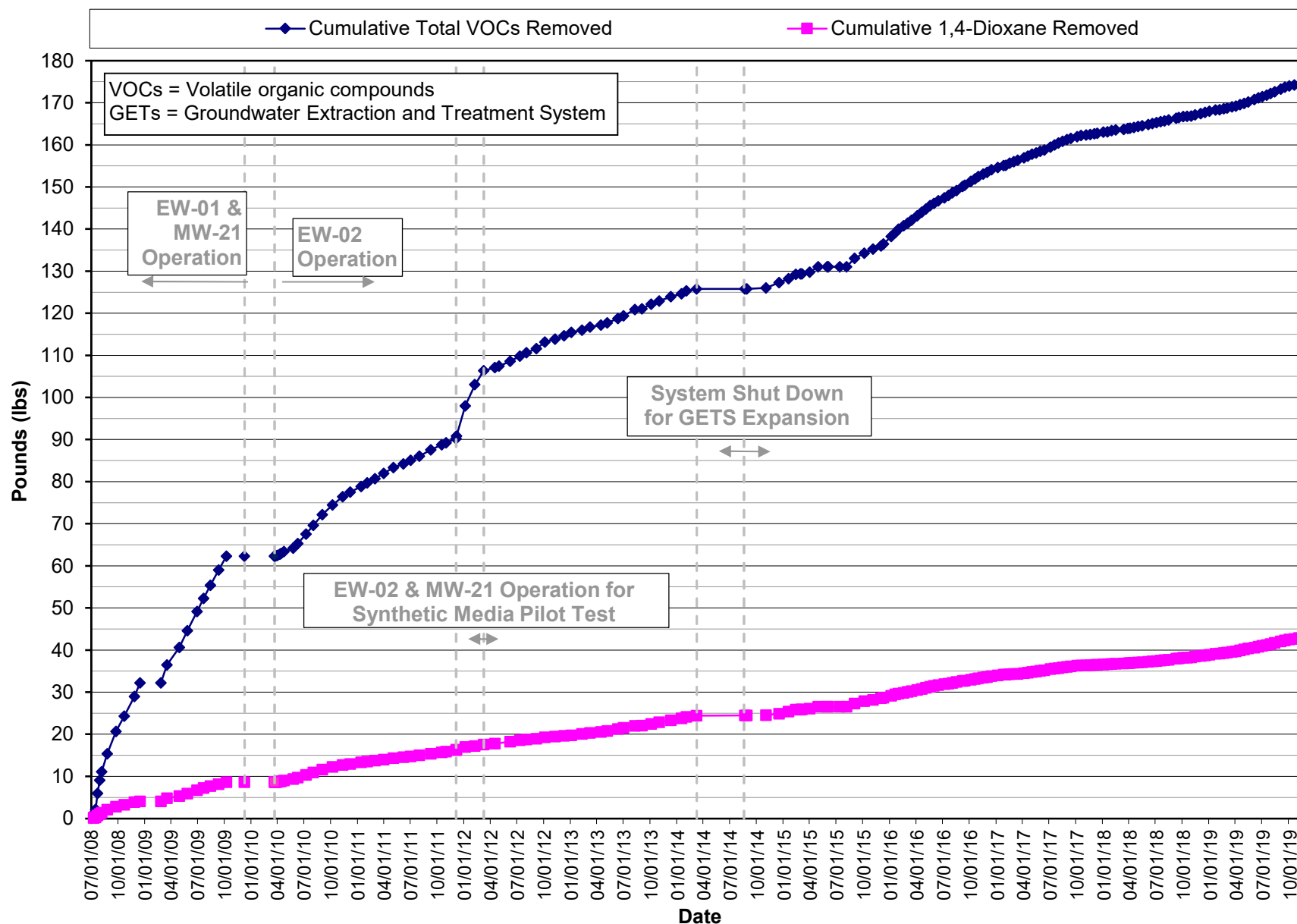


FIGURE 7.
PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM MASS REMOVAL

APPENDIX A
GROUNDWATER SAMPLING FIELD FORMS

NOVEMBER 2019

QUARTERLY GROUNDWATER MONITORING
FIELD NOTEBOOK

~~LARGE~~ VOLUME MONITOR WELLS
LOW

RAYTHEON COMPANY

532.30

1901 MALVERN AVE.
FULLERTON, CALIFORNIA



HARGIS + ASSOCIATES, INC.
HYDROGEOLOGY • ENGINEERING



DAILY FIELD SAFETY BRIEFING ATTENDANCE SHEET

Date:

Location: FULLERTON, CA

Presented by:

A. GENERAL INTRODUCTION

1. Location of site Health and Safety Plan (HSP) and ensure everyone has read the site HSP.
2. Primary hazards and controls (chemical, physical, and biological).
3. Sanitation and decontamination (potable water, nonpotable water, toilet, sink, shower).
4. General Site Rules.
5. Emergency Response Plan (location where emergency telephone numbers and hospital route posted, shower, first aid kit, fire extinguisher, alarm system, evacuation, meeting place, contingencies, upwind).
6. Establish buddy system.

B. SPECIFIC PRECAUTIONS FOR DAY'S ACTIVITIES Go over the hospital route daily; wear traffic vests, use safety cones, and be aware of traffic whenever in or near the roadways; wear sunscreen and hydrate well; wear gloves and take appropriate precautions when handling contaminated groundwater; watch for black widow spiders in vaults. Notify your supervisor and field partner of any issues.

C. ON-SITE ORGANIZATION AND COORDINATION

D. OTHER TOPICS:

ATTENDEE LIST

PRINT NAME	SIGNATURE	COMPANY	DATE
Nadja Scholl		HARGIS + ASSOC., INC	11/20/19
Amanda Sanzon		HARGIS + ASSOC., INC	11/20/19
DT Seavee		HARGIS + ASSOC., INC	11/20/19
SOFIA ROCHA		H + A	11/20/19

DAILY FIELD SAFETY BRIEFING ATTENDANCE SHEET

Date:

Location: FULLERTON, CA

Presented by:

A. GENERAL INTRODUCTION

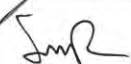
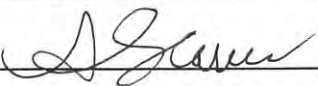
1. Location of site Health and Safety Plan (HSP) and ensure everyone has read the site HSP.
2. Primary hazards and controls (chemical, physical, and biological).
3. Sanitation and decontamination (potable water, nonpotable water, toilet, sink, shower).
4. General Site Rules.
5. Emergency Response Plan (location where emergency telephone numbers and hospital route posted, shower, first aid kit, fire extinguisher, alarm system, evacuation, meeting place, contingencies, upwind).
6. Establish buddy system.

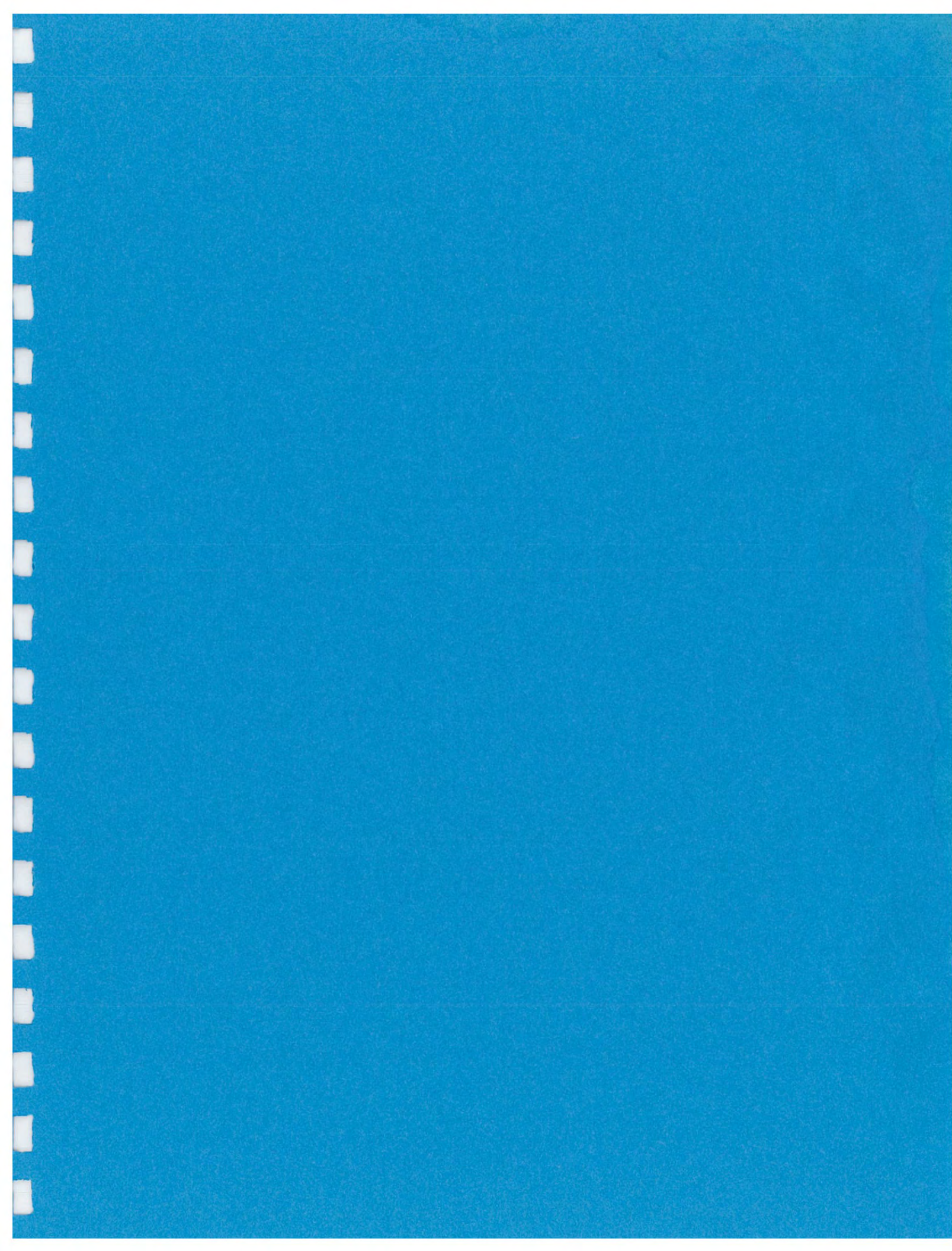
B. SPECIFIC PRECAUTIONS FOR DAY'S ACTIVITIES Go over the hospital route daily; wear traffic vests, use safety cones, and be aware of traffic whenever in or near the roadways; wear sunscreen and hydrate well; wear gloves and take appropriate precautions when handling contaminated groundwater; watch for black widow spiders in vaults. Notify your supervisor and field partner of any issues.

C. ON-SITE ORGANIZATION AND COORDINATION

D. OTHER TOPICS:

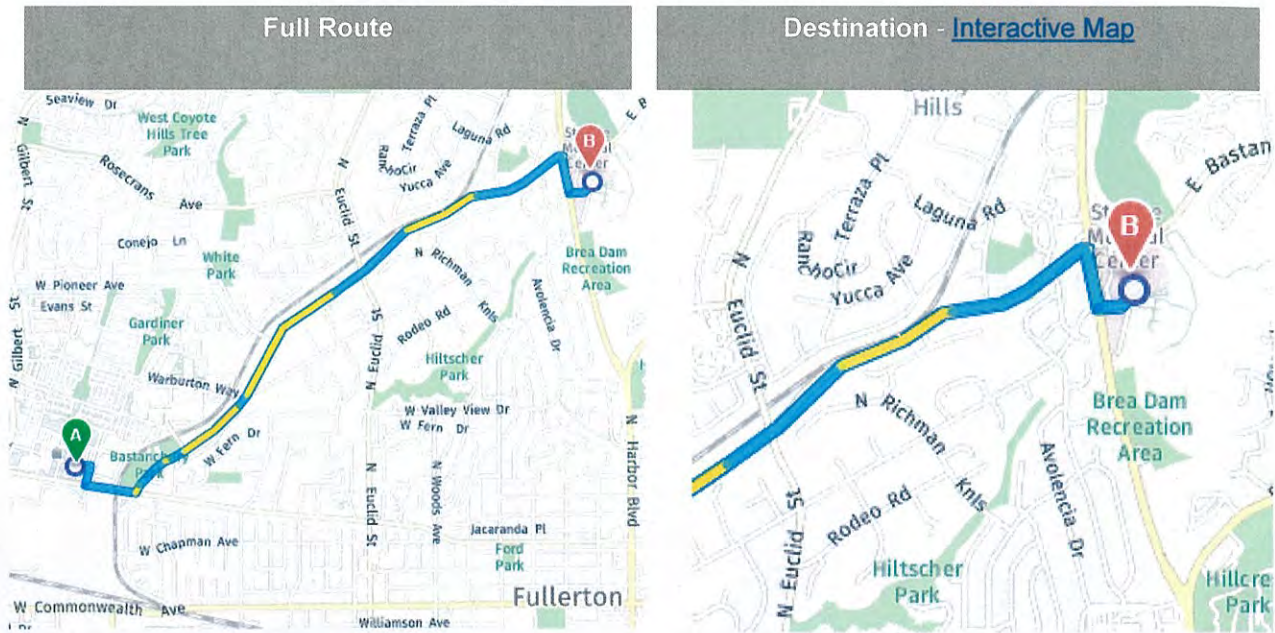
ATTENDEE LIST

PRINT NAME	SIGNATURE	COMPANY	DATE
Nadja Schell		HARGIS + ASSOC., INC	10/18/19
Amanda Janzon		HARGIS + ASSOC., INC	11/18/19
Sofia Rocha		HARGIS + ASSOC., INC	11/18/19
DJ Scalet		H + A	11/18/19



Driving Directions

Starting from:	1	Raytheon Site: 1901 W. Malvern Ave., Fullerton, California 92833-2177
Arriving at:	2	St. Jude Medical Center: 101 E. Valencia Mesa, Fullerton, California 92835-3809
Distance:	2.4 miles	Approximate Travel Time: 5 minutes



Directions		Miles	
1.	Start on MALVERN AVE	0.1	↑
2.	Turn Left on W BASTANCHURY RD	2.2	↶
3.	Turn Right on N HARBOR BLVD	0.2	↷
4.	Turn Left on E VALENCIA MESA DR	0.0	↶
Distance: 2.4 miles		Approximate Travel Time: 5 minutes	

FIGURE 7
ROUTE TO HOSPITAL

FIELD CONTACTS

RAYTHEON FORMER MAIN FACILITY, FULLERTON (# 532)

H+A Project Team Cell Numbers

CGAR: 619.994.9710
RAN: 619.871.9002
SPN: 619.249.3166
GTC: 619.823-8106
GLW: 619.820.0826
DM: 760.399.7881
EJH: 530.306.7049

Site Contacts:

Paul Brewer, Raytheon: (714) 446-3525
Alan Nakagawa, Raytheon El Segundo: (310) 647-8591
Bob Labanko, SunCal (Construction Superintendent, new Park area): (714) 609-3394
Eric Silvers, Regency Centers (Sr. Manager Environmental): (904) 598-7000
Denise Gerstenberg, Cushman & Wakefield (Property Manager): (213) 955-5137
Megan Smietana, Regency Centers (Property Manager): (213) 553-2229
Carol Owens, Amerige Point (Onsite manager): (714) 879-4500
Nira Yamachika OCWD (Director of WQ- contact for OCWD splits) (714) 378-3281
Gary, OCWD (County Inspector (MW-36 Access). office 714-955-0213
cell 714-448-0593
Doug Alvy, Clayton Environmental Services: (714) 431-4100
Gene Novella, MBK Homes; Radcliffe at Amerige Hts. (MW-9 area): (714) 350-3169
Wayne Perry, Inc. (714) 826-0352

BC2

Sam Walker (office) (714) 744-2990

Laboratories:

ATL (Rachelle Arada): (562) 989-4045
3275 Walnut Ave.
Signal Hill, CA 90755

Securitas USA (714) 935-5908
Joseph Keirouz

Rain for Rent (800) 742-7246
Long Beach (562) 595-7760

EMERGENCY CONTACTS

Local Police

Fullerton Police Department
237 West Commonwealth Avenue
Fullerton, CA

911 or for non-emergency (714) 738-6790

Local Fire Department

Fullerton Fire Department
312 East Commonwealth Avenue
Fullerton, CA

911 or for non-emergency (714) 738-6500

Local Ambulance Service

Care Ambulance Service
8932 Katella Avenue
Anaheim, CA

911 or for non-emergency (714) 828-7750

Local Hospital

St. Jude Medical Center
101 East Valencia Mesa
Fullerton, CA

(714) 992-3000

Client Contact

(714) 446-3525

Paul Brewer
Raytheon

Poison Control Center

University of California, Medical Center
200 West Arbor Drive
San Diego, CA 92103

(800) 222-1222 for emergency or
(858) 715-6300 for administration

H+A Offices

Project Manager, Chris Ross
Field Task Manager, _____
H&S Manager, Cindy Leo
H&S Administrator/Site Safety Officer,
Marcos Rodriquez

San Diego (858) 455-6500
San Diego (858) 455-6500
Tucson (858) 455-6500
San Diego (858) 455-6500

Occupational Medicine Consulting Firm

WorkCare, Inc.
300 South Harbor Blvd. Suite 600
Anaheim, CA 92805

Phone: (800)455-6155 ext 152
Fax: (714) 922-1023

CalScience (Virendra Patel)	
7440 Lincoln Way	
Garden Grove, CA 92841.	(714) 895-5494

Suppliers:

Diversified Well Products	(714) 256-1963
400 North Berry St.	
Brea 92821	

Sinclair Well Products.	(562) 403-3559
10637 Midway Ave.	
Cerritos 90703	

United Rentals	(714) 871-5712
1301 South State College Boulevard	
Fullerton Ca, 92831	

Apex Drum	(323) 721-8994
6226 Ferguson Drive	
Commerce, CA 90022	

GCL	(714) 869-3353
3726 E Miraloma Ave	
Anaheim CA 92806	
Bob Loll	(714) 331-6838

Aquarius Water Equipment Rentals	(800) 498-BAGS
12799 Magnolia Ave.	
Riverside CA 92503	

Bell Pipe and Supply	(714) 772-3200
215 East Bell Road	
Anaheim, CA	

Pine Environmental Services	(949) 263-1500
1350 Reynolds Ave # 117,	
Irvine, CA 92614-5534	
Angela Reiter (cell)	(949) 943.7302

Environmental Noise Control	(310) 663-4516
Jeff Obermeyer	

United Site Services	(800) 864-5387
----------------------	----------------

Pacific Surveys	(909) 625-6262
Michael Ridder	

American Intergrated Serices	(310) 522-1168
Melynda Borrego	(310) 864-2489
Dispatch	(310) 428-4402



FIELD OBSERVATIONS

PROJECT NAME / LOCATION: _____ RAYTHEON / FULLERTON, CA

PROJECT NO.: _____ 532.30 _____ DATE: _____ INITIALS: _____

0715 - NES on site

0730 - DJS, AMT, SR on site

0800 - Calibrate sanders

Steps

- 1: Upload data
- 2: Save as CSV
- 3: Save as Excel
- 4: Check Excel to make sure it's saved
- 5: Synchronize time
- 6: Set future start

INSTRUMENT CALIBRATION LOG FOR GROUNDWATER SAMPLING: Temp + pH + EC + DO + ORP

[illegible]



PROJECT NUMBER:532.30

[illegible]

STATIC WATER LEVEL DATA SHEET

MONTH/YEAR: NOV 2019

METHOD OF MEASUREMENT/SOUNDER IDENTIFIER: FLAT TAPE ELECTRIC SOUNDER # _____

PROJECT NUMBER: 532.30

WELL IDENTIFIER	DATE	TIME	MEASURING POINT	DEPTH TO WATER FROM REFERENCE POINT (+feet)	REFERENCE POINT ELEVATION (ft msl)	WATER LEVEL ELEVATION (ft msl)	AUG 2019 PREVIOUS DEPTH TO WATER (ft)	CHANGE IN WATER LEVEL (± ft)	COMMENTS	INITIALS
P-07	11/ /19				142.31		111.81			
P-09	11/ 18 /19	1245	TOC	120.65	183.86	63.21	120.73	+ .08		NES/SR
MW-06	11/ 18 /19	1250	TOC	162.42	184.70	22.28	158.29	-4.13		I
MW-08	11/ /19				155.91		131.47			
MW-09	11/ 21 /19	1240	TOC	160.68	180.10	19.42	156.39	-4.29		DJS
MW-13	11/ 18 /19	1023	TOC	128.66	141.84	13.18	125.94	-2.72		NES/SR
MW-15	11/ /19				144.95		127.92			
MW-16	11/ /19				142.40		125.70			
MW-17	11/ 18 /19	1310	TOST	131.40	142.70	10.58 11.32	127.29	-4.19 -4.01		NES/SR
MW-18	11/ 18 /19	1020	TOC	129.95	142.32	12.37	127.79	-2.25		I
MW-19	11/ 18 /19	1030	TOC	131.38	142.06	6.68 11.32	127.47	-3.91 -4.09		I
MW-20	11/ 18 /19	1255	TOC	157.35	184.19	26.84	153.42	-3.93		
MW-21	11/ /19				141.18		116.91		Totalizer: Pumping?	
MW-22	11/ 18 /19	1042	TOST	127.90	138.65	10.75	124.05	-3.85		NES/SR
MW-23	11/ 18 /19	0918	TOST	128.36	137.33	8.97	124.19	-4.17		I
MW-24	11/ /19				142.83		119.38			
MW-25	11/ /19				142.64		119.87			
MW-26A	11/ 18 /19	0921	TOC	123.52	137.04	13.52	119.47	-17.57		NES/SR
MW-26B	11/ 18 /19	0923	TOC	122.50	137.05	14.55	119.84	-2.61		I
MW-26C	11/ 18 /19	0927	TOC	127.11	137.22	10.11	122.34	-4.77		I

msl = Mean sea level

ft = feet

STATIC WATER LEVEL DATA SHEET

MONTH/YEAR: NOV 2019

METHOD OF MEASUREMENT/SOUNDER IDENTIFIER: FLAT TAPE ELECTRIC SOUNDER # _____

PROJECT NUMBER: 532.30

WELL IDENTIFIER	DATE	TIME	MEASURING POINT	DEPTH TO WATER FROM REFERENCE POINT (+feet)	REFERENCE POINT ELEVATION (ft msl)	WATER LEVEL ELEVATION (ft msl)	AUG 2019 PREVIOUS DEPTH TO WATER (ft)	CHANGE IN WATER LEVEL (± ft)	COMMENTS	INITIALS
MW-27	11/18/19	0953	TOST	126.64	137.16	11.52	121.91	-4.73		NE/SR
MW-28	11/18/19	0912	TOST	130.8	140.77	9.97	125.83	-4.97		I
MW-29	11/ /19				139.81		176.04P		Totalizer: Pumping?	
MW-30A	11/ /19				129.44		115.56			
MW-30B	11/ /19				129.39		112.75			
MW-31	11/ /19				119.60		105.28			
MW-32A	11/ /19				92.88		80.66			
MW-32B	11/ /19				92.89		79.84			
MW-32C	11/ /19				92.88		73.45			
MW-33	11/ /19				83.19		71.79			
MW-34A	11/18/19	1324	TOST	149.58	153.25	3.67	145.11	-4.47		NE/SR
MW-34B	11/18/19	1326	TOST	143.92	153.11	9.19	139.32	-4.6		I
MW-34C	11/18/19	1334	TOST	142.72	153.29	10.57	138.94	-3.78		
MW-35A	11/ /19				93.57		80.12			
MW-35B	11/ /19				93.56		84.54			
MW-35C	11/ /19				93.55		81.68			
MW-36	11/18/19	11:14	TOST	79.64	86.65	7.01	75.50	-4.14		NE/SR
MW-37	11/18/19	1410	TOST	143.20	155.60	12.4	139.05	-4.15		I
MW-38	11/18/19	1401	TOST	153.76	154.90	1.14	148.61	-5.15		I
MW-39	11/18/19	1058	TOST	77.74	84.25	6.51	73.78	-3.96		I

msl = Mean sea level

ft = feet

STATIC WATER LEVEL DATA SHEET

MONTH/YEAR: NOV 2019

METHOD OF MEASUREMENT/SOUNDER IDENTIFIER: FLAT TAPE ELECTRIC SOUNDER # _____

PROJECT NUMBER: 532.30

WELL IDENTIFIER	DATE	TIME	MEASURING POINT	DEPTH TO WATER FROM REFERENCE POINT (+feet)	REFERENCE POINT ELEVATION (ft msl)	WATER LEVEL ELEVATION (ft msl)	AUG 2019 PREVIOUS DEPTH TO WATER (ft)	CHANGE IN WATER LEVEL (± ft)	COMMENTS	INITIALS
MW-40	11/ /19				123.40		107.80			
MW-41	11/18 /19	TOST	1352	146.03	155.60	9.57	141.60	-4.43		NES/SR
MW-42	11/ /19				82.80		72.59			
MW-43	11/ /19				76.64		66.77			
EW-01	11/ /19				141.07		124.12		SOUNDING TUBE TO 172.65 Totalizer: Pumping?	
EW-02	11/ /19				132.97		123.12		Totalizer: Pumping?	

msl = Mean sea level
ft = feet

**NOVEMBER 2019 GROUNDWATER SAMPLE PLAN
TEAM 2**

QA/QC	Total VOC's µg/L	1,4-Dioxane µg/L	APROX. GALLONS	ESTIMATE D TIME (minutes)	WELL IDENTIFIER	HYDROGEOLOGIC ZONE	NOVEMBER 2019 SAMPLING SCHEDULE	SAMPLE METHOD
	87	42	150	15	✓ EW-01 ✓	Deep; B	VOCs; 1,4-Dioxane (8270 MOD)	Dedicated
MS/MSD	1028	510	300	15	✓ MW-21 ✓	Water Table; BC	VOCs; 1,4-Dioxane (8270 MOD)	Dedicated
	0	0	240	19	✓ MW-40 ✓	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	0	0.06	59	11	✓ MW-30A ✓	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	0.9	0.21	99	17	✓ MW-28 ✓	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	5	0.84	149	22	✓ MW-41 ✓	Deep; B	VOCs; 1,4-Dioxane (8270 MOD)	Ded.240V
	60	22	178	22	✓ MW-34B ✓	Deep; B	VOCs; 1,4-Dioxane (8270 MOD)	Ded 240V
	124	0.92	129	28	✓ MW-30B ✓	Deep; BC	VOCs; 1,4-Dioxane	Ded.240V
	¹ 0 RS	0	153	51	✓ MW-26C ✓	Deep; B	VOCs; 1,4-Dioxane	Redi-flo
SPT/DUP MS-MSD	² 151	3.6	19	25	✓ MW-08 ✓	Water Table; BC	VOCs; 1,4-Dioxane	Redi-flo

NOTE

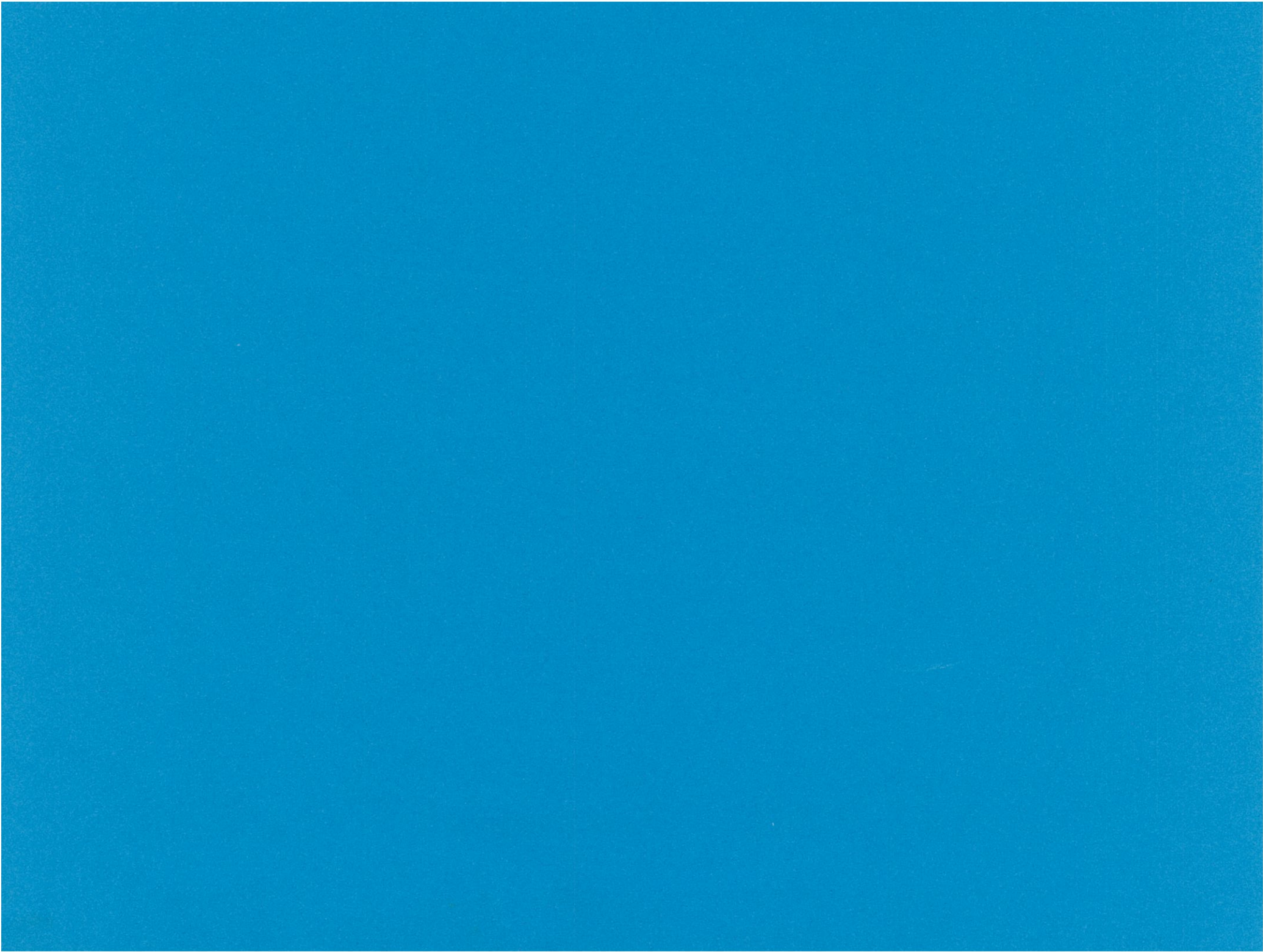
1 = Day - # refers to the day scheduled to sample and the corresponding dedicated pipestand to use: ND=1; 0-10=2; 10 - 100=3; >100=4

A **MS** and **MSD** (3x40ml VOA and 1L amber) should be collected every day/ alternating 1,4-Dioxane methods as indicated.

1,4-Dioxane analysis method is 8270 SIM unless specified otherwise (if historical detect is > 5.0 ug/l MOD is used).

Wells with dedicated pumps should follow concentration order when possible.

MW-36 and MW-39 Gate Access Code: 3252



NOVEMBER 2019 GROUNDWATER SAMPLE PLAN
TEAM 1

QA/QC	Total VOC's µg/L	1,4-Dioxane µg/L	APROX. GALLONS	ESTIMATE D TIME (minutes)	WELL IDENTIFIER	HYDROGEOLOGIC ZONE	NOVEMBER 2019 SAMPLING SCHEDULE	SAMPLE METHOD
	0	0	957	46	✓ MW-43	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	0	0	835	38	✓ MW-39	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
2/3SV	0	0	892	46	✓ MW-33	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
MS/MSD	1.8	0	1048 864	44	✓ MW-35C	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	5	0.25	925	43	✓ MW-42	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
2/3SV	74	6.7	973	73	✓ MW-36	Deep; D	VOCs; 1,4-Dioxane	Ded.240V
2/3SV	294	7.6	803	63	✓ MW-32B	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
SPT/DUP MS/MSD	355	11	264	29	✓ MW-31	Deep; B	VOCs; 1,4-Dioxane	Ded.240V

NOTES

A **MS** and **MSD** (3x40ml VOA and 1L amber) should be collected every day/ alternating 1,4-Dioxane methods as indicated.

1,4-Dioxane analysis method is 8270 SIM unless specified otherwise (if historical detect is > 5.0 ug/l MOD is used).

1 = Day - # refers to the day scheduled to sample and the corresponding dedicated pipestand to use: ND=1; 0-10=2; 10 - 100=3; >100=4

Wells with dedicated pumps should follow concentration order when possible.

MW-36 and MW-39 Gate Access Code: 3252

RB = Rinsate blank taken on non-dedicated equipment each day- will vary with schedule and should be confirmed with both teams each morning.

GROUNDWATER SAMPLING INFORMATION

DATE: 11/19/2019

TASK: 532.30

WELL ID: MW-26C

Time <u>0927</u> Static DTW (ft below reference point)	<u>127.11</u>	Screen <u>SV</u> Casing Volume (CV) (gallons) <u>49</u>	3 CV (gallons) <u>147</u>	Weather Conditions	Initials: <u>NES / SR</u>
Casing Total Depth (ft below reference point)	<u>499</u>	Purging Device <u>Grandfos</u>	Sampling Device <u>Ded. tubing</u>	Time <u>0930</u> Temp. <u>66°</u>	Begin Purge <u>0933</u> End Purge <u>1026</u>
Pump to screen Water Column (feet)	<u>376.6</u>	Pump: Depth (ft brp) <u>~200</u> Type <u>MPI</u> Voltage <u>115</u> HP <u>0.5</u>		Skies <u>Clear</u>	Gallons Purged <u>159</u> CVs Purged <u>3.24</u>
Casing Capacity (Diameter <u>2"</u>) (gallons per foot)	<u>0.163</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>		Wind (mph) <u>3</u> From <u>-</u>	DTW (ft brp) <u>127.11</u> Time <u>0927</u>

Time	Depth to Water	Volume Purged (Gallons)	S Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
<u>0933</u>							<u>Pump On</u>			<u>317</u>	<u>Q ≈ 3gpm</u>
<u>0940</u>	<u>128.25</u>	<u>21</u>	<u>0.43</u>	<u>22.1</u>	<u>9.18</u>	<u>0.394</u>	<u>-131.7</u>	<u>0.23</u>	<u>NM</u>	<u>317</u>	
<u>0947</u>	<u>128.30</u>	<u>42</u>	<u>0.86</u>	<u>22.0</u>	<u>9.17</u>	<u>0.393</u>	<u>-189.7</u>	<u>0.19</u>	<u>NM</u>	<u>317</u>	
<u>0954</u>	<u>128.40</u>	<u>63</u>	<u>1.29</u>	<u>22.0</u>	<u>8.58</u>	<u>0.66</u>	<u>-197.0</u>	<u>0.21</u>	<u>NM</u>	<u>317</u>	
1000 <u>1001</u>	<u>128.46</u>	<u>84</u>	<u>1.71</u>	<u>22.1</u>	<u>8.01</u>	<u>0.76</u>	<u>-155.4</u>	<u>0.33</u>	<u>NM</u>	<u>317</u>	
<u>1008</u>	<u>128.50</u>	<u>105</u>	<u>2.14</u>	<u>22.1</u>	<u>7.89</u>	<u>0.76</u>	<u>-144.3</u>	<u>0.34</u>	<u>NM</u>	<u>317</u>	
<u>1015</u>	<u>128.52</u>	<u>126</u>	<u>2.57</u>	<u>22.1</u>	<u>7.84</u>	<u>0.75</u>	<u>-140.1</u>	<u>0.34</u>	<u>NM</u>	<u>317</u>	
<u>1022</u>	<u>128.55</u>	<u>147</u>	<u>3</u>	<u>22.1</u>	<u>7.84</u>	<u>0.75</u>	<u>-137.0</u>	<u>0.35</u>	<u>NM</u>	<u>317</u>	
<u>1026</u>	<u>NM</u>	<u>159</u>	<u>3.24</u>				<u>Pump Off</u>			<u>-</u>	

SAMPLE COLLECTION SAMPLE TIME 1024
ANALYSIS _____ QUANTITY _____ TYPE _____

8260B VOCs 8 40 ml VOA
8270 SIM 1,4 dioxane 2 1 L Amber
8270 MOD 1,4 dioxane _____ 1 L Amber

DUPLICATES / SPLITS / BLANKS? (Y) N
If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA _____ BKGD NA _____ BREATHING ZONE NA _____ DISCHARGE WATER NA _____
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

RB-111919 @ 1045

GROUNDWATER SAMPLING INFORMATION

DATE: 11/19/2019TASK: 532.30WELL ID: MW-08

Time <u>1118</u> Static DTW (ft below reference point) <u>135.11</u>	Casing Volume (CV) (gallons) <u>5.05</u> 3 CV (gallons) <u>15.15</u>	Weather Conditions	Initials: <u>NES /SR</u>
Casing Total Depth (ft below reference point) <u>166.10</u>	Purging Device <u>Groundfos</u> Sampling Device <u>ded tubing</u>	Time _____ Temp. _____	Begin Purge <u>1120</u> End Purge <u>1148</u>
Water Column (feet) <u>30.99</u>	Pump: Depth (ft brp) <u>-164</u> Type <u>MP1</u> Voltage <u>115</u> HP <u>0.5</u>	Skies <u>Clear</u>	Gallons Purged <u>18.8</u> CVs Purged <u>3.72</u>
Casing Capacity (Diameter <u>2</u> ") (gallons per foot) <u>0.163</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) _____ From _____	DTW (ft brp) <u>135.11</u> Time <u>1118</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1120						Pump	On			275	
1123	137.52	2.8	0.55	22.1	7.91	1.53	17.3	0.82	4.61	275	Q = 0.85
1127	137.80	5.6	1.11	23.1	7.60	1.69	19.6	1.91	2.50	275	
1130	138.95	8.4	1.66	23.3	7.50	1.72	19.0	1.92	1.75	275	
1134	138.10	11.2	2.22	23.4	7.45	1.73	18.5	1.90	0.98	275	
1138	138.15	14.0	2.77	23.4	7.43	1.73	17.4	1.42	1.64	275	
1142	138.30	15.8	3.13	23.4	7.46	1.70	18.9	2.30	1.05	275	
1148	NM	18.8	3.72			Pump	Off			-	

SAMPLE COLLECTION SAMPLE TIME 1145
 ANALYSIS QUANTITY TYPE

8260B VOCs 9 40 ml VOA
 8270 SIM 1,4 dioxane 3 1 L Amber
 8270 MOD 1,4 dioxane _____ 1 L Amber

DUPLICATES / SPLITS / BLANKS? (Y) N
 If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
 NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

MW-0800 @ 1155

GROUNDWATER SAMPLING INFORMATION

DATE: 11/19/19

TASK: S32.30

WELL ID: MW-34B

Time <u>1025</u> Static DTW (ft below reference point)	<u>144.20</u> Screen <u>SV</u>	Casing Volume (CV) (gallons) <u>50</u>	3 CV (gallons) <u>150</u>	Weather Conditions	Initials: <u>NES/SL</u>
Casing Total Depth (ft below reference point)	<u>536</u>	Purging Device <u>ded. pump</u>	Sampling Device <u>10-100 psi steel</u>	Time <u>1042</u> Temp. <u>64</u>	Begin Purge <u>1027</u> End Purge <u>1044</u>
Pump to screen Water Column (feet)	<u>76</u>	Pump: Depth (ft brp) <u>460</u> Type <u>groundhog</u>	Voltage <u>40</u> HP <u>-</u>	Skies <u>cloudy</u>	Gallons Purged <u>182.8</u> CVs Purged <u>3.7</u>
Casing Capacity (Diameter <u>4</u> ") (gallons per foot)	<u>0.66</u>	Monitor Well Recharge Rate: Slow	Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>144.2</u> Time <u>1025</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1027	144.2	0	0							-	Q = 10 GPM
1029	146.35	20 25	0.5	21.4	7.71	0.82	-76.8	2.70	76.8	-	
1031	NM	50	1	21.6	7.61	0.84	-80.7	2.81	28.6	-	
1032	145.08	75	1.5	21.6	7.60	0.84	-45.6	2.71	11.3	-	
1035	145.41	100	2	21.6	7.53	0.85	-31.5	2.79	5.01	-	
1038	145.48	125	2.5	21.9	7.51	0.85	-24.7	2.84	9.73	-	
1041	145.63	150 182.8	3	21.9	7.49	0.85	-18.7	2.81	2.92	-	- Sample
		182.8									
1044	NM	182.8	3.7							-	
			Pump off								

SAMPLE COLLECTION SAMPLE TIME <u>1042</u>		
ANALYSIS	QUANTITY	TYPE
8260B VOCs	<u>3</u>	40 ml VOA <u>X</u>
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber
8270 MOD 1,4 dioxane	<u>1</u>	1 L Amber <u>X</u>
DUPLICATES / SPLITS / BLANKS? Y <u>(N)</u>		
If yes, complete appropriate forms.		

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

@1042

GROUNDWATER SAMPLING INFORMATION

DATE: 11/19/19

TASK: 532.30

WELL ID: MW-28

Time 1535 Static DTW (ft below reference point) 130.8	Casing Volume (CV) (gallons) 29.7 3 CV (gallons) 89.1	Weather Conditions	Initials: NES/SR
Casing Total Depth (ft below reference point) 375	Purging Device Ded. Pump Sampling Device 0-10 no piston	Time 1530 Temp. 62	Begin Purge 1540 End Purge 1555
Water Column (feet) 45	Pump: Depth (ft brp) 330 Type (ground) Voltage 240 HP 0.5	Skies Cloudy	Gallons Purged 103 CVs Purged 147
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow Fast X	Wind (mph) From	DTW (ft brp) 130.8 Time 1535

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1540						Pump Start				-	
1543	139.9	15	0.51	21.6	7.88	0.96	73.6	4.09	3.82	-	Q ≈ 6.5 gpm
1545	140.19	30	1.01	21.5	7.75	0.96	-21.4	3.89	3.98	-	
1547	140.20	45	1.52	21.5	7.68	0.95	-20.4	3.38	3.08	-	
1549	140.40	60	2.02	21.5	7.63	0.95	-18.7	3.27	3.28	-	
1551	140.43	75	2.53	21.5	7.61	0.95	-11.4	3.20	2.74	-	
1553	140.50	90	3.03	21.5	7.59	0.95	-8.4	3.20	1.31	-	
1555	NM	103	3.47			Pump Stop				-	

SAMPLE COLLECTION SAMPLE TIME 1554

ANALYSIS	QUANTITY	TYPE
8260B VOCs	3	40 ml VOA
8270 SIM 1,4 dioxane	1	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber

DUPLICATES / SPLITS / BLANKS? Y ☒ N

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 11/20/19

TASK: 532.30

WELL ID: MW-21

Time <u>0807</u> Static DTW (ft below reference point) <u>120.15</u>	Casing Volume (CV) (gallons) <u>74</u> 3 CV (gallons) <u>222</u>	Weather Conditions	Initials: <u>NES/SR</u>
Casing Total Depth (ft below reference point) <u>232</u>	Purging Device <u>ded pump</u> Sampling Device <u>ded sample port</u>	Time <u>0805</u> Temp. <u>59</u>	Begin Purge <u>0812</u> End Purge <u>0830</u>
Water Column (feet) <u>111.95</u>	Pump: Depth (ft brp) <u>-</u> Type <u>-</u> Voltage <u>-</u> HP <u>-</u>	Skies <u>Cloudy</u>	Gallons Purged <u>360</u> CVs Purged <u>4.8</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>120.15</u> Time <u>0807</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0812				Pump On						-	
0814	135.8	40	0.54	21.3°	6.58	1.66	47.4	1.19	7.08	-	Q ≈ 20 gpm
0816	136.38	80	0.93	21.2	6.82	1.70	-30	1.48	3.83	-	
0818	136.46	120	1.62	20.7	6.92	1.48	-33.9	2.20	3.42	-	
0820	136.92	160	2.16	20.7	6.99	1.02	-27.9	2.12	7.86	-	
0822	137.11	200	2.70	21.1	6.97	1.72	-23.3	2.65	2.20	-	
0824	137.28	240	3.24	21.1	7.06	1.74	-20.4	2.68	3.67	-	
0830	-	360	4.8	Pump OFF						-	

SAMPLE COLLECTION SAMPLE TIME 0828
ANALYSIS QUANTITY TYPE

8260B VOCs 9 40 ml VOA
8270 SIM 1,4 dioxane 3 1 L Amber
8270 MOD 1,4 dioxane 3 1 L Amber

DUPLICATES / SPLITS / BLANKS? (Y) N
If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

MS/MSP collected

GROUNDWATER SAMPLING INFORMATION

DATE: 11/20/19TASK: 532.30WELL ID: EW-01

Time <u>0840</u> Static DTW (ft below reference point) <u>129.54</u>	Casing Volume (CV) (gallons) <u>38.6</u> 3 CV (gallons) <u>116</u>	Weather Conditions	Initials: <u>NES/BR</u>
Casing Total Depth (ft below reference point) <u>198</u>	Purging Device <u>ded pump</u> Sampling Device <u>ded sample port</u>	Time <u>0838</u> Temp. <u>59</u>	Begin Purge <u>0846</u> End Purge <u>0857</u>
Water Column (feet) <u>58.46</u>	Pump: Depth (ft brp) <u>-</u> Type <u>-</u> Voltage <u>-</u> HP <u>-</u>	Skies <u>Cloudy</u>	Gallons Purged <u>154</u> CVs Purged <u>3.99</u>
Casing Capacity (Diameter <u>4</u> ") (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>129.54</u> Time <u>0840</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0846	130.00	0	Pump on	29.0	7.30	1.14	-1.1	5.71	3.67	-	Q = 11 GPM
0848	130.00	22	0.57	29.0	7.30	1.14	-1.1	5.71	3.67	-	
0850	130.00	44	1.14	20.4	7.25	1.09	8.5	1.89	5.97	-	
0852	130.01	66	1.71	20.1	7.26	1.08	14.2	6.69	1.98	-	
0854	130.03	88	2.28	19.9	7.02	1.07	22.2	6.64	1.25	-	
0856	130.03	110	2.85	20.1	7.35	1.08	28.8	7.87	1.57	-	
0857	130.04	121	3.13	20.5	7.28	1.11	30.0	6.94	2.67	-	
0900	NM	154	3.99				Pump Off			-	

SAMPLE COLLECTION SAMPLE TIME <u>0859</u>		
ANALYSIS	QUANTITY	TYPE
8260B VOCs	<u>3</u>	40 ml VOA <u>X</u>
8270 SIM 1,4 dioxane	<u>-</u>	1 L Amber <u>-</u>
8270 MOD 1,4 dioxane	<u>/</u>	1 L Amber <u>X</u>
DUPLICATES / SPLITS / BLANKS? Y <u>(N)</u>		

AIR MONITORING PID/FID ppm: VAULT NA - BKGD NA - BREATHING ZONE NA - DISCHARGE WATER NA -

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 11/20/19

TASK: S3230

WELL ID: MW-41

Time <u>0947</u> Static DTW (ft below reference point) <u>146.32</u>	Casing Volume (CV) (gallons) <u>39</u> ^{SV} <u>SV</u> <u>117</u>	Weather Conditions	Initials: <u>NES/ER</u>
Casing Total Depth (ft below reference point) <u>425</u>	Purging Device <u>del. pump</u> Sampling Device <u>8-10</u>	Time <u>0940</u> Temp. <u>62</u>	Begin Purge <u>0943</u> End Purge <u>1003</u>
<u>Pump to Screen</u> Water Column (feet) <u>103.82</u>	Pump: Depth (ft brp) <u>360</u> Type <u>Grundfos</u> Voltage <u>240</u> HP <u>-</u>	Skies <u>Rainy</u>	Gallons Purged <u>178.5</u> CVs Purged <u>4.6</u>
Casing Capacity (Diameter <u>4</u> ") (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>146.32</u> Time <u>0944</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
<u>0943</u>		<u>0</u>	<u>0</u>	<u>Pump on →</u>						<u>-</u>	<u>Q=6 GPM</u>
<u>0944</u>	<u>152.10</u>	<u>19.5</u>	<u>0.5</u>	<u>21.4°</u>	<u>7.11</u>	<u>1.78</u>	<u>-55</u>	<u>1.61</u>	<u>45.6</u>	<u>-</u>	
<u>0945</u>	<u>152.2</u>	<u>39</u>	<u>1</u>	<u>21.4°</u>	<u>7.05</u>	<u>1.80</u>	<u>23.9</u>	<u>3.11</u>	<u>9.69</u>	<u>-</u>	
<u>0948</u>	<u>152.21</u>	<u>58.5</u>	<u>1.5</u>	<u>21.8°</u>	<u>7.02</u>	<u>1.80</u>	<u>30.2</u>	<u>3.54</u>	<u>30.0</u>	<u>-</u>	
<u>0951</u>	<u>152.28</u>	<u>78</u>	<u>2</u>	<u>21.8°</u>	<u>6.98</u>	<u>1.80</u>	<u>34.7</u>	<u>3.66</u>	<u>35.2</u>	<u>-</u>	
<u>0953</u>	<u>152.34</u>	<u>97.5</u>	<u>2.5</u>	<u>21.9°</u>	<u>6.96</u>	<u>1.81</u>	<u>38.4</u>	<u>3.71</u>	<u>18.3</u>	<u>-</u>	
<u>0956</u>	<u>152.32</u>	<u>117</u>	<u>3</u>	<u>21.9</u>	<u>6.95</u>	<u>1.81</u>	<u>40.6</u>	<u>3.92</u>	<u>5.99</u>	<u>-</u>	
<u>1002</u>	<u>152.38</u>	<u>149</u>	<u>3.8</u>	<u>21.9</u>	<u>6.94</u>	<u>1.81</u>	<u>44.9</u>	<u>3.89</u>	<u>8.35</u>	<u>-</u>	<u>* Collect Sample</u>
<u>1003</u>	<u>NM</u>	<u>178.5</u>	<u>4.6</u>	<u>Pump off</u>							

SAMPLE COLLECTION SAMPLE TIME <u>1002</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane		1 L Amber				
8270 MOD 1,4 dioxane	<u>1</u>	1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y <u>(N)</u>						

GROUNDWATER SAMPLING INFORMATION

DATE: 11/20/19TASK: 532.30WELL ID: MLW-30A

Time <u>1355</u> Static DTW (ft below reference point) <u>120.26</u>	Casing Volume <u>SV</u> (gallons) <u>17.6</u> 3 CV (gallons) <u>528</u>	Weather Conditions	Initials: <u>NES/SR</u>
Casing Total Depth (ft below reference point) <u>564</u>	Purging Device <u>ded. pump</u> Sampling Device <u>0-10 ND</u>	Time <u>1355</u> Temp. <u>64</u>	Begin Purge <u>1359</u> End Purge <u>1411</u>
<u>pump to screen</u> Water Column (feet) <u>443.74</u>	Pump: Depth (ft brp) <u>520</u> Type <u>grundfar</u> Voltage <u>240</u> HP <u>0.5</u>	Skies <u>Raining</u>	Gallons Purged <u>74</u> CVs Purged <u>4.2</u>
Casing Capacity (Diameter <u>3"</u>) (gallons per foot) <u>0.39</u>	Monitor Well Recharge Rate: Slow Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>120.26</u> Time <u>1355</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1359	120.29	0	0	Pump on							Q ≈ 6 gpm
1400	122.32	9	0.51	19.9	8.10	0.66	20.8	1.41	2.33	-	
1402	122.34	18	1.02	20.2	7.82	0.65	25.0	1.59	2.48	-	
1403	122.34	27	1.53	20.7	7.88	0.66	19.5	2.30	2.47	-	
1405	122.35	36	2.05	20.9	7.76	0.66	25.0	1.65	1.72	-	
1406	122.36	45	2.56	20.8	7.69	0.66	26.2	1.39	1.61	-	
1408	122.36	54	3.07	20.9	7.68	0.66	26.6	1.35	1.77	-	
1411	Nm	Pump off	4.20							-	
		74									

SAMPLE COLLECTION SAMPLE TIME <u>1410</u>	
ANALYSIS	QUANTITY TYPE
8260B VOCs	3 40 ml VOA X
8270 SIM 1,4 dioxane	1 1 L Amber X
8270 MOD 1,4 dioxane	1 1 L Amber
DUPLICATES / SPLITS / BLANKS? Y <u>N</u>	
If yes, complete appropriate forms.	

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 11/20/19TASK: 532.30WELL ID: MW-30B

Time <u>1416</u> Static DTW (ft below reference point)	<u>116.96</u>	Casing Volume (CV) (gallons) <u>40</u> 3 CV (gallons) <u>120</u>	Weather Conditions	Initials: <u>NES/SL</u>
Casing Total Depth (ft below reference point)	<u>619</u>	Purging Device <u>ded. pump</u> Sampling Device <u>10AOC-10</u>	Time <u>1618</u> Temp. <u>64</u>	Begin Purge <u>1418</u> End Purge <u>1445</u>
<u>pump to screen</u> Water Column (feet)	<u>55.06</u>	Pump: Depth (ft brp) <u>520</u> Type <u>groutless</u> Voltage <u>240</u> HP <u>405</u>	Skies <u>Raining</u>	Gallons Purged <u>137</u> CVs Purged <u>3.4</u>
Casing Capacity (Diameter <u>3</u> ") (gallons per foot)	<u>0.39</u>	Monitor Well Recharge Rate: Slow Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>116.96</u> Time <u>1416</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
<u>1418</u>	<u>NM</u>	<u>0</u>	<u>0</u>	<u>Pump</u>	<u>on</u>	<u>~</u>				<u>-</u>	<u>Q ≈ 5 gpm</u>
<u>1422</u>	<u>138.05</u>	<u>20</u>	<u>0.5</u>	<u>7.28</u>	<u>20.4</u>	<u>1.36</u>	<u>-3.1</u>	<u>3.48</u>	<u>2.16</u>	<u>-</u>	
<u>1426</u>	<u>139.05</u>	<u>40</u>	<u>1</u>	<u>20.6</u>	<u>7.29</u>	<u>1.50</u>	<u>-17.3</u>	<u>4.31</u>	<u>5.36</u>	<u>-</u>	
<u>1430</u>	<u>140.46</u>	<u>60</u>	<u>1.5</u>	<u>20.6</u>	<u>7.41</u>	<u>1.25</u>	<u>-20.2</u>	<u>3.70</u>	<u>6.97</u>	<u>-</u>	
<u>1434</u>	<u>141.18</u>	<u>80</u>	<u>2</u>	<u>20.7</u>	<u>7.41</u>	<u>1.15</u>	<u>-27.7</u>	<u>3.36</u>	<u>4.21</u>	<u>-</u>	
<u>1438</u>	<u>141.79</u>	<u>100</u>	<u>2.5</u>	<u>20.8</u>	<u>7.41</u>	<u>1.15</u>	<u>-33.7</u>	<u>3.45</u>	<u>2.84</u>	<u>-</u>	
<u>1442</u>	<u>142.32</u>	<u>120</u>	<u>3</u>	<u>20.7</u>	<u>7.37</u>	<u>1.15</u>	<u>-37.1</u>	<u>3.32</u>	<u>2.83</u>	<u>-</u>	
<u>1445</u>	<u>NM</u>	<u>137</u>	<u>3.4</u>	<u>Pump</u>	<u>off</u>	<u>~</u>				<u>-</u>	

SAMPLE COLLECTION SAMPLE TIME 1444

ANALYSIS	QUANTITY	TYPE
8260B VOCs	<u>3</u>	40 ml VOA <u>X</u>
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber <u>X</u>
8270 MOD 1,4 dioxane		1 L Amber

DUPLICATES / SPLITS / BLANKS? Y (N)

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 11/20/19TASK: 532.30WELL ID: MW-40

Time <u>1540</u> Static DTW (ft below reference point)	<u>112.22</u>	Screen <u>SV</u> Casing Volume (CV) (gallons) <u>75</u> 3 CV (gallons) <u>225</u>	Weather Conditions Time <u>1545</u> Temp. <u>66</u>	Initials: <u>NBS / SR</u>
Casing Total Depth (ft below reference point)	<u>970</u>	Purging Device <u>ded pump</u> Sampling Device <u>MD Pipe</u>	Skies <u>cloudy</u>	Begin Purge <u>1550</u> End Purge <u>1618</u>
Water Column (feet)	<u>857.78</u>	Pump: Depth (ft brp) <u>550</u> Type <u>ganter</u> Voltage <u>240</u> HP	Wind (mph) <u>-</u> From <u>-</u>	Gallons Purged <u>280</u> CVs Purged <u>3.7</u>
Casing Capacity (Diameter <u>6</u> ") (gallons per foot)	<u>1.5</u>	Monitor Well Recharge Rate: Slow Fast <u>X</u>	DTW (ft brp) <u>112.22</u> Time <u>1546</u>	

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
<u>1550</u>	<u>ndm</u>	<u>0</u>	<u>pump on</u>	<u>20.0</u>	<u>7.92</u>	<u>0.68</u>	<u>-87.8</u>	<u>2.92</u>	<u>5.43</u>		<u>Q ≈ 9</u>
<u>1554</u>	<u>113.0</u>	<u>36</u>	<u>0.48</u>	<u>20.0</u>	<u>7.92</u>	<u>0.68</u>	<u>-87.8</u>	<u>2.92</u>	<u>5.43</u>	-	
<u>1557</u>	<u>113.1</u>	<u>72</u>	<u>0.96</u>	<u>20.7</u>	<u>7.81</u>	<u>0.67</u>	<u>-92.1</u>	<u>2.43</u>	<u>4.91</u>	-	
<u>1601</u>	<u>113.15</u>	<u>108</u>	<u>1.44</u>	<u>20.4</u>	<u>7.77</u>	<u>0.67</u>	<u>-67.9</u>	<u>1.97</u>	<u>2.59</u>	-	
<u>1605</u>	<u>113.15</u>	<u>144</u>	<u>1.92</u>	<u>20.6</u>	<u>7.76</u>	<u>0.67</u>	<u>-43.2</u>	<u>1.22</u>	<u>1.70</u>	-	
<u>1609</u>	<u>113.15</u>	<u>180</u>	<u>2.4</u>	<u>20.9</u>	<u>7.66</u>	<u>0.6</u>	<u>-42.6</u>	<u>1.08</u>	<u>8.68</u>	-	
<u>1614</u>	<u>113.2</u>	<u>228</u>	<u>3.04</u>	<u>20.8</u>	<u>7.63</u>	<u>0.67</u>	<u>-38.1</u>	<u>1.56</u>	<u>2.98</u>	-	
<u>1616</u>	<u>ndm</u>	<u>280</u>	<u>3.73</u>	<u>Pump off</u>	<u>→</u>					-	

SAMPLE COLLECTION SAMPLE TIME 1615
ANALYSIS QUANTITY TYPE

8260B VOCs 3 40 ml VOA X
8270 SIM 1,4 dioxane 1 1 L Amber X
8270 MOD 1,4 dioxane 1 L Amber

DUPLICATES / SPLITS / BLANKS? Y (N)
If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

 HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING INFORMATION

DATE: _____

TASK: _____

WELL ID: _____

Time_____Static DTW (ft below reference point)	Casing Volume (CV) (gallons) _____ 3 CV (gallons) _____	<u>Weather Conditions</u> Time _____Temp. _____ Skies _____ Wind (mph) _____From _____	Initials:
Casing Total Depth (ft below reference point)	Purging Device _____ Sampling Device _____		Begin Purge _____End Purge _____
Water Column (feet)	Pump: Depth (ft brp) _____ Type _____ Voltage _____ HP _____		Gallons Purged _____CVs Purged _____
Casing Capacity (Diameter ") (gallons per foot)	Monitor Well Recharge Rate: Slow _____ Fast _____		DTW (ft brp) _____Time _____

[illegible]

SAMPLE COLLECTION		SAMPLE TIME	AIR MONITORING PID/FID ppm:		VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA	
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)						
8260B VOCs		40 ml VOA							
8270 SIM 1,4 dioxane		1 L Amber							
8270 MOD 1,4 dioxane		1 L Amber							
DUPLICATES / SPLITS / BLANKS?		Y	N						



GROUNDWATER SAMPLING INFORMATION

DATE: _____

TASK: _____

WELL ID: _____

Time_____Static DTW (ft below reference point)	Casing Volume (CV) (gallons) _____ 3 CV (gallons) _____	<u>Weather Conditions</u>	<u>Initials:</u>
Casing Total Depth (ft below reference point)	Purging Device _____ Sampling Device _____	Time _____ Temp. _____	Begin Purge _____ End Purge _____
Water Column (feet)	Pump: Depth (ft brp) _____ Type _____ Voltage _____ HP _____	Skies _____	Gallons Purged _____ CVs Purged _____
Casing Capacity (Diameter ") (gallons per foot)	Monitor Well Recharge Rate: Slow _____ Fast _____	Wind (mph) _____ From _____	DTW (ft brp) _____ Time _____

[illegible]

SAMPLE COLLECTION		SAMPLE TIME	AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs		40 ml VOA				
8270 SIM 1,4 dioxane		1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS?		Y N				
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 08/15/19

TASK: 532.30

WELL ID: EW-01

Time 0938 Static DTW (ft below reference point) 124.49	Casing Volume (CV) (gallons) 46.9 3 CV (gallons) 125.7	Weather Conditions	Initials: AMS/AMO
Casing Total Depth (ft below reference point) 188	Purging Device ded. pump Sampling Device ded. sample port	Time 09.08 Temp. 65	Begin Purge 0941 End Purge 0956
Water Column (feet) 63.51	Pump: Depth (ft brp) - Type - Voltage - HP -	Skies cloudy	Gallons Purged 150 CVs Purged 3.6
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow Fast X	Wind (mph) - From -	DTW (ft brp) 125.06 Time 0951

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0941	124.49	0	0							-	Q ≈ 11 GPM
0943	124.96	22	0.5	24.0	7.55	1.51	166.0	5.13	0.82	-	
0945	125.01	44	1.1	23.8	7.42	1.42	170.2	6.31	1.06	-	
0947	125.04	66	1.6	23.8	7.41	1.42	172.4	6.61	1.34	-	
0949	125.06	88	2.1	24.5	7.35	1.42	172.8	5.67	0.65	-	
0951	125.06	110	2.6	24.3	7.35	1.42	173.2	6.02	0.67	-	
0953	NM	125.7	3.0	24.3	7.37	1.42	171.8	5.66	0.53	-	collect samples
0956	NM	150	3.6								

SAMPLE COLLECTION SAMPLE TIME 0953			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	3	40 ml VOA X				
8270 SIM 1,4 dioxane		1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber X				
DUPLICATES / SPLITS / BLANKS? Y N						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 8/15/19

TASK: 53230

WELL ID: MW-08

Time <u>1324</u> Static DTW (ft below reference point) <u>131.59</u>	Casing Volume (CV) (gallons) <u>5.6</u> 3 CV (gallons) <u>16.9</u>	Weather Conditions	Initials: <u>AMD/AMJ</u>
Casing Total Depth (ft below reference point) <u>166.10</u>	Purging Device <u>grundfos</u> Sampling Device <u>ded tubing</u>	Time <u>1324</u> Temp. <u>85</u>	Begin Purge <u>1328</u> End Purge <u>1353</u>
Water Column (feet) <u>34.51</u>	Pump: Depth (ft brp) <u>164</u> Type <u>MPI</u> Voltage <u>115</u> HP <u>0.5</u>	Skies <u>clear</u>	Gallons Purged <u>18.8</u> CVs Purged <u>3.3</u>
Casing Capacity (Diameter <u>2"</u>) (gallons per foot) <u>0.163</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>132.97</u> Time <u>1351</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
<u>1328</u>	<u>131.59</u>	<u>0</u>	<u>0</u>	<u>PUMP ON</u>							<u>Q ≈ 0.75 GPM</u>
<u>1332</u>	<u>132.76</u>	<u>2.8</u>	<u>0.9</u>	<u>25.2</u>	<u>7.31</u>	<u>1.90</u>	<u>180.2</u>	<u>4.04</u>	<u>2.90</u>	<u>275</u>	
<u>1336</u>	<u>132.79</u>	<u>6</u>	<u>1.1</u>	<u>24.2</u>	<u>7.19</u>	<u>1.99</u>	<u>181.3</u>	<u>2.81</u>	<u>2.16</u>	<u>275</u>	
<u>1340</u>	<u>132.82</u>	<u>9</u>	<u>1.6</u>	<u>24.0</u>	<u>7.16</u>	<u>2.03</u>	<u>182.3</u>	<u>2.60</u>	<u>1.27</u>	<u>275</u>	
<u>1343</u>	<u>132.84</u>	<u>11.25</u>	<u>2.0</u>	<u>24.0</u>	<u>7.16</u>	<u>2.04</u>	<u>182.8</u>	<u>2.48</u>	<u>0.90</u>	<u>275</u>	
<u>1347</u>	<u>132.91</u>	<u>14.25</u>	<u>2.5</u>	<u>24.0</u>	<u>7.15</u>	<u>2.04</u>	<u>183.4</u>	<u>2.57</u>	<u>0.78</u>	<u>275</u>	
<u>1350</u>	<u>132.97</u>	<u>16.25</u>	<u>3.0</u>	<u>23.8</u>	<u>7.15</u>	<u>2.04</u>	<u>184.1</u>	<u>2.53</u>	<u>0.49</u>	<u>275</u>	<u>collect samples</u>
<u>1353</u>	<u>NM</u>	<u>18.75</u>	<u>3.3</u>	<u>pump off</u>							

SAMPLE COLLECTION SAMPLE TIME <u>1351</u>		
ANALYSIS	QUANTITY	TYPE
8260B VOCs	<u>3</u>	40 ml VOA <u>X</u>
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber <u>X</u>
8270 MOD 1,4 dioxane		1 L Amber
DUPLICATES / SPLITS / BLANKS?		Y <u>(N)</u>

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 08/15/19

TASK: 532.30

WELL ID: MW-21

Time 0921 Static DTW (ft below reference point)	116.64	Casing Volume (CV) (gallons) 76	3 CV (gallons) 228	Weather Conditions	Initials: AMJ/AMD
Casing Total Depth (ft below reference point)	232	Purging Device ded. pump	Sampling Device ded. sample port	Time 0915 Temp. 65	Begin Purge 0916 End Purge 0931
Water Column (feet)	115.36	Pump: Depth (ft brp) -	Type -	Skies cloudy	Gallons Purged 300 CVs Purged 3.95
Casing Capacity (Diameter 4") (gallons per foot)	0.66	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) -	From -
					DTW (ft brp) 133.39 Time 0928

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (mS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0916	116.64	0	0	PUMP ON							
0918	131.94	40	0.53	23.6	7.56	2.08	213.3	2.13	NM	-	Q = 20 gpm
0920	132.39	80	1.05	22.2	7.46	2.19	189.3	1.58	1.21	-	
0921	132.68	100	1.32	22.0	7.38	2.22	182.0	2.30	1.75	-	
0923	132.89	146	1.84	22.0	7.35	2.23	180.2	3.06	2.63	-	
0925	133.12	180	2.36	22.0	7.32	2.23	178.8	2.81	2.09	-	
0928	133.39	240	3.15	22.2	7.30	2.24	177.2	3.12	1.12	-	
0931	NM	300	3.95	PUMP OFF							

SAMPLE COLLECTION SAMPLE TIME 0928		AIR MONITORING PID/FID ppm: VAULT NA		BKGD NA		BREATHING ZONE NA		DISCHARGE WATER NA	
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)						
8260B VOCs	69	40 ml VOA	MS/MSD collected						
8270 SIM 1,4 dioxane		1 L Amber							
8270 MOD 1,4 dioxane	3	1 L Amber							
DUPLICATES / SPLITS / BLANKS?		Y	(N)						
If yes, complete appropriate forms.									

GROUNDWATER SAMPLING INFORMATION

DATE: 8/14/19

TASK: 532.36

WELL ID: MW-26C

Time 0829 Static DTW (ft below reference point) 122.40	Screen Casing Volume (CV) (gallons) 49 3 CV (gallons) 147	Weather Conditions	Initials: AMS/AMD
Casing Total Depth (ft below reference point) 499	Purging Device Grundfos Sampling Device Ded. tubing	Time 0835 Temp. 96	Begin Purge 0843 End Purge 0934
Water Column (feet) 376.60	Pump: Depth (ft brp) ~200 Type MPI Voltage 115 HP 0.5	Skies Clear & Hazy	Gallons Purged 153 CVs Purged 3.12
Casing Capacity (Diameter 2") (gallons per foot) 0.163	Monitor Well Recharge Rate: Slow Fast X	Wind (mph) - From -	DTW (ft brp) 123.44 Time 0932

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µm S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0843	122.40	0	0	~	Begin	purge				330	Q ≈ 3 GPM
0851	123.39	24.5	0.5	22.2	9.17	0.442	181.2	2.1	1.60	330	
0903	123.41	60	1.22	22.2	7.26	0.81	229.8	0.23	0.90	330	
0908	123.43	75	1.53	22.2	7.63	0.84	185.0	0.17	0.92	330	
0916	123.43	99	2.02	22.2	7.70	0.85	120.1	0.17	1.28	330	
0924	123.44	123	2.51	22.2	7.69	0.86	92.7	0.16	0.60	330	
0932	123.44	147	3.00	22.3	7.68	0.86	70.5	0.20	0.59	330	collect samples
0934	NM	153	3.12	~	End	purge					

SAMPLE COLLECTION SAMPLE TIME 0932

ANALYSIS	QUANTITY	TYPE
8260B VOCs	6	40 ml VOA X
8270 SIM 1,4 dioxane	2	1 L Amber X
8270 MOD 1,4 dioxane		1 L Amber
DUPLICATES / SPLITS / BLANKS?	(Y)	N

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

RB-081419 collected @ 0940

GROUNDWATER SAMPLING INFORMATION

DATE: 8/15/19

TASK: 532.30

WELL ID: MW-28

Time 0816 Static DTW (ft below reference point)	126.02	Casing Volume (CV) (gallons) 29.7	3 CV (gallons) 89.1	Weather Conditions	Initials: AMS/AMD
Casing Total Depth (ft below reference point)	375	Purging Device ded pump	Sampling Device ND postland	Time 0815 Temp. 64	Begin Purge 0822 End Purge 0839
Water Column (feet)	45	Pump: Depth (ft brp) 330	Type grundfos Voltage 240 HP 0.5	Skies cloudy	Gallons Purged 98.6 CVs Purged 3.3
Casing Capacity (Diameter 4") (gallons per foot)	266	Monitor Well Recharge Rate: Slow	Fast x	Wind (mph) - From -	DTW (ft brp) 132.00 Time 0838

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0822	126.02	0	0			Pump on				-	Q ≈ 6 GPM
0825	131.88	15	0.5	21.6	7.31	1.09	206.3	1.90	5.53	-	
0827	132.59	30	1.0	21.7	7.40	1.09	200.8	3.34	3.81	-	
0830	132.00	45	1.5	21.7	7.42	1.08	200.1	3.39	2.49	-	
0832	132.00	60	2.0	21.7	7.44	1.07	201.4	3.19	3.13	-	
0835	132.00	75	2.5	21.7	7.45	1.07	203.0	3.18	1.31	-	
0838	132.00	89.1	3.0	21.7	7.46	1.07	204.7	3.15	1.74	-	collect samples
0839	NM	98.6	3.3			Pump off					

SAMPLE COLLECTION SAMPLE TIME 0838			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	3	40 ml VOA x				
8270 SIM 1.4 dioxane	1	1 L Amber x				
8270 MOD 1.4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y (N)						

GROUNDWATER SAMPLING INFORMATION

DATE: 8/13/19

TASK: 532.30

WELL ID: MW-30A

Time 1135 Static DTW (ft below reference point) 115.00	Screen Casing Volume (SV) (gallons) 17.6	SV 3 CV (gallons) 52.8	Weather Conditions
Casing Total Depth (ft below reference point) 564	Purging Device decl. pump	Sampling Device ND p/stand	Time 1435 Temp. 86
Water Column (feet) 44	Pump: Depth (ft brp) 520 Type grinder Voltage 240 HP 0.5		Skies clear
Casing Capacity (Diameter 3") (gallons per foot) 0.39	Monitor Well Recharge Rate: Slow Fast X		Wind (mph) — From —

Initials: AMJ/AMD

Begin Purge 1439 End Purge 1450

Gallons Purged 59 CVs Purged 3.35

DTW (ft brp) 117.71 Time 1449

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1439	115.60	0	0								Begin purge
1441	117.60	9	0.5	25.4	7.67	1.11	112.8	5.16	1.06	—	Q ≈ 6 GPM
1442	117.63	18	1.0	25.1	7.67	1.11	108.9	3.87	2.20	—	
1444	117.65	26.4	1.5	25.1	7.66	1.11	106.0	3.67	1.95	—	
1445	117.68	35.2	2.0	25.2	7.66	1.11	103.4	3.51	1.27	—	
1447	117.70	44	2.5	25.2	7.65	1.11	101.8	3.29	1.12	—	
1449	117.71	52.8	3.0	25.3	7.64	1.11	100.6	3.54	1.15	—	collect sample
1450	NM	59.0	3.35								End purge

SAMPLE COLLECTION SAMPLE TIME 1449			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	3	40 ml VOA X				
8270 SIM 1,4 dioxane	1	1 L Amber X				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y N						

GROUNDWATER SAMPLING INFORMATION

DATE: 8/13/19

TASK: 532.30

WELL ID: MW-303

Time 1459 Static DTW (ft below reference point) 112.92	Casing Volume (OV) (gallons) 40	3 OV (gallons) 120	Weather Conditions	Initials: LMS/AMJ
Casing Total Depth (ft below reference point) 619	Purging Device 10-100 pipette	Sampling Device 10-100 pipette	Time 1500 Temp. 86	Begin Purge 1502 End Purge 1530
Water Column (feet) 99	Pump: Depth (ft brp) 520 Type 9/16" x 1/2"	Voltage 240 HP 0.5	Skies clear	Gallons Purged 129
Casing Capacity (Diameter 3") (gallons per foot) 0.39	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) - From -	DTW (ft brp) 135.59 Time 1525

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1502	112.92	0	0	-	-	-	-	-	-	-	Q=5.4 GPM
1506	131.22	20	0.5	21.7	7.11	1.44	103.7	0.85	1.09	-	
1510	133.22	40	1.0	21.9	7.03	1.62	104.2	1.50	3.80	-	
1515	134.31	60	1.5	22.0	7.02	1.56	109.1	3.89	2.78	-	
1519	135.00	80	2.0	22.0	7.07	1.50	107.5	3.26	3.61	-	
1525	135.59	100	2.5	22.1	7.08	1.50	107.1	3.03	2.42	-	
1528	NM	120	3.0	22.1	7.07	1.50	107.2	2.99	1.31	-	collect sample
1530	NM	129	3.2	-	-	-	-	-	-	-	end purge

SAMPLE COLLECTION SAMPLE TIME 1528			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	9	40 ml VOA	collected MS/MSD			
8270 SIM 1,4 dioxane	3	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y N						

GROUNDWATER SAMPLING INFORMATION

DATE: 8/13/19

TASK: 532.30

WELL ID: MW-31

Time 1327 Static DTW (ft below reference point)	105.29	Casing Volume (CV) (gallons) 81	3 CV (gallons) 243	Weather Conditions	Time 1320 Temp. 86	Initials: AMJ/AMD
Casing Total Depth (ft below reference point)	996	Purging Device ded. pump	Sampling Device 10-100' post	Time 1320 Temp. 86	Begin Purge 1330 End Purge 1359	
Water Column (feet)	54	Pump: Depth (ft brp) 942	Type Grundfos Voltage 240 HP	Skies clear	Gallons Purged 264	CVs Purged 108.39
Casing Capacity (Diameter 6") (gallons per foot)	1.5	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) -	From -	DTW (ft brp) 105.29 Time 1353

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1330	105.29	0	0	Begin purge						-	Q ≈ 9 GPM
1335	108.45	40.5	0.5	23.4	7.29	1.18	89.4	4.27	3.62	-	
1339	108.32	81	1.0	21.5	7.89	1.56	83.6	1.88	40.9	-	
1344	108.53	121.5	1.5	21.6	7.45	1.35	82.9	0.94	13.0	-	
1348	108.36	162	2.0	21.6	7.37	1.24	83.1	0.73	8.92	-	
1353	108.39	202.5	2.5	21.6	7.34	1.17	85.3	0.70	3.69	-	
1357	NM	243	3.0	21.2	7.34	1.4	87.1	0.73	2.41	-	collect sample
1359	NM	264		End purge						-	

SAMPLE COLLECTION SAMPLE TIME 1357			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	9	40 ml VOA	MW-3100 collected @ 1358 (duplicate)			
8270 SIM 1,4 dioxane	3	1 L Amber	MW-31 collected @ 1357 (original)			
8270 MOD 1,4 dioxane		1 L Amber	MW-31 collected @ 1359 (duplicate split)			
DUPLICATES / SPLITS / BLANKS? If yes, complete appropriate forms.			Y N			

GROUNDWATER SAMPLING INFORMATION

DATE: 8-13-19

TASK: 53230

WELL ID: MW-32B

Time 1508 Static DTW (ft below reference point) 79.78	Casing Volume (CV) (gallons) 1664 3 CV (gallons) 791	Weather Conditions	Initials: DTS, CVP
Casing Total Depth (ft below reference point) 999	Purging Device des pump Sampling Device 7100 P.P. stand	Time 1500 Temp. 80	Begin Purge 1519 End Purge 1622
Pump Water Column (feet) 419.22	Pump: Depth (ft brp) 560 Type geonics Voltage 240 HP -	Skies Sunny	Gallons Purged 803 CVs Purged 3.04
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow Fast	Wind (mph) - From	DTW (ft brp) 79.78 Time 1508

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1519	79.78	0	0	~	Begin		Purge				Q ≈ 12 GPM
1528	98.24	132	0.5	22.8	7.83	0.94	-226.1	1.24	4.12		
1534	98.70	264	1.0	22.3	7.80	0.93	-205.5	0.86	2.87		
1550	99.01	396	1.5	22.6	7.78	0.59	-147.8	1.66	3.40		
1600	99.20	528	2.0	22.6	7.78	1.10	-144.9	1.07	3.60		
1611	99.35	660	2.5	22.7	7.73	1.07	-137.1	0.66	2.69		
1621	99.45	791	3.0	22.5	7.74	1.67	-155.1	1.43	4.5		
1622	-	803	3.04	~	End Purge						

SAMPLE COLLECTION SAMPLE TIME 1622		
ANALYSIS	QUANTITY	TYPE
8260B VOCs	6	40 ml VOA
8270 SIM 1,4 dioxane	2	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber
DUPLICATES / SPLITS / BLANKS? (Y) N		
If yes, complete appropriate forms.		

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

MW-32B-2-SU G 1603

GROUNDWATER SAMPLING INFORMATION

DATE: 8-14-19

TASK: 532.3

WELL ID: MW-33

Time 1258 Static DTW (ft below reference point) 71.72	Casing Volume (CV) (gallons) 291 3 CV (gallons) 873	Weather Conditions
Casing Total Depth (ft below reference point) 1020	Purging Device ded Pump Sampling Device 0-10 Protons	Time 1256 Temp. 82
Pump to Screen Water Column (feet) 948.28	Pump: Depth (ft brp) 535 Type Gravity Voltage 240 HP	Skies clear
Casing Capacity (Diameter 4") (gallons per foot) 0.62	Monitor Well Recharge Rate: Slow Fast	Wind (mph) ~ From ~
		Initials: DJS/CVD
		Begin Purge 1304 End Purge 1350
		Gallons Purged 892 CVs Purged 3.06
		DTW (ft brp) 71.72 Time 1258

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1304	71.72	0	0	~	Begin Purge	~	~	~	~		Q ≈ 14 gpm
1312	73.97	146	0.5	23.4	7.73	0.71	-55.9	1.77	1.71		
1319	74.03	291	1.0	22.9	7.77	0.365	-100.5	1.85	1.74		
1326	74.08	432	1.5	22.5	7.69	0.71	-52.3	1.31	1.36		
1334	74.13	582	2.0	22.3	7.71	0.68	-52.8	1.66	1.33		
1342	74.20	728	2.5	22.2	7.71	0.70	-23.9	1.75	1.14		
1349	74.15	873	3.0	22.4	7.65	0.71	-22.7	2.06	1.14		
1350	-	892	3.06	~	End Purge	~	~	~	~		

SAMPLE COLLECTION SAMPLE TIME 1350	
ANALYSIS	QUANTITY TYPE
8280B VOCs	40 ml VOA 6
8270 SIM 1,4 dioxane	1 L Amber 2
8270 MOD 1,4 dioxane	1 L Amber
DUPLICATES / SPLITS / BLANKS? (1) N	
If yes, complete appropriate forms.	

AIR MONITORING PID/FID ppm: VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
MW-33-850- (6) 1334			
MW-33 (6) 1350			

GROUNDWATER SAMPLING INFORMATION

DATE: 08/13/19

TASK: 832.30

WELL ID: MW-34B

Time <u>1006</u> Static DTW (ft below reference point) <u>139.25</u>	Screen Casing Volume (SV) (gallons) <u>50</u> 3 SV (gallons) <u>150</u>	Weather Conditions Time <u>1020</u> Temp <u>38</u> Sides <u>clear</u> Wind (mph) <u>—</u> From <u>—</u>	Initials: <u>AMJ/AMD</u>
Casing Total Depth (ft below reference point) <u>536</u>	Purging Device <u>10-100 pit</u> Sampling Device <u>10-100 pit</u>		Begin Purge <u>1013</u> End Purge <u>1035</u>
Water Column (feet) <u>76</u>	Pump: Depth (ft brp) <u>460</u> Type <u>grindfles</u> Voltage <u>410</u> HP <u>—</u>		Gallons Purged <u>178</u> SV Purged <u>3.56</u>
Casing Capacity (Diameter 4") (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow <u>—</u> Fast <u>X</u>		DTW (ft brp) <u>140.44</u> Time <u>1032</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volume Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1013	139.25	0	0	21.8	7.12	0.95	126.4	2.00	3.80	—	Q ~ 10 gpm
1017	140.39	25	0.56	22.2	7.23	0.98	125.2	2.08	7.04	—	
1019	140.46	50	1.0	22.2	7.26	0.98	128.7	2.16	1.53	—	
1023	140.41	75	1.5	22.2	7.26	0.98	131.9	2.24	0.97	—	
1026	140.44	100	2.0	22.2	7.26	0.98	134.4	2.23	1.11	—	
1029	140.44	125	2.5	22.2	7.26	0.98	136.2	2.25	NS	—	collect sample
1032	140.44	150	3.0	22.2	7.26	0.98				—	
1035	NM	178	3.56	End	purge					—	

SAMPLE COLLECTION SAMPLE TIME <u>1032</u>	
ANALYSIS	QUANTITY TYPE
8260B VOCs	9 40 ml VOA X
8270 SIM 1,4 dioxane	1 L Amber
8270 MOD 1,4 dioxane	3 1 L Amber X
DUPLICATES SPLITS/BLANKS? If yes, complete appropriate forms.	

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)
MW-340B collected @ 1033
MW-34B collected @ 1032 (original)
MW-34B collected @ 1034 (split)

GROUNDWATER SAMPLING INFORMATION

DATE: 8-16-19

TASK: 532.30

WELL ID: MW-35G

Time 1219	Static DTW (ft below reference point) 81.69	Casing Volume (CV) (gallons) 342	3 CV (gallons) 1026	Weather Conditions	Initials: JSS, CUD
Casing Total Depth (ft below reference point) 1040	Purging Device P.P.C. 1121.69	Sampling Device ND P.P.C. 1026	Time	Temp.	Begin Purge 153
Pump Water Column (feet) 50	Pump: Depth (ft bpr) 560	Voltage HP	Skies		End Purge 1237
Casing Capacity (Diameter 4") (gallons per foot) 0.60	Monitor Well Recharge Rate: Slow	Fast	Wind (mph)	From	Gallons Purged 1048 CVs Purged 306
					DTW (ft bpr) 81.69 Time 1229

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°F)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1153	81.69	0	0	~	Begin Purge	~					Q ≈ 82 gpm
1200	93.05	171	0.5	20.7	7.79	0.56	176.2	1.92	0.99		
1208	93.42	342	1.0	22.9	7.72	0.85	174.1	3.98	2.66		
1215	93.72	513	1.5	23.1	7.64	0.85	167.0	3.61	4.01		
1222	94.21	684	2.0	22.8	7.64	0.84	168.6	3.71	5.22		
1229	94.55	855	2.5	22.9	7.66	0.84	172.5	3.28	5.56		
1236	94.74	1026	3.0	22.8	7.56	0.84	172.7	6.89	1.80		
1237	—	1048	3.06	~	End Purge	~					

SAMPLE COLLECTION SAMPLE TIME 1237	
ANALYSIS	QUANTITY TYPE
8260B VOCs	40 ml VOA
8270 SIM 1.4 dioxane	1 L Amber
8270 MOD 1.4 dioxane	1 L Amber
DUPLICATES / SPLITS / BLANKS? Y (N)	
If yes, complete appropriate forms.	

AIR MONITORING PID/FID ppm: VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			

GROUNDWATER SAMPLING INFORMATION

DATE: 08-14-11

TASK: 532.36

WELL ID: MW-36

Time 1510 Static DTW (ft below reference point) 71.40	Casing Volume (CV) (gallons) 320 3 CV (gallons) 960	Weather Conditions
Casing Total Depth (ft below reference point) 99.4	Purging Device 2nd Pump Sampling Device 10-100 pipe string	Time 1505 Temp 83
Pump to Screen Water Column (feet)	Pump: Depth (ft bfp) 460 Type 4" 2" Voltage 240 HP	Skies Clear
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow Fast	Wind (mph) ~ From ~
Initials: DJB/cup/		
Begin Purge 1518 End Purge 1631		
Gallons Purged 973 CVs Purged 3		
DTW (ft bfp) 71.40 Time 1510		

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1518	71.40	0	0	~	Begin	Purge	~				Q ≈ 13 GPM
1530	70.88	160	0.5	23.4	7.62	1.24	-63.8	1.93	1.17		
1542	70.02	320	1.0	25.1	8.00	0.88	40.0	1.67	3.45		
1554	71.06	480	1.5	24.0	7.67	1.12	50.2	0.91	1.43		
1606	71.15	640	2.0	24.4	7.80	1.19	50.2	1.87	1.78		
1618	71.08	800	2.5	23.2	7.68	1.28	47.4	1.00	1.30		
1630	71.08	960	3.0	23.4	7.65	1.33	52.6	1.05	1.43		
1631	-	973	3.04	~	End	Purge	~				

SAMPLE COLLECTION SAMPLE TIME 1630	AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
ANALYSIS QUANTITY TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)
8280B VOCs 6 40 ml VOA	MW-36-250- G 16:08.
8270 SIM 1,4 dioxane 2 1 L Amber	
8270 MOD 1,4 dioxane 1 1 L Amber	
DUPLICATES / SPLITS / BLANKS? N	

GROUNDWATER SAMPLING INFORMATION

DATE: 8/15/14

TASK: 532.30

WELL ID: MW-39

Time 0855 Static DTW (ft below reference point) 73.72	Casing Volume (CV) (gallons) 271 3 CV (gallons) 813	Weather Conditions	Initials: DJS, CUD
Casing Total Depth (ft below reference point) 1612	Purging Device 100 pump Sampling Device PIPESTAR	Time 0850 Temp. 71	Begin Purge 907 End Purge 945
Pump to screen Water Column (feet)	Pump: Depth (ft brp) 560 Type GROUNDERS Voltage 240 HP	Skies Clear	Gallons Purged 835 CVs Purged 308
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow Fast	Wind (mph) From	DTW (ft brp) 73.72 Time 855

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
907	73.72	0	0	Begin Purge							Q ≈ 22 GPM
913	88.99	136	0.5	23.4	8.56	0.405	-285.9	3.02	1.94		
919	89.21	271	1.0	23.1	8.70	0.424	-288.5	1.60	1.86		
925	89.24	407	1.5	23.2	8.62	0.432	-176.5	1.17	1.29		
931	89.43	542	2.0	23.3	8.57	0.431	-189.3	1.00	1.21		
937	89.62	678	2.5	23.1	8.55	0.436	-161.0	1.20	1.67		
944	89.80	813	3.0	23.3	8.48	0.438	-164.2	1.52	1.37		
945	-	835	3.08	End Purge							

SAMPLE COLLECTION SAMPLE TIME 9:45

ANALYSIS	QUANTITY	TYPE
8260B VOCs	40 ml VOA	3
8270 SIM 1.4 dioxane	1 L Amber	
8270 MOD 1.4 dioxane	1 L Amber	

DUPLICATES / SPLITS / BLANKS? Y (N)

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 8/15/19

TASK: 532.30

WELL ID: MW-410

Time <u>1235</u> Static DTW (ft below reference point) <u>107.81</u>	Casing Volume (CV) (gallons) <u>75</u> 3 CV (gallons) <u>225</u>	Weather Conditions	Initials: <u>DJS, CVD</u>
Casing Total Depth (ft below reference point) <u>970</u>	Purging Device <u>ded pump</u> Sampling Device <u>MD PIPES + LOG</u>	Time <u>1230</u> Temp. <u>79</u>	Begin Purge <u>1239</u> End Purge <u>1259</u>
Pump Water Column (feet) <u>560</u>	Pump: Depth (ft brp) <u>560</u> Type <u>grouters</u> Voltage <u>240</u> HP	Skies <u>clear sunny</u>	Gallons Purged <u>3.33</u> CVs Purged <u>1239</u>
Casing Capacity (Diameter 6") (gallons per foot) <u>1.5</u>	Monitor Well Recharge Rate: Slow Fast ☒	Wind (mph) <u>1</u> From <u>1</u>	DTW (ft brp) <u>107.81</u> Time <u>1235</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1239	101.8	0	0								QX 12 gpm
1242	108.81	36	0.5	24.0	7.55	0.73	-242.9	1.96	6.36		
1245	108.88	72	1.0	22.3	7.75	0.83	-154.5	1.66	8.09		
1248	108.89	108	1.5	22.3	7.69	0.81	-125.0	0.90	3.43		
1251	108.90	144	2.0	21.7	7.71	0.83	-123.4	0.84	2.24		
1254	108.9	180	2.5	21.9	7.70	0.83	-111.9	1.24	2.93		
1257	108.87	228	3.0	22.0	7.70	0.83	-113.1	1.89	2.04		
1258	-	240	3.33	~ End Purge ~							

SAMPLE COLLECTION SAMPLE TIME <u>1238</u>		
ANALYSIS	QUANTITY	TYPE
8260B VOCs	<u>3</u>	40 ml VOA
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber
DUPLICATES / SPLITS / BLANKS? Y <u>(N)</u>		
If yes, complete appropriate forms.		

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 8/14/19

TASK: 532.30

WELL ID: MW-41

Time 1319	Static DTW (ft below reference point) 141.78	screen SV	Gaging Volume (SV) (gallons) 39	3 SV (gallons) 418.117	Weather Conditions	Initials: AUS/AMD
Casing Total Depth (ft below reference point) 425	Purging Device ded pump	Sampling Device 10-100 plastic	Time 1320	Temp. 85	Begin Purge 1329	End Purge 1346
Water Column (feet) 65	Pump: Depth (ft brp) 360	Type grundfor	Voltage 240	HP -	Gallons Purged 149	SVs Purged 3.8
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) -	From -	DTW (ft brp) 146.57	Time 1341

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µmS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1324	141.78	0	0								Pump on Q ≈ 6 GPM
1327	146.35	19.5	0.5	22.1	6.99	2.22	132.1	259	5.82	-	
1329	146.44	39	1.0	22.4	6.98	2.22	133.6	329	17.6	-	
1332	146.54	58.5	1.5	22.4	6.97	2.22	136.9	347	17.4	-	
1336	146.53	78	2.0	22.4	6.96	2.22	140.4	348	12.4	-	
1339	146.54	97.5	2.5	22.5	6.96	2.22	142.6	345	6.9	-	
1341	146.57	117	3.0	22.5	6.96	2.22	144.5	348	4.93	-	collect sample
1346	NM	149	3.82							-	pump off

SAMPLE COLLECTION SAMPLE TIME 1341

ANALYSIS	QUANTITY	TYPE
8260B VOCs	9	40 ml VOA x
8270 SIM 1,4 dioxane	3	1 L Amber x
8270 MOD 1,4 dioxane		1 L Amber
DUPLICATES / SPLITS / BLANKS?	Y	(N)

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

MS/MSD collected

GROUNDWATER SAMPLING INFORMATION

DATE: 8-14-19

TASK: 53230

WELL ID: MW-42

Time <u>1030</u> Static DTW (ft below reference point) <u>72.55</u>	Casing Volume (CV) (gallons) <u>301</u> 3 CV (gallons) <u>903</u>	Weather Conditions Time <u>1030</u> Temp. <u>76</u>	Initials: <u>DJS, CUD</u>
Casing Total Depth (ft below reference point) <u>1057</u>	Purging Device <u>per pump</u> Sampling Device <u>PIDeS tan</u>	Skies <u>Clear</u>	Begin Purge <u>1034</u> End Purge <u>1122</u>
Pump Water Column (feet) <u>1057</u>	Pump: Depth (ft bsp) <u>560</u> Type <u>gpm</u> Voltage <u>240</u> HP <u>-</u>	Wind (mph) <u>-</u> From <u>-</u>	Gallons Purged <u>926</u> CVs Purged <u>307</u>
Casing Capacity (Diameter <u>4</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>✓</u>	DTW (ft bsp) <u>72.55</u> Time <u>1030</u>	

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1034	72.55	0	0.5	22.3	7.98	0.515	-235.4	1.31	1.89		Q ≈ 23 gpm
1047	81.00	1.0	0.5	22.5	8.02	0.513	-191.9	1.40	1.67		
1054	81.14	2.0	1.0	22.5	8.05	0.52	-106.1	1.61	1.51		
1101	82.21	3.0	1.5	22.7	8.07	0.519	-113.7	1.59	1.50		
1108	81.38	4.0	2.0	23.0	8.07	0.52	-92.8	1.54	2.00		
1144	81.41	5.0	2.5	23.5	8.07	0.275	-103.8	2.10	2.11		
1121	81.59	6.0	3.0								
1122	-	926	3.07								

SAMPLE COLLECTION SAMPLE TIME 1122

ANALYSIS	QUANTITY	TYPE
8280B VOCs	<u>3</u>	40 ml VOA
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber

DUPLICATES / SPLITS / BLANKS? Y (N)

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 8-14-19

TASK: 532-30

WELL ID: MW-43

Time <u>820</u> Static DTW (ft below reference point) <u>66.72</u> Casing Total Depth (ft below reference point) <u>1051</u> Pump Water Column (feet) <u>405m</u> Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Casing Volume (CV) (gallons) <u>319</u> 3 CV (gallons) <u>957</u> Purging Device <u>GET-200 Pump</u> Sampling Device <u>ND Pipet Stand</u> Pump: Depth (ft bfp) <u>520</u> Type <u>grinder</u> Voltage <u>240</u> HP <u>-</u> Monitor Well Recharge Rate: Slow <u>Fast</u> ☒	Weather Conditions Time <u>815</u> Temp. <u>71</u> Skies <u>clear</u> Wind (mph) <u>~</u> From <u>-</u>	Initials: <u>DJS, CVD</u> Begin Purge <u>827</u> End Purge <u>913</u> Gallons Purged <u>957</u> CVs Purged <u>3.06</u> DTW (ft bfp) <u>66.72</u> Time <u>820</u>
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Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
827	66.72	0	0	~	Begin	Purge	~				Q ≈ 24
835	73.68	160	0.5	21.1	8.01	0.55	-246.9	1.26	3.18		
842	74.00	320	1.0	21.6	7.98	0.516	-126.9	1.31	2.48		
849	74.71	480	1.5	21.7	7.98	0.515	-83.1	0.82	1.91		
857	74.05	640	2.0	21.6	7.97	0.516	-63.3	1.40	1.32		
905	74.12	800	2.5	21.8	8.00	0.519	-51.4	0.82	1.22		
912	74.24	957	3.0	21.7	8.01	0.516	-53.7	0.94	1.19		
913	-	981	3.06	~	End	Purge	~				

SAMPLE COLLECTION SAMPLE TIME: <u>913</u> ANALYSIS QUANTITY TYPE 8280B VOCs <u>40 ml VOA</u> <u>3</u> 8270 SIM 1,4 dioxane <u>1 L Amber</u> <u>1</u> 8270 MOD 1,4 dioxane <u>1 L Amber</u> DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u> If yes, complete appropriate forms.	AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.) _____ _____ _____
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TABLE 2
WELL CONSTRUCTION SUMMARY

Well Identifier	Date Installed	Current Land Surface Elevation (feet msl)	Current Reference Point Elevation (feet msl)	Total Depth of Borehole (feet bls)	Perforated Interval (feet bls)	Screen Slot Size (inches)	Borehole Diameter (inches)	Casing Diameter (inches) (a)	Filter Pack Interval (feet bls)	Filter Pack Sand Size	Grout Filter/ Intermediate Seal Interval (feet bls) (b)	Annular Seal Interval (feet bls) (c)
<u>Regional Groundwater System Monitor Wells, Extraction Wells and Piezometers</u>												
MW-06	1/16/1997	185.0	184.70	190.9	149.6 - 189.6	0.010	8.5	2	145.4 - 190.9	#2/16	139.4 - 145.4 (d)	0 - 139.4
MW-08	1/22/1997	156.6	155.91	167.2	126.1 - 166.1	0.010	8.5	2	120.7 - 167.2	#2/16	115.7 - 120.7	0 - 115.7
MW-09	3/21/1997	180.5	180.10	194.2	152.2 - 192.2	0.010	8.5	2	146.2 - 194.2	#2/16	141.2 - 146.2	0 - 141.2
MW-13	4/16/1997	142.5	141.84	159.6	120.6 - 159.6	0.010	8.5	2	114.6 - 159.6	#2/16	109.6 - 114.6	0 - 109.6
MW-15	5/18/1998	145.6	144.95	174.8	120.8 - 170.8	0.010	8.5	2	115.8 - 174.8	#2/16	112.8 - 115.8	0 - 112.8
MW-16	11/20/1999	143.0	142.40	179.5	148.5 - 178.5	0.010	11.0	4	144.5 - 179.5	#2/16	134.5 - 144.5 (e)	0 - 134.5
MW-17	5/31/2000	142.8	142.70	203.7	173.1 - 193.1 (i)	0.020	10.0	4	159.7 - 193.1	#2/16	156.2 - 159.7 193.1 - 203.7 (j)	0 - 156.2
MW-18	5/24/2000	142.4	142.32	195.6	164.1 - 194.1	0.020	10.0	4	158.9 - 194.5	#2/16	154.2 - 158.9	0 - 154.2
MW-19	5/26/2000	142.7	142.06	205.5	184.9 - 204.9	0.020	10.0	4	177.0 - 205.3	#2/16	171.5 - 177.0	0 - 171.5
MW-20	6/26/2003	184.4	184.19	200.0	158.6 - 198.2	0.020	11.0	4 (f)	158.0 - 200.0	#2/12	151.0 - 158.0 (g)	0 - 151.1 (h)
MW-21	7/17/2003	143.3	141.18	238.3	212.1 - 232.1	0.010	8.0	4 (k)	205.0 - 234.5	#2/16	202.0 - 205.0 234.5 - 238 (j)	0 - 202.0 (h)
MW-22	8/13/2003	139.4	138.65	245.0	217.4 - 237.4	0.020	8.0	4 (l)	215.0 - 238.0	#2/12	208.0 - 215.0 (m)	0 - 208.0 (h)
MW-23	8/18/2003	137.8	137.33	235.6	215.2 - 235.2	0.020	8.0	4 (n)	209.4 - 235.6	#2/12	203.5 - 209.4 (m)	0 - 203.5 (h)
MW-24	9/15/2004	143.1	142.83	338.0	310.3 - 330.3	0.030	10.6	4 (o)	306 - 330	#3	301 - 306 (p)	0 - 301 (h)
MW-25	9/10/2004	143.0	142.64	805	449.4 - 479.8	0.010	8.5 (q)	2 (r)	429 - 485	#2/16	418 - 429	0 - 418 (h)
MW-26A (s)	10/1/2004	137.6	137.04	805	279 - 309	0.020	12.25 (q)	2 (l)	274 - 315	#2/12	266 - 274	0 - 266 (h)
MW-26B (s)	10/1/2004	137.6	137.05	805	339 - 379	0.020	12.25 (q)	2 (u)	334 - 387	#2/12	266 - 274	0 - 266 (h)
MW-26C (s)	10/1/2004	137.6	137.22	805	459 - 499	0.020	12.25 (q)	2 (v)	435 - 499	#2/12	387 - 435 (w)	0 - 266 (h)
MW-27	4/22/2008	137.6	137.16	550	475 - 505.2 (cc)	0.030	11.25 (q)	4 (z)	468 - 520	#3	457.5 - 468	0 - 457.5 (h)
MW-28	5/5/2008	141.4	140.77	425	335 - 375	0.040	12.25 (q)	4 (z)	325.4 - 377	#8	318 - 325.4	0 - 318 (h)
MW-29	8/15/2008	142.7	142.34	265.7	200 - 240	0.020	10.0 (aa)	4 (z)	185 - 246	#2/12	176 - 185	0 - 176 (h)
MW-30A(s)	11/26/2008	130.2	129.44	635 (j)	524-564	0.020	14.25	3 (y)	515.9-570.5	#2/12	495.5-515.9	0-495.5 (bb)
MW-30B(s)	11/26/2008	130.2	129.39	635 (j)	596-616	0.020	14.25	3 (y)	586.8-625	#2/12	586.8-570.5	0-495.5 (bb)
MW-31	10/2/2009	120.3	119.60	1,100 (jj)	946-996	0.020	13	6(kk)	922-1,006	#2/12	904-922	0-904
MW-32A(s)	12/10/2009	93.4	92.88	1,153 (gg)	890-905	0.020	18.5	4(dd)	880-910	#2/12	832-880	0-832
MW-32B(s)	12/10/2009	93.4	92.89	1,153 (gg)	969-999	0.020	18.5	4(dd)	960-1,004.5	#2/12	910-960	0-832
MW-32C(s)	12/10/2009	93.4	92.88	1,153 (gg)	1,070-1,090	0.020	18.5	4(dd)	1,054-1,100	#2/12	1,004.5-1,054	0-832
MW-33	7/2/2010	83.8	83.19	1,080 (hh)	980-1,020	0.020	11	4(dd)	970-1,025	#2/12	924-970	0-924 (ii)
MW-34A	2/3/2011	154.0	153.25	290	220 - 280	0.020	12.25	4(dd)	211 - 290	#2/12	175 - 211	0 - 175
MW-34B	2/1/2011	153.9	153.11	540	486 - 536	0.020	12.25	4(dd)	475 - 540	#2/12	449 - 475	0 - 449
MW-34C	1/19/2011	154.1	153.29	709 (ll)	556 - 576	0.020	12.25	4(dd)	551 - 582	#2/12	530 - 551	0 - 530
MW-35A	12/20/2010	94.3	93.57	1,101	420 - 470	0.020	18	4(dd)	401 - 482	#2/12	376 - 401	0 - 376
MW-35B	12/20/2010	94.3	93.56	1,101	745 - 805	0.020	18	4(dd)	725 - 816	#2/12	482 - 725	0 - 376
MW-35C	12/20/2010	94.3	93.55	1101 (ll)	990 - 1,040	0.020	12.25	4(dd)	980 - 1,048	#2/12	816 - 980	0 - 376
MW-36	1/3/2012	87.19	86.65	1030 (mm)	934 - 954 974 - 994	0.020	12.25	4(dd)	914 - 1,003	#2/12	95-853 (oo), 853 - 914 (pp)	0 - 95 (qq)
MW-37	10/17/2012	156.02	155.60	916	770-820	0.020	12.25	4(dd)	755-834	#2/12	724-755 (pp) 120-140 (pp)	0-229 (ss)
MW-38	7/29/2013	155.7	154.90	203	150-200	0.020	10	4(z)	140-203	#2/12		0-120 (qq)
MW-39	7/25/2013	84.71	84.25	1,080 (ll)	982-1,012	0.020	12.25	4(dd)	974-1,017	#2/12	156-917 (rr) 917-974 (pp)	0-156 (qq)
MW-40	7/2/2013	124.09	123.40	1040 (ll)	930-970	0.030	12.25	6(dd)	916-975	#3	175-880 (rr) 880-916 (pp)	0-175 (qq)
EW-01	5/16/2005	143.3	141.07	195	138.1-188.1	0.020	7.6	4 (x)	134.1-195	#2/12	129-134.1 (m)	0-129 (h)
EW-02	10/20/2009	136.0	132.97	473 (ee)	410-460	0.030	17.0	8 (ff)	400-465	#3	384-400	0-384
<u>Perched Zone Piezometers</u>												
P-07	6/6/1997	142.7	142.31	116.8	107.7 - 117.7	0.010	8.5	2	104.7 - 117.7	#2/16	101.7 - 104.7	0 - 101.7
P-09	6/30/2003	184.3	183.86	130.0	109.6 - 129.6	0.010	11.0	4	114.0 - 130.0	#2/16	101.0 - 108.0 (g)	0 - 101.0 (h)

TABLE 2

WELL CONSTRUCTION SUMMARY

NOTE: Refer to page 2 of this table for footnotes.

FOOTNOTES

msl = Mean sea level, City of Fullerton datum

bls = Below current land surface (October 2004)

(a) = Schedule 40 polyvinyl chloride (PVC) screen and casing, unless otherwise indicated

(b) = Medium bentonite chip seal, unless otherwise indicated

(c) = Bentonite grout annular seal unless otherwise indicated, completed at surface with vault set in concrete

(d) = No. 60 silica sand

(e) = Includes 2.0 feet of No. 60 silica sand placed above filter pack

(f) = Schedule 80 polyvinyl chloride screen and casing

(g) = Includes 2.5 to 3.0 feet of No. 60 silica sand placed above bentonite chip seal

(h) = Cement/bentonite grout, Type I/II Portland, less than 5% bentonite

(i) = Well plug, approximately 0.5-foot length, set at bottom of perforated interval

(j) = Bottom of borehole backfilled with bentonite chips

(k) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 122.0 - 212.1 feet bls; Schedule 40 mild steel casing 0 - 122.0 feet bls

(l) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 112.4 - 217.4 feet bls; Schedule 40 mild steel casing 0 - 112.4 feet bls

(m) = 1/4-inch coated bentonite pellets

(n) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 110.1 - 215.2 feet bls; Schedule 40 mild steel casing 0 - 110.1 feet bls

(o) = Mild steel wire wrap screen and Schedule 40 mild steel well casing

(p) = Includes 1 to 2 feet of #2/16 sand placed above bentonite chip seal

(q) = Below filter pack, diameter of the original pilot borehole is 5 to 6.25 inches to total depth of boring. Lower borehole backfilled with cement/bentonite grout, Type I/II Portland, less than 5% bentonite

(r) = Stainless steel wire wrap screen, Schedule 10 stainless steel casing 429.4 - 449.4 feet bls, Schedule 80 polyvinylchloride casing 429.0 - 429.4 feet bls, Schedule 40 mild steel casing 0 - 429.0 feet bls

(s) = Nested wells MW-26A, MW-26B, MW-26C, and MW-32A, MW-32B, MW-32C are constructed with three separate well casings in a single borehole; nested well MW-30A and MW-30B is constructed with two separate casings in a single borehole.

(t) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 259 - 279 feet bls and 0 - 19 feet bls; Schedule 40 mild steel casing 19 - 259 feet bls

(u) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 319 - 339 feet bls; Schedule 40 mild steel casing 0 - 319 feet bls

(v) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 439 - 459 feet bls; Schedule 40 mild steel casing 0 - 439 feet bls

(w) = #8 granular bentonite with exception of heavy mud/formational caving filling annular interval from 417 to 428 feet bls

(x) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 118.1-138.1 feet bls; Schedule 40 mild steel casing 0-118.1 feet bls

(y) = Schedule 40 Stainless steel endcaps; Schedule 10 stainless steel casing; Stainless steel wire wrap screen

(z) = Schedule 80 PVC blank and screen casing

(aa) = Below filter pack, diameter of the original pilot borehole is 8 inches to total depth of boring. Lower borehole backfilled with cement/bentonite grout, Type I/II Portland, less than 5% bentonite

(bb) = Neat cement

(cc) = Depth of screen interval adjusted to account for loss at bottom of casing due to breakage in casing wall. Original casing (515 ft bls) was sealed at 505.2 ft bls

(dd) = Schedule 40 Stainless steel endcaps; Schedule 80 polyvinyl chloride casing; Stainless steel wire wrap screen

(ee) = Pilot borehole drilled to a total depth of 493 feet bls and backfilled with 5% bentonite-cement grout seal to 465 feet bls

(ff) = Schedule 40 Stainless steel endcaps; Schedule 40 stainless steel casing; Stainless steel wire wrap screen; 2.5-foot stainless steel sump

(gg) = Pilot borehole drilled to a total depth of 1,153 feet bls and backfilled with 5% bentonite-cement grout seal to 1,100 feet bls

(hh) = Pilot borehole drilled to a total depth of 1,080 feet bls and backfilled with 5% bentonite-cement grout seal to 1,025 feet bls

(ii) = Annular seal interval is composed of cement grout with approximately 5% bentonite from 720 to 924 feet bls and bentonite grout from near land surface to 720 feet bls

(jj) = Pilot borehole drilled to a total depth of 1,100 feet bls and backfilled with 5% bentonite-cement grout seal to 1,006 feet bls

(kk) = Schedule 40 Stainless steel endcaps; Schedule 40 stainless steel casing; Stainless steel wire wrap screen; 5-foot stainless steel sump

(ll) = Bottom of borehole backfilled with approximately 5% bentonite-cement grout

(mm) = Bottom of borehole backfilled with bentonite pellets

(oo) = High solids bentonite grout

(pp) = Bentonite chips

(qq) = Portland cement with approximately 5% bentonite

(rr) = Medium bentonite chips and #2/12 Sand; 1:1 dry volume mix

(ss) = Portland cement with approximately 2.5% bentonite

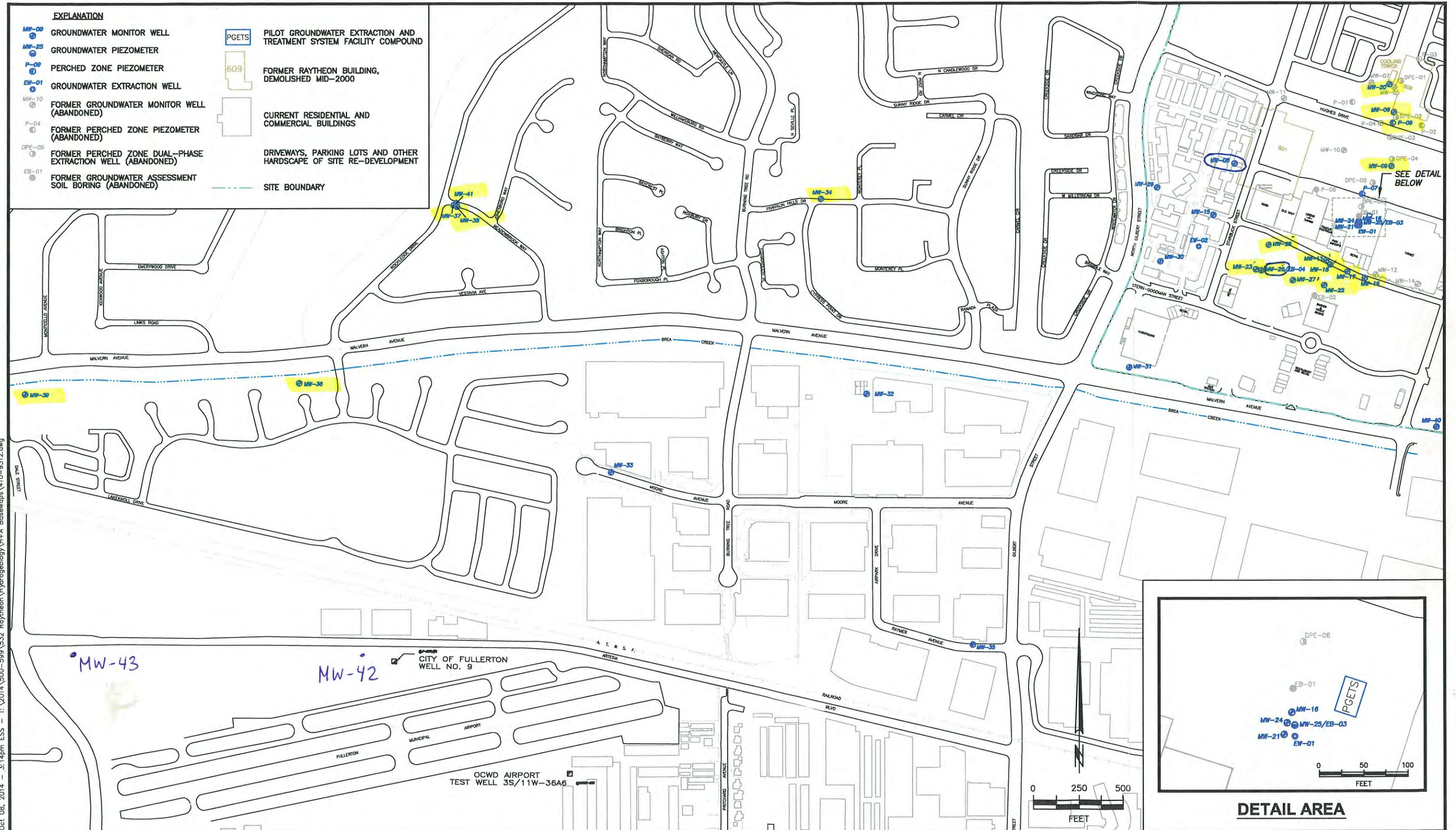


FIGURE 2.
WELL AND PIEZOMETER LOCATIONS

NOVEMBER 2019

QUARTERLY GROUNDWATER MONITORING
FIELD NOTEBOOK
LARGE VOLUME MONITOR WELLS

RAYTHEON COMPANY

532.30

1901 MALVERN AVE.
FULLERTON, CALIFORNIA



HARGIS + ASSOCIATES, INC.
HYDROGEOLOGY • ENGINEERING

DAILY FIELD SAFETY BRIEFING ATTENDANCE SHEET

Date:

Location: FULLERTON, CA

Presented by:

A. GENERAL INTRODUCTION

1. Location of site Health and Safety Plan (HSP) and ensure everyone has read the site HSP.
2. Primary hazards and controls (chemical, physical, and biological).
3. Sanitation and decontamination (potable water, nonpotable water, toilet, sink, shower).
4. General Site Rules.
5. Emergency Response Plan (location where emergency telephone numbers and hospital route posted, shower, first aid kit, fire extinguisher, alarm system, evacuation, meeting place, contingencies, upwind).
6. Establish buddy system.

B. SPECIFIC PRECAUTIONS FOR DAY'S ACTIVITIES Go over the hospital route daily; wear traffic vests, use safety cones, and be aware of traffic whenever in or near the roadways; wear sunscreen and hydrate well; wear gloves and take appropriate precautions when handling contaminated groundwater; watch for black widow spiders in vaults. Notify your supervisor and field partner of any issues.

C. ON-SITE ORGANIZATION AND COORDINATION

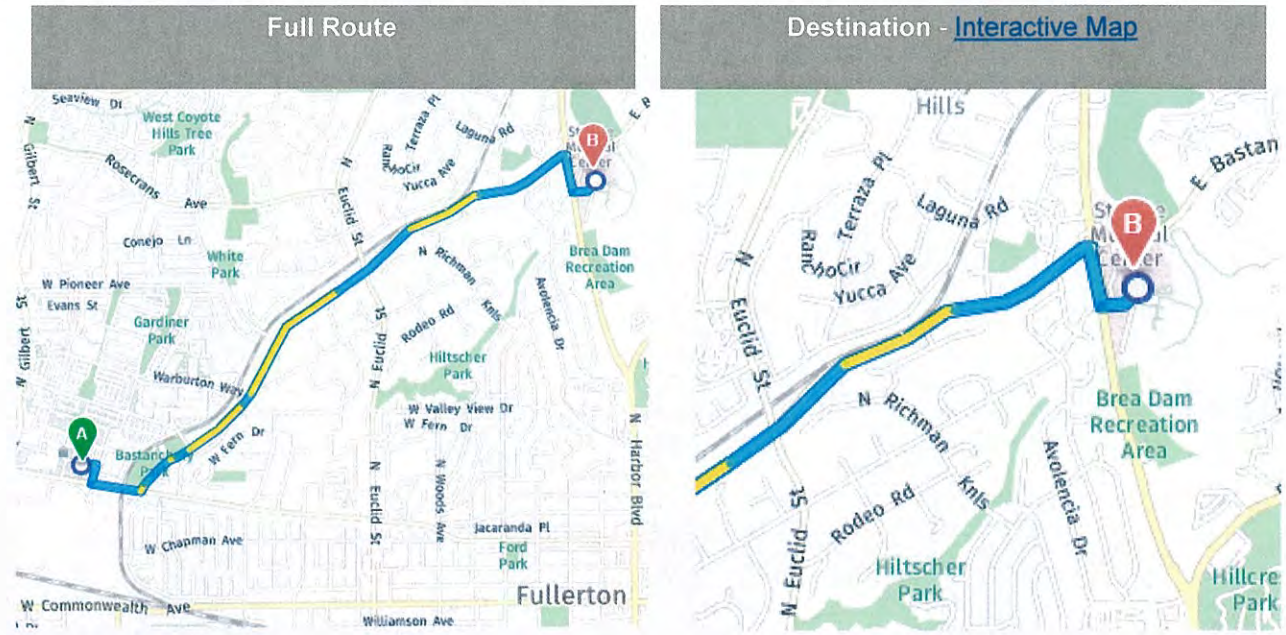
D. OTHER TOPICS:

ATTENDEE LIST

PRINT NAME	SIGNATURE	COMPANY	DATE
		HARGIS + ASSOC., INC	
		HARGIS + ASSOC., INC	
		HARGIS + ASSOC., INC	

Driving Directions

Starting from:	1	Raytheon Site: 1901 W. Malvern Ave., Fullerton, California 92833-2177
Arriving at:	2	St. Jude Medical Center: 101 E. Valencia Mesa, Fullerton, California 92835-3809
Distance:	2.4 miles	Approximate Travel Time: 5 minutes



Directions		Miles	
1.	Start on MALVERN AVE	0.1	↑
2.	Turn Left on W BASTANCHURY RD	2.2	↶
3.	Turn Right on N HARBOR BLVD	0.2	↷
4.	Turn Left on E VALENCIA MESA DR	0.0	↶
Distance: 2.4 miles		Approximate Travel Time: 5 minutes	

FIGURE 7
ROUTE TO HOSPITAL

FIELD CONTACTS

RAYTHEON FORMER MAIN FACILITY, FULLERTON (# 532)

H+A Project Team Cell Numbers

CGAR: 619.994.9710
RAN: 619.871.9002
SPN: 619.249.3166
GTC: 619.823-8106
GLW: 619.820.0826
DM: 760.399.7881
EJH: 530.306.7049

Site Contacts:

Paul Brewer, Raytheon: (714) 446-3525
Alan Nakagawa, Raytheon El Segundo: (310) 647-8591
Bob Labanko, SunCal (Construction Superintendent, new Park area): (714) 609-3394
Eric Silvers, Regency Centers (Sr. Manager Environmental): . (904) 598-7000
Denise Gerstenberg, Cushman & Wakefield (Property Manager). (213) 955-5137
Megan Smietana, Regency Centers (Property Manager). . (213) 553-2229
Carol Owens, Amerige Point (Onsite manager). (714) 879-4500
Nira Yamachika OCWD (Director of WQ- contact for OCWD splits) (714) 378-3281
Gary, OCWD (County Inspector (MW-36 Access). office 714-955-0213
. cell 714-448-0593
Doug Alvy, Clayton Environmental Services: (714) 431-4100
Gene Novella, MBK Homes; Radcliffe at Amerige Hts. (MW-9 area): (714) 350-3169
Wayne Perry, Inc. (714) 826-0352

BC2

Sam Walker (office) (714) 744-2990

Laboratories:

ATL (Rachelle Arada): (562) 989-4045
3275 Walnut Ave.
Signal Hill, CA 90755

CalScience (Virendra Patel)	
7440 Lincoln Way	
Garden Grove, CA 92841.	(714) 895-5494

Suppliers:

Diversified Well Products	(714) 256-1963
400 North Berry St.	
Brea 92821	

Sinclair Well Products.	(562) 403-3559
10637 Midway Ave.	
Cerritos 90703	

United Rentals	(714) 871-5712
1301 South State College Boulevard	
Fullerton Ca, 92831	

Apex Drum	(323) 721-8994
6226 Ferguson Drive	
Commerce, CA 90022	

GCL	(714) 869-3353
3726 E Miraloma Ave	
Anaheim CA 92806	

Bob Loll	(714) 331-6838
----------	----------------

Aquarius Water Equipment Rentals	(800) 498-BAGS
12799 Magnolia Ave.	
Riverside CA 92503	

Bell Pipe and Supply	(714) 772-3200
215 East Bell Road	
Anaheim, CA	

Pine Environmental Services	(949) 263-1500
1350 Reynolds Ave # 117,	
Irvine, CA 92614-5534	

Angela Reiter (cell)	(949) 943.7302
----------------------	----------------

Environmental Noise Control	(310) 663-4516
Jeff Obermeyer	

United Site Services	(800) 864-5387
----------------------	----------------

Pacific Surveys	(909) 625-6262
Michael Ridder	

American Intergrated Serices.	(310) 522-1168
Melynda Borrego	(310) 864-2489
Dispatch	(310) 428-4402

Securitas USA	.	.	.	.	.	.	.	.	(714) 935-5908
Joseph Keirouz									
Rain for Rent	.	.	.	.	.	.	.	.	(800) 742-7246
Long Beach	.	.	.	.	.	.	.	.	(562) 595-7760

EMERGENCY CONTACTS

Local Police

Fullerton Police Department
237 West Commonwealth Avenue
Fullerton, CA

911 or for non-emergency (714) 738-6790

Local Fire Department

Fullerton Fire Department
312 East Commonwealth Avenue
Fullerton, CA

911 or for non-emergency (714) 738-6500

Local Ambulance Service

Care Ambulance Service
8932 Katella Avenue
Anaheim, CA

911 or for non-emergency (714) 828-7750

Local Hospital

St. Jude Medical Center
101 East Valencia Mesa
Fullerton, CA

(714) 992-3000

Client Contact

(714) 446-3525

Paul Brewer
Raytheon

Poison Control Center

University of California, Medical Center
200 West Arbor Drive
San Diego, CA 92103

(800) 222-1222 for emergency or
(858) 715-6300 for administration

H+A Offices

Project Manager, Chris Ross
Field Task Manager, _____
H&S Manager, Cindy Leo
H&S Administrator/Site Safety Officer,
Marcos Rodriguez

San Diego (858) 455-6500
San Diego (858) 455-6500
Tucson (858) 455-6500
San Diego (858) 455-6500

Occupational Medicine Consulting Firm

WorkCare, Inc.
300 South Harbor Blvd. Suite 600
Anaheim, CA 92805

Phone: (800)455-6155 ext 152
Fax: (714) 922-1023

STATIC WATER LEVEL DATA SHEET

MONTH/YEAR: NOV 2019

METHOD OF MEASUREMENT/SOUNDER IDENTIFIER: FLAT TAPE ELECTRIC SOUNDER # _____

PROJECT NUMBER: 532.30

WELL IDENTIFIER	DATE	TIME	MEASURING POINT	DEPTH TO WATER FROM REFERENCE POINT (+feet)	REFERENCE POINT ELEVATION (ft msl)	WATER LEVEL ELEVATION (ft msl)	AUG 2019 PREVIOUS DEPTH TO WATER (ft)	CHANGE IN WATER LEVEL (± ft)	COMMENTS	INITIALS
P-07	11/18/19	1351	TOC	113.51	142.31	28.8	111.81	-1.70		AMJ/DJS
P-09	11/ /19				183.86		120.73			
MW-06	11/ /19				184.70		158.29			
MW-08	11/18/19	1440	TOC	134.96	155.91	20.95	131.47	-3.49		AMJ/DJS
MW-09	11/ /19				180.10		156.39			
MW-13	11/ /19				141.84		125.94			
MW-15	11/18/19	1358	TOC	130.51	144.95	14.44	127.92	-2.59		
MW-16	11/18/19	1342	TOC	130.84	142.40	11.56	125.70	-5.14		AMJ/DJS
MW-17	11/ /19				142.70		127.29			
MW-18	11/ /19				142.32		127.79			
MW-19	11/ /19				142.06		127.47			
MW-20	11/ /19				184.19		153.42			
MW-21	11/18/19	1317	TOST	120.11	141.18	21.07	116.91	-3.20	Totalizer: N/A Pumping? No	AMJ/DJS
MW-22	11/ /19				138.65		124.05			
MW-23	11/ /19				137.33		124.19			
MW-24	11/18/19	1348	TOST	125.62	142.83	17.31	119.38	-6.14		AMJ/DJS
MW-25	11/18/19	1359	TOC	125.03	142.64	17.61	119.87	-5.16		↓
MW-26A	11/ /19				137.04		119.47			
MW-26B	11/ /19				137.05		119.84			
MW-26C	11/ /19				137.22		122.34			

msl = Mean sea level

ft = feet

STATIC WATER LEVEL DATA SHEET

MONTH/YEAR: NOV 2019

METHOD OF MEASUREMENT/SOUNDER IDENTIFIER: FLAT TAPE ELECTRIC SOUNDER # _____

PROJECT NUMBER: 532.30

WELL IDENTIFIER	DATE	TIME	MEASURING POINT	DEPTH TO WATER FROM REFERENCE POINT (+feet)	REFERENCE POINT ELEVATION (ft msl)	WATER LEVEL ELEVATION (ft msl)	AUG 2019 PREVIOUS DEPTH TO WATER (ft)	CHANGE IN WATER LEVEL (± ft)	COMMENTS	INITIALS
MW-27	11/ /19				137.16		121.91			
MW-28	11/ /19				140.77		125.83			
MW-29	11/ 18/19	1404	TOST	174.53P	139.81	-34.72	176.04P	+11.51	Totalizer: 4917036.0 Pumping? Y	AMT/DSS
MW-30A	11/ 18/19	1240	TOST	120.31	129.44	9.13	115.56	-4.75		AMS/DJS
MW-30B	11/ 18/19	1252	TOST	116.81	129.39	12.58	112.75	-4.06		↓
MW-31	11/ 18/19	1108	TOST	109.48	119.60	10.12	105.28	-4.20		↓
MW-32A	11/ 18/19	0811	TOST	84.69	92.88	8.19	80.66	-4.03		AMS/DJS
MW-32B	11/ 18/19	0820	TOST	83.95	92.89	8.94	79.84	-4.11		↓
MW-32C	11/ 18/19	0825	TOST	77.67	92.88	15.21	73.45	-4.22		↓
MW-33	11/ 18/19	1024	TOST	75.91	83.19	7.28	71.79	-4.12		↓
MW-34A	11/ /19				153.25		145.11			
MW-34B	11/ /19				153.11		139.32			
MW-34C	11/ /19				153.29		138.94			
MW-35A	11/ 18/19	0950	TOST	83.17	93.57	10.40	80.12	-3.05		AMS/DJS
MW-35B	11/ 18/19	0952	TOST	88.40	93.56	5.16	84.54	-3.86		↓
MW-35C	11/ 18/19	0954	TOST	85.68	93.55	7.87	81.68	-4.00		↓
MW-36	11/ /19				86.65		75.50			
MW-37	11/ /19				155.60		139.05			
MW-38	11/ /19				154.90		148.61			
MW-39	11/ /19				84.25		73.78			

msl = Mean sea level

ft = feet

STATIC WATER LEVEL DATA SHEET

MONTH/YEAR: NOV 2019

METHOD OF MEASUREMENT/SOUNDER IDENTIFIER: FLAT TAPE ELECTRIC SOUNDER # _____

PROJECT NUMBER: 532.30

WELL IDENTIFIER	DATE	TIME	MEASURING POINT	DEPTH TO WATER FROM REFERENCE POINT (+feet)	REFERENCE POINT ELEVATION (ft msl)	WATER LEVEL ELEVATION (ft msl)	AUG 2019 PREVIOUS DEPTH TO WATER (ft)	CHANGE IN WATER LEVEL (± ft)	COMMENTS	INITIALS
MW-40	11/18/19	1050	TOST	112.04	123.40	11.36	107.80	-4.24		Amf/DJS
MW-41	11/ /19				155.60		141.60			
MW-42	11/18/19	0930	TOST	76.63	82.80	6.17	72.59	-4.04		Amf/DJS
MW-43	11/18/19	0913	TOST	76.74	76.64	5.90	66.77	-3.97		
EW-01	11/18/19	1318	TOST	129.26	141.07	11.81	124.12	-5.14	SOUNDING TUBE TO 172.65 Totalizer: NA	Pumping? No
EW-02	11/18/19	1426	TOST	127.81	132.97	5.16	123.12	-4.69	Totalizer: 2791669	Pumping? Y, 315 GPM

 msl = Mean sea level
 ft = feet

**NOVEMBER 2019 GROUNDWATER SAMPLE PLAN
TEAM 1**

QA/QC	Total VOC's µg/L	1,4-Dioxane µg/L	APROX. GALLONS	ESTIMATE D TIME (minutes)	WELL IDENTIFIER	HYDROGEOLOGIC ZONE	NOVEMBER 2019 SAMPLING SCHEDULE	SAMPLE METHOD
	0	0	957	46	MW-43	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	0	0	835	38	MW-39	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
2/3SV	0	0	892	46	MW-33	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
MS/MSD	1.8	0	864 1048	44	MW-35	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	5	0.25	925	43	MW-42	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
2/3SV	74	6.7	973	73	MW-36	Deep; D	VOCs; 1,4-Dioxane	Ded.240V
2/3SV	294	7.6	803	63	MW-32B	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
Split/dup	355	11	264	29	MW-31	Deep; B	VOCs; 1,4-Dioxane	Ded.240V

NOTES

A **MS** and **MSD** (3x40ml VOA and 1L amber) should be collected every day/ alternating 1,4-Dioxane methods as indicated.

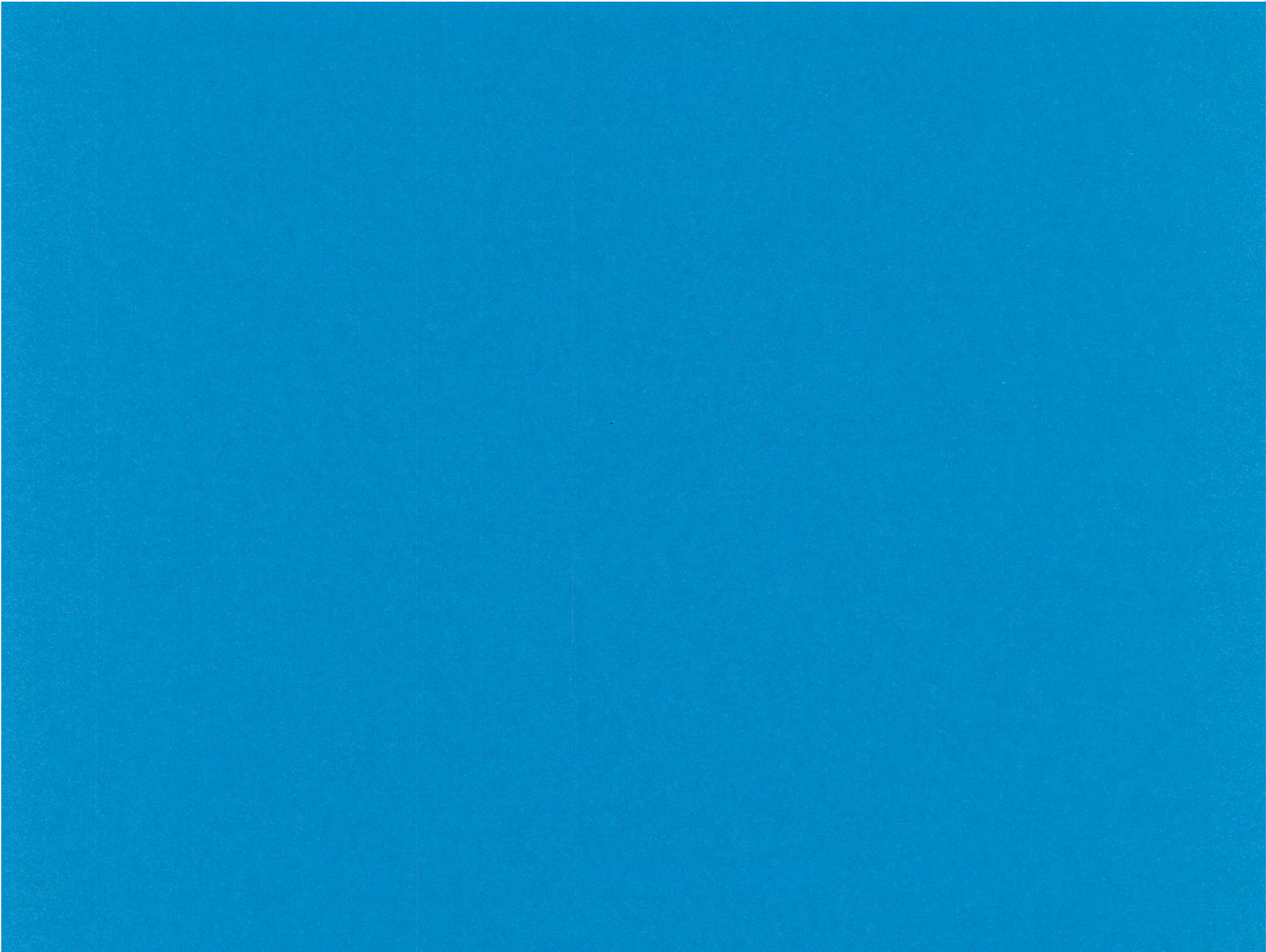
1,4-Dioxane analysis method is 8270 SIM unless specified otherwise (if historical detect is > 5.0 ug/l MOD is used).

1 = Day - # refers to the day scheduled to sample and the corresponding dedicated pipestand to use: ND=1; 0-10=2; 10 - 100=3; >100=4

Wells with dedicated pumps should follow concentration order when possible.

MW-36 and MW-39 Gate Access Code: 3252

RB = Rinsate blank taken on non-dedicated equipment each day- will vary with schedule and should be confirmed with both teams each morning.



**NOVEMBER 2019 GROUNDWATER SAMPLE PLAN
TEAM 2**

QA/QC	Total VOC's µg/L	1,4-Dioxane µg/L	APROX. GALLONS	ESTIMATE D TIME (minutes)	WELL IDENTIFIER	HYDROGEOLOGIC ZONE	NOVEMBER 2019 SAMPLING SCHEDULE	SAMPLE METHOD
	87	42	150	15	EW-01	Deep; B	VOCs; 1,4-Dioxane (8270 MOD)	Dedicated
	1028	510	300	15	MW-21	Water Table; BC	VOCs; 1,4-Dioxane (8270 MOD)	Dedicated
	0	0	240	19	<u>MW-40</u>	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	0	0.06	59	11	MW-30A	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	0.9	0.21	99	17	MW-28	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	5	0.84	149	22	MW-41	Deep; B	VOCs; 1,4-Dioxane (8270 MOD)	Ded.240V
	60	22	178	22	MW-34B	Deep; B	VOCs; 1,4-Dioxane (8270 MOD)	Ded 240V
	124	0.92	129	28	MW-30B	Deep; BC	VOCs; 1,4-Dioxane	Ded.240V
	0	0	153	51	MW-26C	Deep; B	VOCs; 1,4-Dioxane	Redi-flo
	151	3.6	19	25	MW-08	Water Table; BC	VOCs; 1,4-Dioxane	Redi-flo

NOTE

1 = Day - # refers to the day scheduled to sample and the corresponding dedicated pipestand to use: ND=1; 0-10=2; 10 - 100=3; >100=4

A **MS** and **MSD** (3x40ml VOA and 1L amber) should be collected every day/ alternating 1,4-Dioxane methods as indicated.

1,4-Dioxane analysis method is 8270 SIM unless specified otherwise (if historical detect is > 5.0 ug/l MOD is used).

Wells with dedicated pumps should follow concentration order when possible.

MW-36 and MW-39 Gate Access Code: 3252

GROUNDWATER SAMPLING INFORMATION

DATE: 11/19/19

TASK: 532.30

WELL ID: MW-33

Time 1018 Static DTW (ft below reference point)	76.01	Casing Volume (CV) (gallons) 291 3 CV (gallons) 873	Weather Conditions	Initials: AMS/DJS
Casing Total Depth (ft below reference point)	1020	Purging Device ded Pump Sampling Device NO PRESSURE	Time 1017 Temp. 70	Begin Purge 1032 End Purge 1134
Pump to Water Column (feet)	948.28	Pump: Depth (ft brp) 555 Type glennco Voltage 240 HP	Skies cloudy	Gallons Purged 902 CVs Purged 3.1
Casing Capacity (Diameter 4") (gallons per foot)	0.66	Monitor Well Recharge Rate: Slow Fast ☒	Wind (mph) — From —	DTW (ft brp) 77.87 Time 1132

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (MS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1032	76.01	0	0			Begin	purge			—	Q ≈ 15 GPM
1040	77.71	146	0.5	20.8	7.44	613	117.6	0.57	2.25	—	
1050	77.79	291	1.0	21.0	7.51	617	97.7	0.70	0.13	—	
1059	77.81	432	1.5	21.0	7.60	606	77.8	1.77	0.64	—	
1110	77.83	582	2.0	21.4	7.71	619	95.2	1.36	0.22	—	25v collected
1122	77.87	728	2.5	21.7	7.66	618	90.1	2.00	0.04	—	
1132	77.87	873	3.0	21.5	7.69	618	96.6	2.48	0.00	—	35v collected
1134	NM	902	3.1			End	purge				

SAMPLE COLLECTION SAMPLE TIME 1132			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	6	40 ml VOA	MW-33-25v 25v collected @ 1114			
8270 SIM 1,4 dioxane	2	1 L Amber	MW-33 collected @ 1132			
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? ☒ N						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 11/19/19

TASK: 532.30

WELL ID: MW-35C

Time 1337 Static DTW (ft below reference point)	85.68	Screen Casing Volume (CV) (gallons) 288	3 CV (gallons) 864	Weather Conditions	Initials: AMJ/DJS
Casing Total Depth (ft below reference point)	1040	Purging Device ded pump	Sampling Device ND pipestand	Time 1340 Temp. 71	Begin Purge 1338 End Purge 1436
pump to screen Water Column (feet)	430	Pump: Depth (ft brp) 560	Type Grundfos Voltage 240 HP	Skies cloudy	Gallons Purged 918 CVs Purged 3.2
Casing Capacity (Diameter 4") (gallons per foot)	0.66	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) - From -	DTW (ft brp) 95.02 Time 1434

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1338	85.68	0	0			Begin					Q ≈ 15 GPM
1350	94.82	144	0.5	21.5	7.70	910	125.2	3.70	0.32	-	
1357	94.93	288	1.0	21.1	7.55	707	116.0	3.54	0.21	-	
1406	94.93	432	1.5	21.0	7.58	700	123.3	3.64	2.10	-	
1416	94.98	576	2.0	20.9	7.59	700	121.5	3.59	2.45	-	
1426	95.01	720	2.5	20.8	7.61	700	118.2	3.48	0.96	-	
1434	95.02	864	3.0	20.7	7.61	698	117.7	3.60	0.58	-	collect samples
1436	NM	918	3.18			End					

SAMPLE COLLECTION SAMPLE TIME 1434

ANALYSIS	QUANTITY	TYPE
8260B VOCs	9	40 ml VOA
8270 SIM 1,4 dioxane	3	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber

DUPLICATES / SPLITS / BLANKS? ☒ N

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

MS/MSD collected

GROUNDWATER SAMPLING INFORMATION

DATE: 11/19/19

TASK: 532.30

WELL ID: MW-31

Time 1528	Static DTW (ft below reference point) 109.60	Casing Volume (CV) (gallons) 81	3 CV (gallons) 243	Weather Conditions	Initials: AMJ/DJS
Casing Total Depth (ft below reference point) 996	Purging Device ded. pump	Sampling Device >100 pipedent	Time 1530	Temp. 70	Begin Purge 1528
Water Column (feet) 54	Pump: Depth (ft brp) 942	Type grundfos	Skies cloudy	Gallons Purged 272	End Purge 1552
Casing Capacity (Diameter 6") (gallons per foot) 1.5	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) -	From -	DTW (ft brp) 113.66
					Time 1548

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1528	109.60	0	0								Begin purge
1532	113.61	40.5	0.5	21.2	10.62*	1135	57.6	3.52	4.03	-	Q ≈ 12 GPM
1535	113.64	81	1.0	21.2	8.63*	1399	62.3	2.62	4.7	-	
1538	113.65	121.5	1.5	21.2	8.23	1255	50.1	1.95	18.5	-	
1542	113.66	162	2.0	21.2	8.03	1155	51.9	0.36	16.0	-	
1545	113.66	202.5	2.5	21.3	7.91	1068	55.8	1.50	7.77	-	
1548	113.66	243	3.0	21.2	7.91	1039	57.3	1.74	4.86	-	collect samples
1552	NM	272	-								End purge

SAMPLE COLLECTION SAMPLE TIME 1548

ANALYSIS	QUANTITY	TYPE
8260B VOCs	6	40 ml VOA
8270 SIM 1,4 dioxane	2	1 L Amber
8270 MOD 1,4 dioxane	2	1 L Amber

DUPLICATES / SPLITS / BLANKS? ☒ Y ☐ N

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

MW-3100 collected @ 1550

GROUNDWATER SAMPLING INFORMATION

DATE: 11/20/19

TASK: 532.30

WELL ID: MW-43

Time 0819 Static DTW (ft below reference point)	70.80	Screen Casing Volume (SV) (gallons) 324319 SV (gallons) 972 957	Weather Conditions Time 0820 Temp. 58	Initials: AMS/DJS
Casing Total Depth (ft below reference point)	1051	Purging Device ded. pump Sampling Device no pipestand	Skies clear w/ some clouds	Begin Purge 0827 End Purge 0927
Water Column (feet)	491	Pump: Depth (ft brp) 560 Type Grundfos Voltage 240 HP	Wind (mph) 1-3 From variable	Gallons Purged 1000 SVs Purged 3.1
Casing Capacity (Diameter 4") (gallons per foot)	0.66	Monitor Well Recharge Rate: Slow Fast X	DTW (ft brp) 76.51 Time 0925	

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0827	70.80	0	0								Begin purge Q ≈ 24 GPM
0833	76.65	160	0.5	19.8	7.93	529.0	11.5	1.80	4.23	-	
0838	76.29	319	1.0	20.6	8.05	495.7	-39.2	1.38	3.08	-	
0849	76.39	479	1.5	21.1	7.84	478.3	-48.9	2.10	1.00	-	Q ≈ 20 GPM
0902	76.46	638	2.0	20.4	7.78	476.7	-12.0	1.33	0.40	-	
0911	76.51	798	2.5	21.1	7.79	479.3	-4.2	1.45	0.11	-	
0925	76.51	957	3.0	20.9	7.82	483.0	-0.6	1.76	3.06	-	Collect samples
0927	NM	1000	3.1								End purge

SAMPLE COLLECTION SAMPLE TIME 0925

ANALYSIS	QUANTITY	TYPE
8260B VOCs	3	40 ml VOA
8270 SIM 1,4 dioxane	1	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber

DUPLICATES / SPLITS / BLANKS? Y (N)

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 11/20/19

TASK: 532.30

WELL ID: MW-42

Time 1025 Static DTW (ft below reference point)	76.77	Screen 31 301 324 3 CV (gallons) 903	Weather Conditions	Initials: AM/DS
Casing Total Depth (ft below reference point)	1051	Purging Device ded. pump Sampling Device 0-10 piped	Time 1024 Temp. 58	Begin Purge 1038 End Purge 1125
Water Column (feet)	491	Pump: Depth (ft brp) 560 Type 9/16 (103) Voltage 240 HP	Skies cloudy	Gallons Purged 930 EV Gvs Purged 3.1
Casing Capacity (Diameter 4") (gallons per foot)	0.66	Monitor Well Recharge Rate: Slow Fast X	Wind (mph) — From —	DTW (ft brp) 84.56 Time 1123

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1038	76.77	0	0								Q ≈ 22 GPM
1047	85.21	151	0.5	19.7	7.94	487.0	-19.6	3.71	0.60	—	
1055	85.21	301	1.0	21.0	7.89	506.8	-38.4	1.44	0.69	—	
1102	85.35	452	1.5	21.0	8.03	505.9	-31.4	1.01	0.65	—	
1109	84.51	602	2.0	21.0	8.04	507.4	-22.7	1.59	0.14	—	
1116	84.55	753	2.5	20.8	8.04	508.6	7.1	1.67	0.37	—	
1123	84.56	903	3.0	21.4	8.09	508.8	-0.2	1.03	0.58	—	Collect samples
1125	NM	930	3.1							—	

SAMPLE COLLECTION SAMPLE TIME 1123

ANALYSIS	QUANTITY	TYPE
8260B VOCs	3	40 ml VOA
8270 SIM 1,4 dioxane	1	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber

DUPLICATES / SPLITS / BLANKS? Y ☒

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 11/20/19

TASK: 532.30

WELL ID: MW-39

Time <u>1333</u> Static DTW (ft below reference point)	77.75	Casing Volume (gallons) <u>271</u>	3 <u>SV</u> (gallons) <u>813</u>	Weather Conditions	Initials: <u>AMJ/DJS</u>
Casing Total Depth (ft below reference point)	1012	Purging Device <u>ded. pump</u>	Sampling Device <u>ND pipet and</u>	Time <u>1323</u> Temp. <u>58</u>	Begin Purge <u>1338</u> End Purge <u>1419</u>
<u>pump screen</u> Water Column (feet)	452	Pump: Depth (ft brp) <u>560</u> Type <u>grundfos</u> Voltage <u>240</u> HP		Skies <u>rain/cloudy</u>	Gallons Purged <u>869</u> <u>SV</u> Purged <u>3.2</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot)	0.65	Monitor Well Recharge Rate: Slow Fast <u>X</u>		Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>93.85</u> Time <u>1417</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (MS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1338	77.75	0	0								Q ≈ 22 GPM
1345	93.29	136	0.5	19.7	8.28	412.3	-86.7	3.61	0.08	-	
1350	93.54	271	1.0	20.8	8.54	407.8	-109.2	2.25	0.18	-	
1357	93.71	407	1.5	20.9	8.58	404.8	-79.5	2.68	0.08	-	
1404	93.66	542	2.0	21.2	8.50	409.7	-46.5	1.57	0.06	-	
1411	93.81	678	2.5	21.7	8.51	411.0	-46.4	1.89	0.17	-	
1417	93.85	813	3.0	21.9	8.48	411.8	-42.9	2.07	0.24	-	Collect samples
1419	NM	869	3.2								

SAMPLE COLLECTION SAMPLE TIME 1417

ANALYSIS	QUANTITY	TYPE
8260B VOCs	<u>2</u>	40 ml VOA
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber

DUPLICATES / SPLITS / BLANKS? Y
If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 11/20/19

TASK: 532.30

WELL ID: MW-36

Time 1530 Static DTW (ft below reference point)	79.69	Screen 5V	Casing Volume (gallons) 320	3V (gallons) 960	Weather Conditions	Time 1532 Temp. 67	Initials: AMJ/OJS
Casing Total Depth (ft below reference point)	994	Purging Device del. pump	Sampling Device 10-150 pipet/d		Skies cloudy	Begin Purge 1532	End Purge 1650
Pump to Screen Water Column (feet)	534	Pump: Depth (ft brp) 466	Type gravel/s	Voltage 40 HP		Gallons Purged 965	SVs Purged 3.1
Casing Capacity (Diameter 4") (gallons per foot)	0.66	Monitor Well Recharge Rate: Slow	Fast X		Wind (mph) -	From -	DTW (ft brp) 79.69 Time 1649

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (M/S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1532	79.69	0	0								Begin purge
1545	82.99	160	0.5	19.9	7.99	982	12.1	1.83	0.30	-	
1557	83.21	320	1.0	20.9	7.96	716	-11.8	0.87	0.14	-	
1610	83.21	480	1.5	20.8	7.86	967	-9.4	1.23	0.02	-	
1622	83.35	640	2.0	20.9	7.79	1075	103.4	1.54	0.01	-	collect samples
1635	83.41	800	2.5	21.1	7.75	1108	5.5	1.08	0.03	-	
1644	83.43	960	3.0	21.2	7.64	1120	5.0	1.84	0.02	-	collect samples
1650	NM	965	3.1								End purge

SAMPLE COLLECTION SAMPLE TIME 1649	AIR MONITORING PID/FID ppm: VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
ANALYSIS QUANTITY TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs 6 40 ml VOA				
8270 SIM 1,4 dioxane 2 1 L Amber				
8270 MOD 1,4 dioxane 1 1 L Amber				
DUPLICATES / SPLITS / BLANKS? (Y) N	MW-36-2SV collected @ 1622			

GROUNDWATER SAMPLING INFORMATION

DATE: 11/21/19

TASK: 532.30

WELL ID: MW-32B

Time 0812	Static DTW (ft below reference point) 84.03	Screen Casing Volume (CV) (gallons) 264	32V (gallons) 791	Weather Conditions	Time 0812	Temp. 58	Initials: AMJ/DJS
Casing Total Depth (ft below reference point)	999	Purging Device ded. pump	Sampling Device	Begin Purge 0815	End Purge 0923		
Water Column (feet)	939	Pump: Depth (ft brp) 560	Type Grundfos Voltage 240 HP	Gallons Purged 824 SV	VS Purged 3.1		
Casing Capacity (Diameter 4") (gallons per foot)	0.66	Monitor Well Recharge Rate: Slow	Fast X	DTW (ft brp) 103.42	Time 0920		

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0816	84.03	0	0			Begin					Q ≈ 13 GPM
0827	102.43	132	0.5	19.7	7.71	989	-9.3	2.10	0.0	-	
0837	102.79	264	1.0	20.7	7.72	950	-72.8	1.07	0.09	-	
0847	103.09	396	1.5	20.7	7.81	1044	-46.3	1.55	0.21	-	
0858	103.26	528	2.0	20.9	7.81	1043	-44.3	0.90	0.19	-	Collect samples
0910	103.35	660	2.5	20.9	7.81	1028	-57.1	0.83	0.22	-	
0920	103.42	791	3.0	21.1	7.78	1020	-52.4	0.96	0.0	-	Collect samples
0923	NM	824	3.1			End					

SAMPLE COLLECTION SAMPLE TIME 0920

ANALYSIS	QUANTITY	TYPE
8260B VOCs	6	40 ml VOA
8270 SIM 1,4 dioxane	2	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber

DUPLICATES / SPLITS / BLANKS? (Y) N

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

MW-32B-2SV collected @ 0858

GROUNDWATER SAMPLING INFORMATION

DATE: 08/15/19

TASK: 532.30

WELL ID: EW-01

Time 0938 Static DTW (ft below reference point)	124.49	Casing Volume (CV) (gallons) 41.9 3 CV (gallons) 125.7	Weather Conditions
Casing Total Depth (ft below reference point)	188	Purging Device ded. pump Sampling Device ded. sample port	Time 09.08 Temp. 65
Water Column (feet)	63.51	Pump: Depth (ft brp) - Type - Voltage - HP -	Skies cloudy
Casing Capacity (Diameter 4") (gallons per foot)	0.66	Monitor Well Recharge Rate: Slow Fast X	Wind (mph) - From -
		Initials: AMS/AMO	
		Begin Purge 0941 End Purge 0956	
		Gallons Purged 150 CVs Purged 3.6	
		DTW (ft brp) 125.06 Time 0951	

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0941	124.49	0	0			Pump	on			-	Q ≈ 11 GPM
0943	124.96	22	0.5	24.0	7.55	1.51	166.0	5.13	0.82	-	
0945	125.01	44	1.1	23.8	7.42	1.42	170.2	6.31	1.06	-	
0947	125.04	66	1.6	23.8	7.41	1.42	172.4	6.61	1.34	-	
0949	125.06	88	2.1	24.5	7.35	1.42	172.8	5.67	0.65	-	
0951	125.06	110	2.6	24.3	7.35	1.42	173.2	6.02	0.67	-	
0953	NM	125.7	3.0	24.3	7.37	1.42	171.8	5.66	0.53	-	collect samples
0956	NM	150	3.6			Pump	off			-	

SAMPLE COLLECTION SAMPLE TIME 0953			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	3	40 ml VOA X				
8270 SIM 1,4 dioxane		1 L Amber				
8270 MOD 1,4 dioxane	1	1 L Amber X				
DUPLICATES / SPLITS / BLANKS? Y N						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 8/15/19

TASK: 53230

WELL ID: MW-08

Time 1324 Static DTW (ft below reference point) 131.59	Casing Volume (CV) (gallons) 5.6 3 CV (gallons) 16.9	Weather Conditions	Initials: AMD/AMJ
Casing Total Depth (ft below reference point) 166.10	Purging Device Grundfos Sampling Device ded tubing	Time 1324 Temp. 85	Begin Purge 1328 End Purge 1353
Water Column (feet) 34.51	Pump: Depth (ft brp) 164 Type MPI Voltage 115 HP 0.5	Skies clear	Gallons Purged 18.8 CVs Purged 3.3
Casing Capacity (Diameter 2") (gallons per foot) 0.163	Monitor Well Recharge Rate: Slow Fast X	Wind (mph) - From -	DTW (ft brp) 132.97 Time 1351

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (m S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1328	131.59	0	0	PUMP ON							Q ≈ 0.75 GPM
1332	132.76	2.8	0.9	25.2	7.31	1.90	180.2	4.04	2.80	275	
1336	132.79	6	1.1	24.2	7.19	1.99	181.3	2.81	2.16	275	
1340	132.82	9	1.6	24.0	7.16	2.03	182.3	2.60	1.27	275	
1343	132.84	11.25	2.0	24.0	7.16	2.04	182.8	2.48	0.90	275	
1347	132.91	14.25	2.5	24.0	7.15	2.04	183.4	2.57	0.78	275	
1351	132.97	17.25	3.0	23.8	7.15	2.04	184.1	2.53	0.49	275	collect samples
1353	NM	18.75	3.3	pump off							

SAMPLE COLLECTION SAMPLE TIME 1351			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	3	40 ml VOA X				
8270 SIM 1,4 dioxane	1	1 L Amber X				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y (N)						

GROUNDWATER SAMPLING INFORMATION

DATE: 08/15/19

TASK: 532.30

WELL ID: MW-21

Time <u>0921</u> Static DTW (ft below reference point)	<u>116.64</u>	Casing Volume (CV) (gallons) <u>76</u> 3 CV (gallons) <u>228</u>	Weather Conditions	Initials: <u>AMJ/AMD</u>
Casing Total Depth (ft below reference point)	<u>232</u>	Purging Device <u>ded. pump</u> Sampling Device <u>ded. sampler</u>	Time <u>0915</u> Temp. <u>65</u>	Begin Purge <u>0916</u> End Purge <u>0931</u>
Water Column (feet)	<u>115.36</u>	Pump: Depth (ft brp) <u>-</u> Type <u>-</u> Voltage <u>-</u> HP <u>-</u>	Skies <u>cloudy</u>	Gallons Purged <u>300</u> CVs Purged <u>395</u>
Casing Capacity (Diameter <u>4"</u> (gallons per foot)	<u>0.66</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>133.39</u> Time <u>0928</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (mS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
<u>0916</u>	<u>116.64</u>	<u>0</u>	<u>0</u>	<u>PUMP ON</u>							
<u>0918</u>	<u>131.94</u>	<u>40</u>	<u>0.53</u>	<u>23.6</u>	<u>7.56</u>	<u>2.08</u>	<u>213.3</u>	<u>2.13</u>	<u>NM</u>	<u>-</u>	<u>Q = 20 gpm</u>
<u>0920</u>	<u>132.39</u>	<u>80</u>	<u>1.05</u>	<u>22.2</u>	<u>7.46</u>	<u>2.19</u>	<u>189.3</u>	<u>1.58</u>	<u>1.21</u>	<u>-</u>	
<u>0921</u>	<u>132.68</u>	<u>100</u>	<u>1.32</u>	<u>22.0</u>	<u>7.38</u>	<u>2.22</u>	<u>182.0</u>	<u>2.30</u>	<u>1.75</u>	<u>-</u>	
<u>0923</u>	<u>132.89</u>	<u>146</u>	<u>1.84</u>	<u>22.0</u>	<u>7.35</u>	<u>2.23</u>	<u>180.2</u>	<u>3.06</u>	<u>2.63</u>	<u>-</u>	
<u>0925</u>	<u>133.12</u>	<u>180</u>	<u>2.36</u>	<u>22.0</u>	<u>7.32</u>	<u>2.23</u>	<u>178.8</u>	<u>2.81</u>	<u>2.09</u>	<u>-</u>	
<u>0928</u>	<u>133.39</u>	<u>240</u>	<u>3.15</u>	<u>22.2</u>	<u>7.30</u>	<u>2.24</u>	<u>177.2</u>	<u>3.12</u>	<u>1.12</u>	<u>-</u>	
<u>0931</u>	<u>NM</u>	<u>300</u>	<u>3.95</u>	<u>PUMP OFF</u>							

SAMPLE COLLECTION SAMPLE TIME <u>0928</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>89</u>	40 ml VOA	<u>MS/MSD collected</u>			
8270 SIM 1,4 dioxane		1 L Amber				
8270 MOD 1,4 dioxane	<u>3</u>	1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y <u>(N)</u>			If yes, complete appropriate forms.			

GROUNDWATER SAMPLING INFORMATION

DATE: 8/14/19

TASK: 532.36

WELL ID: MW-26C

Time 0829 Static DTW (ft below reference point) 122.40	Screen Casing Volume (GV) (gallons) 49	SV 147	Weather Conditions	Initials: AMS/AMD
Casing Total Depth (ft below reference point) 499	Purging Device Grundfos	Sampling Device obd. tubing	Time 0835 Temp. 76	Begin Purge 0843 End Purge 0934
Water Column (feet) 376.60	Pump: Depth (ft brp) ~200 Type MPI Voltage 115 HP 0.5		Skies Clear & HLE cloudy	Gallons Purged 153 SVs Purged 3.12
Casing Capacity (Diameter 2") (gallons per foot) 0.163	Monitor Well Recharge Rate: Slow Fast X		Wind (mph) - From -	DTW (ft brp) 123.44 Time 0932

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µmS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0843	122.40	0	0							330	Q ≈ 3 GPM
0851	123.39	24.5	0.5	22.2	9.17	0.442	181.2	2.1	1.60	330	
0903	123.41	60	1.22	22.2	7.26	0.81	229.8	0.23	0.90	330	
0908	123.43	75	1.53	22.2	7.63	0.84	185.0	0.17	0.92	330	
0916	123.43	99	2.02	22.2	7.70	0.85	120.1	0.17	1.28	330	
0924	123.44	123	2.51	22.2	7.69	0.86	92.7	0.16	0.60	330	
0932	123.44	147	3.00	22.3	7.68	0.86	70.5	0.20	0.69	330	collect samples
0934	NM	153	3.12								

SAMPLE COLLECTION SAMPLE TIME 0932			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	6	40 ml VOA X	RB-08/1919 collected @ 0940			
8270 SIM 1.4 dioxane	2	1 L Amber X				
8270 MOD 1.4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? ☒ Y ☐ N If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 8/15/19

TASK: 532.30

WELL ID: MW-28

Time 0816	Static DTW (ft below reference point)	126.02	Casing Volume (CV) (gallons)	29.7	3 CV (gallons)	89.1	Weather Conditions	Time 0815	Temp. 64	Initials: AMS/AMD
Casing Total Depth (ft below reference point)		375	Purging Device	ded pump	Sampling Device	ND prestand	Begin Purge	0822	End Purge	0839
Water Column (feet)		45	Pump: Depth (ft brp)	330	Type	grundfos	Gallons Purged	98.6	CVs Purged	3.3
Casing Capacity (Diameter 4") (gallons per foot)		0.66	Monitor Well Recharge Rate: Slow		Fast	x	DTW (ft brp)	132.00	Time	0838

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0822	126.02	0	0			Pump on				—	Q ≈ 6 GPM
0825	131.88	15	0.5	21.6	7.31	1.09	206.3	1.90	5.53	—	
0827	132.59	30	1.0	21.7	7.40	1.09	200.8	3.34	3.81	—	
0830	132.00	45	1.5	21.7	7.42	1.08	200.1	3.39	2.49	—	
0832	132.00	60	2.0	21.7	7.44	1.07	201.4	3.19	3.13	—	
0835	132.00	75	2.5	21.7	7.45	1.07	203.0	3.18	1.31	—	
0838	132.00	89.1	3.0	21.7	7.46	1.07	204.7	3.15	1.74	—	collect samples
0839	NM	98.6	3.3			Pump off					

SAMPLE COLLECTION SAMPLE TIME 0838			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	3	40 ml VOA x				
8270 SIM 1.4 dioxane	1	1 L Amber x				
8270 MOD 1.4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y (N)						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 8/13/19

TASK: 532.30

WELL ID: MW-30A

Time 1135 Static DTW (ft below reference point) 115.00	Screen Casing Volume (SV) (gallons) 17.6 SV 3 CV (gallons) 52.8	Weather Conditions	Initials: AMJ/AMD
Casing Total Depth (ft below reference point) 564	Purging Device decl. pump Sampling Device ND p/pestanal	Time 1435 Temp. 86	Begin Purge 1439 End Purge 1450
Water Column (feet) 44	Pump: Depth (ft brp) 520 Type grundles Voltage 240 HP 0.5	Skies clear	Gallons Purged 59 SV CVs Purged 3.35
Casing Capacity (Diameter 5") (gallons per foot) 0.39	Monitor Well Recharge Rate: Slow Fast X	Wind (mph) — From —	DTW (ft brp) 117.71 Time 1449

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1439	115.60	0	0			Begin					Q ≈ 6 GPM
1441	117.60	9	0.5	25.4	7.67	1.11	112.8	5.16	1.06	—	
1442	117.63	18	1.0	25.1	7.67	1.11	108.9	3.87	2.20	—	
1444	117.65	26.4	1.5	25.1	7.66	1.11	106.0	3.67	1.95	—	
1445	117.68	35.2	2.0	25.2	7.66	1.11	103.4	3.51	1.27	—	
1447	117.70	44	2.5	25.2	7.65	1.11	101.8	3.29	1.12	—	
1449	117.71	52.8	3.0	25.3	7.64	1.11	100.6	3.54	1.15	—	collect sample
1450	NM	59.0	3.35			End					

SAMPLE COLLECTION SAMPLE TIME 1449			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	3	40 ml VOA X				
8270 SIM 1,4 dioxane	1	1 L Amber X				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y N						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 8/13/19

TASK: 532.30

WELL ID: MW-303

Time 1459 Static DTW (ft below reference point) 112.92	Casing Volume (GV) (gallons) 40	3 GV (gallons) 120	Weather Conditions	Initials: fms/AMT
Casing Total Depth (ft below reference point) 61.9	Purging Device elect. pump	Sampling Device 10-100 pipette	Time 1500 Temp. 86	Begin Purge 1502 End Purge 1530
Water Column (feet) 9.9	Pump: Depth (ft brp) 520 Type 9/16" x 1/2"	Voltage 240 HP 0.5	Skies clear	Gallons Purged 12.9 GV Purged 3.2
Casing Capacity (Diameter 3") (gallons per foot) 0.39	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) - From -	DTW (ft brp) 135.59 Time 1525

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1502	112.92	0	0	-	Begin	purge	-	-	-	-	Q=5.4 GPM
1506	131.22	20	0.5	21.7	7.11	1.44	103.7	0.85	1.09	-	
1510	133.22	40	1.0	21.9	7.03	1.62	104.2	1.50	3.80	-	
1515	134.31	60	1.5	22.0	7.02	1.56	109.1	3.89	2.78	-	
1519	135.00	80	2.0	22.0	7.07	1.50	107.5	3.26	3.61	-	
1525	135.59	100	2.5	22.1	7.08	1.50	107.1	3.03	2.42	-	
1528	NM	120	3.0	22.1	7.07	1.50	107.2	2.99	1.31	-	collect sample
1530	NM	129	3.2	-	end	purge	-	-	-	-	

SAMPLE COLLECTION SAMPLE TIME 1528			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	9	40 ml VOA X	collected MS/MSD			
8270 SIM 1,4 dioxane	3	1 L Amber X				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y N						

GROUNDWATER SAMPLING INFORMATION

DATE: 8/13/19

TASK: 532.30

WELL ID: MW-31

Time 1327 Static DTW (ft below reference point) 105.29	Casing Volume (CV) (gallons) 81	3 CV (gallons) 243	Weather Conditions	Initials: AMT/AMD
Casing Total Depth (ft below reference point) 99.6	Purging Device ded. pump	Sampling Device 10-100' post	Time 1320 Temp. 86	Begin Purge 1330 End Purge 1359
Water Column (feet) 54	Pump: Depth (ft brp) 942	Type Grundfos Voltage 240 HP	Skies clear	Gallons Purged 264
Casing Capacity (Diameter 6") (gallons per foot) 1.5	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) -	DTW (ft brp) 108.39 Time 1353

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1330	105.29	0	0	Begin purge						-	Q ≈ 9 GPM
1335	108.45	40.5	0.5	23.4	7.29	1.18	89.4	4.27	3.62	-	
1339	108.32	81	1.0	21.5	7.89	1.56	83.6	1.88	40.9	-	
1344	108.33	121.5	1.5	21.6	7.45	1.35	82.9	0.94	13.0	-	
1348	108.36	162	2.0	21.6	7.37	1.24	83.1	0.73	8.92	-	
1353	108.39	202.5	2.5	21.6	7.34	1.17	85.3	0.70	3.69	-	
1357	NM	243	3.0	21.2	7.34	1.4	87.1	0.73	2.41	-	collect sample
1359	NM	264		End purge						-	

SAMPLE COLLECTION SAMPLE TIME 1357			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	9	40 ml VOA	MW-3100 collected @ 1358 (duplicate)			
8270 SIM 1,4 dioxane	3	1 L Amber	MW-31 collected @ 1357 (original)			
8270 MOD 1,4 dioxane		1 L Amber	MW-31 collected @ 1359 (duplicate split)			
DUPLICATES / SPLITS / BLANKS? ☒ Y ☐ N If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 8-13-19

TASK: 53230

WELL ID: MW-32B

Time 1508 Static DTW (ft below reference point) 79.78	Casing Volume (CV) (gallons) 264 3 CV (gallons) 791	Weather Conditions	Initials: DTS, CVP
Casing Total Depth (ft below reference point) 999	Purging Device des pump Sampling Device pipe stand	Time 1500 Temp. 80	Begin Purge 1519 End Purge 1622
Pump Water Column (feet) 19.22	Pump: Depth (ft brp) 560 Type geonics Voltage 240 HP -	Skies Sunny	Gallons Purged 803 CVs Purged 3.04
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow Fast	Wind (mph) - From	DTW (ft brp) 79.78 Time 1508

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1519	79.78	0	0	~	Begin	Purge	~				Q ≈ 126 gpm
1528	98.20	132	0.5	22.8	7.83	0.99	-226.1	1.24	4.12		
1539	98.70	264	1.0	22.3	7.80	0.93	-205.5	0.86	2.87		
1550	99.01	396	1.5	22.6	7.78	0.59	-147.8	1.66	3.40		
1600	99.20	528	2.0	22.6	7.78	1.10	-144.9	1.07	3.60		
1611	99.35	660	2.5	22.7	7.73	1.07	-137.1	0.66	2.69		
1621	99.45	791	3.0	22.5	7.79	1.67	-155.1	1.43	4.5		
1622	-	803	3.04	~	End	Purge	~				

SAMPLE COLLECTION SAMPLE TIME 1603			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	6	40 ml VOA	MW-32B-2-SU G 1603			
8270 SIM 1,4 dioxane	2	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? (Y) N			If yes, complete appropriate forms.			

GROUNDWATER SAMPLING INFORMATION

DATE: 8-14-19

TASK: 532.38

WELL ID: MW-33

Time <u>1258</u> Static DTW (ft below reference point) <u>71.72</u>	Casing Volume (CV) (gallons) <u>291</u> 3 CV (gallons) <u>873</u>	Weather Conditions	Initials: <u>DJS/CVD</u>
Casing Total Depth (ft below reference point) <u>1020</u>	Purging Device <u>ded Pump</u> Sampling Device <u>PRO-10</u>	Time <u>1256</u> Temp. <u>82</u>	Begin Purge <u>1304</u> End Purge <u>1350</u>
Pump to Screen Water Column (feet) <u>948.28</u>	Pump: Depth (ft brp) <u>535</u> Type <u>Graham</u> Voltage <u>240</u> HP	Skies <u>clear</u>	Gallons Purged <u>892</u> CVs Purged <u>3.06</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.62</u>	Monitor Well Recharge Rate: Slow Fast ☒	Wind (mph) <u>---</u> From <u>---</u>	DTW (ft brp) <u>71.72</u> Time <u>1258</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1304	71.72	0	0	~	Begin	Purge	~	~	~		QZ 19 gpm
1312	73.97	146	0.5	23.4	7.73	0.71	-55.9	1.77	1.71		
1319	74.03	291	1.0	22.9	7.77	0.365	-100.5	1.85	1.74		
1326	74.02	432	1.5	22.5	7.69	0.71	-52.3	1.31	1.36		
1334	74.13	582	2.0	22.3	7.71	0.68	-52.8	1.66	1.33		
1342	74.20	728	2.5	22.2	7.71	0.70	-23.9	1.75	1.14		
1349	74.15	873	3.0	22.4	7.65	0.71	-22.7	2.06	1.14		
1350	-	892	3.06	~	End	Purge	~	~	~		

SAMPLE COLLECTION SAMPLE TIME <u>1350</u>		
ANALYSIS	QUANTITY	TYPE
8280B VOCs	40 ml VOA	6
8270 SIM 1,4 dioxane	1 L Amber	2
8270 MOD 1,4 dioxane	1 L Amber	
DUPLICATES / SPLITS / BLANKS? <u>(19)</u>		N
If yes, complete appropriate forms.		

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

MW-33-850 - G 1334

MW-33 G 1350

GROUNDWATER SAMPLING INFORMATION

DATE: 08/13/19

TASK: 532.30

WELL ID: MW-34B

Time 1006	Static DTW (ft below reference point) 139.25	Casing Volume (20) (gallons) 50	30 (gallons) 150	Weather Conditions	Initials: AMJ/AMD
Casing Total Depth (ft below reference point) 536	Purging Device 1st pump	Sampling Device 10-100 psi	Time 1020	Temp. 38	Begin Purge 1013
Water Column (feet) 76	Pump: Depth (ft brp) 465	Type Grundfos	Skies clear		End Purge 1035
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) -	From -	Gallons Purged 178
					DTW (ft brp) 140.44
					Time 1032

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1013	139.25	0	0	21.8	7.12	0.95	126.4	2.00	3.80	-	Q ~ 10 gpm
1017	140.39	25	0.56	22.2	7.23	0.98	125.2	2.08	7.04	-	
1019	140.46	50	1.0	22.2	7.26	0.98	128.7	2.16	1.53	-	
1023	140.41	75	1.5	22.2	7.26	0.98	131.9	2.24	0.97	-	
1026	140.44	100	2.0	22.2	7.26	0.98	137.4	2.23	1.11	-	
1029	140.44	125	2.5	22.2	7.26	0.98	136.2	2.25	NS	-	collect sample
1032	140.44	150	3.0	22.2	7.26	0.98				-	
1035	NM	178	3.56	End						-	

SAMPLE COLLECTION SAMPLE TIME 1032			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	9	40 ml VOA	MW-3400B collected @ 1033			
8270 SIM 1.4 dioxane		1 L Amber	MW-34B collected @ 1032 (original)			
8270 MOD 1.4 dioxane	3	1 L Amber	MW-34B collected @ 1034 (split)			
DUPLICATES SPLITS BLANKS? If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 8-16-19

TASK: 632.30

WELL ID: MW-35C

Time 1129 Static DTW (ft below reference point) 81.69	Casing Volume (CV) (gallons) 342	3 CV (gallons) 1026	Weather Conditions Time _____ Temp. _____ Skies _____ Wind (mph) _____ From _____	Initials: DJS, CVD Begin Purge 1153 End Purge 1237 Gallons Purged 1048 CVs Purged 306 DTW (ft bsp) 81.69 Time 1129
Casing Total Depth (ft below reference point) 1040	Purging Device PRC-100	Sampling Device ND PRC-100		
Pump Water Column (feet) 500	Pump: Depth (ft bsp) 1121.69	Type 560 Voltage HP		
Casing Capacity (Diameter 4") (gallons per foot) 0.60	Monitor Well Recharge Rate: Slow Fast			

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1153	81.69	0	0	~	Begin Purge	~					Q ≈ 800 gpm
1200	93.05	171	0.5	24.7	7.79	0.56	176.2	1.92	0.99		
1208	93.42	342	1.0	22.9	7.72	0.85	174.1	3.98	2.66		
1215	93.72	513	1.5	23.1	7.64	0.85	167.0	3.61	4.01		
1222	94.21	684	2.0	22.8	7.64	0.84	168.6	3.71	5.22		
1229	94.55	855	2.5	22.9	7.66	0.84	172.5	3.28	3.56		
1236	94.74	1026	3.0	22.8	7.56	0.84	172.7	6.89	1.80		
1237	—	1048	3.06	~	End Purge	~					

SAMPLE COLLECTION SAMPLE TIME 1237 ANALYSIS QUANTITY TYPE 8260B VOCs 40 ml VOA 3 8270 SIM 1.4 dioxane 1 L Amber 8270 MOD 1.4 dioxane 1 L Amber DUPLICATES / SPLITS / BLANKS? Y (N) If yes, complete appropriate forms.	AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)
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GROUNDWATER SAMPLING INFORMATION

DATE: 08-14-11

TASK: 532.30

WELL ID: MW-36

Time 1510 Static DTW (ft below reference point) 71.40	Casing Volume (CV) (gallons) 320 3 CV (gallons) 960	Weather Conditions
Casing Total Depth (ft below reference point) 99.4	Purging Device 2nd Pump Sampling Device 10-100 p.p.s.s.s.	Time 1505 Temp. 83
Pump to Screen Water Column (feet)	Pump: Depth (ft bfp) 460 Type 460 Voltage 240 HP	Skies Clear
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow Fast	Wind (mph) ~ From ~
		Initials: DJS/cwp/
		Begin Purge 1518 End Purge 1631
		Gallons Purged 973 CVs Purged 304
		DTW (ft bfp) 71.40 Time 1510

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1518	71.40	0	0	~	Begin	Purge	~				Q ≈ 13 GPM
1530	70.88	160	0.5	23.4	7.62	1.24	-63.8	1.93	1.17		
1542	70.02	320	1.0	25.1	8.00	0.88	40.0	1.67	3.45		
1554	71.06	480	1.5	24.0	7.67	1.12	50.1	0.91	1.43		
1606	71.15	640	2.0	24.4	7.80	1.19	50.2	1.87	1.76		
1618	71.08	800	2.5	23.2	7.68	1.28	47.4	1.00	1.30		
1630	71.08	960	3.0	23.4	7.65	1.33	52.6	1.05	1.43		
1631	-	973	3.04	~	End	Purge	~				

SAMPLE COLLECTION SAMPLE TIME 1630		AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA	
ANALYSIS	QUANTITY TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)	
8280B VOCs	6 40 ml VOA	MW-36-250-6 16:06	
8270 SIM 1,4 dioxane	2 1 L Amber		
8270 MOD 1,4 dioxane	2 1 L Amber		
DUPLICATES / SPLITS / BLANKS? (Y) N			
If yes, complete appropriate forms.			

GROUNDWATER SAMPLING INFORMATION

DATE: 8/15/14

TASK: 532.30

WELL ID: MW-3A

Time <u>0855</u> Static DTW (ft below reference point) <u>73.72</u>	Casing Volume (EV) (gallons) <u>SV 271</u> <u>SV 3 CV (gallons) 813</u>	Weather Conditions	Initials: <u>DJS, CUD</u>
Casing Total Depth (ft below reference point) <u>1012</u>	Purging Device <u>ded pump</u> Sampling Device <u>PIPESTAMP</u>	Time <u>0850</u> Temp. <u>71</u>	Begin Purge <u>907</u> End Purge <u>945</u>
<u>Pump to screen</u> Water Column (feet)	Pump: Depth (ft brp) <u>560</u> Type <u>GRINDER</u> Voltage <u>240</u> HP	Skies <u>Clear</u>	Gallons Purged <u>835</u> CVs Purged <u>3.08</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow <u>Fast</u> <u>✓</u>	Wind (mph) <u>—</u> From <u>—</u>	DTW (ft brp) <u>73.72</u> Time <u>855</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
<u>907</u>	<u>73.72</u>	<u>0</u>	<u>0</u>	<u>~</u>	<u>Boyle</u>	<u>Purge</u>	<u>~</u>				<u>Q ≈ 22 GPM</u>
<u>913</u>	<u>88.94</u>	<u>136</u>	<u>0.5</u>	<u>23.4</u>	<u>8.86</u>	<u>0.445</u>	<u>-285.9</u>	<u>3.02</u>	<u>1.94</u>		
<u>919</u>	<u>89.21</u>	<u>271</u>	<u>1.0</u>	<u>23.1</u>	<u>8.70</u>	<u>0.424</u>	<u>-288.5</u>	<u>1.60</u>	<u>1.86</u>		
<u>925</u>	<u>89.24</u>	<u>407</u>	<u>1.5</u>	<u>23.2</u>	<u>8.62</u>	<u>0.432</u>	<u>-176.5</u>	<u>1.17</u>	<u>1.29</u>		
<u>931</u>	<u>89.43</u>	<u>542</u>	<u>2.0</u>	<u>23.3</u>	<u>8.57</u>	<u>0.431</u>	<u>-179.3</u>	<u>1.06</u>	<u>1.21</u>		
<u>937</u>	<u>89.62</u>	<u>678</u>	<u>2.5</u>	<u>23.1</u>	<u>8.55</u>	<u>0.436</u>	<u>-161.0</u>	<u>1.20</u>	<u>1.67</u>		
<u>944</u>	<u>89.84</u>	<u>813</u>	<u>3.0</u>	<u>23.3</u>	<u>8.48</u>	<u>0.438</u>	<u>-164.2</u>	<u>1.52</u>	<u>1.37</u>		
<u>945</u>	<u>—</u>	<u>835</u>	<u>3.08</u>	<u>~</u>	<u>End purge</u>	<u>~</u>					

SAMPLE COLLECTION SAMPLE TIME 9:45

ANALYSIS	QUANTITY	TYPE
8260B VOCs	40 ml VOA	<u>3</u>
8270 SIM 1,4 dioxane	1 L Amber	
8270 MOD 1,4 dioxane	1 L Amber	

DUPLICATES / SPLITS / BLANKS? Y (N)

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 8/15/19

TASK: 532.30

WELL ID: MW-410

Time 1235	Static DTW (ft below reference point) 107.81	Casing Volume (CV) (gallons) 75	3 CV (gallons) 225	Weather Conditions		Initials: DTS, CVD
Casing Total Depth (ft below reference point) 970	Purging Device ded Pump	Sampling Device 40 Pipestone	Time 1230	Temp 79	Begin Purge 1239	End Purge 1259
Pump Water Column (feet) 862.19	Pump: Depth (ft brp) 510	Type grouters	Voltage 240	HP	Gallons Purged 3.33	CVs Purged 1239
Casing Capacity (Diameter 6") (gallons per foot) 1.5	Monitor Well Recharge Rate: Slow		Fast	Wind (mph)	From	DTW (ft brp) 107.81

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1239	101.86	0	0								QX 12 gpm
1242	108.51	36	0.5	24.0	7.55	0.73	-242.9	1.96	6.36		
1245	108.88	72	1.0	22.3	7.75	0.83	-154.5	1.66	8.09		
1248	108.89	108	1.5	22.3	7.69	0.81	-125.0	0.90	3.43		
1251	108.90	144	2.0	21.7	7.71	0.83	-123.4	0.84	2.29		
1254	108.9	180	2.5	21.9	7.70	0.83	-114.8	1.24	2.93		
1257	108.87	228	3.0	22.0	7.70	0.83	-113.1	1.89	2.04		
1258	-	240	3.33	~ End Purge ~							

SAMPLE COLLECTION SAMPLE TIME 1258		AIR MONITORING PID/FID ppm: VAULT NA		BKGD NA		BREATHING ZONE NA		DISCHARGE WATER NA	
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)						
8260B VOCs	3	40 ml VOA							
8270 SIM 1,4 dioxane	1	1 L Amber							
8270 MOD 1,4 dioxane		1 L Amber							
DUPLICATES / SPLITS / BLANKS?		Y	(N)						

GROUNDWATER SAMPLING INFORMATION

DATE: 8/14/19

TASK: 532.30

WELL ID: MW-41

Time <u>1319</u> Static DTW (ft below reference point) <u>141.78</u>	Gaging Volume (SV) (gallons) <u>39</u> 3 SV (gallons) <u>418.17</u>	Weather Conditions	Initials: <u>AUS/AMD</u>
Casing Total Depth (ft below reference point) <u>425</u>	Purging Device <u>ded pump</u> Sampling Device <u>10-100 plastic</u>	Time <u>1320</u> Temp. <u>85</u>	Begin Purge <u>1329</u> End Purge <u>1346</u>
Water Column (feet) <u>65</u>	Pump: Depth (ft brp) <u>360</u> Type <u>grundfos</u> Voltage <u>240</u> HP <u>-</u>	Skies <u>clear</u>	Gallons Purged <u>149</u> SVs Purged <u>3.8</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>146.57</u> Time <u>1341</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µmS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1324	141.78	0	0	Pump on						-	Q ≈ 6 GPM
1327	146.35	19.5	0.5	22.1	6.99	2.22	132.1	259	5.82	-	
1329	146.44	39	1.0	22.4	6.78	2.22	133.6	3.29	17.6	-	
1332	146.54	58.5	1.5	22.4	6.97	2.22	136.9	3.47	17.4	-	
1336	146.53	78	2.0	22.4	6.96	2.22	140.4	3.48	12.4	-	
1339	146.54	97.5	2.5	22.5	6.96	2.22	142.6	3.45	6.9	-	
1341	146.57	117	3.0	22.5	6.96	2.22	144.5	3.48	4.93	-	collect sample
1346	NM	149	3.82	pump off						-	

SAMPLE COLLECTION SAMPLE TIME 1341

ANALYSIS	QUANTITY	TYPE
8260B VOCs	<u>9</u>	40 ml VOA <u>X</u>
8270 SIM 1,4 dioxane	<u>3</u>	1 L Amber <u>X</u>
8270 MOD 1,4 dioxane		1 L Amber

DUPLICATES / SPLITS / BLANKS? Y (N)

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

MS/MSD collected

GROUNDWATER SAMPLING INFORMATION

DATE: 8-14-19

TASK: 53230

WELL ID: MW-42

Time 1030 Static DTW (ft below reference point) 72.55	Casing Volume (CV) (gallons) 301 3 CV (gallons) 903	Weather Conditions	Initials: DJS, CUD
Casing Total Depth (ft below reference point) 1057	Purging Device 1000 pump Sampling Device PIDeston	Time 1030 Temp. 76	Begin Purge 1034 End Purge 1122
Pump Water Column (feet) 1057	Pump: Depth (ft bfp) 560 Type 1000 Voltage 240 HP -	Skies Clear	Gallons Purged 926 CVs Purged 307
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow Fast ☒	Wind (mph) ~ From ~	DTW (ft bfp) 72.55 Time 1030

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1034	72.55	0	0.0	~	Begin	Purge	~	~	~		
1047	81.00	180	0.5	22.3	7.98	0.515	-235.4	1.31	1.89		Q ≈ 23 gpm
1054	81.14	300	1.0	22.5	8.02	0.513	-191.9	1.40	1.67		
1101	81.21	450	1.5	22.5	8.05	0.52	-106.1	1.61	1.51		
1108	81.38	600	2.0	22.7	8.07	0.519	-113.7	1.59	1.60		
1114	81.41	750	2.5	23.0	8.07	0.52	-92.8	1.54	2.00		
1121	81.54	900	3.0	23.5	8.07	0.275	-103.1	2.10	2.11		
1122	-	926	3.07	~	End	Purge	~	~	~		

SAMPLE COLLECTION SAMPLE TIME 1122		
ANALYSIS	QUANTITY	TYPE
8260B VOCs	3	40 ml VOA
8270 SIM 1,4 dioxane	1	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber
DUPLICATES / SPLITS / BLANKS? Y ☒		
If yes, complete appropriate forms.		

AIR MONITORING PID/FID ppm: VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			

GROUNDWATER SAMPLING INFORMATION

DATE: 8-14-19

TASK: 532-30

WELL ID: MW-43

Time 820	Static DTW (ft below reference point)	EG 72	Casing Volume (CV) (gallons) 319	3 CV (gallons) 957	Weather Conditions		Initials: DJS, CVD
Casing Total Depth (ft below reference point)		1051	Purging Device Grout-dred pump	MD Pipe Stand	Time 815	Temp 71	Begin Purge 827 End Purge 913
Pure Water Column (feet)		984.28	Pump: Depth (ft brp) 520	Type grout Voltage 240 HP ~	Skies clear		Gallons Purged 957 CVs Purged 306
Casing Capacity (Diameter 4") (gallons per foot)		0.66	Monitor Well Recharge Rate: Slow Fast ☒		Wind (mph) ~	From	DTW (ft brp) 66.72 Time 820

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
827	65.72	0	0	~	Begin	Purge	~				Q224
835	73.68	160	0.5	21.1	8.01	0.55	-246.9	1.26	3.18		
842	74.00	320	1.0	21.6	7.98	0.516	-126.9	1.31	2.48		
849	74.71	480	1.5	21.7	7.98	0.515	-83.1	0.82	1.91		
857	74.86	640	2.0	21.6	7.97	0.516	-63.3	1.40	1.32		
905	74.12	800	2.5	21.8	8.00	0.519	-51.4	0.82	1.22		
912	74.24	957	3.0	21.7	8.01	0.516	-53.7	0.94	1.19		
913	-	981	3.06	~	End	Purge	~				

SAMPLE COLLECTION SAMPLE TIME 913	
ANALYSIS	QUANTITY TYPE
8260B VOCs	40 ml VOA 3
8270 SIM 1,4 dioxane	1 L Amber 1
8270 MOD 1,4 dioxane	1 L Amber
DUPLICATES / SPLITS / BLANKS? Y (N)	
If yes, complete appropriate forms.	

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

TABLE 2
WELL CONSTRUCTION SUMMARY

Well Identifier	Date Installed	Current Land Surface Elevation (feet msl)	Current Reference Point Elevation (feet msl)	Total Depth of Borehole (feet bls)	Perforated Interval (feet bls)	Screen Slot Size (inches)	Borehole Diameter (inches)	Casing Diameter (inches) (a)	Filter Pack Interval (feet bls)	Filter Pack Sand Size	Grout Filter/ Intermediate Seal Interval (feet bls) (b)	Annular Seal Interval (feet bls) (c)
<u>Regional Groundwater System Monitor Wells, Extraction Wells and Piezometers</u>												
MW-06	1/16/1997	185.0	184.70	190.9	149.6 - 189.6	0.010	8.5	2	145.4 - 190.9	#2/16	139.4 - 145.4 (d)	0 - 139.4
MW-08	1/22/1997	156.6	155.91	167.2	126.1 - 166.1	0.010	8.5	2	120.7 - 167.2	#2/16	115.7 - 120.7	0 - 115.7
MW-09	3/21/1997	180.5	180.10	194.2	152.2 - 192.2	0.010	8.5	2	146.2 - 194.2	#2/16	141.2 - 146.2	0 - 141.2
MW-13	4/16/1997	142.5	141.84	159.6	120.6 - 159.6	0.010	8.5	2	114.6 - 159.6	#2/16	109.6 - 114.6	0 - 109.6
MW-15	5/18/1998	145.6	144.95	174.8	120.8 - 170.8	0.010	8.5	2	115.8 - 174.8	#2/16	112.8 - 115.8	0 - 112.8
MW-16	11/20/1999	143.0	142.40	179.5	148.5 - 178.5	0.010	11.0	4	144.5 - 179.5	#2/16	134.5 - 144.5 (e)	0 - 134.5
MW-17	5/31/2000	142.8	142.70	203.7	173.1 - 193.1 (j)	0.020	10.0	4	159.7 - 193.1	#2/16	156.2 - 159.7 193.1 - 203.7 (j)	0 - 156.2
MW-18	5/24/2000	142.4	142.32	195.6	164.1 - 194.1	0.020	10.0	4	158.9 - 194.5	#2/16	154.2 - 158.9	0 - 154.2
MW-19	5/26/2000	142.7	142.06	205.5	184.9 - 204.9	0.020	10.0	4	177.0 - 205.3	#2/16	171.5 - 177.0	0 - 171.5
MW-20	6/26/2003	184.4	184.19	200.0	158.6 - 198.2	0.020	11.0	4 (f)	158.0 - 200.0	#2/12	151.0 - 158.0 (g)	0 - 151.1 (h)
MW-21	7/17/2003	143.3	141.18	238.3	212.1 - 232.1	0.010	8.0	4 (k)	205.0 - 234.5	#2/16	202.0 - 205.0 234.5 - 238 (j)	0 - 202.0 (h)
MW-22	8/13/2003	139.4	138.65	245.0	217.4 - 237.4	0.020	8.0	4 (l)	215.0 - 238.0	#2/12	208.0 - 215.0 (m)	0 - 208.0 (h)
MW-23	8/18/2003	137.8	137.33	235.6	215.2 - 235.2	0.020	8.0	4 (n)	209.4 - 235.6	#2/12	203.5 - 209.4 (m)	0 - 203.5 (h)
MW-24	9/15/2004	143.1	142.83	338.0	310.3 - 330.3	0.030	10.6	4 (o)	306 - 330	#3	301 - 306 (p)	0 - 301 (h)
MW-25	9/10/2004	143.0	142.64	805	449.4 - 479.8	0.010	8.5 (q)	2 (r)	429 - 485	#2/16	418 - 429	0 - 418 (h)
MW-26A (s)	10/1/2004	137.6	137.04	805	279 - 309	0.020	12.25 (q)	2 (l)	274 - 315	#2/12	266 - 274	0 - 266 (h)
MW-26B (s)	10/1/2004	137.6	137.05	805	339 - 379	0.020	12.25 (q)	2 (u)	334 - 387	#2/12	266 - 274	0 - 266 (h)
MW-26C (s)	10/1/2004	137.6	137.22	805	459 - 499	0.020	12.25 (q)	2 (v)	435 - 499	#2/12	387 - 435 (w)	0 - 266 (h)
MW-27	4/22/2008	137.6	137.16	550	475 - 505.2 (cc)	0.030	11.25 (q)	4 (z)	468 - 520	#3	457.5 - 468	0 - 457.5 (h)
MW-28	5/5/2008	141.4	140.77	425	335 - 375	0.040	12.25 (q)	4 (z)	325.4 - 377	#8	318 - 325.4	0 - 318 (h)
MW-29	8/15/2008	142.7	142.34	265.7	200 - 240	0.020	10.0 (aa)	4 (z)	185 - 246	#2/12	176 - 185	0 - 176 (h)
MW-30A(s)	11/26/2008	130.2	129.44	635 (j)	524-564	0.020	14.25	3 (y)	515.9-570.5	#2/12	495.5-515.9	0-495.5 (bb)
MW-30B(s)	11/26/2008	130.2	129.39	635 (j)	596-616	0.020	14.25	3 (y)	586.8-625	#2/12	586.8-570.5	0-495.5 (bb)
MW-31	10/2/2009	120.3	119.60	1,100 (jj)	946-996	0.020	13	6(kk)	922-1,006	#2/12	904-922	0-904
MW-32A(s)	12/10/2009	93.4	92.88	1,153 (gg)	890-905	0.020	18.5	4(dd)	880-910	#2/12	832-880	0-832
MW-32B(s)	12/10/2009	93.4	92.89	1,153 (gg)	969-999	0.020	18.5	4(dd)	960-1,004.5	#2/12	910-960	0-832
MW-32C(s)	12/10/2009	93.4	92.88	1,153 (gg)	1,070-1,090	0.020	18.5	4(dd)	1,054-1,100	#2/12	1,004.5-1,054	0-832
MW-33	7/2/2010	83.8	83.19	1,080 (hh)	980-1,020	0.020	11	4(dd)	970-1,025	#2/12	924-970	0-924 (ii)
MW-34A	2/3/2011	154.0	153.25	290	220 - 280	0.020	12.25	4(dd)	211 - 290	#2/12	175 - 211	0 - 175
MW-34B	2/1/2011	153.9	153.11	540	486 - 536	0.020	12.25	4(dd)	475 - 540	#2/12	449 - 475	0 - 449
MW-34C	1/19/2011	154.1	153.29	709 (ll)	556 - 576	0.020	12.25	4(dd)	551 - 582	#2/12	530 - 551	0 - 530
MW-35A	12/20/2010	94.3	93.57	1,101	420 - 470	0.020	18	4(dd)	401 - 482	#2/12	376 - 401	0 - 376
MW-35B	12/20/2010	94.3	93.56	1,101	745 - 805	0.020	18	4(dd)	725 - 816	#2/12	482 - 725	0 - 376
MW-35C	12/20/2010	94.3	93.55	1101 (ll)	990 - 1,040	0.020	12.25	4(dd)	980 - 1,048	#2/12	816 - 980	0 - 376
MW-36	1/3/2012	87.19	86.65	1030 (mm)	934 - 954 974 - 994	0.020	12.25	4(dd)	914 - 1,003	#2/12	95 - 853 (oo), 853 - 914 (pp)	0 - 95 (qq)
MW-37	10/17/2012	156.02	155.60	916	770-820	0.020	12.25	4(dd)	755-834	#2/12	229-724 (rr) 724-755 (pp)	0-229 (ss)
MW-38	7/29/2013	155.7	154.90	203	150-200	0.020	10	4(z)	140-203	#2/12	120-140 (pp)	0-120 (qq)
MW-39	7/25/2013	84.71	84.25	1,080 (ll)	982-1,012	0.020	12.25	4(dd)	974-1,017	#2/12	156 - 917 (rr) 917-974 (pp)	0-156 (qq)
MW-40	7/2/2013	124.09	123.40	1040 (ll)	930-970	0.030	12.25	6(dd)	916-975	#3	175 - 880 (rr) 880-916 (pp)	0-175 (qq)
EW-01	5/16/2005	143.3	141.07	195	138.1-188.1	0.020	7.6	4 (x)	134.1-195	#2/12	129-134.1 (m)	0-129 (h)
EW-02	10/20/2009	136.0	132.97	473 (ee)	410-460	0.030	17.0	8 (ff)	400-465	#3	384-400	0-384
<u>Perched Zone Piezometers</u>												
P-07	6/6/1997	142.7	142.31	116.8	107.7 - 117.7	0.010	8.5	2	104.7 - 117.7	#2/16	101.7 - 104.7	0 - 101.7
P-09	6/30/2003	184.3	183.86	130.0	109.6 - 129.6	0.010	11.0	4	114.0 - 130.0	#2/16	101.0 - 108.0 (g)	0 - 101.0 (h)

TABLE 2

WELL CONSTRUCTION SUMMARY

NOTE: Refer to page 2 of this table for footnotes.

FOOTNOTES

msl = Mean sea level, City of Fullerton datum

bis = Below current land surface (October 2004)

(a) = Schedule 40 polyvinyl chloride (PVC) screen and casing, unless otherwise indicated

(b) = Medium bentonite chip seal, unless otherwise indicated

(c) = Bentonite grout annular seal unless otherwise indicated, completed at surface with vault set in concrete

(d) = No. 60 silica sand

(e) = Includes 2.0 feet of No. 60 silica sand placed above filter pack

(f) = Schedule 80 polyvinyl chloride screen and casing

(g) = Includes 2.5 to 3.0 feet of No. 60 silica sand placed above bentonite chip seal

(h) = Cement/bentonite grout, Type I/II Portland, less than 5% bentonite

(i) = Well plug, approximately 0.5-foot length, set at bottom of perforated interval

(j) = Bottom of borehole backfilled with bentonite chips

(k) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 122.0 - 212.1 feet bis; Schedule 40 mild steel casing 0 - 122.0 feet bis

(l) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 112.4 - 217.4 feet bis; Schedule 40 mild steel casing 0 - 112.4 feet bis

(m) = 1/4-inch coated bentonite pellets

(n) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 110.1 - 215.2 feet bis; Schedule 40 mild steel casing 0 - 110.1 feet bis

(o) = Mild steel wire wrap screen and Schedule 40 mild steel well casing

(p) = Includes 1 to 2 feet of #2/16 sand placed above bentonite chip seal

(q) = Below filter pack, diameter of the original pilot borehole is 5 to 6.25 inches to total depth of boring. Lower borehole backfilled with cement/bentonite grout, Type I/II Portland, less than 5% bentonite

(r) = Stainless steel wire wrap screen, Schedule 10 stainless steel casing 429.4 - 449.4 feet bis, Schedule 80 polyvinylchloride casing 429.0 - 429.4 feet bis, Schedule 40 mild steel casing 0 - 429.0 feet bis

(s) = Nested wells MW-26A, MW-26B, MW-26C, and MW-32A, MW-32B, MW-32C are constructed with three separate well casings in a single borehole; nested well MW-30A and MW-30B is constructed with two separate casings in a single borehole.

(t) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 259 - 279 feet bis and 0 - 19 feet bis; Schedule 40 mild steel casing 19 - 259 feet bis

(u) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 319 - 339 feet bis; Schedule 40 mild steel casing 0 - 319 feet bis

(v) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 439 - 459 feet bis; Schedule 40 mild steel casing 0 - 439 feet bis

(w) = #8 granular bentonite with exception of heavy mud/formational caving filling annular interval from 417 to 428 feet bis

(x) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 118.1-138.1 feet bis; Schedule 40 mild steel casing 0-118.1 feet bis

(y) = Schedule 40 Stainless steel endcaps; Schedule 10 stainless steel casing; Stainless steel wire wrap screen

(z) = Schedule 80 PVC blank and screen casing

(aa) = Below filter pack, diameter of the original pilot borehole is 8 inches to total depth of boring. Lower borehole backfilled with cement/bentonite grout, Type I/II Portland, less than 5% bentonite

(bb) = Neat cement

(cc) = Depth of screen interval adjusted to account for loss at bottom of casing due to breakage in casing wall. Original casing (515 ft bis) was sealed at 505.2 ft bis

(dd) = Schedule 40 Stainless steel endcaps; Schedule 80 polyvinyl chloride casing; Stainless steel wire wrap screen

(ee) = Pilot borehole drilled to a total depth of 493 feet bis and backfilled with 5% bentonite-cement grout seal to 465 feet bis

(ff) = Schedule 40 Stainless steel endcaps; Schedule 40 stainless steel casing; Stainless steel wire wrap screen; 2.5-foot stainless steel sump

(gg) = Pilot borehole drilled to a total depth of 1,153 feet bis and backfilled with 5% bentonite-cement grout seal to 1,100 feet bis

(hh) = Pilot borehole drilled to a total depth of 1,080 feet bis and backfilled with 5% bentonite-cement grout seal to 1,025 feet bis

(ii) = Annular seal interval is composed of cement grout with approximately 5% bentonite from 720 to 924 feet bis and bentonite grout from near land surface to 720 feet bis

(jj) = Pilot borehole drilled to a total depth of 1,100 feet bis and backfilled with 5% bentonite-cement grout seal to 1,006 feet bis

(kk) = Schedule 40 Stainless steel endcaps; Schedule 40 stainless steel casing; Stainless steel wire wrap screen; 5-foot stainless steel sump

(ll) = Bottom of borehole backfilled with approximately 5% bentonite-cement grout

(mm) = Bottom of borehole backfilled with bentonite pellets

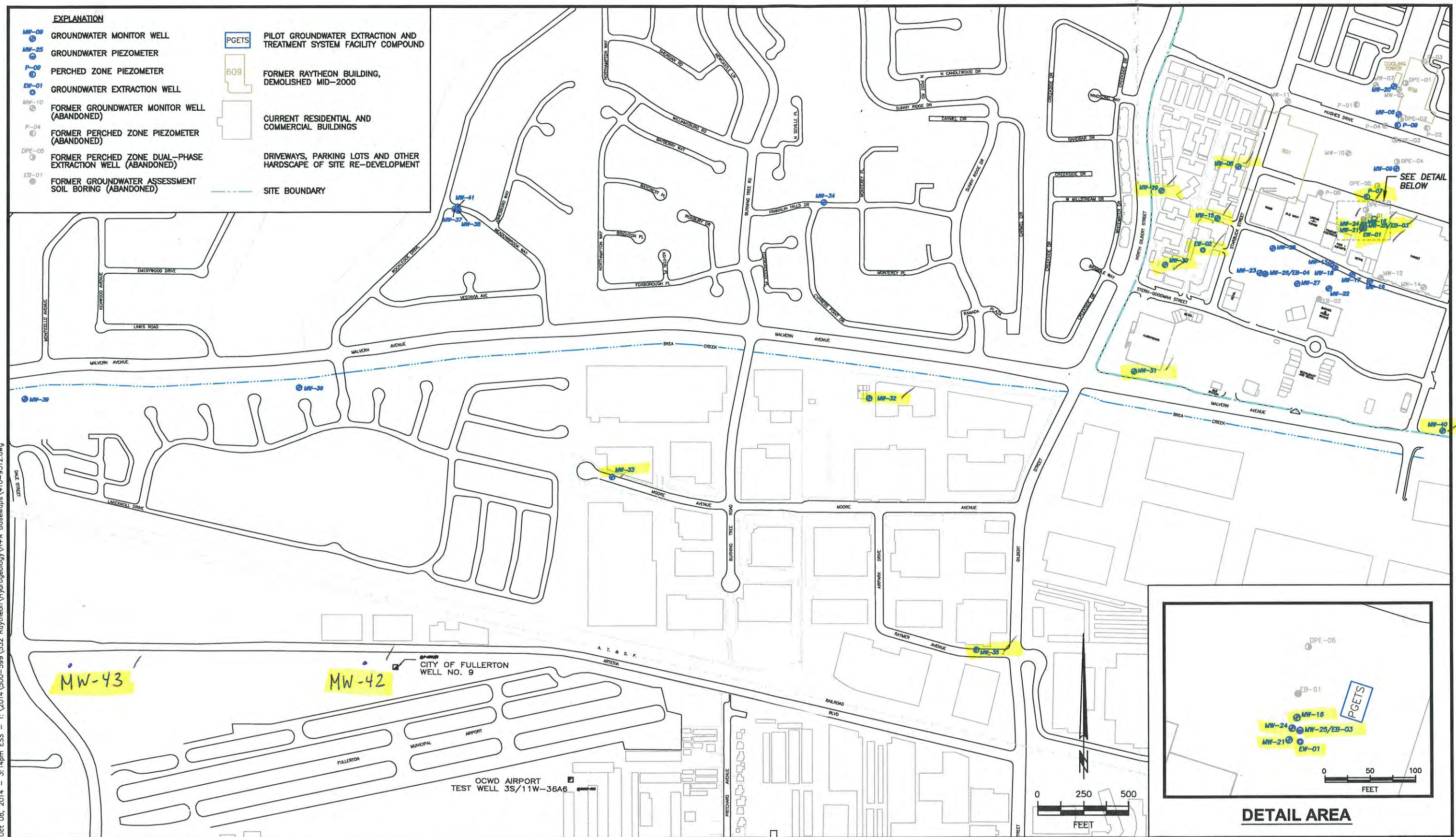
(oo) = High solids bentonite grout

(pp) = Bentonite chips

(qq) = Portland cement with approximately 5% bentonite

(rr) = Medium bentonite chips and #2/12 Sand; 1:1 dry volume mix

(ss) = Portland cement with approximately 2.5% bentonite



APPENDIX B
LABORATORY ANALYTICAL REPORTS

GROUNDWATER SAMPLING ANALYTICAL RESULTS



December 02, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1904177
Client Reference : Raytheon Fullerton, 532.30

Enclosed are the results for sample(s) received on November 19, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read 'Edgar Caballero', with a small 'En' written below the main signature.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.

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Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-111919A	1904177-01	Lab prepared water	11/19/19 8:00	11/19/19 17:12
MW-33_25V	1904177-02	Groundwater	11/19/19 11:14	11/19/19 17:12
MW-33	1904177-03	Groundwater	11/19/19 11:32	11/19/19 17:12
MW-35C	1904177-04	Groundwater	11/19/19 14:34	11/19/19 17:12
MW-31	1904177-05	Groundwater	11/19/19 15:48	11/19/19 17:12
MW-3100	1904177-06	Groundwater	11/19/19 15:50	11/19/19 17:12
MW-26C-111919	1904177-07	Groundwater	11/19/19 10:24	11/19/19 17:12
RB-111919	1904177-08	Lab prepared water	11/19/19 10:45	11/19/19 17:12
MW-08	1904177-09	Groundwater	11/19/19 11:45	11/19/19 17:12
MW-0800	1904177-10	Groundwater	11/19/19 11:55	11/19/19 17:12
MW-28	1904177-11	Groundwater	11/19/19 15:54	11/19/19 17:12



Certificate of Analysis

Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: TB-111919A

Lab ID: 1904177-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0609	11/25/2019	11/25/19 22:19	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0609	11/25/2019	11/25/19 22:19	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0609	11/25/2019	11/25/19 22:19	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0609	11/25/2019	11/25/19 22:19	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0609	11/25/2019	11/25/19 22:19	
1,1-Dichloroethene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:19	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:19	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0609	11/25/2019	11/25/19 22:19	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0609	11/25/2019	11/25/19 22:19	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0609	11/25/2019	11/25/19 22:19	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0609	11/25/2019	11/25/19 22:19	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0609	11/25/2019	11/25/19 22:19	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0609	11/25/2019	11/25/19 22:19	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0609	11/25/2019	11/25/19 22:19	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0609	11/25/2019	11/25/19 22:19	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0609	11/25/2019	11/25/19 22:19	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:19	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0609	11/25/2019	11/25/19 22:19	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0609	11/25/2019	11/25/19 22:19	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0609	11/25/2019	11/25/19 22:19	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0609	11/25/2019	11/25/19 22:19	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0609	11/25/2019	11/25/19 22:19	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0609	11/25/2019	11/25/19 22:19	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0609	11/25/2019	11/25/19 22:19	
Benzene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:19	
Bromobenzene	ND	0.50	0.21	1	B9K0609	11/25/2019	11/25/19 22:19	
Bromodichloromethane	ND	0.50	0.14	1	B9K0609	11/25/2019	11/25/19 22:19	
Bromoform	ND	0.50	0.20	1	B9K0609	11/25/2019	11/25/19 22:19	
Bromomethane	ND	0.50	0.40	1	B9K0609	11/25/2019	11/25/19 22:19	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0609	11/25/2019	11/25/19 22:19	
Chlorobenzene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:19	
Chloroethane	ND	0.50	0.15	1	B9K0609	11/25/2019	11/25/19 22:19	
Chloroform	ND	0.50	0.11	1	B9K0609	11/25/2019	11/25/19 22:19	
Chloromethane	ND	0.50	0.12	1	B9K0609	11/25/2019	11/25/19 22:19	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0609	11/25/2019	11/25/19 22:19	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:19	



Certificate of Analysis

Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: TB-111919A

Lab ID: 1904177-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0609	11/25/2019	11/25/19 22:19	
Dibromomethane	ND	0.50	0.19	1	B9K0609	11/25/2019	11/25/19 22:19	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0609	11/25/2019	11/25/19 22:19	
Ethylbenzene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:19	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0609	11/25/2019	11/25/19 22:19	
Isopropylbenzene	ND	0.50	0.10	1	B9K0609	11/25/2019	11/25/19 22:19	
m,p-Xylene	ND	1.0	0.19	1	B9K0609	11/25/2019	11/25/19 22:19	
Methylene chloride	ND	1.0	0.71	1	B9K0609	11/25/2019	11/25/19 22:19	
n-Butylbenzene	ND	0.50	0.11	1	B9K0609	11/25/2019	11/25/19 22:19	
n-Propylbenzene	ND	0.50	0.10	1	B9K0609	11/25/2019	11/25/19 22:19	
Naphthalene	ND	0.50	0.41	1	B9K0609	11/25/2019	11/25/19 22:19	
o-Xylene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:19	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0609	11/25/2019	11/25/19 22:19	
Styrene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:19	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0609	11/25/2019	11/25/19 22:19	
Tetrachloroethene	ND	0.50	0.10	1	B9K0609	11/25/2019	11/25/19 22:19	
Toluene	ND	0.50	0.12	1	B9K0609	11/25/2019	11/25/19 22:19	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0609	11/25/2019	11/25/19 22:19	
Trichloroethene	ND	0.50	0.10	1	B9K0609	11/25/2019	11/25/19 22:19	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0609	11/25/2019	11/25/19 22:19	
Vinyl chloride	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:19	
Surrogate: 1,2-Dichloroethane-d4	111 %	59 - 158			B9K0609	11/25/2019	11/25/19 22:19	
Surrogate: 4-Bromofluorobenzene	101 %	71 - 127			B9K0609	11/25/2019	11/25/19 22:19	
Surrogate: Dibromofluoromethane	105 %	66 - 147			B9K0609	11/25/2019	11/25/19 22:19	
Surrogate: Toluene-d8	107 %	77 - 138			B9K0609	11/25/2019	11/25/19 22:19	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-33_25V

Lab ID: 1904177-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0609	11/25/2019	11/25/19 23:05	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0609	11/25/2019	11/25/19 23:05	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0609	11/25/2019	11/25/19 23:05	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0609	11/25/2019	11/25/19 23:05	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0609	11/25/2019	11/25/19 23:05	
1,1-Dichloroethene	2.2	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 23:05	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 23:05	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0609	11/25/2019	11/25/19 23:05	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0609	11/25/2019	11/25/19 23:05	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0609	11/25/2019	11/25/19 23:05	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0609	11/25/2019	11/25/19 23:05	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0609	11/25/2019	11/25/19 23:05	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0609	11/25/2019	11/25/19 23:05	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0609	11/25/2019	11/25/19 23:05	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0609	11/25/2019	11/25/19 23:05	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0609	11/25/2019	11/25/19 23:05	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 23:05	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0609	11/25/2019	11/25/19 23:05	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0609	11/25/2019	11/25/19 23:05	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0609	11/25/2019	11/25/19 23:05	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0609	11/25/2019	11/25/19 23:05	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0609	11/25/2019	11/25/19 23:05	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0609	11/25/2019	11/25/19 23:05	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0609	11/25/2019	11/25/19 23:05	
Benzene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 23:05	
Bromobenzene	ND	0.50	0.21	1	B9K0609	11/25/2019	11/25/19 23:05	
Bromodichloromethane	ND	0.50	0.14	1	B9K0609	11/25/2019	11/25/19 23:05	
Bromoform	ND	0.50	0.20	1	B9K0609	11/25/2019	11/25/19 23:05	
Bromomethane	ND	0.50	0.40	1	B9K0609	11/25/2019	11/25/19 23:05	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0609	11/25/2019	11/25/19 23:05	
Chlorobenzene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 23:05	
Chloroethane	ND	0.50	0.15	1	B9K0609	11/25/2019	11/25/19 23:05	
Chloroform	ND	0.50	0.11	1	B9K0609	11/25/2019	11/25/19 23:05	
Chloromethane	ND	0.50	0.12	1	B9K0609	11/25/2019	11/25/19 23:05	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0609	11/25/2019	11/25/19 23:05	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 23:05	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-33_25V

Lab ID: 1904177-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0609	11/25/2019	11/25/19 23:05	
Dibromomethane	ND	0.50	0.19	1	B9K0609	11/25/2019	11/25/19 23:05	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0609	11/25/2019	11/25/19 23:05	
Ethylbenzene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 23:05	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0609	11/25/2019	11/25/19 23:05	
Isopropylbenzene	ND	0.50	0.10	1	B9K0609	11/25/2019	11/25/19 23:05	
m,p-Xylene	ND	1.0	0.19	1	B9K0609	11/25/2019	11/25/19 23:05	
Methylene chloride	ND	1.0	0.71	1	B9K0609	11/25/2019	11/25/19 23:05	
n-Butylbenzene	ND	0.50	0.11	1	B9K0609	11/25/2019	11/25/19 23:05	
n-Propylbenzene	ND	0.50	0.10	1	B9K0609	11/25/2019	11/25/19 23:05	
Naphthalene	ND	0.50	0.41	1	B9K0609	11/25/2019	11/25/19 23:05	
o-Xylene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 23:05	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0609	11/25/2019	11/25/19 23:05	
Styrene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 23:05	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0609	11/25/2019	11/25/19 23:05	
Tetrachloroethene	ND	0.50	0.10	1	B9K0609	11/25/2019	11/25/19 23:05	
Toluene	ND	0.50	0.12	1	B9K0609	11/25/2019	11/25/19 23:05	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0609	11/25/2019	11/25/19 23:05	
Trichloroethene	0.24	0.50	0.10	1	B9K0609	11/25/2019	11/25/19 23:05	J
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0609	11/25/2019	11/25/19 23:05	
Vinyl chloride	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 23:05	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>112 %</i>	<i>59 - 158</i>			B9K0609	11/25/2019	<i>11/25/19 23:05</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>102 %</i>	<i>71 - 127</i>			B9K0609	11/25/2019	<i>11/25/19 23:05</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>105 %</i>	<i>66 - 147</i>			B9K0609	11/25/2019	<i>11/25/19 23:05</i>	
<i>Surrogate: Toluene-d8</i>	<i>106 %</i>	<i>77 - 138</i>			B9K0609	11/25/2019	<i>11/25/19 23:05</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-33_25V

Lab ID: 1904177-02

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	0.13	0.20	0.05	1	B9K0659	11/26/2019	11/26/19 15:11	J
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>116 %</i>	<i>22 - 117</i>			B9K0659	11/26/2019	<i>11/26/19 15:11</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>125 %</i>	<i>20 - 131</i>			B9K0659	11/26/2019	<i>11/26/19 15:11</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>122 %</i>	<i>24 - 135</i>			B9K0659	11/26/2019	<i>11/26/19 15:11</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>142 %</i>	<i>6 - 124</i>			B9K0659	11/26/2019	<i>11/26/19 15:11</i>	S5



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Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-33

Lab ID: 1904177-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 11:58	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 11:58	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0621	11/26/2019	11/26/19 11:58	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0621	11/26/2019	11/26/19 11:58	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 11:58	
1,1-Dichloroethene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 11:58	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 11:58	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0621	11/26/2019	11/26/19 11:58	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0621	11/26/2019	11/26/19 11:58	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 11:58	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 11:58	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0621	11/26/2019	11/26/19 11:58	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0621	11/26/2019	11/26/19 11:58	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 11:58	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 11:58	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 11:58	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 11:58	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 11:58	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 11:58	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0621	11/26/2019	11/26/19 11:58	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0621	11/26/2019	11/26/19 11:58	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 11:58	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 11:58	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 11:58	
Benzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 11:58	
Bromobenzene	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 11:58	
Bromodichloromethane	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 11:58	
Bromoform	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 11:58	
Bromomethane	ND	0.50	0.40	1	B9K0621	11/26/2019	11/26/19 11:58	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 11:58	
Chlorobenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 11:58	
Chloroethane	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 11:58	
Chloroform	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 11:58	
Chloromethane	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 11:58	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 11:58	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 11:58	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-33

Lab ID: 1904177-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 11:58	
Dibromomethane	ND	0.50	0.19	1	B9K0621	11/26/2019	11/26/19 11:58	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0621	11/26/2019	11/26/19 11:58	
Ethylbenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 11:58	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 11:58	
Isopropylbenzene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 11:58	
m,p-Xylene	ND	1.0	0.19	1	B9K0621	11/26/2019	11/26/19 11:58	
Methylene chloride	ND	1.0	0.71	1	B9K0621	11/26/2019	11/26/19 11:58	
n-Butylbenzene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 11:58	
n-Propylbenzene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 11:58	
Naphthalene	ND	0.50	0.41	1	B9K0621	11/26/2019	11/26/19 11:58	
o-Xylene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 11:58	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 11:58	
Styrene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 11:58	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 11:58	
Tetrachloroethene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 11:58	
Toluene	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 11:58	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 11:58	
Trichloroethene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 11:58	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0621	11/26/2019	11/26/19 11:58	
Vinyl chloride	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 11:58	
Surrogate: 1,2-Dichloroethane-d4	109 %	59 - 158			B9K0621	11/26/2019	11/26/19 11:58	
Surrogate: 4-Bromofluorobenzene	105 %	71 - 127			B9K0621	11/26/2019	11/26/19 11:58	
Surrogate: Dibromofluoromethane	106 %	66 - 147			B9K0621	11/26/2019	11/26/19 11:58	
Surrogate: Toluene-d8	105 %	77 - 138			B9K0621	11/26/2019	11/26/19 11:58	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-33

Lab ID: 1904177-03

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	0.13	0.20	0.05	1	B9K0659	11/26/2019	11/26/19 15:37	J
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>110 %</i>	<i>22 - 117</i>			B9K0659	11/26/2019	<i>11/26/19 15:37</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>120 %</i>	<i>20 - 131</i>			B9K0659	11/26/2019	<i>11/26/19 15:37</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>122 %</i>	<i>24 - 135</i>			B9K0659	11/26/2019	<i>11/26/19 15:37</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>138 %</i>	<i>6 - 124</i>			B9K0659	11/26/2019	<i>11/26/19 15:37</i>	S5



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-35C

Lab ID: 1904177-04

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 12:21	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 12:21	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0621	11/26/2019	11/26/19 12:21	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0621	11/26/2019	11/26/19 12:21	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 12:21	
1,1-Dichloroethene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:21	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:21	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0621	11/26/2019	11/26/19 12:21	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0621	11/26/2019	11/26/19 12:21	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 12:21	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 12:21	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0621	11/26/2019	11/26/19 12:21	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0621	11/26/2019	11/26/19 12:21	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 12:21	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 12:21	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 12:21	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:21	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 12:21	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 12:21	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0621	11/26/2019	11/26/19 12:21	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0621	11/26/2019	11/26/19 12:21	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 12:21	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 12:21	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 12:21	
Benzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:21	
Bromobenzene	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 12:21	
Bromodichloromethane	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 12:21	
Bromoform	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 12:21	
Bromomethane	ND	0.50	0.40	1	B9K0621	11/26/2019	11/26/19 12:21	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 12:21	
Chlorobenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:21	
Chloroethane	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 12:21	
Chloroform	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 12:21	
Chloromethane	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 12:21	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 12:21	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:21	



Certificate of Analysis

Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-35C

Lab ID: 1904177-04

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 12:21	
Dibromomethane	ND	0.50	0.19	1	B9K0621	11/26/2019	11/26/19 12:21	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0621	11/26/2019	11/26/19 12:21	
Ethylbenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:21	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 12:21	
Isopropylbenzene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 12:21	
m,p-Xylene	ND	1.0	0.19	1	B9K0621	11/26/2019	11/26/19 12:21	
Methylene chloride	ND	1.0	0.71	1	B9K0621	11/26/2019	11/26/19 12:21	
n-Butylbenzene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 12:21	
n-Propylbenzene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 12:21	
Naphthalene	ND	0.50	0.41	1	B9K0621	11/26/2019	11/26/19 12:21	
o-Xylene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:21	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 12:21	
Styrene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:21	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 12:21	
Tetrachloroethene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 12:21	
Toluene	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 12:21	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 12:21	
Trichloroethene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 12:21	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0621	11/26/2019	11/26/19 12:21	
Vinyl chloride	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:21	
Surrogate: 1,2-Dichloroethane-d4	110 %	59 - 158			B9K0621	11/26/2019	11/26/19 12:21	
Surrogate: 4-Bromofluorobenzene	104 %	71 - 127			B9K0621	11/26/2019	11/26/19 12:21	
Surrogate: Dibromofluoromethane	106 %	66 - 147			B9K0621	11/26/2019	11/26/19 12:21	
Surrogate: Toluene-d8	107 %	77 - 138			B9K0621	11/26/2019	11/26/19 12:21	



Certificate of Analysis

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Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-35C

Lab ID: 1904177-04

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	0.06	0.20	0.05	1	B9K0659	11/26/2019	11/26/19 16:03	J
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>107 %</i>	<i>22 - 117</i>			B9K0659	11/26/2019	<i>11/26/19 16:03</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>117 %</i>	<i>20 - 131</i>			B9K0659	11/26/2019	<i>11/26/19 16:03</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>107 %</i>	<i>24 - 135</i>			B9K0659	11/26/2019	<i>11/26/19 16:03</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>133 %</i>	<i>6 - 124</i>			B9K0659	11/26/2019	<i>11/26/19 16:03</i>	S5



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-31

Lab ID: 1904177-05

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 17:16	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 17:16	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0621	11/26/2019	11/26/19 17:16	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0621	11/26/2019	11/26/19 17:16	
1,1-Dichloroethane	2.4	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 17:16	
1,1-Dichloroethene	330	5.0	1.3	10	B9K0621	11/26/2019	11/26/19 16:31	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 17:16	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0621	11/26/2019	11/26/19 17:16	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0621	11/26/2019	11/26/19 17:16	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 17:16	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 17:16	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0621	11/26/2019	11/26/19 17:16	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0621	11/26/2019	11/26/19 17:16	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 17:16	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 17:16	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 17:16	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 17:16	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 17:16	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 17:16	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0621	11/26/2019	11/26/19 17:16	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0621	11/26/2019	11/26/19 17:16	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 17:16	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 17:16	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 17:16	
Benzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 17:16	
Bromobenzene	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 17:16	
Bromodichloromethane	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 17:16	
Bromoform	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 17:16	
Bromomethane	ND	0.50	0.40	1	B9K0621	11/26/2019	11/26/19 17:16	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 17:16	
Chlorobenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 17:16	
Chloroethane	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 17:16	
Chloroform	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 17:16	
Chloromethane	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 17:16	
cis-1,2-Dichloroethene	0.76	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 17:16	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 17:16	



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-31

Lab ID: 1904177-05

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 17:16	
Dibromomethane	ND	0.50	0.19	1	B9K0621	11/26/2019	11/26/19 17:16	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0621	11/26/2019	11/26/19 17:16	
Ethylbenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 17:16	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 17:16	
Isopropylbenzene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 17:16	
m,p-Xylene	ND	1.0	0.19	1	B9K0621	11/26/2019	11/26/19 17:16	
Methylene chloride	ND	1.0	0.71	1	B9K0621	11/26/2019	11/26/19 17:16	
n-Butylbenzene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 17:16	
n-Propylbenzene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 17:16	
Naphthalene	ND	0.50	0.41	1	B9K0621	11/26/2019	11/26/19 17:16	
o-Xylene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 17:16	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 17:16	
Styrene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 17:16	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 17:16	
Tetrachloroethene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 17:16	
Toluene	0.20	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 17:16	J
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 17:16	
Trichloroethene	11	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 17:16	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0621	11/26/2019	11/26/19 17:16	
Vinyl chloride	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 17:16	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>114 %</i>	<i>59 - 158</i>			B9K0621	11/26/2019	<i>11/26/19 16:31</i>	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>114 %</i>	<i>59 - 158</i>			B9K0621	11/26/2019	<i>11/26/19 17:16</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>106 %</i>	<i>71 - 127</i>			B9K0621	11/26/2019	<i>11/26/19 16:31</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>105 %</i>	<i>71 - 127</i>			B9K0621	11/26/2019	<i>11/26/19 17:16</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>109 %</i>	<i>66 - 147</i>			B9K0621	11/26/2019	<i>11/26/19 17:16</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>109 %</i>	<i>66 - 147</i>			B9K0621	11/26/2019	<i>11/26/19 16:31</i>	
<i>Surrogate: Toluene-d8</i>	<i>106 %</i>	<i>77 - 138</i>			B9K0621	11/26/2019	<i>11/26/19 16:31</i>	
<i>Surrogate: Toluene-d8</i>	<i>101 %</i>	<i>77 - 138</i>			B9K0621	11/26/2019	<i>11/26/19 17:16</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-31

Lab ID: 1904177-05

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	13	0.20	0.05	1	B9K0659	11/26/2019	11/26/19 16:30	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>110 %</i>	<i>22 - 117</i>			B9K0659	11/26/2019	<i>11/26/19 16:30</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>124 %</i>	<i>20 - 131</i>			B9K0659	11/26/2019	<i>11/26/19 16:30</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>125 %</i>	<i>24 - 135</i>			B9K0659	11/26/2019	<i>11/26/19 16:30</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>141 %</i>	<i>6 - 124</i>			B9K0659	11/26/2019	<i>11/26/19 16:30</i>	S5



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9171 Towne Centre Drive, Suite 375
San Diego, CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-3100

Lab ID: 1904177-06

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 17:39	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 17:39	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0621	11/26/2019	11/26/19 17:39	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0621	11/26/2019	11/26/19 17:39	
1,1-Dichloroethane	2.4	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 17:39	
1,1-Dichloroethene	320	5.0	1.3	10	B9K0621	11/26/2019	11/26/19 16:54	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 17:39	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0621	11/26/2019	11/26/19 17:39	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0621	11/26/2019	11/26/19 17:39	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 17:39	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 17:39	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0621	11/26/2019	11/26/19 17:39	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0621	11/26/2019	11/26/19 17:39	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 17:39	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 17:39	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 17:39	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 17:39	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 17:39	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 17:39	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0621	11/26/2019	11/26/19 17:39	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0621	11/26/2019	11/26/19 17:39	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 17:39	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 17:39	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 17:39	
Benzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 17:39	
Bromobenzene	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 17:39	
Bromodichloromethane	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 17:39	
Bromoform	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 17:39	
Bromomethane	ND	0.50	0.40	1	B9K0621	11/26/2019	11/26/19 17:39	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 17:39	
Chlorobenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 17:39	
Chloroethane	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 17:39	
Chloroform	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 17:39	
Chloromethane	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 17:39	
cis-1,2-Dichloroethene	0.67	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 17:39	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 17:39	



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-3100

Lab ID: 1904177-06

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 17:39	
Dibromomethane	ND	0.50	0.19	1	B9K0621	11/26/2019	11/26/19 17:39	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0621	11/26/2019	11/26/19 17:39	
Ethylbenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 17:39	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 17:39	
Isopropylbenzene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 17:39	
m,p-Xylene	ND	1.0	0.19	1	B9K0621	11/26/2019	11/26/19 17:39	
Methylene chloride	ND	1.0	0.71	1	B9K0621	11/26/2019	11/26/19 17:39	
n-Butylbenzene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 17:39	
n-Propylbenzene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 17:39	
Naphthalene	ND	0.50	0.41	1	B9K0621	11/26/2019	11/26/19 17:39	
o-Xylene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 17:39	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 17:39	
Styrene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 17:39	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 17:39	
Tetrachloroethene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 17:39	
Toluene	0.15	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 17:39	J
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 17:39	
Trichloroethene	11	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 17:39	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0621	11/26/2019	11/26/19 17:39	
Vinyl chloride	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 17:39	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>113 %</i>	<i>59 - 158</i>			B9K0621	11/26/2019	<i>11/26/19 17:39</i>	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>115 %</i>	<i>59 - 158</i>			B9K0621	11/26/2019	<i>11/26/19 16:54</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>105 %</i>	<i>71 - 127</i>			B9K0621	11/26/2019	<i>11/26/19 17:39</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>104 %</i>	<i>71 - 127</i>			B9K0621	11/26/2019	<i>11/26/19 16:54</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>109 %</i>	<i>66 - 147</i>			B9K0621	11/26/2019	<i>11/26/19 16:54</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>108 %</i>	<i>66 - 147</i>			B9K0621	11/26/2019	<i>11/26/19 17:39</i>	
<i>Surrogate: Toluene-d8</i>	<i>101 %</i>	<i>77 - 138</i>			B9K0621	11/26/2019	<i>11/26/19 17:39</i>	
<i>Surrogate: Toluene-d8</i>	<i>107 %</i>	<i>77 - 138</i>			B9K0621	11/26/2019	<i>11/26/19 16:54</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-3100

Lab ID: 1904177-06

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	15	0.20	0.05	1	B9K0659	11/26/2019	11/26/19 16:56	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>116 %</i>	<i>22 - 117</i>			B9K0659	11/26/2019	<i>11/26/19 16:56</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>126 %</i>	<i>20 - 131</i>			B9K0659	11/26/2019	<i>11/26/19 16:56</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>127 %</i>	<i>24 - 135</i>			B9K0659	11/26/2019	<i>11/26/19 16:56</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>146 %</i>	<i>6 - 124</i>			B9K0659	11/26/2019	<i>11/26/19 16:56</i>	S5



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-26C-111919

Lab ID: 1904177-07

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 12:43	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 12:43	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0621	11/26/2019	11/26/19 12:43	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0621	11/26/2019	11/26/19 12:43	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 12:43	
1,1-Dichloroethene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:43	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:43	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0621	11/26/2019	11/26/19 12:43	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0621	11/26/2019	11/26/19 12:43	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 12:43	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 12:43	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0621	11/26/2019	11/26/19 12:43	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0621	11/26/2019	11/26/19 12:43	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 12:43	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 12:43	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 12:43	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:43	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 12:43	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 12:43	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0621	11/26/2019	11/26/19 12:43	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0621	11/26/2019	11/26/19 12:43	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 12:43	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 12:43	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 12:43	
Benzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:43	
Bromobenzene	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 12:43	
Bromodichloromethane	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 12:43	
Bromoform	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 12:43	
Bromomethane	ND	0.50	0.40	1	B9K0621	11/26/2019	11/26/19 12:43	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 12:43	
Chlorobenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:43	
Chloroethane	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 12:43	
Chloroform	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 12:43	
Chloromethane	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 12:43	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 12:43	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:43	



Certificate of Analysis

Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-26C-111919

Lab ID: 1904177-07

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 12:43	
Dibromomethane	ND	0.50	0.19	1	B9K0621	11/26/2019	11/26/19 12:43	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0621	11/26/2019	11/26/19 12:43	
Ethylbenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:43	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 12:43	
Isopropylbenzene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 12:43	
m,p-Xylene	ND	1.0	0.19	1	B9K0621	11/26/2019	11/26/19 12:43	
Methylene chloride	ND	1.0	0.71	1	B9K0621	11/26/2019	11/26/19 12:43	
n-Butylbenzene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 12:43	
n-Propylbenzene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 12:43	
Naphthalene	ND	0.50	0.41	1	B9K0621	11/26/2019	11/26/19 12:43	
o-Xylene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:43	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 12:43	
Styrene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:43	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 12:43	
Tetrachloroethene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 12:43	
Toluene	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 12:43	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 12:43	
Trichloroethene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 12:43	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0621	11/26/2019	11/26/19 12:43	
Vinyl chloride	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 12:43	
Surrogate: 1,2-Dichloroethane-d4	110 %	59 - 158			B9K0621	11/26/2019	11/26/19 12:43	
Surrogate: 4-Bromofluorobenzene	102 %	71 - 127			B9K0621	11/26/2019	11/26/19 12:43	
Surrogate: Dibromofluoromethane	106 %	66 - 147			B9K0621	11/26/2019	11/26/19 12:43	
Surrogate: Toluene-d8	105 %	77 - 138			B9K0621	11/26/2019	11/26/19 12:43	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-26C-111919

Lab ID: 1904177-07

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	0.05	0.20	0.05	1	B9K0659	11/26/2019	11/26/19 17:22	J
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>113 %</i>	<i>22 - 117</i>			B9K0659	11/26/2019	<i>11/26/19 17:22</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>124 %</i>	<i>20 - 131</i>			B9K0659	11/26/2019	<i>11/26/19 17:22</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>102 %</i>	<i>24 - 135</i>			B9K0659	11/26/2019	<i>11/26/19 17:22</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>141 %</i>	<i>6 - 124</i>			B9K0659	11/26/2019	<i>11/26/19 17:22</i>	S5



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: RB-111919

Lab ID: 1904177-08

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0609	11/25/2019	11/25/19 22:42	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0609	11/25/2019	11/25/19 22:42	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0609	11/25/2019	11/25/19 22:42	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0609	11/25/2019	11/25/19 22:42	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0609	11/25/2019	11/25/19 22:42	
1,1-Dichloroethene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:42	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:42	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0609	11/25/2019	11/25/19 22:42	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0609	11/25/2019	11/25/19 22:42	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0609	11/25/2019	11/25/19 22:42	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0609	11/25/2019	11/25/19 22:42	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0609	11/25/2019	11/25/19 22:42	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0609	11/25/2019	11/25/19 22:42	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0609	11/25/2019	11/25/19 22:42	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0609	11/25/2019	11/25/19 22:42	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0609	11/25/2019	11/25/19 22:42	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:42	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0609	11/25/2019	11/25/19 22:42	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0609	11/25/2019	11/25/19 22:42	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0609	11/25/2019	11/25/19 22:42	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0609	11/25/2019	11/25/19 22:42	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0609	11/25/2019	11/25/19 22:42	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0609	11/25/2019	11/25/19 22:42	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0609	11/25/2019	11/25/19 22:42	
Benzene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:42	
Bromobenzene	ND	0.50	0.21	1	B9K0609	11/25/2019	11/25/19 22:42	
Bromodichloromethane	ND	0.50	0.14	1	B9K0609	11/25/2019	11/25/19 22:42	
Bromoform	ND	0.50	0.20	1	B9K0609	11/25/2019	11/25/19 22:42	
Bromomethane	ND	0.50	0.40	1	B9K0609	11/25/2019	11/25/19 22:42	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0609	11/25/2019	11/25/19 22:42	
Chlorobenzene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:42	
Chloroethane	ND	0.50	0.15	1	B9K0609	11/25/2019	11/25/19 22:42	
Chloroform	ND	0.50	0.11	1	B9K0609	11/25/2019	11/25/19 22:42	
Chloromethane	ND	0.50	0.12	1	B9K0609	11/25/2019	11/25/19 22:42	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0609	11/25/2019	11/25/19 22:42	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:42	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego, CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: RB-111919

Lab ID: 1904177-08

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0609	11/25/2019	11/25/19 22:42	
Dibromomethane	ND	0.50	0.19	1	B9K0609	11/25/2019	11/25/19 22:42	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0609	11/25/2019	11/25/19 22:42	
Ethylbenzene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:42	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0609	11/25/2019	11/25/19 22:42	
Isopropylbenzene	ND	0.50	0.10	1	B9K0609	11/25/2019	11/25/19 22:42	
m,p-Xylene	ND	1.0	0.19	1	B9K0609	11/25/2019	11/25/19 22:42	
Methylene chloride	ND	1.0	0.71	1	B9K0609	11/25/2019	11/25/19 22:42	
n-Butylbenzene	ND	0.50	0.11	1	B9K0609	11/25/2019	11/25/19 22:42	
n-Propylbenzene	ND	0.50	0.10	1	B9K0609	11/25/2019	11/25/19 22:42	
Naphthalene	ND	0.50	0.41	1	B9K0609	11/25/2019	11/25/19 22:42	
o-Xylene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:42	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0609	11/25/2019	11/25/19 22:42	
Styrene	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:42	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0609	11/25/2019	11/25/19 22:42	
Tetrachloroethene	ND	0.50	0.10	1	B9K0609	11/25/2019	11/25/19 22:42	
Toluene	ND	0.50	0.12	1	B9K0609	11/25/2019	11/25/19 22:42	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0609	11/25/2019	11/25/19 22:42	
Trichloroethene	ND	0.50	0.10	1	B9K0609	11/25/2019	11/25/19 22:42	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0609	11/25/2019	11/25/19 22:42	
Vinyl chloride	ND	0.50	0.13	1	B9K0609	11/25/2019	11/25/19 22:42	
Surrogate: 1,2-Dichloroethane-d4	114 %	59 - 158			B9K0609	11/25/2019	11/25/19 22:42	
Surrogate: 4-Bromofluorobenzene	103 %	71 - 127			B9K0609	11/25/2019	11/25/19 22:42	
Surrogate: Dibromofluoromethane	106 %	66 - 147			B9K0609	11/25/2019	11/25/19 22:42	
Surrogate: Toluene-d8	107 %	77 - 138			B9K0609	11/25/2019	11/25/19 22:42	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: RB-111919

Lab ID: 1904177-08

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	0.05	1	B9K0659	11/26/2019	11/26/19 17:48	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>103 %</i>	<i>22 - 117</i>			B9K0659	11/26/2019	<i>11/26/19 17:48</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>111 %</i>	<i>20 - 131</i>			B9K0659	11/26/2019	<i>11/26/19 17:48</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>133 %</i>	<i>24 - 135</i>			B9K0659	11/26/2019	<i>11/26/19 17:48</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>123 %</i>	<i>6 - 124</i>			B9K0659	11/26/2019	<i>11/26/19 17:48</i>	



Certificate of Analysis

Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-08

Lab ID: 1904177-09

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 14:15	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 14:15	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0621	11/26/2019	11/26/19 14:15	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0621	11/26/2019	11/26/19 14:15	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 14:15	
1,1-Dichloroethene	39	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:15	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:15	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0621	11/26/2019	11/26/19 14:15	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0621	11/26/2019	11/26/19 14:15	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 14:15	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 14:15	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0621	11/26/2019	11/26/19 14:15	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0621	11/26/2019	11/26/19 14:15	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 14:15	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 14:15	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 14:15	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:15	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 14:15	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 14:15	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0621	11/26/2019	11/26/19 14:15	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0621	11/26/2019	11/26/19 14:15	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 14:15	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 14:15	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 14:15	
Benzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:15	
Bromobenzene	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 14:15	
Bromodichloromethane	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 14:15	
Bromoform	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 14:15	
Bromomethane	ND	0.50	0.40	1	B9K0621	11/26/2019	11/26/19 14:15	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 14:15	
Chlorobenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:15	
Chloroethane	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 14:15	
Chloroform	0.31	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 14:15	J
Chloromethane	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 14:15	
cis-1,2-Dichloroethene	3.2	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 14:15	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:15	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-08

Lab ID: 1904177-09

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 14:15	
Dibromomethane	ND	0.50	0.19	1	B9K0621	11/26/2019	11/26/19 14:15	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0621	11/26/2019	11/26/19 14:15	
Ethylbenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:15	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 14:15	
Isopropylbenzene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 14:15	
m,p-Xylene	ND	1.0	0.19	1	B9K0621	11/26/2019	11/26/19 14:15	
Methylene chloride	ND	1.0	0.71	1	B9K0621	11/26/2019	11/26/19 14:15	
n-Butylbenzene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 14:15	
n-Propylbenzene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 14:15	
Naphthalene	ND	0.50	0.41	1	B9K0621	11/26/2019	11/26/19 14:15	
o-Xylene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:15	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 14:15	
Styrene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:15	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 14:15	
Tetrachloroethene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 14:15	
Toluene	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 14:15	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 14:15	
Trichloroethene	78	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 14:15	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0621	11/26/2019	11/26/19 14:15	
Vinyl chloride	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:15	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>111 %</i>	<i>59 - 158</i>			B9K0621	11/26/2019	<i>11/26/19 14:15</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>104 %</i>	<i>71 - 127</i>			B9K0621	11/26/2019	<i>11/26/19 14:15</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>106 %</i>	<i>66 - 147</i>			B9K0621	11/26/2019	<i>11/26/19 14:15</i>	
<i>Surrogate: Toluene-d8</i>	<i>95.1 %</i>	<i>77 - 138</i>			B9K0621	11/26/2019	<i>11/26/19 14:15</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-08

Lab ID: 1904177-09

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	2.7	0.20	0.05	1	B9K0659	11/26/2019	11/26/19 18:15	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>111 %</i>		<i>22 - 117</i>		B9K0659	11/26/2019	<i>11/26/19 18:15</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>118 %</i>		<i>20 - 131</i>		B9K0659	11/26/2019	<i>11/26/19 18:15</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>120 %</i>		<i>24 - 135</i>		B9K0659	11/26/2019	<i>11/26/19 18:15</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>136 %</i>		<i>6 - 124</i>		B9K0659	11/26/2019	<i>11/26/19 18:15</i>	S5



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego, CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-0800

Lab ID: 1904177-10

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 14:37	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 14:37	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0621	11/26/2019	11/26/19 14:37	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0621	11/26/2019	11/26/19 14:37	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 14:37	
1,1-Dichloroethene	39	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:37	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:37	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0621	11/26/2019	11/26/19 14:37	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0621	11/26/2019	11/26/19 14:37	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 14:37	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 14:37	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0621	11/26/2019	11/26/19 14:37	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0621	11/26/2019	11/26/19 14:37	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 14:37	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 14:37	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 14:37	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:37	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 14:37	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 14:37	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0621	11/26/2019	11/26/19 14:37	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0621	11/26/2019	11/26/19 14:37	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 14:37	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 14:37	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 14:37	
Benzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:37	
Bromobenzene	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 14:37	
Bromodichloromethane	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 14:37	
Bromoform	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 14:37	
Bromomethane	ND	0.50	0.40	1	B9K0621	11/26/2019	11/26/19 14:37	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 14:37	
Chlorobenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:37	
Chloroethane	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 14:37	
Chloroform	0.31	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 14:37	J
Chloromethane	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 14:37	
cis-1,2-Dichloroethene	3.2	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 14:37	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:37	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego, CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-0800

Lab ID: 1904177-10

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 14:37	
Dibromomethane	ND	0.50	0.19	1	B9K0621	11/26/2019	11/26/19 14:37	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0621	11/26/2019	11/26/19 14:37	
Ethylbenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:37	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 14:37	
Isopropylbenzene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 14:37	
m,p-Xylene	ND	1.0	0.19	1	B9K0621	11/26/2019	11/26/19 14:37	
Methylene chloride	ND	1.0	0.71	1	B9K0621	11/26/2019	11/26/19 14:37	
n-Butylbenzene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 14:37	
n-Propylbenzene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 14:37	
Naphthalene	ND	0.50	0.41	1	B9K0621	11/26/2019	11/26/19 14:37	
o-Xylene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:37	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 14:37	
Styrene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:37	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 14:37	
Tetrachloroethene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 14:37	
Toluene	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 14:37	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 14:37	
Trichloroethene	78	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 14:37	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0621	11/26/2019	11/26/19 14:37	
Vinyl chloride	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 14:37	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>110 %</i>	<i>59 - 158</i>			B9K0621	11/26/2019	<i>11/26/19 14:37</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>105 %</i>	<i>71 - 127</i>			B9K0621	11/26/2019	<i>11/26/19 14:37</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>106 %</i>	<i>66 - 147</i>			B9K0621	11/26/2019	<i>11/26/19 14:37</i>	
<i>Surrogate: Toluene-d8</i>	<i>93.9 %</i>	<i>77 - 138</i>			B9K0621	11/26/2019	<i>11/26/19 14:37</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-0800

Lab ID: 1904177-10

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	2.7	0.20	0.05	1	B9K0659	11/26/2019	11/26/19 18:41	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>106 %</i>	<i>22 - 117</i>			B9K0659	11/26/2019	<i>11/26/19 18:41</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>117 %</i>	<i>20 - 131</i>			B9K0659	11/26/2019	<i>11/26/19 18:41</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>129 %</i>	<i>24 - 135</i>			B9K0659	11/26/2019	<i>11/26/19 18:41</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>130 %</i>	<i>6 - 124</i>			B9K0659	11/26/2019	<i>11/26/19 18:41</i>	S5



Certificate of Analysis

Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-28

Lab ID: 1904177-11

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 13:06	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 13:06	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0621	11/26/2019	11/26/19 13:06	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0621	11/26/2019	11/26/19 13:06	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 13:06	
1,1-Dichloroethene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:06	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:06	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0621	11/26/2019	11/26/19 13:06	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0621	11/26/2019	11/26/19 13:06	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 13:06	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 13:06	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0621	11/26/2019	11/26/19 13:06	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0621	11/26/2019	11/26/19 13:06	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 13:06	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 13:06	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 13:06	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:06	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 13:06	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 13:06	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0621	11/26/2019	11/26/19 13:06	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0621	11/26/2019	11/26/19 13:06	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 13:06	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 13:06	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 13:06	
Benzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:06	
Bromobenzene	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 13:06	
Bromodichloromethane	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 13:06	
Bromoform	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 13:06	
Bromomethane	ND	0.50	0.40	1	B9K0621	11/26/2019	11/26/19 13:06	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 13:06	
Chlorobenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:06	
Chloroethane	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 13:06	
Chloroform	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 13:06	
Chloromethane	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 13:06	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 13:06	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:06	



Certificate of Analysis

Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-28

Lab ID: 1904177-11

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 13:06	
Dibromomethane	ND	0.50	0.19	1	B9K0621	11/26/2019	11/26/19 13:06	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0621	11/26/2019	11/26/19 13:06	
Ethylbenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:06	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 13:06	
Isopropylbenzene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 13:06	
m,p-Xylene	ND	1.0	0.19	1	B9K0621	11/26/2019	11/26/19 13:06	
Methylene chloride	ND	1.0	0.71	1	B9K0621	11/26/2019	11/26/19 13:06	
n-Butylbenzene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 13:06	
n-Propylbenzene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 13:06	
Naphthalene	ND	0.50	0.41	1	B9K0621	11/26/2019	11/26/19 13:06	
o-Xylene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:06	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 13:06	
Styrene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:06	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 13:06	
Tetrachloroethene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 13:06	
Toluene	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 13:06	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 13:06	
Trichloroethene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 13:06	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0621	11/26/2019	11/26/19 13:06	
Vinyl chloride	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:06	
Surrogate: 1,2-Dichloroethane-d4	113 %	59 - 158			B9K0621	11/26/2019	11/26/19 13:06	
Surrogate: 4-Bromofluorobenzene	108 %	71 - 127			B9K0621	11/26/2019	11/26/19 13:06	
Surrogate: Dibromofluoromethane	108 %	66 - 147			B9K0621	11/26/2019	11/26/19 13:06	
Surrogate: Toluene-d8	108 %	77 - 138			B9K0621	11/26/2019	11/26/19 13:06	



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Hargis & Associates, Inc.

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San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Client Sample ID: MW-28

Lab ID: 1904177-11

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	0.19	0.20	0.05	1	B9K0659	11/26/2019	11/26/19 19:07	J
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>92.9 %</i>	<i>22 - 117</i>			B9K0659	11/26/2019	<i>11/26/19 19:07</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>108 %</i>	<i>20 - 131</i>			B9K0659	11/26/2019	<i>11/26/19 19:07</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>134 %</i>	<i>24 - 135</i>			B9K0659	11/26/2019	<i>11/26/19 19:07</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>116 %</i>	<i>6 - 124</i>			B9K0659	11/26/2019	<i>11/26/19 19:07</i>	



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San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

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QUALITY CONTROL SECTION

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0609 - MSVOA_LL_W

Blank (B9K0609-BLK1)

Prepared: 11/25/2019 Analyzed: 11/25/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.21
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.40
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0609 - MSVOA_LL_W (continued)

Blank (B9K0609-BLK1) - Continued

Prepared: 11/25/2019 Analyzed: 11/25/2019

Dichlorodifluoromethane	ND	0.50	0.18
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15
Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.23
Vinyl chloride	ND	0.50	0.13

Surrogate: 1,2-Dichloroethane-d4	26.91	25.0000	108	59 - 158
Surrogate: 4-Bromofluorobenzene	25.82	25.0000	103	71 - 127
Surrogate: Dibromofluoromethane	25.82	25.0000	103	66 - 147
Surrogate: Toluene-d8	26.71	25.0000	107	77 - 138

LCS (B9K0609-BS1)

Prepared: 11/25/2019 Analyzed: 11/25/2019

1,1,1,2-Tetrachloroethane	21.2600	0.50	0.11	20.0000	106	71 - 133
1,1,1-Trichloroethane	20.6900	0.50	0.21	20.0000	103	62 - 124
1,1,2,2-Tetrachloroethane	19.5800	0.50	0.36	20.0000	97.9	50 - 131
1,1,2-Trichloroethane	20.5400	0.50	0.25	20.0000	103	77 - 121
1,1-Dichloroethane	19.8400	0.50	0.09	20.0000	99.2	52 - 130
1,1-Dichloroethene	19.3100	0.50	0.13	20.0000	96.6	61 - 136
1,1-Dichloropropene	22.3200	0.50	0.13	20.0000	112	80 - 128
1,2,3-Trichloropropane	20.4500	0.50	0.39	20.0000	102	59 - 126
1,2,3-Trichlorobenzene	22.1400	0.50	0.18	20.0000	111	69 - 138
1,2,4-Trichlorobenzene	20.9400	0.50	0.16	20.0000	105	78 - 125
1,2,4-Trimethylbenzene	20.2700	0.50	0.14	20.0000	101	70 - 126
1,2-Dibromo-3-chloropropane	17.4200	0.50	0.41	20.0000	87.1	58 - 127
1,2-Dibromoethane	21.7100	0.50	0.24	20.0000	109	76 - 120
1,2-Dichlorobenzene	20.0900	0.50	0.20	20.0000	100	82 - 117
1,2-Dichloroethane	19.9100	0.50	0.20	20.0000	99.6	66 - 126



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0609 - MSVOA_LL_W (continued)

LCS (B9K0609-BS1) - Continued

Prepared: 11/25/2019 Analyzed: 11/25/2019

1,2-Dichloropropane	20.6200	0.50	0.15	20.0000	103	70 - 117
1,3,5-Trimethylbenzene	22.1400	0.50	0.13	20.0000	111	71 - 125
1,3-Dichlorobenzene	19.9600	0.50	0.16	20.0000	99.8	81 - 116
1,3-Dichloropropane	20.8400	0.50	0.21	20.0000	104	69 - 124
1,4-Dichlorobenzene	18.8000	0.50	0.17	20.0000	94.0	80 - 114
2,2-Dichloropropane	19.3900	0.50	0.38	20.0000	97.0	58 - 132
2-Chlorotoluene	21.0600	0.50	0.11	20.0000	105	71 - 119
4-Chlorotoluene	21.1400	0.50	0.12	20.0000	106	72 - 122
4-Isopropyltoluene	19.9700	0.50	0.11	20.0000	99.8	69 - 126
Benzene	41.5000	0.50	0.13	40.0000	104	80 - 116
Bromobenzene	20.4200	0.50	0.21	20.0000	102	77 - 118
Bromodichloromethane	20.2800	0.50	0.14	20.0000	101	73 - 118
Bromoform	18.0800	0.50	0.20	20.0000	90.4	65 - 133
Bromomethane	32.9500	0.50	0.40	20.0000	165	7 - 205
Carbon tetrachloride	20.6500	0.50	0.09	20.0000	103	63 - 133
Chlorobenzene	19.8000	0.50	0.13	20.0000	99.0	86 - 113
Chloroethane	23.4900	0.50	0.15	20.0000	117	66 - 141
Chloroform	19.5500	0.50	0.11	20.0000	97.8	63 - 127
Chloromethane	22.9300	0.50	0.12	20.0000	115	0 - 207
cis-1,2-Dichloroethene	20.0500	0.50	0.14	20.0000	100	64 - 126
cis-1,3-Dichloropropene	18.9100	0.50	0.13	20.0000	94.6	70 - 141
Dibromochloromethane	19.2000	0.50	0.16	20.0000	96.0	67 - 135
Dibromomethane	21.0600	0.50	0.19	20.0000	105	74 - 118
Dichlorodifluoromethane	23.2000	0.50	0.18	20.0000	116	14 - 181
Ethylbenzene	43.6600	0.50	0.13	40.0000	109	77 - 118
Hexachlorobutadiene	20.4500	0.50	0.15	20.0000	102	66 - 125
Isopropylbenzene	22.3900	0.50	0.10	20.0000	112	68 - 137
m,p-Xylene	43.6000	1.0	0.19	40.0000	109	78 - 126
Methylene chloride	20.7300	1.0	0.71	20.0000	104	51 - 149
n-Butylbenzene	19.8300	0.50	0.11	20.0000	99.2	63 - 127
n-Propylbenzene	22.1600	0.50	0.10	20.0000	111	69 - 124
Naphthalene	19.3400	0.50	0.41	20.0000	96.7	60 - 126
o-Xylene	46.7900	0.50	0.13	40.0000	117	79 - 126
sec-Butylbenzene	22.5700	0.50	0.09	20.0000	113	69 - 124
Styrene	20.0800	0.50	0.13	20.0000	100	80 - 127
tert-Butylbenzene	22.2100	0.50	0.09	20.0000	111	71 - 124
Tetrachloroethene	20.2400	0.50	0.10	20.0000	101	73 - 129
Toluene	42.1100	0.50	0.12	40.0000	105	78 - 121
trans-1,2-Dichloroethene	19.7400	0.50	0.09	20.0000	98.7	58 - 141
Trichloroethene	21.3000	0.50	0.10	20.0000	106	73 - 126



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

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Reported : 12/02/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0609 - MSVOA_LL_W (continued)

LCS (B9K0609-BS1) - Continued

Prepared: 11/25/2019 Analyzed: 11/25/2019

Trichlorofluoromethane	21.5200	0.50	0.23	20.0000	108	62 - 146			
Vinyl chloride	20.3700	0.50	0.13	20.0000	102	61 - 137			
Surrogate: 1,2-Dichloroethane-d4	24.58			25.0000	98.3	59 - 158			
Surrogate: 4-Bromofluorobenzene	27.25			25.0000	109	71 - 127			
Surrogate: Dibromofluoromethane	25.13			25.0000	101	66 - 147			
Surrogate: Toluene-d8	26.48			25.0000	106	77 - 138			

LCS Dup (B9K0609-BS1)

Prepared: 11/25/2019 Analyzed: 11/25/2019

1,1,1,2-Tetrachloroethane	21.1900	0.50	0.11	20.0000	106	71 - 133	0.330	20	
1,1,1-Trichloroethane	19.9100	0.50	0.21	20.0000	99.6	62 - 124	3.84	20	
1,1,2,2-Tetrachloroethane	19.9600	0.50	0.36	20.0000	99.8	50 - 131	1.92	20	
1,1,2-Trichloroethane	19.8200	0.50	0.25	20.0000	99.1	77 - 121	3.57	20	
1,1-Dichloroethane	19.2900	0.50	0.09	20.0000	96.4	52 - 130	2.81	20	
1,1-Dichloroethene	18.8600	0.50	0.13	20.0000	94.3	61 - 136	2.36	20	
1,1-Dichloropropene	21.9800	0.50	0.13	20.0000	110	80 - 128	1.53	20	
1,2,3-Trichloropropane	20.5500	0.50	0.39	20.0000	103	59 - 126	0.488	20	
1,2,3-Trichlorobenzene	21.5800	0.50	0.18	20.0000	108	69 - 138	2.56	20	
1,2,4-Trichlorobenzene	20.8500	0.50	0.16	20.0000	104	78 - 125	0.431	20	
1,2,4-Trimethylbenzene	20.3800	0.50	0.14	20.0000	102	70 - 126	0.541	20	
1,2-Dibromo-3-chloropropane	17.7200	0.50	0.41	20.0000	88.6	58 - 127	1.71	20	
1,2-Dibromoethane	21.2500	0.50	0.24	20.0000	106	76 - 120	2.14	20	
1,2-Dichlorobenzene	20.2200	0.50	0.20	20.0000	101	82 - 117	0.645	20	
1,2-Dichloroethane	19.3700	0.50	0.20	20.0000	96.8	66 - 126	2.75	20	
1,2-Dichloropropane	20.1500	0.50	0.15	20.0000	101	70 - 117	2.31	20	
1,3,5-Trimethylbenzene	22.4500	0.50	0.13	20.0000	112	71 - 125	1.39	20	
1,3-Dichlorobenzene	20.0100	0.50	0.16	20.0000	100	81 - 116	0.250	20	
1,3-Dichloropropane	20.8300	0.50	0.21	20.0000	104	69 - 124	0.0480	20	
1,4-Dichlorobenzene	18.8300	0.50	0.17	20.0000	94.2	80 - 114	0.159	20	
2,2-Dichloropropane	19.0300	0.50	0.38	20.0000	95.2	58 - 132	1.87	20	
2-Chlorotoluene	21.1500	0.50	0.11	20.0000	106	71 - 119	0.426	20	
4-Chlorotoluene	21.2600	0.50	0.12	20.0000	106	72 - 122	0.566	20	
4-Isopropyltoluene	20.1100	0.50	0.11	20.0000	101	69 - 126	0.699	20	
Benzene	40.7000	0.50	0.13	40.0000	102	80 - 116	1.95	20	
Bromobenzene	20.9100	0.50	0.21	20.0000	105	77 - 118	2.37	20	
Bromodichloromethane	20.0600	0.50	0.14	20.0000	100	73 - 118	1.09	20	
Bromoform	18.1700	0.50	0.20	20.0000	90.8	65 - 133	0.497	20	
Bromomethane	29.9200	0.50	0.40	20.0000	150	7 - 205	9.64	20	
Carbon tetrachloride	19.8800	0.50	0.09	20.0000	99.4	63 - 133	3.80	20	
Chlorobenzene	19.6200	0.50	0.13	20.0000	98.1	86 - 113	0.913	20	
Chloroethane	21.8200	0.50	0.15	20.0000	109	66 - 141	7.37	20	



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0609 - MSVOA_LL_W (continued)

LCS Dup (B9K0609-BSD1) - Continued

Prepared: 11/25/2019 Analyzed: 11/25/2019

Chloroform	19.1300	0.50	0.11	20.0000		95.6	63 - 127	2.17	20
Chloromethane	20.9300	0.50	0.12	20.0000		105	0 - 207	9.12	20
cis-1,2-Dichloroethene	19.7900	0.50	0.14	20.0000		99.0	64 - 126	1.31	20
cis-1,3-Dichloropropene	19.3600	0.50	0.13	20.0000		96.8	70 - 141	2.35	20
Dibromochloromethane	19.0300	0.50	0.16	20.0000		95.2	67 - 135	0.889	20
Dibromomethane	20.3500	0.50	0.19	20.0000		102	74 - 118	3.43	20
Dichlorodifluoromethane	21.4000	0.50	0.18	20.0000		107	14 - 181	8.07	20
Ethylbenzene	43.1600	0.50	0.13	40.0000		108	77 - 118	1.15	20
Hexachlorobutadiene	20.6900	0.50	0.15	20.0000		103	66 - 125	1.17	20
Isopropylbenzene	22.5500	0.50	0.10	20.0000		113	68 - 137	0.712	20
m,p-Xylene	43.3500	1.0	0.19	40.0000		108	78 - 126	0.575	20
Methylene chloride	20.2200	1.0	0.71	20.0000		101	51 - 149	2.49	20
n-Butylbenzene	19.7100	0.50	0.11	20.0000		98.6	63 - 127	0.607	20
n-Propylbenzene	22.1900	0.50	0.10	20.0000		111	69 - 124	0.135	20
Naphthalene	19.2900	0.50	0.41	20.0000		96.4	60 - 126	0.259	20
o-Xylene	46.6500	0.50	0.13	40.0000		117	79 - 126	0.300	20
sec-Butylbenzene	22.3100	0.50	0.09	20.0000		112	69 - 124	1.16	20
Styrene	20.2100	0.50	0.13	20.0000		101	80 - 127	0.645	20
tert-Butylbenzene	22.3400	0.50	0.09	20.0000		112	71 - 124	0.584	20
Tetrachloroethene	20.0600	0.50	0.10	20.0000		100	73 - 129	0.893	20
Toluene	41.6100	0.50	0.12	40.0000		104	78 - 121	1.19	20
trans-1,2-Dichloroethene	19.2900	0.50	0.09	20.0000		96.4	58 - 141	2.31	20
Trichloroethene	20.8600	0.50	0.10	20.0000		104	73 - 126	2.09	20
Trichlorofluoromethane	19.7900	0.50	0.23	20.0000		99.0	62 - 146	8.38	20
Vinyl chloride	18.9400	0.50	0.13	20.0000		94.7	61 - 137	7.28	20
Surrogate: 1,2-Dichloroethane-d4	23.91			25.0000		95.6	59 - 158		
Surrogate: 4-Bromofluorobenzene	27.34			25.0000		109	71 - 127		
Surrogate: Dibromofluoromethane	24.95			25.0000		99.8	66 - 147		
Surrogate: Toluene-d8	26.49			25.0000		106	77 - 138		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0621 - MSVOA_LL_W

Blank (B9K0621-BLK1)

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.21
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.40
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.18
Ethylbenzene	ND	0.50	0.13



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San Diego , CA 92122

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Reported : 12/02/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0621 - MSVOA_LL_W (continued)

Blank (B9K0621-BLK1) - Continued

Prepared: 11/26/2019 Analyzed: 11/26/2019

Hexachlorobutadiene	ND	0.50	0.15
Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.23
Vinyl chloride	ND	0.50	0.13

Surrogate: 1,2-Dichloroethane-d4	27.32	25.0000	109	59 - 158
Surrogate: 4-Bromofluorobenzene	26.86	25.0000	107	71 - 127
Surrogate: Dibromofluoromethane	26.99	25.0000	108	66 - 147
Surrogate: Toluene-d8	26.24	25.0000	105	77 - 138

LCS (B9K0621-BS1)

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,1,1,2-Tetrachloroethane	21.7800	0.50	0.11	20.0000	109	71 - 133
1,1,1-Trichloroethane	17.6100	0.50	0.21	20.0000	88.0	62 - 124
1,1,2,2-Tetrachloroethane	19.2700	0.50	0.36	20.0000	96.4	50 - 131
1,1,2-Trichloroethane	17.2000	0.50	0.25	20.0000	86.0	77 - 121
1,1-Dichloroethane	16.8900	0.50	0.09	20.0000	84.4	52 - 130
1,1-Dichloroethene	16.1600	0.50	0.13	20.0000	80.8	61 - 136
1,1-Dichloropropene	19.3200	0.50	0.13	20.0000	96.6	80 - 128
1,2,3-Trichloropropane	18.8200	0.50	0.39	20.0000	94.1	59 - 126
1,2,3-Trichlorobenzene	18.9200	0.50	0.18	20.0000	94.6	69 - 138
1,2,4-Trichlorobenzene	18.5700	0.50	0.16	20.0000	92.8	78 - 125
1,2,4-Trimethylbenzene	19.2700	0.50	0.14	20.0000	96.4	70 - 126
1,2-Dibromo-3-chloropropane	20.5400	0.50	0.41	20.0000	103	58 - 127
1,2-Dibromoethane	18.1200	0.50	0.24	20.0000	90.6	76 - 120
1,2-Dichlorobenzene	18.9300	0.50	0.20	20.0000	94.6	82 - 117
1,2-Dichloroethane	17.3800	0.50	0.20	20.0000	86.9	66 - 126
1,2-Dichloropropane	17.8700	0.50	0.15	20.0000	89.4	70 - 117
1,3,5-Trimethylbenzene	21.3200	0.50	0.13	20.0000	107	71 - 125



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0621 - MSVOA_LL_W (continued)

LCS (B9K0621-BS1) - Continued

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,3-Dichlorobenzene	19.0700	0.50	0.16	20.0000		95.4	81 - 116		
1,3-Dichloropropane	18.2200	0.50	0.21	20.0000		91.1	69 - 124		
1,4-Dichlorobenzene	18.0100	0.50	0.17	20.0000		90.0	80 - 114		
2,2-Dichloropropane	20.0900	0.50	0.38	20.0000		100	58 - 132		
2-Chlorotoluene	20.0200	0.50	0.11	20.0000		100	71 - 119		
4-Chlorotoluene	20.3600	0.50	0.12	20.0000		102	72 - 122		
4-Isopropyltoluene	19.1900	0.50	0.11	20.0000		96.0	69 - 126		
Benzene	36.5300	0.50	0.13	40.0000		91.3	80 - 116		
Bromobenzene	19.0600	0.50	0.21	20.0000		95.3	77 - 118		
Bromodichloromethane	20.4200	0.50	0.14	20.0000		102	73 - 118		
Bromoform	21.3800	0.50	0.20	20.0000		107	65 - 133		
Bromomethane	29.3000	0.50	0.40	20.0000		146	7 - 205		
Carbon tetrachloride	20.8400	0.50	0.09	20.0000		104	63 - 133		
Chlorobenzene	18.0100	0.50	0.13	20.0000		90.0	86 - 113		
Chloroethane	19.5800	0.50	0.15	20.0000		97.9	66 - 141		
Chloroform	16.7300	0.50	0.11	20.0000		83.6	63 - 127		
Chloromethane	18.5200	0.50	0.12	20.0000		92.6	0 - 207		
cis-1,2-Dichloroethene	16.5000	0.50	0.14	20.0000		82.5	64 - 126		
cis-1,3-Dichloropropene	18.3200	0.50	0.13	20.0000		91.6	70 - 141		
Dibromochloromethane	20.7500	0.50	0.16	20.0000		104	67 - 135		
Dibromomethane	18.6100	0.50	0.19	20.0000		93.0	74 - 118		
Dichlorodifluoromethane	18.9100	0.50	0.18	20.0000		94.6	14 - 181		
Ethylbenzene	40.3400	0.50	0.13	40.0000		101	77 - 118		
Hexachlorobutadiene	21.0300	0.50	0.15	20.0000		105	66 - 125		
Isopropylbenzene	20.9100	0.50	0.10	20.0000		105	68 - 137		
m,p-Xylene	40.5000	1.0	0.19	40.0000		101	78 - 126		
Methylene chloride	17.6200	1.0	0.71	20.0000		88.1	51 - 149		
n-Butylbenzene	19.2600	0.50	0.11	20.0000		96.3	63 - 127		
n-Propylbenzene	21.2400	0.50	0.10	20.0000		106	69 - 124		
Naphthalene	16.1300	0.50	0.41	20.0000		80.6	60 - 126		
o-Xylene	42.9400	0.50	0.13	40.0000		107	79 - 126		
sec-Butylbenzene	21.3700	0.50	0.09	20.0000		107	69 - 124		
Styrene	18.8500	0.50	0.13	20.0000		94.2	80 - 127		
tert-Butylbenzene	20.8600	0.50	0.09	20.0000		104	71 - 124		
Tetrachloroethene	18.2800	0.50	0.10	20.0000		91.4	73 - 129		
Toluene	37.3200	0.50	0.12	40.0000		93.3	78 - 121		
trans-1,2-Dichloroethene	16.5500	0.50	0.09	20.0000		82.8	58 - 141		
Trichloroethene	17.6100	0.50	0.10	20.0000		88.0	73 - 126		
Trichlorofluoromethane	18.1700	0.50	0.23	20.0000		90.8	62 - 146		
Vinyl chloride	17.1000	0.50	0.13	20.0000		85.5	61 - 137		



Certificate of Analysis

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San Diego , CA 92122

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Report To : Steve Netto

Reported : 12/02/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD RPD	RPD Limit	Notes
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Batch B9K0621 - MSVOA_LL_W (continued)

LCS (B9K0621-BS1) - Continued

Prepared: 11/26/2019 Analyzed: 11/26/2019

Surrogate: 1,2-Dichloroethane-d4	22.93		25.0000		91.7	59 - 158			
Surrogate: 4-Bromofluorobenzene	28.43		25.0000		114	71 - 127			
Surrogate: Dibromofluoromethane	24.04		25.0000		96.2	66 - 147			
Surrogate: Toluene-d8	26.41		25.0000		106	77 - 138			

LCS Dup (B9K0621-BS1)

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,1,1,2-Tetrachloroethane	24.4500	0.50	0.11	20.0000	122	71 - 133	11.6	20	
1,1,1-Trichloroethane	19.2000	0.50	0.21	20.0000	96.0	62 - 124	8.64	20	
1,1,2,2-Tetrachloroethane	23.2400	0.50	0.36	20.0000	116	50 - 131	18.7	20	
1,1,2-Trichloroethane	20.1400	0.50	0.25	20.0000	101	77 - 121	15.7	20	
1,1-Dichloroethane	18.9800	0.50	0.09	20.0000	94.9	52 - 130	11.7	20	
1,1-Dichloroethene	18.1500	0.50	0.13	20.0000	90.8	61 - 136	11.6	20	
1,1-Dichloropropene	21.0600	0.50	0.13	20.0000	105	80 - 128	8.62	20	
1,2,3-Trichloropropane	22.4500	0.50	0.39	20.0000	112	59 - 126	17.6	20	
1,2,3-Trichlorobenzene	22.4100	0.50	0.18	20.0000	112	69 - 138	16.9	20	
1,2,4-Trichlorobenzene	21.6300	0.50	0.16	20.0000	108	78 - 125	15.2	20	
1,2,4-Trimethylbenzene	21.6600	0.50	0.14	20.0000	108	70 - 126	11.7	20	
1,2-Dibromo-3-chloropropane	23.8100	0.50	0.41	20.0000	119	58 - 127	14.7	20	
1,2-Dibromoethane	21.6600	0.50	0.24	20.0000	108	76 - 120	17.8	20	
1,2-Dichlorobenzene	21.5600	0.50	0.20	20.0000	108	82 - 117	13.0	20	
1,2-Dichloroethane	19.8700	0.50	0.20	20.0000	99.4	66 - 126	13.4	20	
1,2-Dichloropropane	20.4800	0.50	0.15	20.0000	102	70 - 117	13.6	20	
1,3,5-Trimethylbenzene	23.6400	0.50	0.13	20.0000	118	71 - 125	10.3	20	
1,3-Dichlorobenzene	21.4300	0.50	0.16	20.0000	107	81 - 116	11.7	20	
1,3-Dichloropropane	21.5200	0.50	0.21	20.0000	108	69 - 124	16.6	20	
1,4-Dichlorobenzene	20.3400	0.50	0.17	20.0000	102	80 - 114	12.2	20	
2,2-Dichloropropane	21.5400	0.50	0.38	20.0000	108	58 - 132	6.97	20	
2-Chlorotoluene	22.5200	0.50	0.11	20.0000	113	71 - 119	11.8	20	
4-Chlorotoluene	22.6600	0.50	0.12	20.0000	113	72 - 122	10.7	20	
4-Isopropyltoluene	20.9900	0.50	0.11	20.0000	105	69 - 126	8.96	20	
Benzene	40.9600	0.50	0.13	40.0000	102	80 - 116	11.4	20	
Bromobenzene	22.1600	0.50	0.21	20.0000	111	77 - 118	15.0	20	
Bromodichloromethane	23.0600	0.50	0.14	20.0000	115	73 - 118	12.1	20	
Bromoform	23.9500	0.50	0.20	20.0000	120	65 - 133	11.3	20	
Bromomethane	31.3500	0.50	0.40	20.0000	157	7 - 205	6.76	20	
Carbon tetrachloride	21.7100	0.50	0.09	20.0000	109	63 - 133	4.09	20	
Chlorobenzene	20.3200	0.50	0.13	20.0000	102	86 - 113	12.1	20	
Chloroethane	21.8600	0.50	0.15	20.0000	109	66 - 141	11.0	20	
Chloroform	18.9400	0.50	0.11	20.0000	94.7	63 - 127	12.4	20	
Chloromethane	20.4200	0.50	0.12	20.0000	102	0 - 207	9.76	20	
cis-1,2-Dichloroethene	18.9600	0.50	0.14	20.0000	94.8	64 - 126	13.9	20	



Certificate of Analysis

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Reported : 12/02/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0621 - MSVOA_LL_W (continued)

LCS Dup (B9K0621-BSD1) - Continued

Prepared: 11/26/2019 Analyzed: 11/26/2019

cis-1,3-Dichloropropene	20.7500	0.50	0.13	20.0000		104	70 - 141	12.4	20	
Dibromochloromethane	23.4100	0.50	0.16	20.0000		117	67 - 135	12.0	20	
Dibromomethane	22.0100	0.50	0.19	20.0000		110	74 - 118	16.7	20	
Dichlorodifluoromethane	19.8000	0.50	0.18	20.0000		99.0	14 - 181	4.60	20	
Ethylbenzene	45.1400	0.50	0.13	40.0000		113	77 - 118	11.2	20	
Hexachlorobutadiene	22.8900	0.50	0.15	20.0000		114	66 - 125	8.47	20	
Isopropylbenzene	23.4000	0.50	0.10	20.0000		117	68 - 137	11.2	20	
m,p-Xylene	44.9500	1.0	0.19	40.0000		112	78 - 126	10.4	20	
Methylene chloride	20.3500	1.0	0.71	20.0000		102	51 - 149	14.4	20	
n-Butylbenzene	21.0100	0.50	0.11	20.0000		105	63 - 127	8.69	20	
n-Propylbenzene	23.4100	0.50	0.10	20.0000		117	69 - 124	9.72	20	
Naphthalene	19.6100	0.50	0.41	20.0000		98.0	60 - 126	19.5	20	
o-Xylene	48.2000	0.50	0.13	40.0000		120	79 - 126	11.5	20	
sec-Butylbenzene	23.5200	0.50	0.09	20.0000		118	69 - 124	9.58	20	
Styrene	21.1400	0.50	0.13	20.0000		106	80 - 127	11.5	20	
tert-Butylbenzene	23.1100	0.50	0.09	20.0000		116	71 - 124	10.2	20	
Tetrachloroethene	19.8400	0.50	0.10	20.0000		99.2	73 - 129	8.18	20	
Toluene	41.6000	0.50	0.12	40.0000		104	78 - 121	10.8	20	
trans-1,2-Dichloroethene	18.5400	0.50	0.09	20.0000		92.7	58 - 141	11.3	20	
Trichloroethene	19.5300	0.50	0.10	20.0000		97.6	73 - 126	10.3	20	
Trichlorofluoromethane	19.1000	0.50	0.23	20.0000		95.5	62 - 146	4.99	20	
Vinyl chloride	18.3700	0.50	0.13	20.0000		91.8	61 - 137	7.16	20	

Surrogate: 1,2-Dichloroethane-d4	23.65			25.0000		94.6	59 - 158			
Surrogate: 4-Bromofluorobenzene	28.98			25.0000		116	71 - 127			
Surrogate: Dibromofluoromethane	24.61			25.0000		98.4	66 - 147			
Surrogate: Toluene-d8	26.53			25.0000		106	77 - 138			

Matrix Spike (B9K0621-MS1)

Source: 1904177-04

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,1,1,2-Tetrachloroethane	24.1400	0.50	0.11	20.0000	ND	121	71 - 133			
1,1,1-Trichloroethane	22.8600	0.50	0.21	20.0000	ND	114	62 - 124			
1,1,2,2-Tetrachloroethane	22.0700	0.50	0.36	20.0000	ND	110	50 - 131			
1,1,2-Trichloroethane	21.0400	0.50	0.25	20.0000	ND	105	77 - 121			
1,1-Dichloroethane	20.5700	0.50	0.09	20.0000	ND	103	52 - 130			
1,1-Dichloroethene	21.5800	0.50	0.13	20.0000	ND	108	61 - 136			
1,1-Dichloropropene	25.4900	0.50	0.13	20.0000	ND	127	80 - 128			
1,2,3-Trichloropropane	22.1000	0.50	0.39	20.0000	ND	110	59 - 126			
1,2,3-Trichlorobenzene	22.1200	0.50	0.18	20.0000	ND	111	69 - 138			
1,2,4-Trichlorobenzene	20.8300	0.50	0.16	20.0000	ND	104	78 - 125			
1,2,4-Trimethylbenzene	21.9300	0.50	0.14	20.0000	ND	110	70 - 126			
1,2-Dibromo-3-chloropropane	19.5700	0.50	0.41	20.0000	ND	97.8	58 - 127			



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD RPD	RPD Limit	Notes
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Batch B9K0621 - MSVOA_LL_W (continued)

Matrix Spike (B9K0621-MS1) - Continued

Source: 1904177-04

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,2-Dibromoethane	21.7900	0.50	0.24	20.0000	ND	109	76 - 120			
1,2-Dichlorobenzene	21.5500	0.50	0.20	20.0000	ND	108	82 - 117			
1,2-Dichloroethane	21.1400	0.50	0.20	20.0000	ND	106	66 - 126			
1,2-Dichloropropane	21.4200	0.50	0.15	20.0000	ND	107	70 - 117			
1,3,5-Trimethylbenzene	24.3800	0.50	0.13	20.0000	ND	122	71 - 125			
1,3-Dichlorobenzene	21.5400	0.50	0.16	20.0000	ND	108	81 - 116			
1,3-Dichloropropane	21.8500	0.50	0.21	20.0000	ND	109	69 - 124			
1,4-Dichlorobenzene	20.3600	0.50	0.17	20.0000	ND	102	80 - 114			
2,2-Dichloropropane	20.3200	0.50	0.38	20.0000	ND	102	58 - 132			
2-Chlorotoluene	22.9200	0.50	0.11	20.0000	ND	115	71 - 119			
4-Chlorotoluene	22.8100	0.50	0.12	20.0000	ND	114	72 - 122			
4-Isopropyltoluene	22.1100	0.50	0.11	20.0000	ND	111	69 - 126			
Benzene	44.7800	0.50	0.13	40.0000	ND	112	80 - 116			
Bromobenzene	21.6500	0.50	0.21	20.0000	ND	108	77 - 118			
Bromodichloromethane	22.5900	0.50	0.14	20.0000	ND	113	73 - 118			
Bromoform	20.8700	0.50	0.20	20.0000	ND	104	65 - 133			
Bromomethane	38.1800	0.50	0.40	20.0000	ND	191	7 - 205			
Carbon tetrachloride	25.7900	0.50	0.09	20.0000	ND	129	63 - 133			
Chlorobenzene	21.4600	0.50	0.13	20.0000	ND	107	81 - 115			
Chloroethane	26.6600	0.50	0.15	20.0000	ND	133	66 - 141			
Chloroform	20.4000	0.50	0.11	20.0000	ND	102	63 - 127			
Chloromethane	25.1600	0.50	0.12	20.0000	ND	126	0 - 207			
cis-1,2-Dichloroethene	19.8500	0.50	0.14	20.0000	ND	99.2	64 - 126			
cis-1,3-Dichloropropene	19.3700	0.50	0.13	20.0000	ND	96.8	70 - 141			
Dibromochloromethane	21.5600	0.50	0.16	20.0000	ND	108	67 - 135			
Dibromomethane	21.8700	0.50	0.19	20.0000	ND	109	74 - 118			
Dichlorodifluoromethane	27.6200	0.50	0.18	20.0000	ND	138	14 - 181			
Ethylbenzene	49.0900	0.50	0.13	40.0000	ND	123	77 - 118			M2
Hexachlorobutadiene	22.0400	0.50	0.15	20.0000	ND	110	66 - 125			
Isopropylbenzene	24.8800	0.50	0.10	20.0000	ND	124	68 - 137			
m,p-Xylene	48.7900	1.0	0.19	40.0000	ND	122	78 - 126			
Methylene chloride	20.1000	1.0	0.71	20.0000	ND	100	51 - 149			
n-Butylbenzene	21.6900	0.50	0.11	20.0000	ND	108	63 - 127			
n-Propylbenzene	24.9900	0.50	0.10	20.0000	ND	125	69 - 124			M2
Naphthalene	18.0500	0.50	0.41	20.0000	ND	90.2	60 - 126			
o-Xylene	51.6200	0.50	0.13	40.0000	ND	129	79 - 126			M2
sec-Butylbenzene	25.5100	0.50	0.09	20.0000	ND	128	69 - 124			M2
Styrene	21.6300	0.50	0.13	20.0000	ND	108	80 - 127			
tert-Butylbenzene	24.9800	0.50	0.09	20.0000	ND	125	71 - 124			M2
Tetrachloroethene	22.7000	0.50	0.10	20.0000	ND	114	73 - 129			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0621 - MSVOA_LL_W (continued)

Matrix Spike (B9K0621-MS1) - Continued

Source: 1904177-04

Prepared: 11/26/2019 Analyzed: 11/26/2019

Toluene	45.8800	0.50	0.12	40.0000	ND	115	78 - 121			
trans-1,2-Dichloroethene	20.3100	0.50	0.09	20.0000	ND	102	58 - 141			
Trichloroethene	21.7100	0.50	0.10	20.0000	ND	109	73 - 126			
Trichlorofluoromethane	26.8700	0.50	0.23	20.0000	ND	134	62 - 146			
Vinyl chloride	23.6800	0.50	0.13	20.0000	ND	118	61 - 137			
Surrogate: 1,2-Dichloroethane-d4	24.55			25.0000		98.2	59 - 158			
Surrogate: 4-Bromofluorobenzene	28.35			25.0000		113	71 - 127			
Surrogate: Dibromofluoromethane	24.63			25.0000		98.5	66 - 147			
Surrogate: Toluene-d8	26.21			25.0000		105	77 - 138			

Matrix Spike Dup (B9K0621-MSD1)

Source: 1904177-04

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,1,1,2-Tetrachloroethane	23.3500	0.50	0.11	20.0000	ND	117	71 - 133	3.33	20	
1,1,1-Trichloroethane	21.8400	0.50	0.21	20.0000	ND	109	62 - 124	4.56	20	
1,1,2,2-Tetrachloroethane	21.8200	0.50	0.36	20.0000	ND	109	50 - 131	1.14	20	
1,1,2-Trichloroethane	20.1800	0.50	0.25	20.0000	ND	101	77 - 121	4.17	20	
1,1-Dichloroethane	19.6100	0.50	0.09	20.0000	ND	98.0	52 - 130	4.78	20	
1,1-Dichloroethene	21.3000	0.50	0.13	20.0000	ND	106	61 - 136	1.31	20	
1,1-Dichloropropene	24.6700	0.50	0.13	20.0000	ND	123	80 - 128	3.27	20	
1,2,3-Trichloropropane	21.4800	0.50	0.39	20.0000	ND	107	59 - 126	2.85	20	
1,2,3-Trichlorobenzene	21.7700	0.50	0.18	20.0000	ND	109	69 - 138	1.59	20	
1,2,4-Trichlorobenzene	20.7000	0.50	0.16	20.0000	ND	104	78 - 125	0.626	20	
1,2,4-Trimethylbenzene	21.9400	0.50	0.14	20.0000	ND	110	70 - 126	0.0456	20	
1,2-Dibromo-3-chloropropane	19.9500	0.50	0.41	20.0000	ND	99.8	58 - 127	1.92	20	
1,2-Dibromoethane	20.9200	0.50	0.24	20.0000	ND	105	76 - 120	4.07	20	
1,2-Dichlorobenzene	21.4500	0.50	0.20	20.0000	ND	107	82 - 117	0.465	20	
1,2-Dichloroethane	19.8000	0.50	0.20	20.0000	ND	99.0	66 - 126	6.55	20	
1,2-Dichloropropane	20.4900	0.50	0.15	20.0000	ND	102	70 - 117	4.44	20	
1,3,5-Trimethylbenzene	24.5600	0.50	0.13	20.0000	ND	123	71 - 125	0.736	20	
1,3-Dichlorobenzene	21.2200	0.50	0.16	20.0000	ND	106	81 - 116	1.50	20	
1,3-Dichloropropane	21.3500	0.50	0.21	20.0000	ND	107	69 - 124	2.31	20	
1,4-Dichlorobenzene	20.0200	0.50	0.17	20.0000	ND	100	80 - 114	1.68	20	
2,2-Dichloropropane	19.7000	0.50	0.38	20.0000	ND	98.5	58 - 132	3.10	20	
2-Chlorotoluene	22.8900	0.50	0.11	20.0000	ND	114	71 - 119	0.131	20	
4-Chlorotoluene	22.8600	0.50	0.12	20.0000	ND	114	72 - 122	0.219	20	
4-Isopropyltoluene	22.0300	0.50	0.11	20.0000	ND	110	69 - 126	0.362	20	
Benzene	42.6400	0.50	0.13	40.0000	ND	107	80 - 116	4.90	20	
Bromobenzene	21.6600	0.50	0.21	20.0000	ND	108	77 - 118	0.0462	20	
Bromodichloromethane	21.5100	0.50	0.14	20.0000	ND	108	73 - 118	4.90	20	
Bromoform	20.1300	0.50	0.20	20.0000	ND	101	65 - 133	3.61	20	
Bromomethane	30.6900	0.50	0.40	20.0000	ND	153	7 - 205	21.8	20	R



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0621 - MSVOA_LL_W (continued)

Matrix Spike Dup (B9K0621-MSD1) - Continued

Source: 1904177-04

Prepared: 11/26/2019 Analyzed: 11/26/2019

Carbon tetrachloride	24.6800	0.50	0.09	20.0000	ND	123	63 - 133	4.40	20	
Chlorobenzene	21.0200	0.50	0.13	20.0000	ND	105	81 - 115	2.07	20	
Chloroethane	24.1400	0.50	0.15	20.0000	ND	121	66 - 141	9.92	20	
Chloroform	19.1600	0.50	0.11	20.0000	ND	95.8	63 - 127	6.27	20	
Chloromethane	23.0400	0.50	0.12	20.0000	ND	115	0 - 207	8.80	20	
cis-1,2-Dichloroethene	19.3900	0.50	0.14	20.0000	ND	97.0	64 - 126	2.34	20	
cis-1,3-Dichloropropene	19.1700	0.50	0.13	20.0000	ND	95.8	70 - 141	1.04	20	
Dibromochloromethane	20.7600	0.50	0.16	20.0000	ND	104	67 - 135	3.78	20	
Dibromomethane	20.5900	0.50	0.19	20.0000	ND	103	74 - 118	6.03	20	
Dichlorodifluoromethane	26.2400	0.50	0.18	20.0000	ND	131	14 - 181	5.12	20	
Ethylbenzene	47.8100	0.50	0.13	40.0000	ND	120	77 - 118	2.64	20	M2
Hexachlorobutadiene	23.0400	0.50	0.15	20.0000	ND	115	66 - 125	4.44	20	
Isopropylbenzene	25.1700	0.50	0.10	20.0000	ND	126	68 - 137	1.16	20	
m,p-Xylene	47.6300	1.0	0.19	40.0000	ND	119	78 - 126	2.41	20	
Methylene chloride	19.1200	1.0	0.71	20.0000	ND	95.6	51 - 149	5.00	20	
n-Butylbenzene	21.4900	0.50	0.11	20.0000	ND	107	63 - 127	0.926	20	
n-Propylbenzene	24.9500	0.50	0.10	20.0000	ND	125	69 - 124	0.160	20	M2
Naphthalene	18.3600	0.50	0.41	20.0000	ND	91.8	60 - 126	1.70	20	
o-Xylene	50.5600	0.50	0.13	40.0000	ND	126	79 - 126	2.07	20	M2
sec-Butylbenzene	25.3700	0.50	0.09	20.0000	ND	127	69 - 124	0.550	20	M2
Styrene	21.2500	0.50	0.13	20.0000	ND	106	80 - 127	1.77	20	
tert-Butylbenzene	25.1200	0.50	0.09	20.0000	ND	126	71 - 124	0.559	20	M2
Tetrachloroethene	22.5700	0.50	0.10	20.0000	ND	113	73 - 129	0.574	20	
Toluene	44.0200	0.50	0.12	40.0000	ND	110	78 - 121	4.14	20	
trans-1,2-Dichloroethene	19.7500	0.50	0.09	20.0000	ND	98.8	58 - 141	2.80	20	
Trichloroethene	21.3300	0.50	0.10	20.0000	ND	107	73 - 126	1.77	20	
Trichlorofluoromethane	24.4700	0.50	0.23	20.0000	ND	122	62 - 146	9.35	20	
Vinyl chloride	21.7900	0.50	0.13	20.0000	ND	109	61 - 137	8.31	20	
Surrogate: 1,2-Dichloroethane-d4	22.90			25.0000		91.6	59 - 158			
Surrogate: 4-Bromofluorobenzene	28.13			25.0000		113	71 - 127			
Surrogate: Dibromofluoromethane	23.57			25.0000		94.3	66 - 147			
Surrogate: Toluene-d8	26.09			25.0000		104	77 - 138			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0659 - MSSEMI_W

Blank (B9K0659-BLK1)

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,4-Dioxane	ND	0.20	0.05						
Surrogate: 1,2-Dichlorobenzene-d	0.7905			1.00000		79.1	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.8320			1.00000		83.2	20 - 131		
Surrogate: 4-Terphenyl-d14	0.9024			1.00000		90.2	24 - 135		
Surrogate: Nitrobenzene-d5	0.8746			1.00000		87.5	6 - 124		

LCS (B9K0659-BS1)

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,4-Dioxane	1.10637	0.20	0.05	1.00000		111	64 - 129		
Surrogate: 1,2-Dichlorobenzene-d	0.7807			1.00000		78.1	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.7946			1.00000		79.5	20 - 131		
Surrogate: 4-Terphenyl-d14	0.8560			1.00000		85.6	24 - 135		
Surrogate: Nitrobenzene-d5	0.9176			1.00000		91.8	6 - 124		

LCS Dup (B9K0659-BSD1)

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,4-Dioxane	1.12712	0.20	0.05	1.00000		113	64 - 129	1.86	20
Surrogate: 1,2-Dichlorobenzene-d	0.7828			1.00000		78.3	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.7923			1.00000		79.2	20 - 131		
Surrogate: 4-Terphenyl-d14	0.8728			1.00000		87.3	24 - 135		
Surrogate: Nitrobenzene-d5	0.9232			1.00000		92.3	6 - 124		



Certificate of Analysis

Hargis & Associates, Inc.

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San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/02/2019

Notes and Definitions

S5	Surrogate recovery was above laboratory acceptance limit. Sample reanalysis showed the same high recovery.
R	RPD value outside acceptance criteria. Calculation is based on raw values.
M2	Matrix spike recovery outside of acceptance limit due to possible matrix interference. The analytical batch was validated by the laboratory control sample.
J	Analyte detected below the Practical Quantitation Limit but above or equal to the Method Detection Limit. Result is an estimated concentration.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.

PROJECT: Raytheon Main

TASK NO.: 532.30

Project Manager Steve Netto

QA Manager Tyler Evans

Phone 858.455.6500

Fax 858.455.6533

Sampled By:

A. Janzon, D. Sealie

SAMPLE COLLECTION

LAB ID	SAMPLE ID	Date	Time	Groundwater	Lab prepared water	Hydrochloric Acid (HCl)	Ice	40-ml VOA	1 L Amber	VOCs by EPA 8260B	1,4 Dioxane 8270 SIM	1,4-Dioxane 8270 MOD	Expected Concentration Range (ppb) for VOA's	24 hr TAT	48 hr TAT	Standard TAT	Level IV Data Validation Requested	MS/MSD Requested	REMARKS
1904177-01	TB-111919A	11/19/19	0800	X	X		X	3		X			X						Report J Flags
-02	MW-33-25V		1114	X	X		X	3		X			X						
	↓		1114	X			X		1		X		X						
-03	MW-33		1132	X	X		X	3		X	X		X						
	↓		1132	X			X		1		X		X						
-04	MW-35C		1434	X	X		X	9		X	X		X						
	↓		1434	X			X		3		X		X					X	
-05	MW-31		1548	X	X		X	3		X									
	↓		1548	X			X		1				X						
-06	MW-3100		1550	X	X		X	3		X			X						
	↓		1550	X			X		1				X						

Total number of containers per analysis:

24 7

Total No. of Containers: 31

Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
A. Janzon / H+A	11/19/19 17:12	[Signature]	11/19/19 17:12
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
[Signature]	11/19/19 18:26	[Signature]	11/19/19 18:26

- ☐ No. of containers correct
☐ Received in good condition
☐ Custody seals secure
☐ Conforms to COC document

Send Results to:

Steve Netto

9171 Towne Centre Drive
Suite 375

San Diego, CA 92122

Ph: 858.455.5400

snetto@hargis.com

Instructions

Fill out form completely and sign only after verified for completeness
 Complete in ballpoint pen. Draw one line through error, initial and date correction
 Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✗
 Note applicable preservatives, special instructions, and deviations from typical environmental samples.
 Consult project QA documents for specific instructions.

0-6 Temperature on receipt

PROJECT: Raytheon Main

TASK NO.: 532.30

Project Manager Steve Netto

QA Manager Tyler Evans

Phone 858.455.6500

Fax 858.455.6533

Sampled By:		SAMPLE COLLECTION		MATRIX		PRESERVATION		CONTAINERS		ANALYSIS REQUESTED		Expected Concentration Range (ppb) for VOA's		SPECIAL HANDLING		Laboratory							
LAB ID	SAMPLE ID	Date	Time	Groundwater	Lab prepared water	Hydrochloric Acid (HCl)		Ice	40-ml VOA	1 L Amber	VOCs by EPA 8260B	1,4 Dioxane 8270 SIM	1,4-Dioxane 8270 MOD	10 - 10	10 - 100	100 - 1,000	>1,000	24 hr TAT	48 hr TAT	Standard TAT	Level IV Data Validation Requested	MS/MSD Requested	REMARKS
1464177-07	MW-26C-111419	11/19/19	1024	X	X			X	3		X			X									Report J Flags
	↓	↓	↓	X						1		X		X									
-08	RB-111919	11/19/19	1045	X	X			X	3		X			X									
	↓	↓	↓	X	X			X		1		X		X									
-09	MW-09	11/19/19	1145	X	X			X	3		X			X									
	↓	↓	↓	X	X			X		1		X		X									
-10	MW-0800	11/19/19	1155	X	X			X	3		X			X									
	↓	↓	↓	X	X			X		1		X		X									
-11	MW-20	11/19/19	1504	X	X			X	3		X			X									
	↓	↓	↓	X	X			X		1		X		X									

Total number of containers per analysis:

15 5

Total No. of Containers: 20

Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
<u>Am / H+A</u>	<u>11/19/19 17:12</u>	<u>[Signature]</u>	<u>11/19/19 17:12</u>
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
<u>[Signature]</u>	<u>11/19/19 18:26</u>	<u>[Signature]</u>	<u>11-19-19 18:26</u>

- ☐ No. of containers correct
☐ Received in good condition
☐ Custody seals secure
☐ Conforms to COC document

Send Results to:

Steve Netto

9171 Towne Centre Drive

Suite 375

San Diego, CA 92122

Ph: 858.455.5400

snetto@hargis.com

Instructions

- Fill out form completely and sign only after verified for completeness
 Complete in ballpoint pen. Draw one line through error, initial and date correction
 Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ×
 Note applicable preservatives, special instructions, and deviations from typical environmental samples.
 Consult project QA documents for specific instructions.

O.C.C. Temperature on receipt

Revision (11/21/19 by Andrew Donnelly/Hargis):
Analyze samples MW-31 and MW-3100 for 1,4-Dioxane by EPA 8270 SIM



Date: 11/19/19
Page 1 of 2

PROJECT: Raytheon Main

TASK NO.: 532.30

Project Manager Steve Netto

QA Manager Tyler Evans

Phone 858.455.6500

Fax 858.455.6533

Sampled By: A. Janzon, D. Sealie				SAMPLE COLLECTION		MATRIX		PRESERVATION		CONTAINERS		ANALYSIS REQUESTED			Expected Concentration Range (ppb) for VOA's				SPECIAL HANDLING				Laboratory				
LAB ID	SAMPLE ID	Date	Time	Groundwater	Lab prepared water	Hydrochloric Acid (HCl)				Ice	40-ml VOA	1 L Amber	VOCs by EPA 8260B	1,4 Dioxane 8270 SIM	1,4-Dioxane 8270 MOD		0 - 10	10 - 100	100 - 1,000	>1,000	24 hr TAT	48 hr TAT	Standard TAT	Level IV Data Validation Requested	MS/MSD Requested	REMARKS	
190417-01	TB-111919A	11/19/19	0800		X	X				X	3		X					X					X				Report J Flags
-02	MW-33-25V		1114	X					X	3			X				X						X				
	↓		1114	X					X		1			X			X						X				
-03	MW-33		1132	X		X			X	3			X				X						X				
	↓		1132	X					X		1			X			X						X				
-04	MW-35C		1434	X		X			X	9			X				X						X				
	↓		1434	X					X		3			X			X						X		X		
-05	MW-31		1548	X		X			X	3			X					X					X				
	↓		1548	X					X		1			X			X						X				
-06	MW-3100		1550	X		X			X	3			X					X					X				
	↓		1550	X					X		1			X			X						X				

Total number of containers per analysis: 24

Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
Andrew / H+H	11/19/19 17:12	Steve Netto	11/19/19 17:12
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
Steve Netto	11/19/19 18:26	Tyler Evans	11/19/19 18:26

- ☐ No. of containers correct
☐ Received in good condition
☐ Custody seals secure
☐ Conforms to COC document

Send Results to:

Steve Netto

9171 Towne Centre Drive

Suite 375

San Diego, CA 92122

Ph: 858.455.5400

snetto@hargis.com

Instructions

Fill out form completely and sign only after verified for completeness
 Complete in ballpoint pen. Draw one line through error, initial and date correction
 Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✕
 Note applicable preservatives, special instructions, and deviations from typical environmental samples.
 Consult project QA documents for specific instructions.

0.6 Temperature on receipt

PROJECT: Raytheon Main

TASK NO.: 532.30

Project Manager Steve Netto

QA Manager Tyler Evans

Phone 858.455.6500

Fax 858.455.6533

Sampled By:				SAMPLE COLLECTION		MATRIX		PRESERVATION		CONTAINERS		ANALYSIS REQUESTED				Expected Concentration Range (ppb) for VOA's				SPECIAL HANDLING				Laboratory	
LAB ID		SAMPLE ID		Date	Time	Groundwater	Lab prepared water	Hydrochloric Acid (HCl)	Ice	40-ml VOA	1 L Amber	VOCs by EPA 8260B	1,4 Dioxane 8270 SIM	1,4-Dioxane 8270 MOD	10 - 10	10 - 100	100 - 1,000	>1,000	24 hr TAT	48 hr TAT	Standard TAT	Level IV Data Validation Requested	MS/MSD Requested	REMARKS	
1464177-07		MW-26C-111419		11/19/19	1024	X		X				X				X								Report J Flags	
-08		RB-111919		11/19/19	1045	X		X				X				X									
-09		MW-08		11/19/19	1145	X		X				X				X									
-10		MW-0800		11/19/19	1155	X		X				X				X									
-11		MW-20		11/19/19	1564	X		X				X				X									
						X		X								X									

Total number of containers per analysis:

15

Total No. of Containers: 20

Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
<u>Anita / H+A</u>	<u>11/19/19 17:12</u>	<u>[Signature]</u>	<u>11/19/19 17:12</u>
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
<u>[Signature]</u>	<u>11/19/19 18:26</u>	<u>[Signature]</u>	<u>11-19-19 18:26</u>

- ☒ No. of containers correct
☒ Received in good condition
☒ Custody seals secure
☒ Conforms to COC document

Send Results to:

Steve Netto

9171 Towne Centre Drive

Suite 375

San Diego, CA 92122

Ph: 858.455.5400

snetto@hargis.com

Instructions

Fill out form completely and sign only after verified for completeness
 Complete in ballpoint pen. Draw one line through error, initial and date correction
 Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✗
 Note applicable preservatives, special instructions, and deviations from typical environmental samples.
 Consult project QA documents for specific instructions.

O.C.C. Temperature on receipt



December 03, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1904199
Client Reference : Raytheon Fullerton, 532.30

Enclosed are the results for sample(s) received on November 20, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read "Edgar Caballero", with a small "Ar" written below the main signature.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.

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www.atlglobal.com



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-112019A	1904199-01	Lab prepared water	11/20/19 8:00	11/20/19 17:15
MW-43	1904199-02	Groundwater	11/20/19 9:25	11/20/19 17:15
MW-42	1904199-03	Groundwater	11/20/19 11:23	11/20/19 17:15
MW-39	1904199-04	Groundwater	11/20/19 14:17	11/20/19 17:15
MW-36_2SV	1904199-05	Groundwater	11/20/19 16:22	11/20/19 17:15
MW-36	1904199-06	Groundwater	11/20/19 16:49	11/20/19 17:15
MW-21	1904199-07	Groundwater	11/20/19 8:34	11/20/19 17:15
EW-01	1904199-08	Groundwater	11/20/19 8:59	11/20/19 17:15
MW-41	1904199-09	Groundwater	11/20/19 10:02	11/20/19 17:15
MW-34B	1904199-10	Groundwater	11/20/19 10:42	11/20/19 17:15
MW-30A	1904199-11	Groundwater	11/20/19 14:10	11/20/19 17:15
MW-30B	1904199-12	Groundwater	11/20/19 14:44	11/20/19 17:15
MW-40	1904199-13	Groundwater	11/20/19 14:15	11/20/19 17:15
TB-112019-B	1904199-14	Lab prepared water	11/20/19 15:13	11/20/19 17:15

CASE NARRATIVE

Results were J-flagged. "J" is used to flag those results that are between the PQL (Practical Quantitation Limit) and the calculated MDL (Method Detection Limit). Results that are "J" flagged are estimated values since it becomes difficult to accurately quantitate the analyte near the MDL.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: TB-112019A

Lab ID: 1904199-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 12:42	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0656	11/27/2019	11/27/19 12:42	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0656	11/27/2019	11/27/19 12:42	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0656	11/27/2019	11/27/19 12:42	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 12:42	
1,1-Dichloroethene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:42	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:42	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0656	11/27/2019	11/27/19 12:42	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0656	11/27/2019	11/27/19 12:42	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0656	11/27/2019	11/27/19 12:42	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0656	11/27/2019	11/27/19 12:42	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0656	11/27/2019	11/27/19 12:42	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0656	11/27/2019	11/27/19 12:42	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0656	11/27/2019	11/27/19 12:42	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0656	11/27/2019	11/27/19 12:42	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0656	11/27/2019	11/27/19 12:42	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:42	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0656	11/27/2019	11/27/19 12:42	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0656	11/27/2019	11/27/19 12:42	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0656	11/27/2019	11/27/19 12:42	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0656	11/27/2019	11/27/19 12:42	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 12:42	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0656	11/27/2019	11/27/19 12:42	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 12:42	
Benzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:42	
Bromobenzene	ND	0.50	0.21	1	B9K0656	11/27/2019	11/27/19 12:42	
Bromodichloromethane	ND	0.50	0.14	1	B9K0656	11/27/2019	11/27/19 12:42	
Bromoform	ND	0.50	0.20	1	B9K0656	11/27/2019	11/27/19 12:42	
Bromomethane	ND	0.50	0.40	1	B9K0656	11/27/2019	11/27/19 12:42	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 12:42	
Chlorobenzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:42	
Chloroethane	ND	0.50	0.15	1	B9K0656	11/27/2019	11/27/19 12:42	
Chloroform	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 12:42	
Chloromethane	ND	0.50	0.12	1	B9K0656	11/27/2019	11/27/19 12:42	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0656	11/27/2019	11/27/19 12:42	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:42	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego, CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: TB-112019A

Lab ID: 1904199-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0656	11/27/2019	11/27/19 12:42	
Dibromomethane	ND	0.50	0.19	1	B9K0656	11/27/2019	11/27/19 12:42	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0656	11/27/2019	11/27/19 12:42	
Ethylbenzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:42	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0656	11/27/2019	11/27/19 12:42	
Isopropylbenzene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 12:42	
m,p-Xylene	ND	1.0	0.19	1	B9K0656	11/27/2019	11/27/19 12:42	
Methylene chloride	ND	1.0	0.71	1	B9K0656	11/27/2019	11/27/19 12:42	
n-Butylbenzene	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 12:42	
n-Propylbenzene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 12:42	
Naphthalene	ND	0.50	0.41	1	B9K0656	11/27/2019	11/27/19 12:42	
o-Xylene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:42	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 12:42	
Styrene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:42	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 12:42	
Tetrachloroethene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 12:42	
Toluene	ND	0.50	0.12	1	B9K0656	11/27/2019	11/27/19 12:42	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 12:42	
Trichloroethene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 12:42	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0656	11/27/2019	11/27/19 12:42	
Vinyl chloride	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:42	
Surrogate: 1,2-Dichloroethane-d4	113 %	59 - 158			B9K0656	11/27/2019	11/27/19 12:42	
Surrogate: 4-Bromofluorobenzene	105 %	71 - 127			B9K0656	11/27/2019	11/27/19 12:42	
Surrogate: Dibromofluoromethane	105 %	66 - 147			B9K0656	11/27/2019	11/27/19 12:42	
Surrogate: Toluene-d8	104 %	77 - 138			B9K0656	11/27/2019	11/27/19 12:42	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-43

Lab ID: 1904199-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0626	11/26/2019	11/26/19 23:20	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0626	11/26/2019	11/26/19 23:20	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0626	11/26/2019	11/26/19 23:20	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0626	11/26/2019	11/26/19 23:20	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0626	11/26/2019	11/26/19 23:20	
1,1-Dichloroethene	ND	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:20	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:20	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0626	11/26/2019	11/26/19 23:20	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0626	11/26/2019	11/26/19 23:20	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0626	11/26/2019	11/26/19 23:20	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0626	11/26/2019	11/26/19 23:20	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0626	11/26/2019	11/26/19 23:20	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0626	11/26/2019	11/26/19 23:20	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0626	11/26/2019	11/26/19 23:20	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0626	11/26/2019	11/26/19 23:20	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0626	11/26/2019	11/26/19 23:20	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:20	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0626	11/26/2019	11/26/19 23:20	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0626	11/26/2019	11/26/19 23:20	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0626	11/26/2019	11/26/19 23:20	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0626	11/26/2019	11/26/19 23:20	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0626	11/26/2019	11/26/19 23:20	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0626	11/26/2019	11/26/19 23:20	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0626	11/26/2019	11/26/19 23:20	
Benzene	ND	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:20	
Bromobenzene	ND	0.50	0.21	1	B9K0626	11/26/2019	11/26/19 23:20	
Bromodichloromethane	ND	0.50	0.14	1	B9K0626	11/26/2019	11/26/19 23:20	
Bromoform	ND	0.50	0.20	1	B9K0626	11/26/2019	11/26/19 23:20	
Bromomethane	ND	0.50	0.40	1	B9K0626	11/26/2019	11/26/19 23:20	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0626	11/26/2019	11/26/19 23:20	
Chlorobenzene	ND	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:20	
Chloroethane	ND	0.50	0.15	1	B9K0626	11/26/2019	11/26/19 23:20	
Chloroform	ND	0.50	0.11	1	B9K0626	11/26/2019	11/26/19 23:20	
Chloromethane	ND	0.50	0.12	1	B9K0626	11/26/2019	11/26/19 23:20	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0626	11/26/2019	11/26/19 23:20	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:20	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-43

Lab ID: 1904199-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0626	11/26/2019	11/26/19 23:20	
Dibromomethane	ND	0.50	0.19	1	B9K0626	11/26/2019	11/26/19 23:20	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0626	11/26/2019	11/26/19 23:20	
Ethylbenzene	ND	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:20	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0626	11/26/2019	11/26/19 23:20	
Isopropylbenzene	ND	0.50	0.10	1	B9K0626	11/26/2019	11/26/19 23:20	
m,p-Xylene	ND	1.0	0.19	1	B9K0626	11/26/2019	11/26/19 23:20	
Methylene chloride	ND	1.0	0.71	1	B9K0626	11/26/2019	11/26/19 23:20	
n-Butylbenzene	ND	0.50	0.11	1	B9K0626	11/26/2019	11/26/19 23:20	
n-Propylbenzene	ND	0.50	0.10	1	B9K0626	11/26/2019	11/26/19 23:20	
Naphthalene	ND	0.50	0.41	1	B9K0626	11/26/2019	11/26/19 23:20	
o-Xylene	ND	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:20	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/26/2019	11/26/19 23:20	
Styrene	ND	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:20	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/26/2019	11/26/19 23:20	
Tetrachloroethene	ND	0.50	0.10	1	B9K0626	11/26/2019	11/26/19 23:20	
Toluene	ND	0.50	0.12	1	B9K0626	11/26/2019	11/26/19 23:20	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0626	11/26/2019	11/26/19 23:20	
Trichloroethene	ND	0.50	0.10	1	B9K0626	11/26/2019	11/26/19 23:20	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0626	11/26/2019	11/26/19 23:20	
Vinyl chloride	ND	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:20	
Surrogate: 1,2-Dichloroethane-d4	105 %	59 - 158			B9K0626	11/26/2019	11/26/19 23:20	
Surrogate: 4-Bromofluorobenzene	105 %	71 - 127			B9K0626	11/26/2019	11/26/19 23:20	
Surrogate: Dibromofluoromethane	102 %	66 - 147			B9K0626	11/26/2019	11/26/19 23:20	
Surrogate: Toluene-d8	105 %	77 - 138			B9K0626	11/26/2019	11/26/19 23:20	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-43

Lab ID: 1904199-02

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	0.05	1	B9K0638	11/25/2019	11/25/19 22:34	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>55.8 %</i>		<i>22 - 117</i>		B9K0638	11/25/2019	<i>11/25/19 22:34</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>53.9 %</i>		<i>20 - 131</i>		B9K0638	11/25/2019	<i>11/25/19 22:34</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>38.6 %</i>		<i>24 - 135</i>		B9K0638	11/25/2019	<i>11/25/19 22:34</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>65.8 %</i>		<i>6 - 124</i>		B9K0638	11/25/2019	<i>11/25/19 22:34</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-42

Lab ID: 1904199-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0626	11/26/2019	11/26/19 23:43	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0626	11/26/2019	11/26/19 23:43	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0626	11/26/2019	11/26/19 23:43	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0626	11/26/2019	11/26/19 23:43	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0626	11/26/2019	11/26/19 23:43	
1,1-Dichloroethene	13	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:43	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:43	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0626	11/26/2019	11/26/19 23:43	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0626	11/26/2019	11/26/19 23:43	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0626	11/26/2019	11/26/19 23:43	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0626	11/26/2019	11/26/19 23:43	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0626	11/26/2019	11/26/19 23:43	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0626	11/26/2019	11/26/19 23:43	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0626	11/26/2019	11/26/19 23:43	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0626	11/26/2019	11/26/19 23:43	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0626	11/26/2019	11/26/19 23:43	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:43	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0626	11/26/2019	11/26/19 23:43	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0626	11/26/2019	11/26/19 23:43	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0626	11/26/2019	11/26/19 23:43	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0626	11/26/2019	11/26/19 23:43	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0626	11/26/2019	11/26/19 23:43	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0626	11/26/2019	11/26/19 23:43	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0626	11/26/2019	11/26/19 23:43	
Benzene	ND	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:43	
Bromobenzene	ND	0.50	0.21	1	B9K0626	11/26/2019	11/26/19 23:43	
Bromodichloromethane	ND	0.50	0.14	1	B9K0626	11/26/2019	11/26/19 23:43	
Bromoform	ND	0.50	0.20	1	B9K0626	11/26/2019	11/26/19 23:43	
Bromomethane	ND	0.50	0.40	1	B9K0626	11/26/2019	11/26/19 23:43	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0626	11/26/2019	11/26/19 23:43	
Chlorobenzene	ND	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:43	
Chloroethane	ND	0.50	0.15	1	B9K0626	11/26/2019	11/26/19 23:43	
Chloroform	ND	0.50	0.11	1	B9K0626	11/26/2019	11/26/19 23:43	
Chloromethane	ND	0.50	0.12	1	B9K0626	11/26/2019	11/26/19 23:43	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0626	11/26/2019	11/26/19 23:43	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:43	



Certificate of Analysis

Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-42

Lab ID: 1904199-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0626	11/26/2019	11/26/19 23:43	
Dibromomethane	ND	0.50	0.19	1	B9K0626	11/26/2019	11/26/19 23:43	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0626	11/26/2019	11/26/19 23:43	
Ethylbenzene	ND	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:43	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0626	11/26/2019	11/26/19 23:43	
Isopropylbenzene	ND	0.50	0.10	1	B9K0626	11/26/2019	11/26/19 23:43	
m,p-Xylene	ND	1.0	0.19	1	B9K0626	11/26/2019	11/26/19 23:43	
Methylene chloride	ND	1.0	0.71	1	B9K0626	11/26/2019	11/26/19 23:43	
n-Butylbenzene	ND	0.50	0.11	1	B9K0626	11/26/2019	11/26/19 23:43	
n-Propylbenzene	ND	0.50	0.10	1	B9K0626	11/26/2019	11/26/19 23:43	
Naphthalene	ND	0.50	0.41	1	B9K0626	11/26/2019	11/26/19 23:43	
o-Xylene	ND	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:43	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/26/2019	11/26/19 23:43	
Styrene	ND	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:43	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/26/2019	11/26/19 23:43	
Tetrachloroethene	ND	0.50	0.10	1	B9K0626	11/26/2019	11/26/19 23:43	
Toluene	ND	0.50	0.12	1	B9K0626	11/26/2019	11/26/19 23:43	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0626	11/26/2019	11/26/19 23:43	
Trichloroethene	ND	0.50	0.10	1	B9K0626	11/26/2019	11/26/19 23:43	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0626	11/26/2019	11/26/19 23:43	
Vinyl chloride	ND	0.50	0.13	1	B9K0626	11/26/2019	11/26/19 23:43	
Surrogate: 1,2-Dichloroethane-d4	106 %	59 - 158			B9K0626	11/26/2019	11/26/19 23:43	
Surrogate: 4-Bromofluorobenzene	106 %	71 - 127			B9K0626	11/26/2019	11/26/19 23:43	
Surrogate: Dibromofluoromethane	103 %	66 - 147			B9K0626	11/26/2019	11/26/19 23:43	
Surrogate: Toluene-d8	104 %	77 - 138			B9K0626	11/26/2019	11/26/19 23:43	



Certificate of Analysis

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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-42

Lab ID: 1904199-03

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	0.74	0.20	0.05	1	B9K0638	11/25/2019	11/25/19 23:00	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>57.7 %</i>		<i>22 - 117</i>		B9K0638	11/25/2019	<i>11/25/19 23:00</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>60.2 %</i>		<i>20 - 131</i>		B9K0638	11/25/2019	<i>11/25/19 23:00</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>43.3 %</i>		<i>24 - 135</i>		B9K0638	11/25/2019	<i>11/25/19 23:00</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>68.6 %</i>		<i>6 - 124</i>		B9K0638	11/25/2019	<i>11/25/19 23:00</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-39

Lab ID: 1904199-04

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 00:06	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 00:06	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0626	11/27/2019	11/27/19 00:06	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0626	11/27/2019	11/27/19 00:06	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 00:06	
1,1-Dichloroethene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:06	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:06	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0626	11/27/2019	11/27/19 00:06	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0626	11/27/2019	11/27/19 00:06	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 00:06	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 00:06	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0626	11/27/2019	11/27/19 00:06	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0626	11/27/2019	11/27/19 00:06	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 00:06	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 00:06	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 00:06	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:06	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 00:06	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 00:06	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0626	11/27/2019	11/27/19 00:06	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0626	11/27/2019	11/27/19 00:06	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 00:06	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 00:06	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 00:06	
Benzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:06	
Bromobenzene	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 00:06	
Bromodichloromethane	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 00:06	
Bromoform	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 00:06	
Bromomethane	ND	0.50	0.40	1	B9K0626	11/27/2019	11/27/19 00:06	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 00:06	
Chlorobenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:06	
Chloroethane	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 00:06	
Chloroform	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 00:06	
Chloromethane	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 00:06	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 00:06	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:06	



Certificate of Analysis

Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-39

Lab ID: 1904199-04

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 00:06	
Dibromomethane	ND	0.50	0.19	1	B9K0626	11/27/2019	11/27/19 00:06	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0626	11/27/2019	11/27/19 00:06	
Ethylbenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:06	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 00:06	
Isopropylbenzene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 00:06	
m,p-Xylene	ND	1.0	0.19	1	B9K0626	11/27/2019	11/27/19 00:06	
Methylene chloride	ND	1.0	0.71	1	B9K0626	11/27/2019	11/27/19 00:06	
n-Butylbenzene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 00:06	
n-Propylbenzene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 00:06	
Naphthalene	ND	0.50	0.41	1	B9K0626	11/27/2019	11/27/19 00:06	
o-Xylene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:06	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 00:06	
Styrene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:06	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 00:06	
Tetrachloroethene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 00:06	
Toluene	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 00:06	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 00:06	
Trichloroethene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 00:06	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0626	11/27/2019	11/27/19 00:06	
Vinyl chloride	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:06	
Surrogate: 1,2-Dichloroethane-d4	108 %	59 - 158			B9K0626	11/27/2019	11/27/19 00:06	
Surrogate: 4-Bromofluorobenzene	106 %	71 - 127			B9K0626	11/27/2019	11/27/19 00:06	
Surrogate: Dibromofluoromethane	105 %	66 - 147			B9K0626	11/27/2019	11/27/19 00:06	
Surrogate: Toluene-d8	106 %	77 - 138			B9K0626	11/27/2019	11/27/19 00:06	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-39

Lab ID: 1904199-04

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	0.05	1	B9K0638	11/25/2019	11/25/19 23:26	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>55.0 %</i>	<i>22 - 117</i>			B9K0638	11/25/2019	<i>11/25/19 23:26</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>57.4 %</i>	<i>20 - 131</i>			B9K0638	11/25/2019	<i>11/25/19 23:26</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>59.4 %</i>	<i>24 - 135</i>			B9K0638	11/25/2019	<i>11/25/19 23:26</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>65.0 %</i>	<i>6 - 124</i>			B9K0638	11/25/2019	<i>11/25/19 23:26</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-36_2SV

Lab ID: 1904199-05

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 02:01	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 02:01	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0626	11/27/2019	11/27/19 02:01	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0626	11/27/2019	11/27/19 02:01	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 02:01	
1,1-Dichloroethene	76	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:01	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:01	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0626	11/27/2019	11/27/19 02:01	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0626	11/27/2019	11/27/19 02:01	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 02:01	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 02:01	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0626	11/27/2019	11/27/19 02:01	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0626	11/27/2019	11/27/19 02:01	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 02:01	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 02:01	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 02:01	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:01	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 02:01	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 02:01	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0626	11/27/2019	11/27/19 02:01	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0626	11/27/2019	11/27/19 02:01	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 02:01	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 02:01	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 02:01	
Benzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:01	
Bromobenzene	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 02:01	
Bromodichloromethane	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 02:01	
Bromoform	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 02:01	
Bromomethane	ND	0.50	0.40	1	B9K0626	11/27/2019	11/27/19 02:01	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 02:01	
Chlorobenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:01	
Chloroethane	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 02:01	
Chloroform	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 02:01	
Chloromethane	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 02:01	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 02:01	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:01	



Certificate of Analysis

Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-36_2SV

Lab ID: 1904199-05

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 02:01	
Dibromomethane	ND	0.50	0.19	1	B9K0626	11/27/2019	11/27/19 02:01	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0626	11/27/2019	11/27/19 02:01	
Ethylbenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:01	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 02:01	
Isopropylbenzene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 02:01	
m,p-Xylene	ND	1.0	0.19	1	B9K0626	11/27/2019	11/27/19 02:01	
Methylene chloride	ND	1.0	0.71	1	B9K0626	11/27/2019	11/27/19 02:01	
n-Butylbenzene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 02:01	
n-Propylbenzene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 02:01	
Naphthalene	ND	0.50	0.41	1	B9K0626	11/27/2019	11/27/19 02:01	
o-Xylene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:01	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 02:01	
Styrene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:01	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 02:01	
Tetrachloroethene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 02:01	
Toluene	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 02:01	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 02:01	
Trichloroethene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 02:01	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0626	11/27/2019	11/27/19 02:01	
Vinyl chloride	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:01	
Surrogate: 1,2-Dichloroethane-d4	112 %	59 - 158			B9K0626	11/27/2019	11/27/19 02:01	
Surrogate: 4-Bromofluorobenzene	106 %	71 - 127			B9K0626	11/27/2019	11/27/19 02:01	
Surrogate: Dibromofluoromethane	106 %	66 - 147			B9K0626	11/27/2019	11/27/19 02:01	
Surrogate: Toluene-d8	105 %	77 - 138			B9K0626	11/27/2019	11/27/19 02:01	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-36_2SV

Lab ID: 1904199-05

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	8.6	0.20	0.05	1	B9K0638	11/25/2019	11/25/19 23:52	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>51.9 %</i>	<i>22 - 117</i>			B9K0638	11/25/2019	<i>11/25/19 23:52</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>54.9 %</i>	<i>20 - 131</i>			B9K0638	11/25/2019	<i>11/25/19 23:52</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>63.4 %</i>	<i>24 - 135</i>			B9K0638	11/25/2019	<i>11/25/19 23:52</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>63.0 %</i>	<i>6 - 124</i>			B9K0638	11/25/2019	<i>11/25/19 23:52</i>	



Certificate of Analysis

Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-36

Lab ID: 1904199-06

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 02:24	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 02:24	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0626	11/27/2019	11/27/19 02:24	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0626	11/27/2019	11/27/19 02:24	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 02:24	
1,1-Dichloroethene	80	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:24	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:24	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0626	11/27/2019	11/27/19 02:24	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0626	11/27/2019	11/27/19 02:24	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 02:24	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 02:24	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0626	11/27/2019	11/27/19 02:24	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0626	11/27/2019	11/27/19 02:24	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 02:24	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 02:24	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 02:24	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:24	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 02:24	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 02:24	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0626	11/27/2019	11/27/19 02:24	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0626	11/27/2019	11/27/19 02:24	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 02:24	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 02:24	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 02:24	
Benzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:24	
Bromobenzene	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 02:24	
Bromodichloromethane	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 02:24	
Bromoform	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 02:24	
Bromomethane	ND	0.50	0.40	1	B9K0626	11/27/2019	11/27/19 02:24	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 02:24	
Chlorobenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:24	
Chloroethane	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 02:24	
Chloroform	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 02:24	
Chloromethane	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 02:24	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 02:24	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:24	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-36

Lab ID: 1904199-06

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 02:24	
Dibromomethane	ND	0.50	0.19	1	B9K0626	11/27/2019	11/27/19 02:24	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0626	11/27/2019	11/27/19 02:24	
Ethylbenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:24	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 02:24	
Isopropylbenzene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 02:24	
m,p-Xylene	ND	1.0	0.19	1	B9K0626	11/27/2019	11/27/19 02:24	
Methylene chloride	ND	1.0	0.71	1	B9K0626	11/27/2019	11/27/19 02:24	
n-Butylbenzene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 02:24	
n-Propylbenzene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 02:24	
Naphthalene	ND	0.50	0.41	1	B9K0626	11/27/2019	11/27/19 02:24	
o-Xylene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:24	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 02:24	
Styrene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:24	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 02:24	
Tetrachloroethene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 02:24	
Toluene	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 02:24	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 02:24	
Trichloroethene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 02:24	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0626	11/27/2019	11/27/19 02:24	
Vinyl chloride	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:24	
Surrogate: 1,2-Dichloroethane-d4	109 %	59 - 158			B9K0626	11/27/2019	11/27/19 02:24	
Surrogate: 4-Bromofluorobenzene	105 %	71 - 127			B9K0626	11/27/2019	11/27/19 02:24	
Surrogate: Dibromofluoromethane	106 %	66 - 147			B9K0626	11/27/2019	11/27/19 02:24	
Surrogate: Toluene-d8	106 %	77 - 138			B9K0626	11/27/2019	11/27/19 02:24	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-36

Lab ID: 1904199-06

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	8.0	0.20	0.05	1	B9K0638	11/25/2019	11/26/19 00:18	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>50.9 %</i>	<i>22 - 117</i>			B9K0638	11/25/2019	<i>11/26/19 00:18</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>55.7 %</i>	<i>20 - 131</i>			B9K0638	11/25/2019	<i>11/26/19 00:18</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>58.9 %</i>	<i>24 - 135</i>			B9K0638	11/25/2019	<i>11/26/19 00:18</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>61.0 %</i>	<i>6 - 124</i>			B9K0638	11/25/2019	<i>11/26/19 00:18</i>	



Certificate of Analysis

Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-21

Lab ID: 1904199-07

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 01:15	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 01:15	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0626	11/27/2019	11/27/19 01:15	
1,1,2-Trichloroethane	4.0	0.50	0.25	1	B9K0626	11/27/2019	11/27/19 01:15	
1,1-Dichloroethane	9.3	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 01:15	
1,1-Dichloroethene	450	10	2.6	20	B9K0656	11/27/2019	11/27/19 11:34	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 01:15	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0626	11/27/2019	11/27/19 01:15	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0626	11/27/2019	11/27/19 01:15	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 01:15	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 01:15	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0626	11/27/2019	11/27/19 01:15	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0626	11/27/2019	11/27/19 01:15	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 01:15	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 01:15	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 01:15	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 01:15	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 01:15	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 01:15	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0626	11/27/2019	11/27/19 01:15	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0626	11/27/2019	11/27/19 01:15	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 01:15	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 01:15	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 01:15	
Benzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 01:15	
Bromobenzene	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 01:15	
Bromodichloromethane	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 01:15	
Bromoform	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 01:15	
Bromomethane	ND	0.50	0.40	1	B9K0626	11/27/2019	11/27/19 01:15	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 01:15	
Chlorobenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 01:15	
Chloroethane	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 01:15	
Chloroform	0.70	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 01:15	
Chloromethane	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 01:15	
cis-1,2-Dichloroethene	1.1	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 01:15	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 01:15	



Certificate of Analysis

Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-21

Lab ID: 1904199-07

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 01:15	
Dibromomethane	ND	0.50	0.19	1	B9K0626	11/27/2019	11/27/19 01:15	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0626	11/27/2019	11/27/19 01:15	
Ethylbenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 01:15	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 01:15	
Isopropylbenzene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 01:15	
m,p-Xylene	ND	1.0	0.19	1	B9K0626	11/27/2019	11/27/19 01:15	
Methylene chloride	ND	1.0	0.71	1	B9K0626	11/27/2019	11/27/19 01:15	
n-Butylbenzene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 01:15	
n-Propylbenzene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 01:15	
Naphthalene	ND	0.50	0.41	1	B9K0626	11/27/2019	11/27/19 01:15	
o-Xylene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 01:15	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 01:15	
Styrene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 01:15	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 01:15	
Tetrachloroethene	2.0	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 01:15	
Toluene	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 01:15	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 01:15	
Trichloroethene	20	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 01:15	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0626	11/27/2019	11/27/19 01:15	
Vinyl chloride	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 01:15	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>108 %</i>	<i>59 - 158</i>			B9K0626	11/27/2019	<i>11/27/19 01:15</i>	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>111 %</i>	<i>59 - 158</i>			B9K0656	11/27/2019	<i>11/27/19 11:34</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>105 %</i>	<i>71 - 127</i>			B9K0656	11/27/2019	<i>11/27/19 11:34</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>104 %</i>	<i>71 - 127</i>			B9K0626	11/27/2019	<i>11/27/19 01:15</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>103 %</i>	<i>66 - 147</i>			B9K0626	11/27/2019	<i>11/27/19 01:15</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>106 %</i>	<i>66 - 147</i>			B9K0656	11/27/2019	<i>11/27/19 11:34</i>	
<i>Surrogate: Toluene-d8</i>	<i>98.6 %</i>	<i>77 - 138</i>			B9K0626	11/27/2019	<i>11/27/19 01:15</i>	
<i>Surrogate: Toluene-d8</i>	<i>106 %</i>	<i>77 - 138</i>			B9K0656	11/27/2019	<i>11/27/19 11:34</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-21

Lab ID: 1904199-07

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	360	4.0	1.7	2	B9K0679	11/27/2019	12/02/19 19:04	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>67.1 %</i>	<i>34 - 188</i>			B9K0679	11/27/2019	<i>12/02/19 19:04</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>82.9 %</i>	<i>39 - 108</i>			B9K0679	11/27/2019	<i>12/02/19 19:04</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>94.6 %</i>	<i>71 - 131</i>			B9K0679	11/27/2019	<i>12/02/19 19:04</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>72.6 %</i>	<i>32 - 106</i>			B9K0679	11/27/2019	<i>12/02/19 19:04</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: EW-01

Lab ID: 1904199-08

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 02:47	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 02:47	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0626	11/27/2019	11/27/19 02:47	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0626	11/27/2019	11/27/19 02:47	
1,1-Dichloroethane	1.0	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 02:47	
1,1-Dichloroethene	99	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:47	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:47	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0626	11/27/2019	11/27/19 02:47	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0626	11/27/2019	11/27/19 02:47	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 02:47	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 02:47	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0626	11/27/2019	11/27/19 02:47	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0626	11/27/2019	11/27/19 02:47	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 02:47	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 02:47	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 02:47	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:47	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 02:47	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 02:47	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0626	11/27/2019	11/27/19 02:47	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0626	11/27/2019	11/27/19 02:47	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 02:47	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 02:47	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 02:47	
Benzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:47	
Bromobenzene	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 02:47	
Bromodichloromethane	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 02:47	
Bromoform	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 02:47	
Bromomethane	ND	0.50	0.40	1	B9K0626	11/27/2019	11/27/19 02:47	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 02:47	
Chlorobenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:47	
Chloroethane	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 02:47	
Chloroform	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 02:47	
Chloromethane	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 02:47	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 02:47	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:47	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: EW-01

Lab ID: 1904199-08

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 02:47	
Dibromomethane	ND	0.50	0.19	1	B9K0626	11/27/2019	11/27/19 02:47	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0626	11/27/2019	11/27/19 02:47	
Ethylbenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:47	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 02:47	
Isopropylbenzene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 02:47	
m,p-Xylene	ND	1.0	0.19	1	B9K0626	11/27/2019	11/27/19 02:47	
Methylene chloride	ND	1.0	0.71	1	B9K0626	11/27/2019	11/27/19 02:47	
n-Butylbenzene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 02:47	
n-Propylbenzene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 02:47	
Naphthalene	ND	0.50	0.41	1	B9K0626	11/27/2019	11/27/19 02:47	
o-Xylene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:47	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 02:47	
Styrene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:47	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 02:47	
Tetrachloroethene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 02:47	
Toluene	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 02:47	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 02:47	
Trichloroethene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 02:47	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0626	11/27/2019	11/27/19 02:47	
Vinyl chloride	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 02:47	
Surrogate: 1,2-Dichloroethane-d4	111 %	59 - 158			B9K0626	11/27/2019	11/27/19 02:47	
Surrogate: 4-Bromofluorobenzene	104 %	71 - 127			B9K0626	11/27/2019	11/27/19 02:47	
Surrogate: Dibromofluoromethane	105 %	66 - 147			B9K0626	11/27/2019	11/27/19 02:47	
Surrogate: Toluene-d8	106 %	77 - 138			B9K0626	11/27/2019	11/27/19 02:47	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: EW-01

Lab ID: 1904199-08

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	41	2.0	0.84	1	B9K0679	11/27/2019	12/02/19 19:30	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>80.1 %</i>	<i>34 - 188</i>			B9K0679	11/27/2019	<i>12/02/19 19:30</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>105 %</i>	<i>39 - 108</i>			B9K0679	11/27/2019	<i>12/02/19 19:30</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>115 %</i>	<i>71 - 131</i>			B9K0679	11/27/2019	<i>12/02/19 19:30</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>83.3 %</i>	<i>32 - 106</i>			B9K0679	11/27/2019	<i>12/02/19 19:30</i>	



Certificate of Analysis

Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-41

Lab ID: 1904199-09

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 00:29	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 00:29	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0626	11/27/2019	11/27/19 00:29	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0626	11/27/2019	11/27/19 00:29	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 00:29	
1,1-Dichloroethene	2.3	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:29	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:29	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0626	11/27/2019	11/27/19 00:29	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0626	11/27/2019	11/27/19 00:29	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 00:29	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 00:29	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0626	11/27/2019	11/27/19 00:29	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0626	11/27/2019	11/27/19 00:29	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 00:29	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 00:29	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 00:29	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:29	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 00:29	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 00:29	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0626	11/27/2019	11/27/19 00:29	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0626	11/27/2019	11/27/19 00:29	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 00:29	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 00:29	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 00:29	
Benzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:29	
Bromobenzene	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 00:29	
Bromodichloromethane	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 00:29	
Bromoform	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 00:29	
Bromomethane	ND	0.50	0.40	1	B9K0626	11/27/2019	11/27/19 00:29	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 00:29	
Chlorobenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:29	
Chloroethane	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 00:29	
Chloroform	0.59	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 00:29	
Chloromethane	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 00:29	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 00:29	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:29	



Certificate of Analysis

Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-41

Lab ID: 1904199-09

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 00:29	
Dibromomethane	ND	0.50	0.19	1	B9K0626	11/27/2019	11/27/19 00:29	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0626	11/27/2019	11/27/19 00:29	
Ethylbenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:29	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 00:29	
Isopropylbenzene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 00:29	
m,p-Xylene	ND	1.0	0.19	1	B9K0626	11/27/2019	11/27/19 00:29	
Methylene chloride	ND	1.0	0.71	1	B9K0626	11/27/2019	11/27/19 00:29	
n-Butylbenzene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 00:29	
n-Propylbenzene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 00:29	
Naphthalene	ND	0.50	0.41	1	B9K0626	11/27/2019	11/27/19 00:29	
o-Xylene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:29	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 00:29	
Styrene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:29	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 00:29	
Tetrachloroethene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 00:29	
Toluene	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 00:29	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 00:29	
Trichloroethene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 00:29	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0626	11/27/2019	11/27/19 00:29	
Vinyl chloride	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:29	
Surrogate: 1,2-Dichloroethane-d4	108 %	59 - 158			B9K0626	11/27/2019	11/27/19 00:29	
Surrogate: 4-Bromofluorobenzene	105 %	71 - 127			B9K0626	11/27/2019	11/27/19 00:29	
Surrogate: Dibromofluoromethane	103 %	66 - 147			B9K0626	11/27/2019	11/27/19 00:29	
Surrogate: Toluene-d8	105 %	77 - 138			B9K0626	11/27/2019	11/27/19 00:29	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-41

Lab ID: 1904199-09

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	2.0	0.84	1	B9K0679	11/27/2019	12/02/19 19:57	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>76.0 %</i>	<i>34 - 188</i>			B9K0679	11/27/2019	<i>12/02/19 19:57</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>99.1 %</i>	<i>39 - 108</i>			B9K0679	11/27/2019	<i>12/02/19 19:57</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>112 %</i>	<i>71 - 131</i>			B9K0679	11/27/2019	<i>12/02/19 19:57</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>81.5 %</i>	<i>32 - 106</i>			B9K0679	11/27/2019	<i>12/02/19 19:57</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-34B

Lab ID: 1904199-10

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 10:26	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0656	11/27/2019	11/27/19 10:26	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0656	11/27/2019	11/27/19 10:26	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0656	11/27/2019	11/27/19 10:26	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 10:26	
1,1-Dichloroethene	47	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 10:26	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 10:26	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0656	11/27/2019	11/27/19 10:26	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0656	11/27/2019	11/27/19 10:26	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0656	11/27/2019	11/27/19 10:26	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0656	11/27/2019	11/27/19 10:26	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0656	11/27/2019	11/27/19 10:26	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0656	11/27/2019	11/27/19 10:26	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0656	11/27/2019	11/27/19 10:26	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0656	11/27/2019	11/27/19 10:26	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0656	11/27/2019	11/27/19 10:26	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 10:26	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0656	11/27/2019	11/27/19 10:26	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0656	11/27/2019	11/27/19 10:26	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0656	11/27/2019	11/27/19 10:26	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0656	11/27/2019	11/27/19 10:26	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 10:26	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0656	11/27/2019	11/27/19 10:26	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 10:26	
Benzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 10:26	
Bromobenzene	ND	0.50	0.21	1	B9K0656	11/27/2019	11/27/19 10:26	
Bromodichloromethane	ND	0.50	0.14	1	B9K0656	11/27/2019	11/27/19 10:26	
Bromoform	ND	0.50	0.20	1	B9K0656	11/27/2019	11/27/19 10:26	
Bromomethane	ND	0.50	0.40	1	B9K0656	11/27/2019	11/27/19 10:26	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 10:26	
Chlorobenzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 10:26	
Chloroethane	ND	0.50	0.15	1	B9K0656	11/27/2019	11/27/19 10:26	
Chloroform	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 10:26	
Chloromethane	ND	0.50	0.12	1	B9K0656	11/27/2019	11/27/19 10:26	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0656	11/27/2019	11/27/19 10:26	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 10:26	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-34B

Lab ID: 1904199-10

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0656	11/27/2019	11/27/19 10:26	
Dibromomethane	ND	0.50	0.19	1	B9K0656	11/27/2019	11/27/19 10:26	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0656	11/27/2019	11/27/19 10:26	
Ethylbenzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 10:26	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0656	11/27/2019	11/27/19 10:26	
Isopropylbenzene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 10:26	
m,p-Xylene	ND	1.0	0.19	1	B9K0656	11/27/2019	11/27/19 10:26	
Methylene chloride	ND	1.0	0.71	1	B9K0656	11/27/2019	11/27/19 10:26	
n-Butylbenzene	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 10:26	
n-Propylbenzene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 10:26	
Naphthalene	ND	0.50	0.41	1	B9K0656	11/27/2019	11/27/19 10:26	
o-Xylene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 10:26	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 10:26	
Styrene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 10:26	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 10:26	
Tetrachloroethene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 10:26	
Toluene	ND	0.50	0.12	1	B9K0656	11/27/2019	11/27/19 10:26	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 10:26	
Trichloroethene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 10:26	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0656	11/27/2019	11/27/19 10:26	
Vinyl chloride	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 10:26	
Surrogate: 1,2-Dichloroethane-d4	107 %	59 - 158			B9K0656	11/27/2019	11/27/19 10:26	
Surrogate: 4-Bromofluorobenzene	106 %	71 - 127			B9K0656	11/27/2019	11/27/19 10:26	
Surrogate: Dibromofluoromethane	103 %	66 - 147			B9K0656	11/27/2019	11/27/19 10:26	
Surrogate: Toluene-d8	107 %	77 - 138			B9K0656	11/27/2019	11/27/19 10:26	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-34B

Lab ID: 1904199-10

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	20	2.0	0.84	1	B9K0679	11/27/2019	12/02/19 20:23	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>74.1 %</i>	<i>34 - 188</i>			B9K0679	11/27/2019	<i>12/02/19 20:23</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>94.7 %</i>	<i>39 - 108</i>			B9K0679	11/27/2019	<i>12/02/19 20:23</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>107 %</i>	<i>71 - 131</i>			B9K0679	11/27/2019	<i>12/02/19 20:23</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>78.4 %</i>	<i>32 - 106</i>			B9K0679	11/27/2019	<i>12/02/19 20:23</i>	



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Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-30A

Lab ID: 1904199-11

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 00:52	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 00:52	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0626	11/27/2019	11/27/19 00:52	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0626	11/27/2019	11/27/19 00:52	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 00:52	
1,1-Dichloroethene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:52	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:52	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0626	11/27/2019	11/27/19 00:52	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0626	11/27/2019	11/27/19 00:52	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 00:52	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 00:52	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0626	11/27/2019	11/27/19 00:52	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0626	11/27/2019	11/27/19 00:52	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 00:52	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 00:52	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 00:52	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:52	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 00:52	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 00:52	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0626	11/27/2019	11/27/19 00:52	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0626	11/27/2019	11/27/19 00:52	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 00:52	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 00:52	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 00:52	
Benzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:52	
Bromobenzene	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 00:52	
Bromodichloromethane	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 00:52	
Bromoform	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 00:52	
Bromomethane	ND	0.50	0.40	1	B9K0626	11/27/2019	11/27/19 00:52	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 00:52	
Chlorobenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:52	
Chloroethane	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 00:52	
Chloroform	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 00:52	
Chloromethane	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 00:52	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 00:52	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:52	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-30A

Lab ID: 1904199-11

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 00:52	
Dibromomethane	ND	0.50	0.19	1	B9K0626	11/27/2019	11/27/19 00:52	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0626	11/27/2019	11/27/19 00:52	
Ethylbenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:52	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 00:52	
Isopropylbenzene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 00:52	
m,p-Xylene	ND	1.0	0.19	1	B9K0626	11/27/2019	11/27/19 00:52	
Methylene chloride	ND	1.0	0.71	1	B9K0626	11/27/2019	11/27/19 00:52	
n-Butylbenzene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 00:52	
n-Propylbenzene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 00:52	
Naphthalene	ND	0.50	0.41	1	B9K0626	11/27/2019	11/27/19 00:52	
o-Xylene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:52	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 00:52	
Styrene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:52	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 00:52	
Tetrachloroethene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 00:52	
Toluene	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 00:52	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 00:52	
Trichloroethene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 00:52	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0626	11/27/2019	11/27/19 00:52	
Vinyl chloride	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 00:52	
Surrogate: 1,2-Dichloroethane-d4	111 %	59 - 158			B9K0626	11/27/2019	11/27/19 00:52	
Surrogate: 4-Bromofluorobenzene	105 %	71 - 127			B9K0626	11/27/2019	11/27/19 00:52	
Surrogate: Dibromofluoromethane	107 %	66 - 147			B9K0626	11/27/2019	11/27/19 00:52	
Surrogate: Toluene-d8	105 %	77 - 138			B9K0626	11/27/2019	11/27/19 00:52	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-30A

Lab ID: 1904199-11

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	0.05	1	B9K0638	11/25/2019	11/26/19 00:44	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>96.9 %</i>	<i>22 - 117</i>			B9K0638	11/25/2019	<i>11/26/19 00:44</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>96.6 %</i>	<i>20 - 131</i>			B9K0638	11/25/2019	<i>11/26/19 00:44</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>91.9 %</i>	<i>24 - 135</i>			B9K0638	11/25/2019	<i>11/26/19 00:44</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>123 %</i>	<i>6 - 124</i>			B9K0638	11/25/2019	<i>11/26/19 00:44</i>	



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9171 Towne Centre Drive, Suite 375
San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-30B

Lab ID: 1904199-12

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 03:55	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 03:55	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0626	11/27/2019	11/27/19 03:55	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0626	11/27/2019	11/27/19 03:55	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 03:55	
1,1-Dichloroethene	20	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 03:55	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 03:55	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0626	11/27/2019	11/27/19 03:55	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0626	11/27/2019	11/27/19 03:55	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 03:55	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 03:55	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0626	11/27/2019	11/27/19 03:55	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0626	11/27/2019	11/27/19 03:55	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 03:55	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 03:55	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 03:55	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 03:55	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 03:55	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 03:55	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0626	11/27/2019	11/27/19 03:55	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0626	11/27/2019	11/27/19 03:55	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 03:55	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 03:55	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 03:55	
Benzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 03:55	
Bromobenzene	ND	0.50	0.21	1	B9K0626	11/27/2019	11/27/19 03:55	
Bromodichloromethane	ND	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 03:55	
Bromoform	ND	0.50	0.20	1	B9K0626	11/27/2019	11/27/19 03:55	
Bromomethane	ND	0.50	0.40	1	B9K0626	11/27/2019	11/27/19 03:55	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 03:55	
Chlorobenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 03:55	
Chloroethane	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 03:55	
Chloroform	0.41	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 03:55	J
Chloromethane	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 03:55	
cis-1,2-Dichloroethene	4.3	0.50	0.14	1	B9K0626	11/27/2019	11/27/19 03:55	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 03:55	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego, CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-30B

Lab ID: 1904199-12

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0626	11/27/2019	11/27/19 03:55	
Dibromomethane	ND	0.50	0.19	1	B9K0626	11/27/2019	11/27/19 03:55	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0626	11/27/2019	11/27/19 03:55	
Ethylbenzene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 03:55	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0626	11/27/2019	11/27/19 03:55	
Isopropylbenzene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 03:55	
m,p-Xylene	ND	1.0	0.19	1	B9K0626	11/27/2019	11/27/19 03:55	
Methylene chloride	ND	1.0	0.71	1	B9K0626	11/27/2019	11/27/19 03:55	
n-Butylbenzene	ND	0.50	0.11	1	B9K0626	11/27/2019	11/27/19 03:55	
n-Propylbenzene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 03:55	
Naphthalene	ND	0.50	0.41	1	B9K0626	11/27/2019	11/27/19 03:55	
o-Xylene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 03:55	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 03:55	
Styrene	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 03:55	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 03:55	
Tetrachloroethene	ND	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 03:55	
Toluene	ND	0.50	0.12	1	B9K0626	11/27/2019	11/27/19 03:55	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0626	11/27/2019	11/27/19 03:55	
Trichloroethene	92	0.50	0.10	1	B9K0626	11/27/2019	11/27/19 03:55	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0626	11/27/2019	11/27/19 03:55	
Vinyl chloride	ND	0.50	0.13	1	B9K0626	11/27/2019	11/27/19 03:55	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>110 %</i>	<i>59 - 158</i>			B9K0626	11/27/2019	<i>11/27/19 03:55</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>102 %</i>	<i>71 - 127</i>			B9K0626	11/27/2019	<i>11/27/19 03:55</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>105 %</i>	<i>66 - 147</i>			B9K0626	11/27/2019	<i>11/27/19 03:55</i>	
<i>Surrogate: Toluene-d8</i>	<i>92.0 %</i>	<i>77 - 138</i>			B9K0626	11/27/2019	<i>11/27/19 03:55</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-30B

Lab ID: 1904199-12

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	0.78	0.20	0.05	1	B9K0638	11/25/2019	11/26/19 01:10	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>87.6 %</i>	<i>22 - 117</i>			B9K0638	11/25/2019	<i>11/26/19 01:10</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>90.9 %</i>	<i>20 - 131</i>			B9K0638	11/25/2019	<i>11/26/19 01:10</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>111 %</i>	<i>24 - 135</i>			B9K0638	11/25/2019	<i>11/26/19 01:10</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>101 %</i>	<i>6 - 124</i>			B9K0638	11/25/2019	<i>11/26/19 01:10</i>	



Certificate of Analysis

Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-40

Lab ID: 1904199-13

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 13:29	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 13:29	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0621	11/26/2019	11/26/19 13:29	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0621	11/26/2019	11/26/19 13:29	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 13:29	
1,1-Dichloroethene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:29	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:29	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0621	11/26/2019	11/26/19 13:29	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0621	11/26/2019	11/26/19 13:29	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 13:29	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 13:29	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0621	11/26/2019	11/26/19 13:29	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0621	11/26/2019	11/26/19 13:29	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 13:29	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 13:29	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 13:29	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:29	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 13:29	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 13:29	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0621	11/26/2019	11/26/19 13:29	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0621	11/26/2019	11/26/19 13:29	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 13:29	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 13:29	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 13:29	
Benzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:29	
Bromobenzene	ND	0.50	0.21	1	B9K0621	11/26/2019	11/26/19 13:29	
Bromodichloromethane	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 13:29	
Bromoform	ND	0.50	0.20	1	B9K0621	11/26/2019	11/26/19 13:29	
Bromomethane	ND	0.50	0.40	1	B9K0621	11/26/2019	11/26/19 13:29	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 13:29	
Chlorobenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:29	
Chloroethane	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 13:29	
Chloroform	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 13:29	
Chloromethane	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 13:29	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0621	11/26/2019	11/26/19 13:29	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:29	



Certificate of Analysis

Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-40

Lab ID: 1904199-13

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0621	11/26/2019	11/26/19 13:29	
Dibromomethane	ND	0.50	0.19	1	B9K0621	11/26/2019	11/26/19 13:29	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0621	11/26/2019	11/26/19 13:29	
Ethylbenzene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:29	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0621	11/26/2019	11/26/19 13:29	
Isopropylbenzene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 13:29	
m,p-Xylene	ND	1.0	0.19	1	B9K0621	11/26/2019	11/26/19 13:29	
Methylene chloride	ND	1.0	0.71	1	B9K0621	11/26/2019	11/26/19 13:29	
n-Butylbenzene	ND	0.50	0.11	1	B9K0621	11/26/2019	11/26/19 13:29	
n-Propylbenzene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 13:29	
Naphthalene	ND	0.50	0.41	1	B9K0621	11/26/2019	11/26/19 13:29	
o-Xylene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:29	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 13:29	
Styrene	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:29	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 13:29	
Tetrachloroethene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 13:29	
Toluene	ND	0.50	0.12	1	B9K0621	11/26/2019	11/26/19 13:29	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0621	11/26/2019	11/26/19 13:29	
Trichloroethene	ND	0.50	0.10	1	B9K0621	11/26/2019	11/26/19 13:29	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0621	11/26/2019	11/26/19 13:29	
Vinyl chloride	ND	0.50	0.13	1	B9K0621	11/26/2019	11/26/19 13:29	
Surrogate: 1,2-Dichloroethane-d4	110 %	59 - 158			B9K0621	11/26/2019	11/26/19 13:29	
Surrogate: 4-Bromofluorobenzene	104 %	71 - 127			B9K0621	11/26/2019	11/26/19 13:29	
Surrogate: Dibromofluoromethane	105 %	66 - 147			B9K0621	11/26/2019	11/26/19 13:29	
Surrogate: Toluene-d8	105 %	77 - 138			B9K0621	11/26/2019	11/26/19 13:29	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: MW-40

Lab ID: 1904199-13

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	0.05	1	B9K0659	11/26/2019	11/26/19 14:44	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>57.4 %</i>	<i>22 - 117</i>			B9K0659	11/26/2019	<i>11/26/19 14:44</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>62.9 %</i>	<i>20 - 131</i>			B9K0659	11/26/2019	<i>11/26/19 14:44</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>69.7 %</i>	<i>24 - 135</i>			B9K0659	11/26/2019	<i>11/26/19 14:44</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>71.4 %</i>	<i>6 - 124</i>			B9K0659	11/26/2019	<i>11/26/19 14:44</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: TB-112019-B

Lab ID: 1904199-14

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 13:05	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0656	11/27/2019	11/27/19 13:05	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0656	11/27/2019	11/27/19 13:05	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0656	11/27/2019	11/27/19 13:05	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 13:05	
1,1-Dichloroethene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 13:05	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 13:05	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0656	11/27/2019	11/27/19 13:05	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0656	11/27/2019	11/27/19 13:05	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0656	11/27/2019	11/27/19 13:05	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0656	11/27/2019	11/27/19 13:05	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0656	11/27/2019	11/27/19 13:05	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0656	11/27/2019	11/27/19 13:05	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0656	11/27/2019	11/27/19 13:05	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0656	11/27/2019	11/27/19 13:05	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0656	11/27/2019	11/27/19 13:05	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 13:05	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0656	11/27/2019	11/27/19 13:05	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0656	11/27/2019	11/27/19 13:05	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0656	11/27/2019	11/27/19 13:05	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0656	11/27/2019	11/27/19 13:05	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 13:05	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0656	11/27/2019	11/27/19 13:05	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 13:05	
Benzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 13:05	
Bromobenzene	ND	0.50	0.21	1	B9K0656	11/27/2019	11/27/19 13:05	
Bromodichloromethane	ND	0.50	0.14	1	B9K0656	11/27/2019	11/27/19 13:05	
Bromoform	ND	0.50	0.20	1	B9K0656	11/27/2019	11/27/19 13:05	
Bromomethane	ND	0.50	0.40	1	B9K0656	11/27/2019	11/27/19 13:05	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 13:05	
Chlorobenzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 13:05	
Chloroethane	ND	0.50	0.15	1	B9K0656	11/27/2019	11/27/19 13:05	
Chloroform	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 13:05	
Chloromethane	ND	0.50	0.12	1	B9K0656	11/27/2019	11/27/19 13:05	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0656	11/27/2019	11/27/19 13:05	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 13:05	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Client Sample ID: TB-112019-B

Lab ID: 1904199-14

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromochloromethane	ND	0.50	0.16	1	B9K0656	11/27/2019	11/27/19 13:05	
Dibromomethane	ND	0.50	0.19	1	B9K0656	11/27/2019	11/27/19 13:05	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0656	11/27/2019	11/27/19 13:05	
Ethylbenzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 13:05	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0656	11/27/2019	11/27/19 13:05	
Isopropylbenzene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 13:05	
m,p-Xylene	ND	1.0	0.19	1	B9K0656	11/27/2019	11/27/19 13:05	
Methylene chloride	ND	1.0	0.71	1	B9K0656	11/27/2019	11/27/19 13:05	
n-Butylbenzene	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 13:05	
n-Propylbenzene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 13:05	
Naphthalene	ND	0.50	0.41	1	B9K0656	11/27/2019	11/27/19 13:05	
o-Xylene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 13:05	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 13:05	
Styrene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 13:05	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 13:05	
Tetrachloroethene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 13:05	
Toluene	ND	0.50	0.12	1	B9K0656	11/27/2019	11/27/19 13:05	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 13:05	
Trichloroethene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 13:05	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0656	11/27/2019	11/27/19 13:05	
Vinyl chloride	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 13:05	
Surrogate: 1,2-Dichloroethane-d4	116 %	59 - 158			B9K0656	11/27/2019	11/27/19 13:05	
Surrogate: 4-Bromofluorobenzene	103 %	71 - 127			B9K0656	11/27/2019	11/27/19 13:05	
Surrogate: Dibromofluoromethane	108 %	66 - 147			B9K0656	11/27/2019	11/27/19 13:05	
Surrogate: Toluene-d8	105 %	77 - 138			B9K0656	11/27/2019	11/27/19 13:05	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

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QUALITY CONTROL SECTION

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD RPD	RPD Limit	Notes
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Batch B9K0621 - MSVOA_LL_W

Blank (B9K0621-BLK1)

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.21
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.40
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0621 - MSVOA_LL_W (continued)

Blank (B9K0621-BLK1) - Continued

Prepared: 11/26/2019 Analyzed: 11/26/2019

Dichlorodifluoromethane	ND	0.50	0.18
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15
Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.23
Vinyl chloride	ND	0.50	0.13

Surrogate: 1,2-Dichloroethane-d4	27.32	25.0000	109	59 - 158
Surrogate: 4-Bromofluorobenzene	26.86	25.0000	107	71 - 127
Surrogate: Dibromofluoromethane	26.99	25.0000	108	66 - 147
Surrogate: Toluene-d8	26.24	25.0000	105	77 - 138

LCS (B9K0621-BS1)

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,1,1,2-Tetrachloroethane	21.7800	0.50	0.11	20.0000	109	71 - 133
1,1,1-Trichloroethane	17.6100	0.50	0.21	20.0000	88.0	62 - 124
1,1,2,2-Tetrachloroethane	19.2700	0.50	0.36	20.0000	96.4	50 - 131
1,1,2-Trichloroethane	17.2000	0.50	0.25	20.0000	86.0	77 - 121
1,1-Dichloroethane	16.8900	0.50	0.09	20.0000	84.4	52 - 130
1,1-Dichloroethene	16.1600	0.50	0.13	20.0000	80.8	61 - 136
1,1-Dichloropropene	19.3200	0.50	0.13	20.0000	96.6	80 - 128
1,2,3-Trichloropropane	18.8200	0.50	0.39	20.0000	94.1	59 - 126
1,2,3-Trichlorobenzene	18.9200	0.50	0.18	20.0000	94.6	69 - 138
1,2,4-Trichlorobenzene	18.5700	0.50	0.16	20.0000	92.8	78 - 125
1,2,4-Trimethylbenzene	19.2700	0.50	0.14	20.0000	96.4	70 - 126
1,2-Dibromo-3-chloropropane	20.5400	0.50	0.41	20.0000	103	58 - 127
1,2-Dibromoethane	18.1200	0.50	0.24	20.0000	90.6	76 - 120
1,2-Dichlorobenzene	18.9300	0.50	0.20	20.0000	94.6	82 - 117
1,2-Dichloroethane	17.3800	0.50	0.20	20.0000	86.9	66 - 126



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0621 - MSVOA_LL_W (continued)

LCS (B9K0621-BS1) - Continued

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,2-Dichloropropane	17.8700	0.50	0.15	20.0000	89.4	70 - 117
1,3,5-Trimethylbenzene	21.3200	0.50	0.13	20.0000	107	71 - 125
1,3-Dichlorobenzene	19.0700	0.50	0.16	20.0000	95.4	81 - 116
1,3-Dichloropropane	18.2200	0.50	0.21	20.0000	91.1	69 - 124
1,4-Dichlorobenzene	18.0100	0.50	0.17	20.0000	90.0	80 - 114
2,2-Dichloropropane	20.0900	0.50	0.38	20.0000	100	58 - 132
2-Chlorotoluene	20.0200	0.50	0.11	20.0000	100	71 - 119
4-Chlorotoluene	20.3600	0.50	0.12	20.0000	102	72 - 122
4-Isopropyltoluene	19.1900	0.50	0.11	20.0000	96.0	69 - 126
Benzene	36.5300	0.50	0.13	40.0000	91.3	80 - 116
Bromobenzene	19.0600	0.50	0.21	20.0000	95.3	77 - 118
Bromodichloromethane	20.4200	0.50	0.14	20.0000	102	73 - 118
Bromoform	21.3800	0.50	0.20	20.0000	107	65 - 133
Bromomethane	29.3000	0.50	0.40	20.0000	146	7 - 205
Carbon tetrachloride	20.8400	0.50	0.09	20.0000	104	63 - 133
Chlorobenzene	18.0100	0.50	0.13	20.0000	90.0	86 - 113
Chloroethane	19.5800	0.50	0.15	20.0000	97.9	66 - 141
Chloroform	16.7300	0.50	0.11	20.0000	83.6	63 - 127
Chloromethane	18.5200	0.50	0.12	20.0000	92.6	0 - 207
cis-1,2-Dichloroethene	16.5000	0.50	0.14	20.0000	82.5	64 - 126
cis-1,3-Dichloropropene	18.3200	0.50	0.13	20.0000	91.6	70 - 141
Dibromochloromethane	20.7500	0.50	0.16	20.0000	104	67 - 135
Dibromomethane	18.6100	0.50	0.19	20.0000	93.0	74 - 118
Dichlorodifluoromethane	18.9100	0.50	0.18	20.0000	94.6	14 - 181
Ethylbenzene	40.3400	0.50	0.13	40.0000	101	77 - 118
Hexachlorobutadiene	21.0300	0.50	0.15	20.0000	105	66 - 125
Isopropylbenzene	20.9100	0.50	0.10	20.0000	105	68 - 137
m,p-Xylene	40.5000	1.0	0.19	40.0000	101	78 - 126
Methylene chloride	17.6200	1.0	0.71	20.0000	88.1	51 - 149
n-Butylbenzene	19.2600	0.50	0.11	20.0000	96.3	63 - 127
n-Propylbenzene	21.2400	0.50	0.10	20.0000	106	69 - 124
Naphthalene	16.1300	0.50	0.41	20.0000	80.6	60 - 126
o-Xylene	42.9400	0.50	0.13	40.0000	107	79 - 126
sec-Butylbenzene	21.3700	0.50	0.09	20.0000	107	69 - 124
Styrene	18.8500	0.50	0.13	20.0000	94.2	80 - 127
tert-Butylbenzene	20.8600	0.50	0.09	20.0000	104	71 - 124
Tetrachloroethene	18.2800	0.50	0.10	20.0000	91.4	73 - 129
Toluene	37.3200	0.50	0.12	40.0000	93.3	78 - 121
trans-1,2-Dichloroethene	16.5500	0.50	0.09	20.0000	82.8	58 - 141
Trichloroethene	17.6100	0.50	0.10	20.0000	88.0	73 - 126



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0621 - MSVOA_LL_W (continued)

LCS (B9K0621-BS1) - Continued

Prepared: 11/26/2019 Analyzed: 11/26/2019

Trichlorofluoromethane	18.1700	0.50	0.23	20.0000	90.8	62 - 146			
Vinyl chloride	17.1000	0.50	0.13	20.0000	85.5	61 - 137			
Surrogate: 1,2-Dichloroethane-d4	22.93			25.0000	91.7	59 - 158			
Surrogate: 4-Bromofluorobenzene	28.43			25.0000	114	71 - 127			
Surrogate: Dibromofluoromethane	24.04			25.0000	96.2	66 - 147			
Surrogate: Toluene-d8	26.41			25.0000	106	77 - 138			

LCS Dup (B9K0621-BS1)

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,1,1,2-Tetrachloroethane	24.4500	0.50	0.11	20.0000	122	71 - 133	11.6	20
1,1,1-Trichloroethane	19.2000	0.50	0.21	20.0000	96.0	62 - 124	8.64	20
1,1,2,2-Tetrachloroethane	23.2400	0.50	0.36	20.0000	116	50 - 131	18.7	20
1,1,2-Trichloroethane	20.1400	0.50	0.25	20.0000	101	77 - 121	15.7	20
1,1-Dichloroethane	18.9800	0.50	0.09	20.0000	94.9	52 - 130	11.7	20
1,1-Dichloroethene	18.1500	0.50	0.13	20.0000	90.8	61 - 136	11.6	20
1,1-Dichloropropene	21.0600	0.50	0.13	20.0000	105	80 - 128	8.62	20
1,2,3-Trichloropropane	22.4500	0.50	0.39	20.0000	112	59 - 126	17.6	20
1,2,3-Trichlorobenzene	22.4100	0.50	0.18	20.0000	112	69 - 138	16.9	20
1,2,4-Trichlorobenzene	21.6300	0.50	0.16	20.0000	108	78 - 125	15.2	20
1,2,4-Trimethylbenzene	21.6600	0.50	0.14	20.0000	108	70 - 126	11.7	20
1,2-Dibromo-3-chloropropane	23.8100	0.50	0.41	20.0000	119	58 - 127	14.7	20
1,2-Dibromoethane	21.6600	0.50	0.24	20.0000	108	76 - 120	17.8	20
1,2-Dichlorobenzene	21.5600	0.50	0.20	20.0000	108	82 - 117	13.0	20
1,2-Dichloroethane	19.8700	0.50	0.20	20.0000	99.4	66 - 126	13.4	20
1,2-Dichloropropane	20.4800	0.50	0.15	20.0000	102	70 - 117	13.6	20
1,3,5-Trimethylbenzene	23.6400	0.50	0.13	20.0000	118	71 - 125	10.3	20
1,3-Dichlorobenzene	21.4300	0.50	0.16	20.0000	107	81 - 116	11.7	20
1,3-Dichloropropane	21.5200	0.50	0.21	20.0000	108	69 - 124	16.6	20
1,4-Dichlorobenzene	20.3400	0.50	0.17	20.0000	102	80 - 114	12.2	20
2,2-Dichloropropane	21.5400	0.50	0.38	20.0000	108	58 - 132	6.97	20
2-Chlorotoluene	22.5200	0.50	0.11	20.0000	113	71 - 119	11.8	20
4-Chlorotoluene	22.6600	0.50	0.12	20.0000	113	72 - 122	10.7	20
4-Isopropyltoluene	20.9900	0.50	0.11	20.0000	105	69 - 126	8.96	20
Benzene	40.9600	0.50	0.13	40.0000	102	80 - 116	11.4	20
Bromobenzene	22.1600	0.50	0.21	20.0000	111	77 - 118	15.0	20
Bromodichloromethane	23.0600	0.50	0.14	20.0000	115	73 - 118	12.1	20
Bromoform	23.9500	0.50	0.20	20.0000	120	65 - 133	11.3	20
Bromomethane	31.3500	0.50	0.40	20.0000	157	7 - 205	6.76	20
Carbon tetrachloride	21.7100	0.50	0.09	20.0000	109	63 - 133	4.09	20
Chlorobenzene	20.3200	0.50	0.13	20.0000	102	86 - 113	12.1	20
Chloroethane	21.8600	0.50	0.15	20.0000	109	66 - 141	11.0	20



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0621 - MSVOA_LL_W (continued)

LCS Dup (B9K0621-BSD1) - Continued

Prepared: 11/26/2019 Analyzed: 11/26/2019

Chloroform	18.9400	0.50	0.11	20.0000		94.7	63 - 127	12.4	20
Chloromethane	20.4200	0.50	0.12	20.0000		102	0 - 207	9.76	20
cis-1,2-Dichloroethene	18.9600	0.50	0.14	20.0000		94.8	64 - 126	13.9	20
cis-1,3-Dichloropropene	20.7500	0.50	0.13	20.0000		104	70 - 141	12.4	20
Dibromochloromethane	23.4100	0.50	0.16	20.0000		117	67 - 135	12.0	20
Dibromomethane	22.0100	0.50	0.19	20.0000		110	74 - 118	16.7	20
Dichlorodifluoromethane	19.8000	0.50	0.18	20.0000		99.0	14 - 181	4.60	20
Ethylbenzene	45.1400	0.50	0.13	40.0000		113	77 - 118	11.2	20
Hexachlorobutadiene	22.8900	0.50	0.15	20.0000		114	66 - 125	8.47	20
Isopropylbenzene	23.4000	0.50	0.10	20.0000		117	68 - 137	11.2	20
m,p-Xylene	44.9500	1.0	0.19	40.0000		112	78 - 126	10.4	20
Methylene chloride	20.3500	1.0	0.71	20.0000		102	51 - 149	14.4	20
n-Butylbenzene	21.0100	0.50	0.11	20.0000		105	63 - 127	8.69	20
n-Propylbenzene	23.4100	0.50	0.10	20.0000		117	69 - 124	9.72	20
Naphthalene	19.6100	0.50	0.41	20.0000		98.0	60 - 126	19.5	20
o-Xylene	48.2000	0.50	0.13	40.0000		120	79 - 126	11.5	20
sec-Butylbenzene	23.5200	0.50	0.09	20.0000		118	69 - 124	9.58	20
Styrene	21.1400	0.50	0.13	20.0000		106	80 - 127	11.5	20
tert-Butylbenzene	23.1100	0.50	0.09	20.0000		116	71 - 124	10.2	20
Tetrachloroethene	19.8400	0.50	0.10	20.0000		99.2	73 - 129	8.18	20
Toluene	41.6000	0.50	0.12	40.0000		104	78 - 121	10.8	20
trans-1,2-Dichloroethene	18.5400	0.50	0.09	20.0000		92.7	58 - 141	11.3	20
Trichloroethene	19.5300	0.50	0.10	20.0000		97.6	73 - 126	10.3	20
Trichlorofluoromethane	19.1000	0.50	0.23	20.0000		95.5	62 - 146	4.99	20
Vinyl chloride	18.3700	0.50	0.13	20.0000		91.8	61 - 137	7.16	20
Surrogate: 1,2-Dichloroethane-d4	23.65			25.0000		94.6	59 - 158		
Surrogate: 4-Bromofluorobenzene	28.98			25.0000		116	71 - 127		
Surrogate: Dibromofluoromethane	24.61			25.0000		98.4	66 - 147		
Surrogate: Toluene-d8	26.53			25.0000		106	77 - 138		

Matrix Spike (B9K0621-MS1)

Source: 1904177-04

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,1,1,2-Tetrachloroethane	24.1400	0.50	0.11	20.0000	ND	121	71 - 133
1,1,1-Trichloroethane	22.8600	0.50	0.21	20.0000	ND	114	62 - 124
1,1,2,2-Tetrachloroethane	22.0700	0.50	0.36	20.0000	ND	110	50 - 131
1,1,2-Trichloroethane	21.0400	0.50	0.25	20.0000	ND	105	77 - 121
1,1-Dichloroethane	20.5700	0.50	0.09	20.0000	ND	103	52 - 130
1,1-Dichloroethene	21.5800	0.50	0.13	20.0000	ND	108	61 - 136
1,1-Dichloropropene	25.4900	0.50	0.13	20.0000	ND	127	80 - 128
1,2,3-Trichloropropane	22.1000	0.50	0.39	20.0000	ND	110	59 - 126
1,2,3-Trichlorobenzene	22.1200	0.50	0.18	20.0000	ND	111	69 - 138



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0621 - MSVOA_LL_W (continued)

Matrix Spike (B9K0621-MS1) - Continued

Source: 1904177-04

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,2,4-Trichlorobenzene	20.8300	0.50	0.16	20.0000	ND	104	78 - 125			
1,2,4-Trimethylbenzene	21.9300	0.50	0.14	20.0000	ND	110	70 - 126			
1,2-Dibromo-3-chloropropane	19.5700	0.50	0.41	20.0000	ND	97.8	58 - 127			
1,2-Dibromoethane	21.7900	0.50	0.24	20.0000	ND	109	76 - 120			
1,2-Dichlorobenzene	21.5500	0.50	0.20	20.0000	ND	108	82 - 117			
1,2-Dichloroethane	21.1400	0.50	0.20	20.0000	ND	106	66 - 126			
1,2-Dichloropropane	21.4200	0.50	0.15	20.0000	ND	107	70 - 117			
1,3,5-Trimethylbenzene	24.3800	0.50	0.13	20.0000	ND	122	71 - 125			
1,3-Dichlorobenzene	21.5400	0.50	0.16	20.0000	ND	108	81 - 116			
1,3-Dichloropropane	21.8500	0.50	0.21	20.0000	ND	109	69 - 124			
1,4-Dichlorobenzene	20.3600	0.50	0.17	20.0000	ND	102	80 - 114			
2,2-Dichloropropane	20.3200	0.50	0.38	20.0000	ND	102	58 - 132			
2-Chlorotoluene	22.9200	0.50	0.11	20.0000	ND	115	71 - 119			
4-Chlorotoluene	22.8100	0.50	0.12	20.0000	ND	114	72 - 122			
4-Isopropyltoluene	22.1100	0.50	0.11	20.0000	ND	111	69 - 126			
Benzene	44.7800	0.50	0.13	40.0000	ND	112	80 - 116			
Bromobenzene	21.6500	0.50	0.21	20.0000	ND	108	77 - 118			
Bromodichloromethane	22.5900	0.50	0.14	20.0000	ND	113	73 - 118			
Bromoform	20.8700	0.50	0.20	20.0000	ND	104	65 - 133			
Bromomethane	38.1800	0.50	0.40	20.0000	ND	191	7 - 205			
Carbon tetrachloride	25.7900	0.50	0.09	20.0000	ND	129	63 - 133			
Chlorobenzene	21.4600	0.50	0.13	20.0000	ND	107	81 - 115			
Chloroethane	26.6600	0.50	0.15	20.0000	ND	133	66 - 141			
Chloroform	20.4000	0.50	0.11	20.0000	ND	102	63 - 127			
Chloromethane	25.1600	0.50	0.12	20.0000	ND	126	0 - 207			
cis-1,2-Dichloroethene	19.8500	0.50	0.14	20.0000	ND	99.2	64 - 126			
cis-1,3-Dichloropropene	19.3700	0.50	0.13	20.0000	ND	96.8	70 - 141			
Dibromochloromethane	21.5600	0.50	0.16	20.0000	ND	108	67 - 135			
Dibromomethane	21.8700	0.50	0.19	20.0000	ND	109	74 - 118			
Dichlorodifluoromethane	27.6200	0.50	0.18	20.0000	ND	138	14 - 181			
Ethylbenzene	49.0900	0.50	0.13	40.0000	ND	123	77 - 118			M2
Hexachlorobutadiene	22.0400	0.50	0.15	20.0000	ND	110	66 - 125			
Isopropylbenzene	24.8800	0.50	0.10	20.0000	ND	124	68 - 137			
m,p-Xylene	48.7900	1.0	0.19	40.0000	ND	122	78 - 126			
Methylene chloride	20.1000	1.0	0.71	20.0000	ND	100	51 - 149			
n-Butylbenzene	21.6900	0.50	0.11	20.0000	ND	108	63 - 127			
n-Propylbenzene	24.9900	0.50	0.10	20.0000	ND	125	69 - 124			M2
Naphthalene	18.0500	0.50	0.41	20.0000	ND	90.2	60 - 126			
o-Xylene	51.6200	0.50	0.13	40.0000	ND	129	79 - 126			M2
sec-Butylbenzene	25.5100	0.50	0.09	20.0000	ND	128	69 - 124			M2



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0621 - MSVOA_LL_W (continued)

Matrix Spike (B9K0621-MS1) - Continued

Source: 1904177-04

Prepared: 11/26/2019 Analyzed: 11/26/2019

Styrene	21.6300	0.50	0.13	20.0000	ND	108	80 - 127			M2
tert-Butylbenzene	24.9800	0.50	0.09	20.0000	ND	125	71 - 124			
Tetrachloroethene	22.7000	0.50	0.10	20.0000	ND	114	73 - 129			
Toluene	45.8800	0.50	0.12	40.0000	ND	115	78 - 121			
trans-1,2-Dichloroethene	20.3100	0.50	0.09	20.0000	ND	102	58 - 141			
Trichloroethene	21.7100	0.50	0.10	20.0000	ND	109	73 - 126			
Trichlorofluoromethane	26.8700	0.50	0.23	20.0000	ND	134	62 - 146			
Vinyl chloride	23.6800	0.50	0.13	20.0000	ND	118	61 - 137			
Surrogate: 1,2-Dichloroethane-d4	24.55			25.0000		98.2	59 - 158			
Surrogate: 4-Bromofluorobenzene	28.35			25.0000		113	71 - 127			
Surrogate: Dibromofluoromethane	24.63			25.0000		98.5	66 - 147			
Surrogate: Toluene-d8	26.21			25.0000		105	77 - 138			

Matrix Spike Dup (B9K0621-MSD1)

Source: 1904177-04

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,1,1,2-Tetrachloroethane	23.3500	0.50	0.11	20.0000	ND	117	71 - 133	3.33	20	
1,1,1-Trichloroethane	21.8400	0.50	0.21	20.0000	ND	109	62 - 124	4.56	20	
1,1,2,2-Tetrachloroethane	21.8200	0.50	0.36	20.0000	ND	109	50 - 131	1.14	20	
1,1,2-Trichloroethane	20.1800	0.50	0.25	20.0000	ND	101	77 - 121	4.17	20	
1,1-Dichloroethane	19.6100	0.50	0.09	20.0000	ND	98.0	52 - 130	4.78	20	
1,1-Dichloroethene	21.3000	0.50	0.13	20.0000	ND	106	61 - 136	1.31	20	
1,1-Dichloropropene	24.6700	0.50	0.13	20.0000	ND	123	80 - 128	3.27	20	
1,2,3-Trichloropropane	21.4800	0.50	0.39	20.0000	ND	107	59 - 126	2.85	20	
1,2,3-Trichlorobenzene	21.7700	0.50	0.18	20.0000	ND	109	69 - 138	1.59	20	
1,2,4-Trichlorobenzene	20.7000	0.50	0.16	20.0000	ND	104	78 - 125	0.626	20	
1,2,4-Trimethylbenzene	21.9400	0.50	0.14	20.0000	ND	110	70 - 126	0.0456	20	
1,2-Dibromo-3-chloropropane	19.9500	0.50	0.41	20.0000	ND	99.8	58 - 127	1.92	20	
1,2-Dibromoethane	20.9200	0.50	0.24	20.0000	ND	105	76 - 120	4.07	20	
1,2-Dichlorobenzene	21.4500	0.50	0.20	20.0000	ND	107	82 - 117	0.465	20	
1,2-Dichloroethane	19.8000	0.50	0.20	20.0000	ND	99.0	66 - 126	6.55	20	
1,2-Dichloropropane	20.4900	0.50	0.15	20.0000	ND	102	70 - 117	4.44	20	
1,3,5-Trimethylbenzene	24.5600	0.50	0.13	20.0000	ND	123	71 - 125	0.736	20	
1,3-Dichlorobenzene	21.2200	0.50	0.16	20.0000	ND	106	81 - 116	1.50	20	
1,3-Dichloropropane	21.3500	0.50	0.21	20.0000	ND	107	69 - 124	2.31	20	
1,4-Dichlorobenzene	20.0200	0.50	0.17	20.0000	ND	100	80 - 114	1.68	20	
2,2-Dichloropropane	19.7000	0.50	0.38	20.0000	ND	98.5	58 - 132	3.10	20	
2-Chlorotoluene	22.8900	0.50	0.11	20.0000	ND	114	71 - 119	0.131	20	
4-Chlorotoluene	22.8600	0.50	0.12	20.0000	ND	114	72 - 122	0.219	20	
4-Isopropyltoluene	22.0300	0.50	0.11	20.0000	ND	110	69 - 126	0.362	20	
Benzene	42.6400	0.50	0.13	40.0000	ND	107	80 - 116	4.90	20	
Bromobenzene	21.6600	0.50	0.21	20.0000	ND	108	77 - 118	0.0462	20	



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0621 - MSVOA_LL_W (continued)

Matrix Spike Dup (B9K0621-MSD1) - Continued

Source: 1904177-04

Prepared: 11/26/2019 Analyzed: 11/26/2019

Bromodichloromethane	21.5100	0.50	0.14	20.0000	ND	108	73 - 118	4.90	20	
Bromoform	20.1300	0.50	0.20	20.0000	ND	101	65 - 133	3.61	20	
Bromomethane	30.6900	0.50	0.40	20.0000	ND	153	7 - 205	21.8	20	R
Carbon tetrachloride	24.6800	0.50	0.09	20.0000	ND	123	63 - 133	4.40	20	
Chlorobenzene	21.0200	0.50	0.13	20.0000	ND	105	81 - 115	2.07	20	
Chloroethane	24.1400	0.50	0.15	20.0000	ND	121	66 - 141	9.92	20	
Chloroform	19.1600	0.50	0.11	20.0000	ND	95.8	63 - 127	6.27	20	
Chloromethane	23.0400	0.50	0.12	20.0000	ND	115	0 - 207	8.80	20	
cis-1,2-Dichloroethene	19.3900	0.50	0.14	20.0000	ND	97.0	64 - 126	2.34	20	
cis-1,3-Dichloropropene	19.1700	0.50	0.13	20.0000	ND	95.8	70 - 141	1.04	20	
Dibromochloromethane	20.7600	0.50	0.16	20.0000	ND	104	67 - 135	3.78	20	
Dibromomethane	20.5900	0.50	0.19	20.0000	ND	103	74 - 118	6.03	20	
Dichlorodifluoromethane	26.2400	0.50	0.18	20.0000	ND	131	14 - 181	5.12	20	
Ethylbenzene	47.8100	0.50	0.13	40.0000	ND	120	77 - 118	2.64	20	M2
Hexachlorobutadiene	23.0400	0.50	0.15	20.0000	ND	115	66 - 125	4.44	20	
Isopropylbenzene	25.1700	0.50	0.10	20.0000	ND	126	68 - 137	1.16	20	
m,p-Xylene	47.6300	1.0	0.19	40.0000	ND	119	78 - 126	2.41	20	
Methylene chloride	19.1200	1.0	0.71	20.0000	ND	95.6	51 - 149	5.00	20	
n-Butylbenzene	21.4900	0.50	0.11	20.0000	ND	107	63 - 127	0.926	20	
n-Propylbenzene	24.9500	0.50	0.10	20.0000	ND	125	69 - 124	0.160	20	M2
Naphthalene	18.3600	0.50	0.41	20.0000	ND	91.8	60 - 126	1.70	20	
o-Xylene	50.5600	0.50	0.13	40.0000	ND	126	79 - 126	2.07	20	M2
sec-Butylbenzene	25.3700	0.50	0.09	20.0000	ND	127	69 - 124	0.550	20	M2
Styrene	21.2500	0.50	0.13	20.0000	ND	106	80 - 127	1.77	20	
tert-Butylbenzene	25.1200	0.50	0.09	20.0000	ND	126	71 - 124	0.559	20	M2
Tetrachloroethene	22.5700	0.50	0.10	20.0000	ND	113	73 - 129	0.574	20	
Toluene	44.0200	0.50	0.12	40.0000	ND	110	78 - 121	4.14	20	
trans-1,2-Dichloroethene	19.7500	0.50	0.09	20.0000	ND	98.8	58 - 141	2.80	20	
Trichloroethene	21.3300	0.50	0.10	20.0000	ND	107	73 - 126	1.77	20	
Trichlorofluoromethane	24.4700	0.50	0.23	20.0000	ND	122	62 - 146	9.35	20	
Vinyl chloride	21.7900	0.50	0.13	20.0000	ND	109	61 - 137	8.31	20	
Surrogate: 1,2-Dichloroethane-d4	22.90			25.0000		91.6	59 - 158			
Surrogate: 4-Bromofluorobenzene	28.13			25.0000		113	71 - 127			
Surrogate: Dibromofluoromethane	23.57			25.0000		94.3	66 - 147			
Surrogate: Toluene-d8	26.09			25.0000		104	77 - 138			



Certificate of Analysis

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San Diego , CA 92122

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Reported : 12/03/2019

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0626 - MSVOA_LL_W

Blank (B9K0626-BLK1)

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.21
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.40
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.18
Ethylbenzene	ND	0.50	0.13



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0626 - MSVOA_LL_W (continued)

Blank (B9K0626-BLK1) - Continued

Prepared: 11/26/2019 Analyzed: 11/26/2019

Hexachlorobutadiene	ND	0.50	0.15
Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.23
Vinyl chloride	ND	0.50	0.13

Surrogate: 1,2-Dichloroethane-d4	25.07	25.0000	100	59 - 158
Surrogate: 4-Bromofluorobenzene	26.77	25.0000	107	71 - 127
Surrogate: Dibromofluoromethane	24.45	25.0000	97.8	66 - 147
Surrogate: Toluene-d8	25.91	25.0000	104	77 - 138

LCS (B9K0626-BS1)

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,1,1,2-Tetrachloroethane	22.4300	0.50	0.11	20.0000	112	71 - 133
1,1,1-Trichloroethane	19.2100	0.50	0.21	20.0000	96.0	62 - 124
1,1,2,2-Tetrachloroethane	21.6000	0.50	0.36	20.0000	108	50 - 131
1,1,2-Trichloroethane	19.9700	0.50	0.25	20.0000	99.8	77 - 121
1,1-Dichloroethane	18.4500	0.50	0.09	20.0000	92.2	52 - 130
1,1-Dichloroethene	17.8100	0.50	0.13	20.0000	89.0	61 - 136
1,1-Dichloropropene	21.2900	0.50	0.13	20.0000	106	80 - 128
1,2,3-Trichloropropane	21.8700	0.50	0.39	20.0000	109	59 - 126
1,2,3-Trichlorobenzene	21.9000	0.50	0.18	20.0000	110	69 - 138
1,2,4-Trichlorobenzene	20.8300	0.50	0.16	20.0000	104	78 - 125
1,2,4-Trimethylbenzene	21.3200	0.50	0.14	20.0000	107	70 - 126
1,2-Dibromo-3-chloropropane	20.6000	0.50	0.41	20.0000	103	58 - 127
1,2-Dibromoethane	20.9200	0.50	0.24	20.0000	105	76 - 120
1,2-Dichlorobenzene	21.3000	0.50	0.20	20.0000	106	82 - 117
1,2-Dichloroethane	19.4400	0.50	0.20	20.0000	97.2	66 - 126
1,2-Dichloropropane	19.8000	0.50	0.15	20.0000	99.0	70 - 117
1,3,5-Trimethylbenzene	23.5600	0.50	0.13	20.0000	118	71 - 125



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0626 - MSVOA_LL_W (continued)

LCS (B9K0626-BS1) - Continued

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,3-Dichlorobenzene	21.1000	0.50	0.16	20.0000	106	81 - 116			
1,3-Dichloropropane	21.2300	0.50	0.21	20.0000	106	69 - 124			
1,4-Dichlorobenzene	19.7800	0.50	0.17	20.0000	98.9	80 - 114			
2,2-Dichloropropane	18.2400	0.50	0.38	20.0000	91.2	58 - 132			
2-Chlorotoluene	22.1800	0.50	0.11	20.0000	111	71 - 119			
4-Chlorotoluene	22.3500	0.50	0.12	20.0000	112	72 - 122			
4-Isopropyltoluene	20.7300	0.50	0.11	20.0000	104	69 - 126			
Benzene	40.5700	0.50	0.13	40.0000	101	80 - 116			
Bromobenzene	21.6000	0.50	0.21	20.0000	108	77 - 118			
Bromodichloromethane	20.7100	0.50	0.14	20.0000	104	73 - 118			
Bromoform	19.8300	0.50	0.20	20.0000	99.2	65 - 133			
Bromomethane	26.5000	0.50	0.40	20.0000	132	7 - 205			
Carbon tetrachloride	20.6100	0.50	0.09	20.0000	103	63 - 133			
Chlorobenzene	20.0400	0.50	0.13	20.0000	100	86 - 113			
Chloroethane	21.4900	0.50	0.15	20.0000	107	66 - 141			
Chloroform	18.3200	0.50	0.11	20.0000	91.6	63 - 127			
Chloromethane	20.6600	0.50	0.12	20.0000	103	0 - 207			
cis-1,2-Dichloroethene	18.6200	0.50	0.14	20.0000	93.1	64 - 126			
cis-1,3-Dichloropropene	18.6700	0.50	0.13	20.0000	93.4	70 - 141			
Dibromochloromethane	20.3300	0.50	0.16	20.0000	102	67 - 135			
Dibromomethane	20.7100	0.50	0.19	20.0000	104	74 - 118			
Dichlorodifluoromethane	19.4800	0.50	0.18	20.0000	97.4	14 - 181			
Ethylbenzene	44.6900	0.50	0.13	40.0000	112	77 - 118			
Hexachlorobutadiene	21.4800	0.50	0.15	20.0000	107	66 - 125			
Isopropylbenzene	23.4600	0.50	0.10	20.0000	117	68 - 137			
m,p-Xylene	44.8000	1.0	0.19	40.0000	112	78 - 126			
Methylene chloride	19.1400	1.0	0.71	20.0000	95.7	51 - 149			
n-Butylbenzene	20.1900	0.50	0.11	20.0000	101	63 - 127			
n-Propylbenzene	23.3400	0.50	0.10	20.0000	117	69 - 124			
Naphthalene	18.6700	0.50	0.41	20.0000	93.4	60 - 126			
o-Xylene	47.9100	0.50	0.13	40.0000	120	79 - 126			
sec-Butylbenzene	23.3000	0.50	0.09	20.0000	116	69 - 124			
Styrene	20.4300	0.50	0.13	20.0000	102	80 - 127			
tert-Butylbenzene	23.2600	0.50	0.09	20.0000	116	71 - 124			
Tetrachloroethene	20.1100	0.50	0.10	20.0000	101	73 - 129			
Toluene	41.4700	0.50	0.12	40.0000	104	78 - 121			
trans-1,2-Dichloroethene	18.1700	0.50	0.09	20.0000	90.8	58 - 141			
Trichloroethene	19.9800	0.50	0.10	20.0000	99.9	73 - 126			
Trichlorofluoromethane	18.6000	0.50	0.23	20.0000	93.0	62 - 146			
Vinyl chloride	18.2300	0.50	0.13	20.0000	91.2	61 - 137			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD RPD	RPD Limit	Notes
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Batch B9K0626 - MSVOA_LL_W (continued)

LCS (B9K0626-BS1) - Continued

Prepared: 11/26/2019 Analyzed: 11/26/2019

Surrogate: 1,2-Dichloroethane-d4	23.16		25.0000		92.6	59 - 158			
Surrogate: 4-Bromofluorobenzene	28.23		25.0000		113	71 - 127			
Surrogate: Dibromofluoromethane	23.74		25.0000		95.0	66 - 147			
Surrogate: Toluene-d8	26.03		25.0000		104	77 - 138			

LCS Dup (B9K0626-BS1)

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,1,1,2-Tetrachloroethane	22.2900	0.50	0.11	20.0000	111	71 - 133	0.626	20	
1,1,1-Trichloroethane	18.5100	0.50	0.21	20.0000	92.6	62 - 124	3.71	20	
1,1,2,2-Tetrachloroethane	20.8400	0.50	0.36	20.0000	104	50 - 131	3.58	20	
1,1,2-Trichloroethane	19.7900	0.50	0.25	20.0000	99.0	77 - 121	0.905	20	
1,1-Dichloroethane	18.4600	0.50	0.09	20.0000	92.3	52 - 130	0.0542	20	
1,1-Dichloroethene	17.2200	0.50	0.13	20.0000	86.1	61 - 136	3.37	20	
1,1-Dichloropropene	20.6700	0.50	0.13	20.0000	103	80 - 128	2.96	20	
1,2,3-Trichloropropane	21.5000	0.50	0.39	20.0000	108	59 - 126	1.71	20	
1,2,3-Trichlorobenzene	22.9900	0.50	0.18	20.0000	115	69 - 138	4.86	20	
1,2,4-Trichlorobenzene	21.6000	0.50	0.16	20.0000	108	78 - 125	3.63	20	
1,2,4-Trimethylbenzene	20.9000	0.50	0.14	20.0000	104	70 - 126	1.99	20	
1,2-Dibromo-3-chloropropane	19.5000	0.50	0.41	20.0000	97.5	58 - 127	5.49	20	
1,2-Dibromoethane	21.0800	0.50	0.24	20.0000	105	76 - 120	0.762	20	
1,2-Dichlorobenzene	21.1300	0.50	0.20	20.0000	106	82 - 117	0.801	20	
1,2-Dichloroethane	19.5700	0.50	0.20	20.0000	97.8	66 - 126	0.666	20	
1,2-Dichloropropane	20.1400	0.50	0.15	20.0000	101	70 - 117	1.70	20	
1,3,5-Trimethylbenzene	22.8500	0.50	0.13	20.0000	114	71 - 125	3.06	20	
1,3-Dichlorobenzene	20.9300	0.50	0.16	20.0000	105	81 - 116	0.809	20	
1,3-Dichloropropane	21.1300	0.50	0.21	20.0000	106	69 - 124	0.472	20	
1,4-Dichlorobenzene	20.0300	0.50	0.17	20.0000	100	80 - 114	1.26	20	
2,2-Dichloropropane	17.7100	0.50	0.38	20.0000	88.6	58 - 132	2.95	20	
2-Chlorotoluene	21.8400	0.50	0.11	20.0000	109	71 - 119	1.54	20	
4-Chlorotoluene	22.1400	0.50	0.12	20.0000	111	72 - 122	0.944	20	
4-Isopropyltoluene	20.3000	0.50	0.11	20.0000	102	69 - 126	2.10	20	
Benzene	40.3300	0.50	0.13	40.0000	101	80 - 116	0.593	20	
Bromobenzene	21.5400	0.50	0.21	20.0000	108	77 - 118	0.278	20	
Bromodichloromethane	20.8800	0.50	0.14	20.0000	104	73 - 118	0.818	20	
Bromoform	19.4100	0.50	0.20	20.0000	97.0	65 - 133	2.14	20	
Bromomethane	25.3100	0.50	0.40	20.0000	127	7 - 205	4.59	20	
Carbon tetrachloride	19.5900	0.50	0.09	20.0000	98.0	63 - 133	5.07	20	
Chlorobenzene	20.0900	0.50	0.13	20.0000	100	86 - 113	0.249	20	
Chloroethane	20.7900	0.50	0.15	20.0000	104	66 - 141	3.31	20	
Chloroform	18.3000	0.50	0.11	20.0000	91.5	63 - 127	0.109	20	
Chloromethane	20.5200	0.50	0.12	20.0000	103	0 - 207	0.680	20	
cis-1,2-Dichloroethene	18.7600	0.50	0.14	20.0000	93.8	64 - 126	0.749	20	



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0626 - MSVOA_LL_W (continued)

LCS Dup (B9K0626-BSD1) - Continued

Prepared: 11/26/2019 Analyzed: 11/26/2019

cis-1,3-Dichloropropene	19.0200	0.50	0.13	20.0000		95.1	70 - 141	1.86	20	
Dibromochloromethane	20.4300	0.50	0.16	20.0000		102	67 - 135	0.491	20	
Dibromomethane	20.3200	0.50	0.19	20.0000		102	74 - 118	1.90	20	
Dichlorodifluoromethane	19.0400	0.50	0.18	20.0000		95.2	14 - 181	2.28	20	
Ethylbenzene	43.4700	0.50	0.13	40.0000		109	77 - 118	2.77	20	
Hexachlorobutadiene	21.0100	0.50	0.15	20.0000		105	66 - 125	2.21	20	
Isopropylbenzene	22.8800	0.50	0.10	20.0000		114	68 - 137	2.50	20	
m,p-Xylene	43.8800	1.0	0.19	40.0000		110	78 - 126	2.07	20	
Methylene chloride	19.4600	1.0	0.71	20.0000		97.3	51 - 149	1.66	20	
n-Butylbenzene	19.9000	0.50	0.11	20.0000		99.5	63 - 127	1.45	20	
n-Propylbenzene	22.6200	0.50	0.10	20.0000		113	69 - 124	3.13	20	
Naphthalene	19.5200	0.50	0.41	20.0000		97.6	60 - 126	4.45	20	
o-Xylene	47.0500	0.50	0.13	40.0000		118	79 - 126	1.81	20	
sec-Butylbenzene	22.6300	0.50	0.09	20.0000		113	69 - 124	2.92	20	
Styrene	20.5200	0.50	0.13	20.0000		103	80 - 127	0.440	20	
tert-Butylbenzene	22.5700	0.50	0.09	20.0000		113	71 - 124	3.01	20	
Tetrachloroethene	19.6900	0.50	0.10	20.0000		98.4	73 - 129	2.11	20	
Toluene	40.5700	0.50	0.12	40.0000		101	78 - 121	2.19	20	
trans-1,2-Dichloroethene	18.0300	0.50	0.09	20.0000		90.2	58 - 141	0.773	20	
Trichloroethene	20.2300	0.50	0.10	20.0000		101	73 - 126	1.24	20	
Trichlorofluoromethane	17.4600	0.50	0.23	20.0000		87.3	62 - 146	6.32	20	
Vinyl chloride	17.4600	0.50	0.13	20.0000		87.3	61 - 137	4.31	20	

Surrogate: 1,2-Dichloroethane-d4	23.22			25.0000		92.9	59 - 158			
Surrogate: 4-Bromofluorobenzene	27.97			25.0000		112	71 - 127			
Surrogate: Dibromofluoromethane	23.93			25.0000		95.7	66 - 147			
Surrogate: Toluene-d8	25.89			25.0000		104	77 - 138			

Matrix Spike (B9K0626-MS1)

Source: 1904199-07

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,1,1,2-Tetrachloroethane	22.2900	0.50	0.11	20.0000	ND	111	71 - 133			
1,1,1-Trichloroethane	20.7700	0.50	0.21	20.0000	ND	104	62 - 124			
1,1,2,2-Tetrachloroethane	21.2300	0.50	0.36	20.0000	ND	106	50 - 131			
1,1,2-Trichloroethane	23.5500	0.50	0.25	20.0000	4.01000	97.7	77 - 121			
1,1-Dichloroethane	27.0700	0.50	0.09	20.0000	9.33000	88.7	52 - 130			
1,1-Dichloroethene	674.380	0.50	0.13	20.0000	811.160	-684	61 - 136			M2
1,1-Dichloropropene	23.5900	0.50	0.13	20.0000	ND	118	80 - 128			
1,2,3-Trichloropropane	21.0200	0.50	0.39	20.0000	ND	105	59 - 126			
1,2,3-Trichlorobenzene	21.8400	0.50	0.18	20.0000	ND	109	69 - 138			
1,2,4-Trichlorobenzene	20.9900	0.50	0.16	20.0000	ND	105	78 - 125			
1,2,4-Trimethylbenzene	21.3700	0.50	0.14	20.0000	ND	107	70 - 126			
1,2-Dibromo-3-chloropropane	19.2100	0.50	0.41	20.0000	ND	96.0	58 - 127			



Certificate of Analysis

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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0626 - MSVOA_LL_W (continued)

Matrix Spike (B9K0626-MS1) - Continued

Source: 1904199-07

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,2-Dibromoethane	20.1800	0.50	0.24	20.0000	ND	101	76 - 120			
1,2-Dichlorobenzene	21.0300	0.50	0.20	20.0000	ND	105	82 - 117			
1,2-Dichloroethane	20.2400	0.50	0.20	20.0000	ND	101	66 - 126			
1,2-Dichloropropane	19.5000	0.50	0.15	20.0000	ND	97.5	70 - 117			
1,3,5-Trimethylbenzene	23.8800	0.50	0.13	20.0000	ND	119	71 - 125			
1,3-Dichlorobenzene	20.8100	0.50	0.16	20.0000	ND	104	81 - 116			
1,3-Dichloropropane	20.6200	0.50	0.21	20.0000	ND	103	69 - 124			
1,4-Dichlorobenzene	19.6800	0.50	0.17	20.0000	ND	98.4	80 - 114			
2,2-Dichloropropane	19.0800	0.50	0.38	20.0000	ND	95.4	58 - 132			
2-Chlorotoluene	22.3100	0.50	0.11	20.0000	ND	112	71 - 119			
4-Chlorotoluene	22.3900	0.50	0.12	20.0000	ND	112	72 - 122			
4-Isopropyltoluene	21.7200	0.50	0.11	20.0000	ND	109	69 - 126			
Benzene	40.9200	0.50	0.13	40.0000	ND	102	80 - 116			
Bromobenzene	21.6700	0.50	0.21	20.0000	ND	108	77 - 118			
Bromodichloromethane	19.9700	0.50	0.14	20.0000	ND	99.8	73 - 118			
Bromoform	19.1100	0.50	0.20	20.0000	ND	95.6	65 - 133			
Bromomethane	24.8300	0.50	0.40	20.0000	ND	124	7 - 205			
Carbon tetrachloride	23.3500	0.50	0.09	20.0000	ND	117	63 - 133			
Chlorobenzene	20.2400	0.50	0.13	20.0000	ND	101	81 - 115			
Chloroethane	21.7200	0.50	0.15	20.0000	ND	109	66 - 141			
Chloroform	18.7900	0.50	0.11	20.0000	0.700000	90.4	63 - 127			
Chloromethane	21.2200	0.50	0.12	20.0000	ND	106	0 - 207			
cis-1,2-Dichloroethene	19.9700	0.50	0.14	20.0000	1.11000	94.3	64 - 126			
cis-1,3-Dichloropropene	18.8300	0.50	0.13	20.0000	ND	94.2	70 - 141			
Dibromochloromethane	20.0000	0.50	0.16	20.0000	ND	100	67 - 135			
Dibromomethane	19.7400	0.50	0.19	20.0000	ND	98.7	74 - 118			
Dichlorodifluoromethane	23.3200	0.50	0.18	20.0000	ND	117	14 - 181			
Ethylbenzene	45.7700	0.50	0.13	40.0000	ND	114	77 - 118			
Hexachlorobutadiene	22.7600	0.50	0.15	20.0000	ND	114	66 - 125			
Isopropylbenzene	24.7600	0.50	0.10	20.0000	ND	124	68 - 137			
m,p-Xylene	45.6500	1.0	0.19	40.0000	ND	114	78 - 126			
Methylene chloride	18.6200	1.0	0.71	20.0000	ND	93.1	51 - 149			
n-Butylbenzene	21.2900	0.50	0.11	20.0000	ND	106	63 - 127			
n-Propylbenzene	24.4300	0.50	0.10	20.0000	ND	122	69 - 124			
Naphthalene	18.9200	0.50	0.41	20.0000	ND	94.6	60 - 126			
o-Xylene	47.8900	0.50	0.13	40.0000	ND	120	79 - 126			
sec-Butylbenzene	25.0700	0.50	0.09	20.0000	ND	125	69 - 124			
Styrene	19.8700	0.50	0.13	20.0000	ND	99.4	80 - 127			
tert-Butylbenzene	24.5800	0.50	0.09	20.0000	ND	123	71 - 124			
Tetrachloroethene	24.0700	0.50	0.10	20.0000	2.02000	110	73 - 129			

M2



Certificate of Analysis

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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0626 - MSVOA_LL_W (continued)

Matrix Spike (B9K0626-MS1) - Continued

Source: 1904199-07

Prepared: 11/26/2019 Analyzed: 11/26/2019

Toluene	41.7500	0.50	0.12	40.0000	ND	104	78 - 121			
trans-1,2-Dichloroethene	19.4400	0.50	0.09	20.0000	ND	97.2	58 - 141			
Trichloroethene	41.6900	0.50	0.10	20.0000	20.0900	108	73 - 126			
Trichlorofluoromethane	21.9400	0.50	0.23	20.0000	ND	110	62 - 146			
Vinyl chloride	20.0400	0.50	0.13	20.0000	ND	100	61 - 137			
Surrogate: 1,2-Dichloroethane-d4	21.97			25.0000		87.9	59 - 158			
Surrogate: 4-Bromofluorobenzene	28.36			25.0000		113	71 - 127			
Surrogate: Dibromofluoromethane	23.03			25.0000		92.1	66 - 147			
Surrogate: Toluene-d8	25.50			25.0000		102	77 - 138			

Matrix Spike Dup (B9K0626-MSD1)

Source: 1904199-07

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,1,1,2-Tetrachloroethane	23.3600	0.50	0.11	20.0000	ND	117	71 - 133	4.69	20	
1,1,1-Trichloroethane	21.5900	0.50	0.21	20.0000	ND	108	62 - 124	3.87	20	
1,1,2,2-Tetrachloroethane	22.0100	0.50	0.36	20.0000	ND	110	50 - 131	3.61	20	
1,1,2-Trichloroethane	24.9700	0.50	0.25	20.0000	4.01000	105	77 - 121	5.85	20	
1,1-Dichloroethane	28.3500	0.50	0.09	20.0000	9.33000	95.1	52 - 130	4.62	20	
1,1-Dichloroethene	702.350	0.50	0.13	20.0000	811.160	-544	61 - 136	4.06	20	M2
1,1-Dichloropropene	24.6700	0.50	0.13	20.0000	ND	123	80 - 128	4.48	20	
1,2,3-Trichloropropane	21.6100	0.50	0.39	20.0000	ND	108	59 - 126	2.77	20	
1,2,3-Trichlorobenzene	22.5300	0.50	0.18	20.0000	ND	113	69 - 138	3.11	20	
1,2,4-Trichlorobenzene	21.9100	0.50	0.16	20.0000	ND	110	78 - 125	4.29	20	
1,2,4-Trimethylbenzene	22.0600	0.50	0.14	20.0000	ND	110	70 - 126	3.18	20	
1,2-Dibromo-3-chloropropane	21.0700	0.50	0.41	20.0000	ND	105	58 - 127	9.24	20	
1,2-Dibromoethane	21.1400	0.50	0.24	20.0000	ND	106	76 - 120	4.65	20	
1,2-Dichlorobenzene	21.5500	0.50	0.20	20.0000	ND	108	82 - 117	2.44	20	
1,2-Dichloroethane	21.1600	0.50	0.20	20.0000	ND	106	66 - 126	4.44	20	
1,2-Dichloropropane	20.5700	0.50	0.15	20.0000	ND	103	70 - 117	5.34	20	
1,3,5-Trimethylbenzene	24.8000	0.50	0.13	20.0000	ND	124	71 - 125	3.78	20	
1,3-Dichlorobenzene	21.3800	0.50	0.16	20.0000	ND	107	81 - 116	2.70	20	
1,3-Dichloropropane	21.9300	0.50	0.21	20.0000	ND	110	69 - 124	6.16	20	
1,4-Dichlorobenzene	20.2300	0.50	0.17	20.0000	ND	101	80 - 114	2.76	20	
2,2-Dichloropropane	20.0300	0.50	0.38	20.0000	ND	100	58 - 132	4.86	20	
2-Chlorotoluene	23.2200	0.50	0.11	20.0000	ND	116	71 - 119	4.00	20	
4-Chlorotoluene	23.1400	0.50	0.12	20.0000	ND	116	72 - 122	3.29	20	
4-Isopropyltoluene	22.3800	0.50	0.11	20.0000	ND	112	69 - 126	2.99	20	
Benzene	42.3600	0.50	0.13	40.0000	ND	106	80 - 116	3.46	20	
Bromobenzene	22.2800	0.50	0.21	20.0000	ND	111	77 - 118	2.78	20	
Bromodichloromethane	21.1700	0.50	0.14	20.0000	ND	106	73 - 118	5.83	20	
Bromoform	20.0500	0.50	0.20	20.0000	ND	100	65 - 133	4.80	20	
Bromomethane	26.0100	0.50	0.40	20.0000	ND	130	7 - 205	4.64	20	



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0626 - MSVOA_LL_W (continued)

Matrix Spike Dup (B9K0626-MSD1) - Continued

Source: 1904199-07

Prepared: 11/26/2019 Analyzed: 11/26/2019

Carbon tetrachloride	24.2300	0.50	0.09	20.0000	ND	121	63 - 133	3.70	20	
Chlorobenzene	21.1800	0.50	0.13	20.0000	ND	106	81 - 115	4.54	20	
Chloroethane	22.6700	0.50	0.15	20.0000	ND	113	66 - 141	4.28	20	
Chloroform	19.6700	0.50	0.11	20.0000	0.700000	94.8	63 - 127	4.58	20	
Chloromethane	21.8400	0.50	0.12	20.0000	ND	109	0 - 207	2.88	20	
cis-1,2-Dichloroethene	20.9000	0.50	0.14	20.0000	1.11000	99.0	64 - 126	4.55	20	
cis-1,3-Dichloropropene	20.0600	0.50	0.13	20.0000	ND	100	70 - 141	6.33	20	
Dibromochloromethane	21.1800	0.50	0.16	20.0000	ND	106	67 - 135	5.73	20	
Dibromomethane	20.7500	0.50	0.19	20.0000	ND	104	74 - 118	4.99	20	
Dichlorodifluoromethane	25.0900	0.50	0.18	20.0000	ND	125	14 - 181	7.31	20	
Ethylbenzene	47.9100	0.50	0.13	40.0000	ND	120	77 - 118	4.57	20	M2
Hexachlorobutadiene	23.1100	0.50	0.15	20.0000	ND	116	66 - 125	1.53	20	
Isopropylbenzene	25.5500	0.50	0.10	20.0000	ND	128	68 - 137	3.14	20	
m,p-Xylene	47.7000	1.0	0.19	40.0000	ND	119	78 - 126	4.39	20	
Methylene chloride	19.6400	1.0	0.71	20.0000	ND	98.2	51 - 149	5.33	20	
n-Butylbenzene	21.9500	0.50	0.11	20.0000	ND	110	63 - 127	3.05	20	
n-Propylbenzene	25.1500	0.50	0.10	20.0000	ND	126	69 - 124	2.90	20	M2
Naphthalene	19.7000	0.50	0.41	20.0000	ND	98.5	60 - 126	4.04	20	
o-Xylene	50.3200	0.50	0.13	40.0000	ND	126	79 - 126	4.95	20	
sec-Butylbenzene	25.5400	0.50	0.09	20.0000	ND	128	69 - 124	1.86	20	M2
Styrene	21.0800	0.50	0.13	20.0000	ND	105	80 - 127	5.91	20	
tert-Butylbenzene	25.4000	0.50	0.09	20.0000	ND	127	71 - 124	3.28	20	M2
Tetrachloroethene	25.6300	0.50	0.10	20.0000	2.02000	118	73 - 129	6.28	20	
Toluene	43.3300	0.50	0.12	40.0000	ND	108	78 - 121	3.71	20	
trans-1,2-Dichloroethene	20.4400	0.50	0.09	20.0000	ND	102	58 - 141	5.02	20	
Trichloroethene	43.3100	0.50	0.10	20.0000	20.0900	116	73 - 126	3.81	20	
Trichlorofluoromethane	23.1300	0.50	0.23	20.0000	ND	116	62 - 146	5.28	20	
Vinyl chloride	20.7700	0.50	0.13	20.0000	ND	104	61 - 137	3.58	20	
Surrogate: 1,2-Dichloroethane-d4	22.57			25.0000		90.3	59 - 158			
Surrogate: 4-Bromofluorobenzene	28.65			25.0000		115	71 - 127			
Surrogate: Dibromofluoromethane	23.33			25.0000		93.3	66 - 147			
Surrogate: Toluene-d8	25.94			25.0000		104	77 - 138			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD RPD	RPD Limit	Notes
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Batch B9K0656 - MSVOA_LL_W

Blank (B9K0656-BLK1)

Prepared: 11/27/2019 Analyzed: 11/27/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.21
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.40
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.18
Ethylbenzene	ND	0.50	0.13



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Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0656 - MSVOA_LL_W (continued)

Blank (B9K0656-BLK1) - Continued

Prepared: 11/27/2019 Analyzed: 11/27/2019

Hexachlorobutadiene	ND	0.50	0.15
Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.23
Vinyl chloride	ND	0.50	0.13

Surrogate: 1,2-Dichloroethane-d4	25.95	25.0000	104	59 - 158
Surrogate: 4-Bromofluorobenzene	26.85	25.0000	107	71 - 127
Surrogate: Dibromofluoromethane	24.91	25.0000	99.6	66 - 147
Surrogate: Toluene-d8	25.93	25.0000	104	77 - 138

LCS (B9K0656-BS1)

Prepared: 11/27/2019 Analyzed: 11/27/2019

1,1,1,2-Tetrachloroethane	22.4900	0.50	0.11	20.0000	112	71 - 133
1,1,1-Trichloroethane	19.2200	0.50	0.21	20.0000	96.1	62 - 124
1,1,2,2-Tetrachloroethane	20.5900	0.50	0.36	20.0000	103	50 - 131
1,1,2-Trichloroethane	19.4400	0.50	0.25	20.0000	97.2	77 - 121
1,1-Dichloroethane	18.4800	0.50	0.09	20.0000	92.4	52 - 130
1,1-Dichloroethene	18.0800	0.50	0.13	20.0000	90.4	61 - 136
1,1-Dichloropropene	21.7400	0.50	0.13	20.0000	109	80 - 128
1,2,3-Trichloropropane	20.3800	0.50	0.39	20.0000	102	59 - 126
1,2,3-Trichlorobenzene	21.0000	0.50	0.18	20.0000	105	69 - 138
1,2,4-Trichlorobenzene	20.1600	0.50	0.16	20.0000	101	78 - 125
1,2,4-Trimethylbenzene	20.7000	0.50	0.14	20.0000	104	70 - 126
1,2-Dibromo-3-chloropropane	18.4000	0.50	0.41	20.0000	92.0	58 - 127
1,2-Dibromoethane	19.9400	0.50	0.24	20.0000	99.7	76 - 120
1,2-Dichlorobenzene	20.5300	0.50	0.20	20.0000	103	82 - 117
1,2-Dichloroethane	19.1700	0.50	0.20	20.0000	95.8	66 - 126
1,2-Dichloropropane	19.7400	0.50	0.15	20.0000	98.7	70 - 117
1,3,5-Trimethylbenzene	23.0500	0.50	0.13	20.0000	115	71 - 125



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0656 - MSVOA_LL_W (continued)

LCS (B9K0656-BS1) - Continued

Prepared: 11/27/2019 Analyzed: 11/27/2019

1,3-Dichlorobenzene	20.7600	0.50	0.16	20.0000	104	81 - 116
1,3-Dichloropropane	20.5300	0.50	0.21	20.0000	103	69 - 124
1,4-Dichlorobenzene	19.5500	0.50	0.17	20.0000	97.8	80 - 114
2,2-Dichloropropane	20.4900	0.50	0.38	20.0000	102	58 - 132
2-Chlorotoluene	21.8500	0.50	0.11	20.0000	109	71 - 119
4-Chlorotoluene	22.1400	0.50	0.12	20.0000	111	72 - 122
4-Isopropyltoluene	20.6600	0.50	0.11	20.0000	103	69 - 126
Benzene	40.7500	0.50	0.13	40.0000	102	80 - 116
Bromobenzene	20.9500	0.50	0.21	20.0000	105	77 - 118
Bromodichloromethane	20.6400	0.50	0.14	20.0000	103	73 - 118
Bromoform	19.1000	0.50	0.20	20.0000	95.5	65 - 133
Bromomethane	31.1100	0.50	0.40	20.0000	156	7 - 205
Carbon tetrachloride	20.9600	0.50	0.09	20.0000	105	63 - 133
Chlorobenzene	20.1100	0.50	0.13	20.0000	101	86 - 113
Chloroethane	22.5500	0.50	0.15	20.0000	113	66 - 141
Chloroform	18.4500	0.50	0.11	20.0000	92.2	63 - 127
Chloromethane	21.0700	0.50	0.12	20.0000	105	0 - 207
cis-1,2-Dichloroethene	18.7200	0.50	0.14	20.0000	93.6	64 - 126
cis-1,3-Dichloropropene	18.9900	0.50	0.13	20.0000	95.0	70 - 141
Dibromochloromethane	20.0300	0.50	0.16	20.0000	100	67 - 135
Dibromomethane	19.7900	0.50	0.19	20.0000	99.0	74 - 118
Dichlorodifluoromethane	21.1800	0.50	0.18	20.0000	106	14 - 181
Ethylbenzene	44.7900	0.50	0.13	40.0000	112	77 - 118
Hexachlorobutadiene	21.9700	0.50	0.15	20.0000	110	66 - 125
Isopropylbenzene	22.9200	0.50	0.10	20.0000	115	68 - 137
m,p-Xylene	44.8200	1.0	0.19	40.0000	112	78 - 126
Methylene chloride	18.7500	1.0	0.71	20.0000	93.8	51 - 149
n-Butylbenzene	20.3700	0.50	0.11	20.0000	102	63 - 127
n-Propylbenzene	23.1200	0.50	0.10	20.0000	116	69 - 124
Naphthalene	16.8800	0.50	0.41	20.0000	84.4	60 - 126
o-Xylene	47.7400	0.50	0.13	40.0000	119	79 - 126
sec-Butylbenzene	23.4200	0.50	0.09	20.0000	117	69 - 124
Styrene	20.6000	0.50	0.13	20.0000	103	80 - 127
tert-Butylbenzene	23.0200	0.50	0.09	20.0000	115	71 - 124
Tetrachloroethene	20.3400	0.50	0.10	20.0000	102	73 - 129
Toluene	41.4000	0.50	0.12	40.0000	104	78 - 121
trans-1,2-Dichloroethene	18.2900	0.50	0.09	20.0000	91.4	58 - 141
Trichloroethene	19.4300	0.50	0.10	20.0000	97.2	73 - 126
Trichlorofluoromethane	20.0200	0.50	0.23	20.0000	100	62 - 146
Vinyl chloride	19.3600	0.50	0.13	20.0000	96.8	61 - 137



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9171 Towne Centre Drive, Suite 375

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Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD RPD	RPD Limit	Notes
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Batch B9K0656 - MSVOA_LL_W (continued)

LCS (B9K0656-BS1) - Continued

Prepared: 11/27/2019 Analyzed: 11/27/2019

Surrogate: 1,2-Dichloroethane-d4	23.06		25.0000		92.2	59 - 158			
Surrogate: 4-Bromofluorobenzene	28.29		25.0000		113	71 - 127			
Surrogate: Dibromofluoromethane	23.94		25.0000		95.8	66 - 147			
Surrogate: Toluene-d8	26.31		25.0000		105	77 - 138			

LCS Dup (B9K0656-BS1)

Prepared: 11/27/2019 Analyzed: 11/27/2019

1,1,1,2-Tetrachloroethane	22.7500	0.50	0.11	20.0000	114	71 - 133	1.15	20	
1,1,1-Trichloroethane	19.6500	0.50	0.21	20.0000	98.2	62 - 124	2.21	20	
1,1,2,2-Tetrachloroethane	21.6000	0.50	0.36	20.0000	108	50 - 131	4.79	20	
1,1,2-Trichloroethane	19.7200	0.50	0.25	20.0000	98.6	77 - 121	1.43	20	
1,1-Dichloroethane	18.6800	0.50	0.09	20.0000	93.4	52 - 130	1.08	20	
1,1-Dichloroethene	18.1900	0.50	0.13	20.0000	91.0	61 - 136	0.607	20	
1,1-Dichloropropene	22.4400	0.50	0.13	20.0000	112	80 - 128	3.17	20	
1,2,3-Trichloropropane	21.2600	0.50	0.39	20.0000	106	59 - 126	4.23	20	
1,2,3-Trichlorobenzene	22.3600	0.50	0.18	20.0000	112	69 - 138	6.27	20	
1,2,4-Trichlorobenzene	21.0100	0.50	0.16	20.0000	105	78 - 125	4.13	20	
1,2,4-Trimethylbenzene	20.7400	0.50	0.14	20.0000	104	70 - 126	0.193	20	
1,2-Dibromo-3-chloropropane	19.8600	0.50	0.41	20.0000	99.3	58 - 127	7.63	20	
1,2-Dibromoethane	20.8500	0.50	0.24	20.0000	104	76 - 120	4.46	20	
1,2-Dichlorobenzene	21.2200	0.50	0.20	20.0000	106	82 - 117	3.31	20	
1,2-Dichloroethane	19.4900	0.50	0.20	20.0000	97.4	66 - 126	1.66	20	
1,2-Dichloropropane	20.0500	0.50	0.15	20.0000	100	70 - 117	1.56	20	
1,3,5-Trimethylbenzene	22.9000	0.50	0.13	20.0000	114	71 - 125	0.653	20	
1,3-Dichlorobenzene	21.1100	0.50	0.16	20.0000	106	81 - 116	1.67	20	
1,3-Dichloropropane	21.3900	0.50	0.21	20.0000	107	69 - 124	4.10	20	
1,4-Dichlorobenzene	19.8800	0.50	0.17	20.0000	99.4	80 - 114	1.67	20	
2,2-Dichloropropane	21.1300	0.50	0.38	20.0000	106	58 - 132	3.08	20	
2-Chlorotoluene	22.0300	0.50	0.11	20.0000	110	71 - 119	0.820	20	
4-Chlorotoluene	22.3800	0.50	0.12	20.0000	112	72 - 122	1.08	20	
4-Isopropyltoluene	20.7100	0.50	0.11	20.0000	104	69 - 126	0.242	20	
Benzene	40.5900	0.50	0.13	40.0000	101	80 - 116	0.393	20	
Bromobenzene	21.3900	0.50	0.21	20.0000	107	77 - 118	2.08	20	
Bromodichloromethane	21.2700	0.50	0.14	20.0000	106	73 - 118	3.01	20	
Bromoform	19.9500	0.50	0.20	20.0000	99.8	65 - 133	4.35	20	
Bromomethane	28.2600	0.50	0.40	20.0000	141	7 - 205	9.60	20	
Carbon tetrachloride	21.8600	0.50	0.09	20.0000	109	63 - 133	4.20	20	
Chlorobenzene	20.0700	0.50	0.13	20.0000	100	86 - 113	0.199	20	
Chloroethane	22.6500	0.50	0.15	20.0000	113	66 - 141	0.442	20	
Chloroform	18.6500	0.50	0.11	20.0000	93.2	63 - 127	1.08	20	
Chloromethane	21.8400	0.50	0.12	20.0000	109	0 - 207	3.59	20	
cis-1,2-Dichloroethene	18.8300	0.50	0.14	20.0000	94.2	64 - 126	0.586	20	



Certificate of Analysis

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Reported : 12/03/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0656 - MSVOA_LL_W (continued)

LCS Dup (B9K0656-BSD1) - Continued

Prepared: 11/27/2019 Analyzed: 11/27/2019

cis-1,3-Dichloropropene	19.4900	0.50	0.13	20.0000	97.4	70 - 141	2.60	20
Dibromochloromethane	21.1000	0.50	0.16	20.0000	106	67 - 135	5.20	20
Dibromomethane	20.6800	0.50	0.19	20.0000	103	74 - 118	4.40	20
Dichlorodifluoromethane	21.7200	0.50	0.18	20.0000	109	14 - 181	2.52	20
Ethylbenzene	44.7000	0.50	0.13	40.0000	112	77 - 118	0.201	20
Hexachlorobutadiene	22.1000	0.50	0.15	20.0000	110	66 - 125	0.590	20
Isopropylbenzene	23.1900	0.50	0.10	20.0000	116	68 - 137	1.17	20
m,p-Xylene	44.9700	1.0	0.19	40.0000	112	78 - 126	0.334	20
Methylene chloride	19.1100	1.0	0.71	20.0000	95.6	51 - 149	1.90	20
n-Butylbenzene	20.5400	0.50	0.11	20.0000	103	63 - 127	0.831	20
n-Propylbenzene	23.1600	0.50	0.10	20.0000	116	69 - 124	0.173	20
Naphthalene	18.8200	0.50	0.41	20.0000	94.1	60 - 126	10.9	20
o-Xylene	47.8400	0.50	0.13	40.0000	120	79 - 126	0.209	20
sec-Butylbenzene	23.5400	0.50	0.09	20.0000	118	69 - 124	0.511	20
Styrene	20.4100	0.50	0.13	20.0000	102	80 - 127	0.927	20
tert-Butylbenzene	22.9800	0.50	0.09	20.0000	115	71 - 124	0.174	20
Tetrachloroethene	20.5500	0.50	0.10	20.0000	103	73 - 129	1.03	20
Toluene	41.0600	0.50	0.12	40.0000	103	78 - 121	0.825	20
trans-1,2-Dichloroethene	18.6200	0.50	0.09	20.0000	93.1	58 - 141	1.79	20
Trichloroethene	20.1400	0.50	0.10	20.0000	101	73 - 126	3.59	20
Trichlorofluoromethane	20.3000	0.50	0.23	20.0000	102	62 - 146	1.39	20
Vinyl chloride	20.3200	0.50	0.13	20.0000	102	61 - 137	4.84	20

Surrogate: 1,2-Dichloroethane-d4	22.88	25.0000	91.5	59 - 158
Surrogate: 4-Bromofluorobenzene	27.93	25.0000	112	71 - 127
Surrogate: Dibromofluoromethane	23.82	25.0000	95.3	66 - 147
Surrogate: Toluene-d8	25.50	25.0000	102	77 - 138



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

1,4-Dioxane by EPA 8270: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0679 - MSSEMI_W

Blank (B9K0679-BLK1)

Prepared: 11/27/2019 Analyzed: 11/27/2019

1,4-Dioxane	ND	2.0	0.84							
Surrogate: 1,2-Dichlorobenzene-d	84.79			100.000		84.8	34 - 188			
Surrogate: 2-Fluorobiphenyl	97.83			100.000		97.8	39 - 108			
Surrogate: 4-Terphenyl-d14	147.0			100.000		147	71 - 131			S15
Surrogate: Nitrobenzene-d5	105.1			100.000		105	32 - 106			

LCS (B9K0679-BS1)

Prepared: 11/27/2019 Analyzed: 11/27/2019

1,4-Dioxane	154.440	2.0	0.84	100.000		154	40 - 159			
Surrogate: 1,2-Dichlorobenzene-d	61.04			100.000		61.0	34 - 188			
Surrogate: 2-Fluorobiphenyl	75.82			100.000		75.8	39 - 108			
Surrogate: 4-Terphenyl-d14	63.82			100.000		63.8	71 - 131			S15
Surrogate: Nitrobenzene-d5	75.76			100.000		75.8	32 - 106			

Matrix Spike (B9K0679-MS1)

Source: 1904199-07

Prepared: 11/27/2019 Analyzed: 12/2/2019

1,4-Dioxane	572.900	4.0	1.7	100.000	357.740	215	40 - 159			M2
Surrogate: 1,2-Dichlorobenzene-d	43.24			100.000		43.2	34 - 188			
Surrogate: 2-Fluorobiphenyl	57.76			100.000		57.8	39 - 108			
Surrogate: 4-Terphenyl-d14	60.60			100.000		60.6	71 - 131			S15
Surrogate: Nitrobenzene-d5	54.18			100.000		54.2	32 - 106			

Matrix Spike Dup (B9K0679-MSD1)

Source: 1904199-07

Prepared: 11/27/2019 Analyzed: 12/2/2019

1,4-Dioxane	523.480	4.0	1.7	100.000	357.740	166	40 - 159	9.02	20	M2
Surrogate: 1,2-Dichlorobenzene-d	42.12			100.000		42.1	34 - 188			
Surrogate: 2-Fluorobiphenyl	57.36			100.000		57.4	39 - 108			
Surrogate: 4-Terphenyl-d14	58.14			100.000		58.1	71 - 131			S15
Surrogate: Nitrobenzene-d5	55.28			100.000		55.3	32 - 106			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
---------	------------------	---------------	---------------	----------------	------------------	-----------------	-----	--------------	-------

Batch B9K0638 - MSSEMI_W

Blank (B9K0638-BLK1)

Prepared: 11/25/2019 Analyzed: 11/25/2019

1,4-Dioxane	ND	0.20	0.05						
Surrogate: 1,2-Dichlorobenzene-d	0.7908			1.00000		79.1	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.8277			1.00000		82.8	20 - 131		
Surrogate: 4-Terphenyl-d14	0.8454			1.00000		84.5	24 - 135		
Surrogate: Nitrobenzene-d5	0.8421			1.00000		84.2	6 - 124		

LCS (B9K0638-BS1)

Prepared: 11/25/2019 Analyzed: 11/25/2019

1,4-Dioxane	1.18514	0.20	0.05	1.00000		119	64 - 129		
Surrogate: 1,2-Dichlorobenzene-d	0.6106			1.00000		61.1	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.6121			1.00000		61.2	20 - 131		
Surrogate: 4-Terphenyl-d14	0.6335			1.00000		63.4	24 - 135		
Surrogate: Nitrobenzene-d5	0.6631			1.00000		66.3	6 - 124		

LCS Dup (B9K0638-BSD1)

Prepared: 11/25/2019 Analyzed: 11/25/2019

1,4-Dioxane	1.24220	0.20	0.05	1.00000		124	64 - 129	4.70	20
Surrogate: 1,2-Dichlorobenzene-d	0.6128			1.00000		61.3	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.6024			1.00000		60.2	20 - 131		
Surrogate: 4-Terphenyl-d14	0.6187			1.00000		61.9	24 - 135		
Surrogate: Nitrobenzene-d5	0.6715			1.00000		67.1	6 - 124		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego, CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0659 - MSSEMI_W

Blank (B9K0659-BLK1)

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,4-Dioxane	ND	0.20	0.05						
Surrogate: 1,2-Dichlorobenzene-d	0.7905			1.00000		79.1	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.8320			1.00000		83.2	20 - 131		
Surrogate: 4-Terphenyl-d14	0.9024			1.00000		90.2	24 - 135		
Surrogate: Nitrobenzene-d5	0.8746			1.00000		87.5	6 - 124		

LCS (B9K0659-BS1)

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,4-Dioxane	1.10637	0.20	0.05	1.00000		111	64 - 129		
Surrogate: 1,2-Dichlorobenzene-d	0.7807			1.00000		78.1	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.7946			1.00000		79.5	20 - 131		
Surrogate: 4-Terphenyl-d14	0.8560			1.00000		85.6	24 - 135		
Surrogate: Nitrobenzene-d5	0.9176			1.00000		91.8	6 - 124		

LCS Dup (B9K0659-BSD1)

Prepared: 11/26/2019 Analyzed: 11/26/2019

1,4-Dioxane	1.12712	0.20	0.05	1.00000		113	64 - 129	1.86	20
Surrogate: 1,2-Dichlorobenzene-d	0.7828			1.00000		78.3	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.7923			1.00000		79.2	20 - 131		
Surrogate: 4-Terphenyl-d14	0.8728			1.00000		87.3	24 - 135		
Surrogate: Nitrobenzene-d5	0.9232			1.00000		92.3	6 - 124		



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/03/2019

Notes and Definitions

S15	Surrogate recovery outside laboratory acceptance limit. However, the surrogate is not associated with the target analyte.
R	RPD value outside acceptance criteria. Calculation is based on raw values.
M2	Matrix spike recovery outside of acceptance limit due to possible matrix interference. The analytical batch was validated by the laboratory control sample.
J	Analyte detected below the Practical Quantitation Limit but above or equal to the Method Detection Limit. Result is an estimated concentration.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.

Date: 11/20/19
Page 1 of 2

PROJECT: Raytheon Main

TASK NO.: 532.30

Project Manager Steve Netto

QA Manager Tyler Evans

Phone 858.455.6500

Fax 858.455.6533

Sampled By:				SAMPLE COLLECTION				MATRIX		PRESERVATION		CONTAINERS				ANALYSIS REQUESTED				Expected Concentration Range (ppb) for VOA's				SPECIAL HANDLING				Laboratory				
LAB ID	SAMPLE ID	Date	Time	Groundwater	Lab prepared water	Hydrochloric Acid (HCl)				Ice	40-ml VOA	1 L Amber				VOCs by EPA 8260B	1,4 Dioxane 8270 SIM	1,4-Dioxane 8270 MOD			0 - 10	10 - 100	100 - 1,000	> 1,000	24 hr TAT	48 hr TAT	Standard TAT	Level IV Data Validation Requested	MS/MSD Requested	REMARKS		
1904199-01	TB-11219A	11/20/19	0800	X	X				X	3						X					X											Report J Flags
-02	MW-43		0925	X	X				X	3						X					X											
	↓		0925	X					X			1					X				X											
-03	MW-42		1123	X	X				X	3						X					X											
	↓		1123	X					X			1					X				X											
-04	MW-39		1417	X	X				X	3						X					X											
	↓		1417	X					X			1					X				X											
-05	MW-36-2SV		1622	X	X				X	3						X					X											
	↓		1622	X					X			1					X				X											
-06	MW-36		1649	X	X				X	3						X					X											
	↓		1649	X					X			1					X				X											
Total number of containers per analysis:								18				5																Total No. of Containers: 22				
Relinquished By: / Company:				Date / Time				Received By: / Company				Date / Time																				
Amber / H+A				11/20/19 1715				[Signature]				11/20/19 1715																				
Relinquished By: / Company:				Date / Time				Received By: / Company				Date / Time																				
[Signature]				11/20/19 1820				FPO [Signature]				11/20/19 1820																				

- ☐ No. of containers correct
☐ Received in good condition
☐ Custody seals secure
☐ Conforms to COC document

Send Results to:

Steve Netto

9171 Towne Centre Drive

Suite 375

San Diego, CA 92122

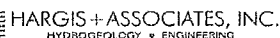
Ph: 858.455.5400

snetto@hargis.com

Instructions

Fill out form completely and sign only after verified for completeness
 Complete in ballpoint pen. Draw one line through error, initial and date correction
 Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✗
 Note applicable preservatives, special instructions, and deviations from typical environmental samples.
 Consult project QA documents for specific instructions.

2.1, 3.2 Temperature on receipt



Fax 858.455.6533

Date: 11/20/19
Page 2 of 2

Send Results to:
Steve Netto
9171 Towne Centre Drive
Suite 375
San Diego, CA 92122
Ph: 858.455.5400
snetto@hargis.com

Fill out form completely and sign only after verified for completeness
Complete in ballpoint pen. Draw one line through error, initial and date correction
Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✕
Note applicable preservatives, special instructions, and deviations from typical environmental samples.
Consult project QA documents for specific instructions.

Temperature on receipt



December 04, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1904222
Client Reference : Raytheon Fullerton, 532.30

Enclosed are the results for sample(s) received on November 21, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read 'Edgar Caballero', with a small 'Ar' written below it.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/04/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-112119	1904222-01	Lab prepared water	11/21/19 8:00	11/21/19 9:30
MW-32B_2SV	1904222-02	Groundwater	11/21/19 8:58	11/21/19 9:30
MW-32B	1904222-03	Groundwater	11/21/19 9:20	11/21/19 9:30

CASE NARRATIVE

Results were J-flagged. "J" is used to flag those results that are between the PQL (Practical Quantitation Limit) and the calculated MDL (Method Detection Limit). Results that are "J" flagged are estimated values since it becomes difficult to accurately quantitate the analyte near the MDL.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: TB-112119

Lab ID: 1904222-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 12:19	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0656	11/27/2019	11/27/19 12:19	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0656	11/27/2019	11/27/19 12:19	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0656	11/27/2019	11/27/19 12:19	
1,1-Dichloroethane	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 12:19	
1,1-Dichloroethene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:19	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:19	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0656	11/27/2019	11/27/19 12:19	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0656	11/27/2019	11/27/19 12:19	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0656	11/27/2019	11/27/19 12:19	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0656	11/27/2019	11/27/19 12:19	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0656	11/27/2019	11/27/19 12:19	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0656	11/27/2019	11/27/19 12:19	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0656	11/27/2019	11/27/19 12:19	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0656	11/27/2019	11/27/19 12:19	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0656	11/27/2019	11/27/19 12:19	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:19	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0656	11/27/2019	11/27/19 12:19	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0656	11/27/2019	11/27/19 12:19	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0656	11/27/2019	11/27/19 12:19	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0656	11/27/2019	11/27/19 12:19	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 12:19	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0656	11/27/2019	11/27/19 12:19	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 12:19	
Benzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:19	
Bromobenzene	ND	0.50	0.21	1	B9K0656	11/27/2019	11/27/19 12:19	
Bromodichloromethane	ND	0.50	0.14	1	B9K0656	11/27/2019	11/27/19 12:19	
Bromoform	ND	0.50	0.20	1	B9K0656	11/27/2019	11/27/19 12:19	
Bromomethane	ND	0.50	0.40	1	B9K0656	11/27/2019	11/27/19 12:19	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 12:19	
Chlorobenzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:19	
Chloroethane	ND	0.50	0.15	1	B9K0656	11/27/2019	11/27/19 12:19	
Chloroform	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 12:19	
Chloromethane	ND	0.50	0.12	1	B9K0656	11/27/2019	11/27/19 12:19	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9K0656	11/27/2019	11/27/19 12:19	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:19	
Dibromochloromethane	ND	0.50	0.16	1	B9K0656	11/27/2019	11/27/19 12:19	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: TB-112119

Lab ID: 1904222-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9K0656	11/27/2019	11/27/19 12:19	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0656	11/27/2019	11/27/19 12:19	
Ethylbenzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:19	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0656	11/27/2019	11/27/19 12:19	
Isopropylbenzene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 12:19	
m,p-Xylene	ND	1.0	0.19	1	B9K0656	11/27/2019	11/27/19 12:19	
Methylene chloride	ND	1.0	0.71	1	B9K0656	11/27/2019	11/27/19 12:19	
n-Butylbenzene	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 12:19	
n-Propylbenzene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 12:19	
Naphthalene	ND	0.50	0.41	1	B9K0656	11/27/2019	11/27/19 12:19	
o-Xylene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:19	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 12:19	
Styrene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:19	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 12:19	
Tetrachloroethene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 12:19	
Toluene	ND	0.50	0.12	1	B9K0656	11/27/2019	11/27/19 12:19	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 12:19	
Trichloroethene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 12:19	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0656	11/27/2019	11/27/19 12:19	
Vinyl chloride	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 12:19	
Surrogate: 1,2-Dichloroethane-d4	114 %		59 - 158		B9K0656	11/27/2019	11/27/19 12:19	
Surrogate: 4-Bromofluorobenzene	107 %		71 - 127		B9K0656	11/27/2019	11/27/19 12:19	
Surrogate: Dibromofluoromethane	108 %		66 - 147		B9K0656	11/27/2019	11/27/19 12:19	
Surrogate: Toluene-d8	106 %		77 - 138		B9K0656	11/27/2019	11/27/19 12:19	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: MW-32B_2SV

Lab ID: 1904222-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 14:59	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0656	11/27/2019	11/27/19 14:59	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0656	11/27/2019	11/27/19 14:59	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0656	11/27/2019	11/27/19 14:59	
1,1-Dichloroethane	1.9	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 14:59	
1,1-Dichloroethene	260	5.0	1.3	10	B9K0656	11/27/2019	11/27/19 14:13	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 14:59	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0656	11/27/2019	11/27/19 14:59	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0656	11/27/2019	11/27/19 14:59	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0656	11/27/2019	11/27/19 14:59	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0656	11/27/2019	11/27/19 14:59	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0656	11/27/2019	11/27/19 14:59	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0656	11/27/2019	11/27/19 14:59	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0656	11/27/2019	11/27/19 14:59	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0656	11/27/2019	11/27/19 14:59	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0656	11/27/2019	11/27/19 14:59	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 14:59	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0656	11/27/2019	11/27/19 14:59	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0656	11/27/2019	11/27/19 14:59	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0656	11/27/2019	11/27/19 14:59	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0656	11/27/2019	11/27/19 14:59	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 14:59	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0656	11/27/2019	11/27/19 14:59	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 14:59	
Benzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 14:59	
Bromobenzene	ND	0.50	0.21	1	B9K0656	11/27/2019	11/27/19 14:59	
Bromodichloromethane	ND	0.50	0.14	1	B9K0656	11/27/2019	11/27/19 14:59	
Bromoform	ND	0.50	0.20	1	B9K0656	11/27/2019	11/27/19 14:59	
Bromomethane	ND	0.50	0.40	1	B9K0656	11/27/2019	11/27/19 14:59	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 14:59	
Chlorobenzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 14:59	
Chloroethane	ND	0.50	0.15	1	B9K0656	11/27/2019	11/27/19 14:59	
Chloroform	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 14:59	
Chloromethane	ND	0.50	0.12	1	B9K0656	11/27/2019	11/27/19 14:59	
cis-1,2-Dichloroethene	4.8	0.50	0.14	1	B9K0656	11/27/2019	11/27/19 14:59	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 14:59	
Dibromochloromethane	ND	0.50	0.16	1	B9K0656	11/27/2019	11/27/19 14:59	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: MW-32B_2SV

Lab ID: 1904222-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9K0656	11/27/2019	11/27/19 14:59	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0656	11/27/2019	11/27/19 14:59	
Ethylbenzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 14:59	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0656	11/27/2019	11/27/19 14:59	
Isopropylbenzene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 14:59	
m,p-Xylene	ND	1.0	0.19	1	B9K0656	11/27/2019	11/27/19 14:59	
Methylene chloride	ND	1.0	0.71	1	B9K0656	11/27/2019	11/27/19 14:59	
n-Butylbenzene	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 14:59	
n-Propylbenzene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 14:59	
Naphthalene	ND	0.50	0.41	1	B9K0656	11/27/2019	11/27/19 14:59	
o-Xylene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 14:59	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 14:59	
Styrene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 14:59	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 14:59	
Tetrachloroethene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 14:59	
Toluene	ND	0.50	0.12	1	B9K0656	11/27/2019	11/27/19 14:59	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 14:59	
Trichloroethene	55	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 14:59	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0656	11/27/2019	11/27/19 14:59	
Vinyl chloride	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 14:59	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>112 %</i>		<i>59 - 158</i>		B9K0656	11/27/2019	<i>11/27/19 14:59</i>	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>119 %</i>		<i>59 - 158</i>		B9K0656	11/27/2019	<i>11/27/19 14:13</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>103 %</i>		<i>71 - 127</i>		B9K0656	11/27/2019	<i>11/27/19 14:59</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>107 %</i>		<i>71 - 127</i>		B9K0656	11/27/2019	<i>11/27/19 14:13</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>111 %</i>		<i>66 - 147</i>		B9K0656	11/27/2019	<i>11/27/19 14:13</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>105 %</i>		<i>66 - 147</i>		B9K0656	11/27/2019	<i>11/27/19 14:59</i>	
<i>Surrogate: Toluene-d8</i>	<i>105 %</i>		<i>77 - 138</i>		B9K0656	11/27/2019	<i>11/27/19 14:13</i>	
<i>Surrogate: Toluene-d8</i>	<i>94.6 %</i>		<i>77 - 138</i>		B9K0656	11/27/2019	<i>11/27/19 14:59</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: MW-32B_2SV

Lab ID: 1904222-02

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	7.9	0.20	0.05	1	B9K0661	11/26/2019	11/27/19 13:26	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>102 %</i>		<i>22 - 117</i>		B9K0661	11/26/2019	<i>11/27/19 13:26</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>118 %</i>		<i>20 - 131</i>		B9K0661	11/26/2019	<i>11/27/19 13:26</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>141 %</i>		<i>24 - 135</i>		B9K0661	11/26/2019	<i>11/27/19 13:26</i>	S10
<i>Surrogate: Nitrobenzene-d5</i>	<i>126 %</i>		<i>6 - 124</i>		B9K0661	11/26/2019	<i>11/27/19 13:26</i>	S10



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: MW-32B

Lab ID: 1904222-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 14:36	
1,1,1-Trichloroethane	ND	0.50	0.21	1	B9K0656	11/27/2019	11/27/19 14:36	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9K0656	11/27/2019	11/27/19 14:36	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9K0656	11/27/2019	11/27/19 14:36	
1,1-Dichloroethane	2.0	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 14:36	
1,1-Dichloroethene	290	5.0	1.3	10	B9K0656	11/27/2019	11/27/19 13:50	
1,1-Dichloropropene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 14:36	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9K0656	11/27/2019	11/27/19 14:36	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9K0656	11/27/2019	11/27/19 14:36	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9K0656	11/27/2019	11/27/19 14:36	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9K0656	11/27/2019	11/27/19 14:36	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9K0656	11/27/2019	11/27/19 14:36	
1,2-Dibromoethane	ND	0.50	0.24	1	B9K0656	11/27/2019	11/27/19 14:36	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9K0656	11/27/2019	11/27/19 14:36	
1,2-Dichloroethane	ND	0.50	0.20	1	B9K0656	11/27/2019	11/27/19 14:36	
1,2-Dichloropropane	ND	0.50	0.15	1	B9K0656	11/27/2019	11/27/19 14:36	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 14:36	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9K0656	11/27/2019	11/27/19 14:36	
1,3-Dichloropropane	ND	0.50	0.21	1	B9K0656	11/27/2019	11/27/19 14:36	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9K0656	11/27/2019	11/27/19 14:36	
2,2-Dichloropropane	ND	0.50	0.38	1	B9K0656	11/27/2019	11/27/19 14:36	
2-Chlorotoluene	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 14:36	
4-Chlorotoluene	ND	0.50	0.12	1	B9K0656	11/27/2019	11/27/19 14:36	
4-Isopropyltoluene	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 14:36	
Benzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 14:36	
Bromobenzene	ND	0.50	0.21	1	B9K0656	11/27/2019	11/27/19 14:36	
Bromodichloromethane	ND	0.50	0.14	1	B9K0656	11/27/2019	11/27/19 14:36	
Bromoform	ND	0.50	0.20	1	B9K0656	11/27/2019	11/27/19 14:36	
Bromomethane	ND	0.50	0.40	1	B9K0656	11/27/2019	11/27/19 14:36	
Carbon tetrachloride	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 14:36	
Chlorobenzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 14:36	
Chloroethane	ND	0.50	0.15	1	B9K0656	11/27/2019	11/27/19 14:36	
Chloroform	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 14:36	
Chloromethane	ND	0.50	0.12	1	B9K0656	11/27/2019	11/27/19 14:36	
cis-1,2-Dichloroethene	5.1	0.50	0.14	1	B9K0656	11/27/2019	11/27/19 14:36	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 14:36	
Dibromochloromethane	ND	0.50	0.16	1	B9K0656	11/27/2019	11/27/19 14:36	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: MW-32B

Lab ID: 1904222-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9K0656	11/27/2019	11/27/19 14:36	
Dichlorodifluoromethane	ND	0.50	0.18	1	B9K0656	11/27/2019	11/27/19 14:36	
Ethylbenzene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 14:36	
Hexachlorobutadiene	ND	0.50	0.15	1	B9K0656	11/27/2019	11/27/19 14:36	
Isopropylbenzene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 14:36	
m,p-Xylene	ND	1.0	0.19	1	B9K0656	11/27/2019	11/27/19 14:36	
Methylene chloride	ND	1.0	0.71	1	B9K0656	11/27/2019	11/27/19 14:36	
n-Butylbenzene	ND	0.50	0.11	1	B9K0656	11/27/2019	11/27/19 14:36	
n-Propylbenzene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 14:36	
Naphthalene	ND	0.50	0.41	1	B9K0656	11/27/2019	11/27/19 14:36	
o-Xylene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 14:36	
sec-Butylbenzene	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 14:36	
Styrene	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 14:36	
tert-Butylbenzene	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 14:36	
Tetrachloroethene	ND	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 14:36	
Toluene	ND	0.50	0.12	1	B9K0656	11/27/2019	11/27/19 14:36	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9K0656	11/27/2019	11/27/19 14:36	
Trichloroethene	59	0.50	0.10	1	B9K0656	11/27/2019	11/27/19 14:36	
Trichlorofluoromethane	ND	0.50	0.23	1	B9K0656	11/27/2019	11/27/19 14:36	
Vinyl chloride	ND	0.50	0.13	1	B9K0656	11/27/2019	11/27/19 14:36	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>111 %</i>		<i>59 - 158</i>		B9K0656	11/27/2019	<i>11/27/19 13:50</i>	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>112 %</i>		<i>59 - 158</i>		B9K0656	11/27/2019	<i>11/27/19 14:36</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>104 %</i>		<i>71 - 127</i>		B9K0656	11/27/2019	<i>11/27/19 13:50</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>103 %</i>		<i>71 - 127</i>		B9K0656	11/27/2019	<i>11/27/19 14:36</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>104 %</i>		<i>66 - 147</i>		B9K0656	11/27/2019	<i>11/27/19 14:36</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>106 %</i>		<i>66 - 147</i>		B9K0656	11/27/2019	<i>11/27/19 13:50</i>	
<i>Surrogate: Toluene-d8</i>	<i>94.9 %</i>		<i>77 - 138</i>		B9K0656	11/27/2019	<i>11/27/19 14:36</i>	
<i>Surrogate: Toluene-d8</i>	<i>103 %</i>		<i>77 - 138</i>		B9K0656	11/27/2019	<i>11/27/19 13:50</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: MW-32B

Lab ID: 1904222-03

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	8.0	0.20	0.05	1	B9K0661	11/26/2019	11/27/19 13:53	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>102 %</i>		<i>22 - 117</i>		B9K0661	11/26/2019	<i>11/27/19 13:53</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>114 %</i>		<i>20 - 131</i>		B9K0661	11/26/2019	<i>11/27/19 13:53</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>123 %</i>		<i>24 - 135</i>		B9K0661	11/26/2019	<i>11/27/19 13:53</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>126 %</i>		<i>6 - 124</i>		B9K0661	11/26/2019	<i>11/27/19 13:53</i>	S10



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/04/2019

QUALITY CONTROL SECTION

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD RPD	RPD Limit	Notes
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Batch B9K0656 - MSVOA_LL_W

Blank (B9K0656-BLK1)

Prepared: 11/27/2019 Analyzed: 11/27/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.21
1,1,1,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.40
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.18



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/04/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0656 - MSVOA_LL_W (continued)

Blank (B9K0656-BLK1) - Continued

Prepared: 11/27/2019 Analyzed: 11/27/2019

Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15
Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.23
Vinyl chloride	ND	0.50	0.13

Surrogate: 1,2-Dichloroethane-d4	25.95		25.0000	104	59 - 158
Surrogate: 4-Bromofluorobenzene	26.85		25.0000	107	71 - 127
Surrogate: Dibromofluoromethane	24.91		25.0000	99.6	66 - 147
Surrogate: Toluene-d8	25.93		25.0000	104	77 - 138

LCS (B9K0656-BS1)

Prepared: 11/27/2019 Analyzed: 11/27/2019

1,1,1,2-Tetrachloroethane	22.4900	0.50	0.11	20.0000	112	71 - 133
1,1,1-Trichloroethane	19.2200	0.50	0.21	20.0000	96.1	62 - 124
1,1,2,2-Tetrachloroethane	20.5900	0.50	0.36	20.0000	103	50 - 131
1,1,2-Trichloroethane	19.4400	0.50	0.25	20.0000	97.2	77 - 121
1,1-Dichloroethane	18.4800	0.50	0.09	20.0000	92.4	52 - 130
1,1-Dichloroethene	18.0800	0.50	0.13	20.0000	90.4	61 - 136
1,1-Dichloropropene	21.7400	0.50	0.13	20.0000	109	80 - 128
1,2,3-Trichloropropane	20.3800	0.50	0.39	20.0000	102	59 - 126
1,2,3-Trichlorobenzene	21.0000	0.50	0.18	20.0000	105	69 - 138
1,2,4-Trichlorobenzene	20.1600	0.50	0.16	20.0000	101	78 - 125
1,2,4-Trimethylbenzene	20.7000	0.50	0.14	20.0000	104	70 - 126
1,2-Dibromo-3-chloropropane	18.4000	0.50	0.41	20.0000	92.0	58 - 127
1,2-Dibromoethane	19.9400	0.50	0.24	20.0000	99.7	76 - 120
1,2-Dichlorobenzene	20.5300	0.50	0.20	20.0000	103	82 - 117
1,2-Dichloroethane	19.1700	0.50	0.20	20.0000	95.8	66 - 126
1,2-Dichloropropane	19.7400	0.50	0.15	20.0000	98.7	70 - 117
1,3,5-Trimethylbenzene	23.0500	0.50	0.13	20.0000	115	71 - 125



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/04/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0656 - MSVOA_LL_W (continued)

LCS (B9K0656-BS1) - Continued

Prepared: 11/27/2019 Analyzed: 11/27/2019

1,3-Dichlorobenzene	20.7600	0.50	0.16	20.0000		104	81 - 116		
1,3-Dichloropropane	20.5300	0.50	0.21	20.0000		103	69 - 124		
1,4-Dichlorobenzene	19.5500	0.50	0.17	20.0000		97.8	80 - 114		
2,2-Dichloropropane	20.4900	0.50	0.38	20.0000		102	58 - 132		
2-Chlorotoluene	21.8500	0.50	0.11	20.0000		109	71 - 119		
4-Chlorotoluene	22.1400	0.50	0.12	20.0000		111	72 - 122		
4-Isopropyltoluene	20.6600	0.50	0.11	20.0000		103	69 - 126		
Benzene	40.7500	0.50	0.13	40.0000		102	80 - 116		
Bromobenzene	20.9500	0.50	0.21	20.0000		105	77 - 118		
Bromodichloromethane	20.6400	0.50	0.14	20.0000		103	73 - 118		
Bromoform	19.1000	0.50	0.20	20.0000		95.5	65 - 133		
Bromomethane	31.1100	0.50	0.40	20.0000		156	7 - 205		
Carbon tetrachloride	20.9600	0.50	0.09	20.0000		105	63 - 133		
Chlorobenzene	20.1100	0.50	0.13	20.0000		101	86 - 113		
Chloroethane	22.5500	0.50	0.15	20.0000		113	66 - 141		
Chloroform	18.4500	0.50	0.11	20.0000		92.2	63 - 127		
Chloromethane	21.0700	0.50	0.12	20.0000		105	0 - 207		
cis-1,2-Dichloroethene	18.7200	0.50	0.14	20.0000		93.6	64 - 126		
cis-1,3-Dichloropropene	18.9900	0.50	0.13	20.0000		95.0	70 - 141		
Dibromochloromethane	20.0300	0.50	0.16	20.0000		100	67 - 135		
Dibromomethane	19.7900	0.50	0.19	20.0000		99.0	74 - 118		
Dichlorodifluoromethane	21.1800	0.50	0.18	20.0000		106	14 - 181		
Ethylbenzene	44.7900	0.50	0.13	40.0000		112	77 - 118		
Hexachlorobutadiene	21.9700	0.50	0.15	20.0000		110	66 - 125		
Isopropylbenzene	22.9200	0.50	0.10	20.0000		115	68 - 137		
m,p-Xylene	44.8200	1.0	0.19	40.0000		112	78 - 126		
Methylene chloride	18.7500	1.0	0.71	20.0000		93.8	51 - 149		
n-Butylbenzene	20.3700	0.50	0.11	20.0000		102	63 - 127		
n-Propylbenzene	23.1200	0.50	0.10	20.0000		116	69 - 124		
Naphthalene	16.8800	0.50	0.41	20.0000		84.4	60 - 126		
o-Xylene	47.7400	0.50	0.13	40.0000		119	79 - 126		
sec-Butylbenzene	23.4200	0.50	0.09	20.0000		117	69 - 124		
Styrene	20.6000	0.50	0.13	20.0000		103	80 - 127		
tert-Butylbenzene	23.0200	0.50	0.09	20.0000		115	71 - 124		
Tetrachloroethene	20.3400	0.50	0.10	20.0000		102	73 - 129		
Toluene	41.4000	0.50	0.12	40.0000		104	78 - 121		
trans-1,2-Dichloroethene	18.2900	0.50	0.09	20.0000		91.4	58 - 141		
Trichloroethene	19.4300	0.50	0.10	20.0000		97.2	73 - 126		
Trichlorofluoromethane	20.0200	0.50	0.23	20.0000		100	62 - 146		
Vinyl chloride	19.3600	0.50	0.13	20.0000		96.8	61 - 137		

Surrogate: 1,2-Dichloroethane-d4	23.06			25.0000		92.2	59 - 158		
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Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/04/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0656 - MSVOA_LL_W (continued)

LCS (B9K0656-BS1) - Continued

Prepared: 11/27/2019 Analyzed: 11/27/2019

Surrogate: 4-Bromofluorobenzene	28.29		25.0000		113	71 - 127			
Surrogate: Dibromofluoromethane	23.94		25.0000		95.8	66 - 147			
Surrogate: Toluene-d8	26.31		25.0000		105	77 - 138			

LCS Dup (B9K0656-BSD1)

Prepared: 11/27/2019 Analyzed: 11/27/2019

1,1,1,2-Tetrachloroethane	22.7500	0.50	0.11	20.0000	114	71 - 133	1.15	20	
1,1,1-Trichloroethane	19.6500	0.50	0.21	20.0000	98.2	62 - 124	2.21	20	
1,1,2,2-Tetrachloroethane	21.6000	0.50	0.36	20.0000	108	50 - 131	4.79	20	
1,1,2-Trichloroethane	19.7200	0.50	0.25	20.0000	98.6	77 - 121	1.43	20	
1,1-Dichloroethane	18.6800	0.50	0.09	20.0000	93.4	52 - 130	1.08	20	
1,1-Dichloroethene	18.1900	0.50	0.13	20.0000	91.0	61 - 136	0.607	20	
1,1-Dichloropropene	22.4400	0.50	0.13	20.0000	112	80 - 128	3.17	20	
1,2,3-Trichloropropane	21.2600	0.50	0.39	20.0000	106	59 - 126	4.23	20	
1,2,3-Trichlorobenzene	22.3600	0.50	0.18	20.0000	112	69 - 138	6.27	20	
1,2,4-Trichlorobenzene	21.0100	0.50	0.16	20.0000	105	78 - 125	4.13	20	
1,2,4-Trimethylbenzene	20.7400	0.50	0.14	20.0000	104	70 - 126	0.193	20	
1,2-Dibromo-3-chloropropane	19.8600	0.50	0.41	20.0000	99.3	58 - 127	7.63	20	
1,2-Dibromoethane	20.8500	0.50	0.24	20.0000	104	76 - 120	4.46	20	
1,2-Dichlorobenzene	21.2200	0.50	0.20	20.0000	106	82 - 117	3.31	20	
1,2-Dichloroethane	19.4900	0.50	0.20	20.0000	97.4	66 - 126	1.66	20	
1,2-Dichloropropane	20.0500	0.50	0.15	20.0000	100	70 - 117	1.56	20	
1,3,5-Trimethylbenzene	22.9000	0.50	0.13	20.0000	114	71 - 125	0.653	20	
1,3-Dichlorobenzene	21.1100	0.50	0.16	20.0000	106	81 - 116	1.67	20	
1,3-Dichloropropane	21.3900	0.50	0.21	20.0000	107	69 - 124	4.10	20	
1,4-Dichlorobenzene	19.8800	0.50	0.17	20.0000	99.4	80 - 114	1.67	20	
2,2-Dichloropropane	21.1300	0.50	0.38	20.0000	106	58 - 132	3.08	20	
2-Chlorotoluene	22.0300	0.50	0.11	20.0000	110	71 - 119	0.820	20	
4-Chlorotoluene	22.3800	0.50	0.12	20.0000	112	72 - 122	1.08	20	
4-Isopropyltoluene	20.7100	0.50	0.11	20.0000	104	69 - 126	0.242	20	
Benzene	40.5900	0.50	0.13	40.0000	101	80 - 116	0.393	20	
Bromobenzene	21.3900	0.50	0.21	20.0000	107	77 - 118	2.08	20	
Bromodichloromethane	21.2700	0.50	0.14	20.0000	106	73 - 118	3.01	20	
Bromoform	19.9500	0.50	0.20	20.0000	99.8	65 - 133	4.35	20	
Bromomethane	28.2600	0.50	0.40	20.0000	141	7 - 205	9.60	20	
Carbon tetrachloride	21.8600	0.50	0.09	20.0000	109	63 - 133	4.20	20	
Chlorobenzene	20.0700	0.50	0.13	20.0000	100	86 - 113	0.199	20	
Chloroethane	22.6500	0.50	0.15	20.0000	113	66 - 141	0.442	20	
Chloroform	18.6500	0.50	0.11	20.0000	93.2	63 - 127	1.08	20	
Chloromethane	21.8400	0.50	0.12	20.0000	109	0 - 207	3.59	20	
cis-1,2-Dichloroethene	18.8300	0.50	0.14	20.0000	94.2	64 - 126	0.586	20	
cis-1,3-Dichloropropene	19.4900	0.50	0.13	20.0000	97.4	70 - 141	2.60	20	
Dibromochloromethane	21.1000	0.50	0.16	20.0000	106	67 - 135	5.20	20	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/04/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0656 - MSVOA_LL_W (continued)

LCS Dup (B9K0656-BSD1) - Continued

Prepared: 11/27/2019 Analyzed: 11/27/2019

Dibromomethane	20.6800	0.50	0.19	20.0000		103	74 - 118	4.40	20	
Dichlorodifluoromethane	21.7200	0.50	0.18	20.0000		109	14 - 181	2.52	20	
Ethylbenzene	44.7000	0.50	0.13	40.0000		112	77 - 118	0.201	20	
Hexachlorobutadiene	22.1000	0.50	0.15	20.0000		110	66 - 125	0.590	20	
Isopropylbenzene	23.1900	0.50	0.10	20.0000		116	68 - 137	1.17	20	
m,p-Xylene	44.9700	1.0	0.19	40.0000		112	78 - 126	0.334	20	
Methylene chloride	19.1100	1.0	0.71	20.0000		95.6	51 - 149	1.90	20	
n-Butylbenzene	20.5400	0.50	0.11	20.0000		103	63 - 127	0.831	20	
n-Propylbenzene	23.1600	0.50	0.10	20.0000		116	69 - 124	0.173	20	
Naphthalene	18.8200	0.50	0.41	20.0000		94.1	60 - 126	10.9	20	
o-Xylene	47.8400	0.50	0.13	40.0000		120	79 - 126	0.209	20	
sec-Butylbenzene	23.5400	0.50	0.09	20.0000		118	69 - 124	0.511	20	
Styrene	20.4100	0.50	0.13	20.0000		102	80 - 127	0.927	20	
tert-Butylbenzene	22.9800	0.50	0.09	20.0000		115	71 - 124	0.174	20	
Tetrachloroethene	20.5500	0.50	0.10	20.0000		103	73 - 129	1.03	20	
Toluene	41.0600	0.50	0.12	40.0000		103	78 - 121	0.825	20	
trans-1,2-Dichloroethene	18.6200	0.50	0.09	20.0000		93.1	58 - 141	1.79	20	
Trichloroethene	20.1400	0.50	0.10	20.0000		101	73 - 126	3.59	20	
Trichlorofluoromethane	20.3000	0.50	0.23	20.0000		102	62 - 146	1.39	20	
Vinyl chloride	20.3200	0.50	0.13	20.0000		102	61 - 137	4.84	20	
Surrogate: 1,2-Dichloroethane-d4	22.88			25.0000		91.5	59 - 158			
Surrogate: 4-Bromofluorobenzene	27.93			25.0000		112	71 - 127			
Surrogate: Dibromofluoromethane	23.82			25.0000		95.3	66 - 147			
Surrogate: Toluene-d8	25.50			25.0000		102	77 - 138			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/04/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0661 - MSSEMI_W

Blank (B9K0661-BLK1)

Prepared: 11/26/2019 Analyzed: 11/27/2019

1,4-Dioxane	ND	0.20	0.05						
Surrogate: 1,2-Dichlorobenzene-d	0.7880			1.00000		78.8	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.8073			1.00000		80.7	20 - 131		
Surrogate: 4-Terphenyl-d14	0.9274			1.00000		92.7	24 - 135		
Surrogate: Nitrobenzene-d5	0.8436			1.00000		84.4	6 - 124		

LCS (B9K0661-BS1)

Prepared: 11/26/2019 Analyzed: 11/27/2019

1,4-Dioxane	1.25191	0.20	0.05	1.00000		125	64 - 129		
Surrogate: 1,2-Dichlorobenzene-d	0.5479			1.00000		54.8	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.5489			1.00000		54.9	20 - 131		
Surrogate: 4-Terphenyl-d14	0.5994			1.00000		59.9	24 - 135		
Surrogate: Nitrobenzene-d5	0.5721			1.00000		57.2	6 - 124		

LCS Dup (B9K0661-BSD1)

Prepared: 11/26/2019 Analyzed: 11/27/2019

1,4-Dioxane	1.27763	0.20	0.05	1.00000		128	64 - 129	2.03	20
Surrogate: 1,2-Dichlorobenzene-d	0.5527			1.00000		55.3	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.5517			1.00000		55.2	20 - 131		
Surrogate: 4-Terphenyl-d14	0.6011			1.00000		60.1	24 - 135		
Surrogate: Nitrobenzene-d5	0.5869			1.00000		58.7	6 - 124		



Certificate of Analysis

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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Fullerton, 532.30

Report To : Steve Netto

Reported : 12/04/2019

Notes and Definitions

S10	Surrogate recovery was outside of laboratory acceptance limit due to possible matrix interference.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.

Date: 11/21/19
Page 1 of 1

PROJECT: Raytheon Main

TASK NO.: 532.30

Project Manager Steve Netto

QA Manager Tyler Evans

Phone 858.455.6500

Fax 858.455.6533

Sampled By:		SAMPLE COLLECTION		MATRIX		PRESERVATION		CONTAINERS		ANALYSIS REQUESTED		Expected Concentration Range (ppb) for VOA's		SPECIAL HANDLING		REMARKS								
LAB ID	SAMPLE ID	Date	Time	Groundwater	Lab prepared water	Hydrochloric Acid (HCl)		Ice	40-ml VOA	1 L Amber	VOCs by EPA 8260B	1,4 Dioxane 8270 SIM	1,4-Dioxane 8270 MOD	0 - 10	10 - 100		100 - 1,000	>1,000	24 hr TAT	48 hr TAT	Standard TAT	Level IV Data Validation Requested	MS/MSD Requested	
190422-01	TB-112119	11/21/19	0800		X	X		X	2		X				X						X			
-02	MW-32B-25V		0858	X	X			X	3		X					X					X			
	↓		0858	X				X		1		X									X			
-03	MW-32B		0920	X	X			X	3		X				X						X			
	↓		0920	X				X		1		X									X			

Total number of containers per analysis: 8

z

Total No. of Containers: 16

Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
Am / H + A	11/21/19 1305	Steve Netto	11/21/19 1305
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
Steve Netto	11/21/19 1348	Tyler Evans	11/21/19 1348

- ☐ No. of containers correct
☐ Received in good condition
☐ Custody seals secure
☐ Conforms to COC document

Send Results to:
Steve Netto

9171 Towne Centre Drive
Suite 375
San Diego, CA 92122
Ph: 858.455.5400
snetto@hargis.com

Instructions

Fill out form completely and sign only after verified for completeness
 Complete in ballpoint pen. Draw one line through error, initial and date correction
 Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✗
 Note applicable preservatives, special instructions, and deviations from typical environmental samples.
 Consult project QA documents for specific instructions.

1.2 Temperature on receipt

ANALYTICAL REPORT

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Tel: (714)895-5494

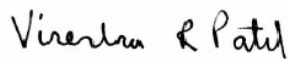
Laboratory Job ID: 570-13325-1

Client Project/Site: Raytheon Main / 532.30

For:

Hargis + Associates, Inc.
La Jolla Gateway
9171 Towne Centre Drive
Suite 375
San Diego, California 92122

Attn: Julie Kelly



Authorized for release by:
12/5/2019 10:05:38 AM

Virendra Patel, Project Manager I
(714)895-5494
virendrapatel@eurofinsus.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits
H	Sample was prepped or analyzed beyond the specified holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Job ID: 570-13325-1

Laboratory: Eurofins Calscience LLC

Narrative

Job Narrative 570-13325-1

Comments

No additional comments.

Receipt

The samples were received on 11/19/2019 5:38 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.9° C.

GC/MS VOA

Method 8260B: The preservative used in the sample containers provided is not compatible with one of the Method 8260 analytes requested. The following sample was received preserved with hydrochloric acid: (570-13237-A-3). The requested target analyte list includes 2-Chloroethyl vinyl ether, an acid-labile compound that degrades in an acidic medium.

Method 8260B: The matrix spike / matrix spike duplicate (MS/MSD) precision for analytical batch 570-36101 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 8260B: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 570-36575.

Method 8260B: The laboratory control sample (LCS) for analytical batch 570-36575 recovered outside control limits for the following analytes: Vinyl acetate. Unless there is a specific client QAPP requirement, the reported analyte list for batch quality control samples (LCS, LCSD, MS, and MSD) is in accordance with EPA Method 8260B. Refer to the QC Sample Results section of this report.

Method 8260B: Dilution analysis of the following samples were performed outside of the analytical holding time due to target analyte(s) over calibration range in the initial analysis: MW-08 (570-13325-2) and MW-31 (570-13325-3). Initial analysis was performed within required holding time.

Method 8260B: The laboratory control sample (LCS) for analytical batch 570-36575 recovered outside control limits for the following analytes: Trichlorofluoromethane. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Client Sample ID: TB-111919B

Lab Sample ID: 570-13325-1

No Detections.

Client Sample ID: MW-08

Lab Sample ID: 570-13325-2

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
1,1,2-Trichloro-1,2,2-trifluoroethane	1.2		0.50	ug/L	1		8260B	Total/NA
1,1-Dichloroethene	33		0.50	ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	3.6		0.50	ug/L	1		8260B	Total/NA
Trichloroethene - DL	76	H	2.0	ug/L	4		8260B	Total/NA
1,4-Dioxane	2.7		0.50	ug/L	1		8270C SIM ID	Total/NA

Client Sample ID: MW-31

Lab Sample ID: 570-13325-3

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
1,1,2-Trichloro-1,2,2-trifluoroethane	1.3		0.50	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	2.5		0.50	ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	0.75		0.50	ug/L	1		8260B	Total/NA
Tetrachloroethene	0.54		0.50	ug/L	1		8260B	Total/NA
Trichloroethene	11		0.50	ug/L	1		8260B	Total/NA
1,1-Dichloroethene - DL	230	H	5.0	ug/L	10		8260B	Total/NA
1,4-Dioxane	9.5		0.50	ug/L	1		8270C SIM ID	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Calscience LLC

Client Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: TB-111919B
Date Collected: 11/19/19 08:00
Date Received: 11/19/19 17:38

Lab Sample ID: 570-13325-1
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.50	ug/L			12/02/19 02:34	1
1,1,1-Trichloroethane	ND		0.50	ug/L			12/02/19 02:34	1
1,1,2,2-Tetrachloroethane	ND		0.50	ug/L			12/02/19 02:34	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50	ug/L			12/02/19 02:34	1
1,1,2-Trichloroethane	ND		0.50	ug/L			12/02/19 02:34	1
1,1-Dichloroethane	ND		0.50	ug/L			12/02/19 02:34	1
1,1-Dichloroethene	ND		0.50	ug/L			12/02/19 02:34	1
1,1-Dichloropropene	ND		0.50	ug/L			12/02/19 02:34	1
1,2,3-Trichlorobenzene	ND		0.50	ug/L			12/02/19 02:34	1
1,2,3-Trichloropropane	ND		1.0	ug/L			12/02/19 02:34	1
1,2,4-Trichlorobenzene	ND		0.50	ug/L			12/02/19 02:34	1
1,2,4-Trimethylbenzene	ND		0.50	ug/L			12/02/19 02:34	1
1,2-Dibromo-3-Chloropropane	ND		5.0	ug/L			12/02/19 02:34	1
1,2-Dibromoethane	ND		0.50	ug/L			12/02/19 02:34	1
1,2-Dichlorobenzene	ND		0.50	ug/L			12/02/19 02:34	1
1,2-Dichloroethane	ND		0.50	ug/L			12/02/19 02:34	1
1,2-Dichloropropane	ND		0.50	ug/L			12/02/19 02:34	1
1,3,5-Trimethylbenzene	ND		0.50	ug/L			12/02/19 02:34	1
1,3-Dichlorobenzene	ND		0.50	ug/L			12/02/19 02:34	1
1,3-Dichloropropane	ND		1.0	ug/L			12/02/19 02:34	1
1,4-Dichlorobenzene	ND		0.50	ug/L			12/02/19 02:34	1
2,2-Dichloropropane	ND		1.0	ug/L			12/02/19 02:34	1
2-Butanone	ND		5.0	ug/L			12/02/19 02:34	1
2-Chlorotoluene	ND		0.50	ug/L			12/02/19 02:34	1
2-Hexanone	ND		10	ug/L			12/02/19 02:34	1
4-Chlorotoluene	ND		0.50	ug/L			12/02/19 02:34	1
4-Methyl-2-pentanone	ND		5.0	ug/L			12/02/19 02:34	1
Acetone	ND		10	ug/L			12/02/19 02:34	1
Benzene	ND		0.50	ug/L			12/02/19 02:34	1
Bromobenzene	ND		0.50	ug/L			12/02/19 02:34	1
Bromochloromethane	ND		1.0	ug/L			12/02/19 02:34	1
Bromodichloromethane	ND		0.50	ug/L			12/02/19 02:34	1
Bromoform	ND		0.50	ug/L			12/02/19 02:34	1
Bromomethane	ND		2.0	ug/L			12/02/19 02:34	1
cis-1,2-Dichloroethene	ND		0.50	ug/L			12/02/19 02:34	1
cis-1,3-Dichloropropane	ND		0.50	ug/L			12/02/19 02:34	1
Carbon disulfide	ND		10	ug/L			12/02/19 02:34	1
Carbon tetrachloride	ND		0.50	ug/L			12/02/19 02:34	1
Chlorobenzene	ND		0.50	ug/L			12/02/19 02:34	1
Chloroethane	ND		0.50	ug/L			12/02/19 02:34	1
Chloroform	ND		0.50	ug/L			12/02/19 02:34	1
Chloromethane	ND		5.0	ug/L			12/02/19 02:34	1
Dibromochloromethane	ND		0.50	ug/L			12/02/19 02:34	1
Dibromomethane	ND		0.50	ug/L			12/02/19 02:34	1
Dichlorodifluoromethane	ND		1.0	ug/L			12/02/19 02:34	1
Ethylbenzene	ND		0.50	ug/L			12/02/19 02:34	1
Isopropylbenzene	ND		0.50	ug/L			12/02/19 02:34	1
Methylene Chloride	ND		1.0	ug/L			12/02/19 02:34	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50	ug/L			12/02/19 02:34	1

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Client Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: TB-111919B
Date Collected: 11/19/19 08:00
Date Received: 11/19/19 17:38

Lab Sample ID: 570-13325-1
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		1.0	ug/L			12/02/19 02:34	1
n-Butylbenzene	ND		0.50	ug/L			12/02/19 02:34	1
N-Propylbenzene	ND		0.50	ug/L			12/02/19 02:34	1
o-Xylene	ND		0.50	ug/L			12/02/19 02:34	1
m,p-Xylene	ND		1.0	ug/L			12/02/19 02:34	1
p-Isopropyltoluene	ND		0.50	ug/L			12/02/19 02:34	1
sec-Butylbenzene	ND		0.50	ug/L			12/02/19 02:34	1
Styrene	ND		0.50	ug/L			12/02/19 02:34	1
trans-1,2-Dichloroethene	ND		0.50	ug/L			12/02/19 02:34	1
trans-1,3-Dichloropropene	ND		0.50	ug/L			12/02/19 02:34	1
tert-Butylbenzene	ND		0.50	ug/L			12/02/19 02:34	1
Tetrachloroethene	ND		0.50	ug/L			12/02/19 02:34	1
Toluene	ND		0.50	ug/L			12/02/19 02:34	1
Trichloroethene	ND		0.50	ug/L			12/02/19 02:34	1
Trichlorofluoromethane	ND		0.50	ug/L			12/02/19 02:34	1
Vinyl acetate	ND		5.0	ug/L			12/02/19 02:34	1
Vinyl chloride	ND		0.50	ug/L			12/02/19 02:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		80 - 128		12/02/19 02:34	1
4-Bromofluorobenzene (Surr)	90		68 - 120		12/02/19 02:34	1
Dibromofluoromethane	95		80 - 127		12/02/19 02:34	1
Toluene-d8 (Surr)	98		80 - 120		12/02/19 02:34	1

Client Sample ID: MW-08
Date Collected: 11/19/19 11:45
Date Received: 11/19/19 17:38

Lab Sample ID: 570-13325-2
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.50	ug/L			12/02/19 03:02	1
1,1,1-Trichloroethane	ND		0.50	ug/L			12/02/19 03:02	1
1,1,2,2-Tetrachloroethane	ND		0.50	ug/L			12/02/19 03:02	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.2		0.50	ug/L			12/02/19 03:02	1
1,1,2-Trichloroethane	ND		0.50	ug/L			12/02/19 03:02	1
1,1-Dichloroethane	ND		0.50	ug/L			12/02/19 03:02	1
1,1-Dichloroethene	33		0.50	ug/L			12/02/19 03:02	1
1,1-Dichloropropene	ND		0.50	ug/L			12/02/19 03:02	1
1,2,3-Trichlorobenzene	ND		0.50	ug/L			12/02/19 03:02	1
1,2,3-Trichloropropane	ND		1.0	ug/L			12/02/19 03:02	1
1,2,4-Trichlorobenzene	ND		0.50	ug/L			12/02/19 03:02	1
1,2,4-Trimethylbenzene	ND		0.50	ug/L			12/02/19 03:02	1
1,2-Dibromo-3-Chloropropane	ND		5.0	ug/L			12/02/19 03:02	1
1,2-Dibromoethane	ND		0.50	ug/L			12/02/19 03:02	1
1,2-Dichlorobenzene	ND		0.50	ug/L			12/02/19 03:02	1
1,2-Dichloroethane	ND		0.50	ug/L			12/02/19 03:02	1
1,2-Dichloropropane	ND		0.50	ug/L			12/02/19 03:02	1
1,3,5-Trimethylbenzene	ND		0.50	ug/L			12/02/19 03:02	1
1,3-Dichlorobenzene	ND		0.50	ug/L			12/02/19 03:02	1
1,3-Dichloropropane	ND		1.0	ug/L			12/02/19 03:02	1
1,4-Dichlorobenzene	ND		0.50	ug/L			12/02/19 03:02	1

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Client Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: MW-08
Date Collected: 11/19/19 11:45
Date Received: 11/19/19 17:38

Lab Sample ID: 570-13325-2
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
2,2-Dichloropropane	ND		1.0	ug/L			12/02/19 03:02	1
2-Butanone	ND		5.0	ug/L			12/02/19 03:02	1
2-Chlorotoluene	ND		0.50	ug/L			12/02/19 03:02	1
2-Hexanone	ND		10	ug/L			12/02/19 03:02	1
4-Chlorotoluene	ND		0.50	ug/L			12/02/19 03:02	1
4-Methyl-2-pentanone	ND		5.0	ug/L			12/02/19 03:02	1
Acetone	ND		10	ug/L			12/02/19 03:02	1
Benzene	ND		0.50	ug/L			12/02/19 03:02	1
Bromobenzene	ND		0.50	ug/L			12/02/19 03:02	1
Bromochloromethane	ND		1.0	ug/L			12/02/19 03:02	1
Bromodichloromethane	ND		0.50	ug/L			12/02/19 03:02	1
Bromoform	ND		0.50	ug/L			12/02/19 03:02	1
Bromomethane	ND		2.0	ug/L			12/02/19 03:02	1
cis-1,2-Dichloroethene	3.6		0.50	ug/L			12/02/19 03:02	1
cis-1,3-Dichloropropene	ND		0.50	ug/L			12/02/19 03:02	1
Carbon disulfide	ND		10	ug/L			12/02/19 03:02	1
Carbon tetrachloride	ND		0.50	ug/L			12/02/19 03:02	1
Chlorobenzene	ND		0.50	ug/L			12/02/19 03:02	1
Chloroethane	ND		0.50	ug/L			12/02/19 03:02	1
Chloroform	ND		0.50	ug/L			12/02/19 03:02	1
Chloromethane	ND		5.0	ug/L			12/02/19 03:02	1
Dibromochloromethane	ND		0.50	ug/L			12/02/19 03:02	1
Dibromomethane	ND		0.50	ug/L			12/02/19 03:02	1
Dichlorodifluoromethane	ND		1.0	ug/L			12/02/19 03:02	1
Ethylbenzene	ND		0.50	ug/L			12/02/19 03:02	1
Isopropylbenzene	ND		0.50	ug/L			12/02/19 03:02	1
Methylene Chloride	ND		1.0	ug/L			12/02/19 03:02	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50	ug/L			12/02/19 03:02	1
Naphthalene	ND		1.0	ug/L			12/02/19 03:02	1
n-Butylbenzene	ND		0.50	ug/L			12/02/19 03:02	1
N-Propylbenzene	ND		0.50	ug/L			12/02/19 03:02	1
o-Xylene	ND		0.50	ug/L			12/02/19 03:02	1
m,p-Xylene	ND		1.0	ug/L			12/02/19 03:02	1
p-Isopropyltoluene	ND		0.50	ug/L			12/02/19 03:02	1
sec-Butylbenzene	ND		0.50	ug/L			12/02/19 03:02	1
Styrene	ND		0.50	ug/L			12/02/19 03:02	1
trans-1,2-Dichloroethene	ND		0.50	ug/L			12/02/19 03:02	1
trans-1,3-Dichloropropene	ND		0.50	ug/L			12/02/19 03:02	1
tert-Butylbenzene	ND		0.50	ug/L			12/02/19 03:02	1
Tetrachloroethene	ND		0.50	ug/L			12/02/19 03:02	1
Toluene	ND		0.50	ug/L			12/02/19 03:02	1
Trichlorofluoromethane	ND		0.50	ug/L			12/02/19 03:02	1
Vinyl acetate	ND		5.0	ug/L			12/02/19 03:02	1
Vinyl chloride	ND		0.50	ug/L			12/02/19 03:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		80 - 128		12/02/19 03:02	1
4-Bromofluorobenzene (Surr)	93		68 - 120		12/02/19 03:02	1
Dibromofluoromethane	88		80 - 127		12/02/19 03:02	1
Toluene-d8 (Surr)	100		80 - 120		12/02/19 03:02	1

Eurofins Calscience LLC

Client Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: MW-31
Date Collected: 11/19/19 15:48
Date Received: 11/19/19 17:38

Lab Sample ID: 570-13325-3
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.50	ug/L			12/02/19 03:31	1
1,1,1-Trichloroethane	ND		0.50	ug/L			12/02/19 03:31	1
1,1,2,2-Tetrachloroethane	ND		0.50	ug/L			12/02/19 03:31	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.3		0.50	ug/L			12/02/19 03:31	1
1,1,2-Trichloroethane	ND		0.50	ug/L			12/02/19 03:31	1
1,1-Dichloroethane	2.5		0.50	ug/L			12/02/19 03:31	1
1,1-Dichloropropene	ND		0.50	ug/L			12/02/19 03:31	1
1,2,3-Trichlorobenzene	ND		0.50	ug/L			12/02/19 03:31	1
1,2,3-Trichloropropane	ND		1.0	ug/L			12/02/19 03:31	1
1,2,4-Trichlorobenzene	ND		0.50	ug/L			12/02/19 03:31	1
1,2,4-Trimethylbenzene	ND		0.50	ug/L			12/02/19 03:31	1
1,2-Dibromo-3-Chloropropane	ND		5.0	ug/L			12/02/19 03:31	1
1,2-Dibromoethane	ND		0.50	ug/L			12/02/19 03:31	1
1,2-Dichlorobenzene	ND		0.50	ug/L			12/02/19 03:31	1
1,2-Dichloroethane	ND		0.50	ug/L			12/02/19 03:31	1
1,2-Dichloropropane	ND		0.50	ug/L			12/02/19 03:31	1
1,3,5-Trimethylbenzene	ND		0.50	ug/L			12/02/19 03:31	1
1,3-Dichlorobenzene	ND		0.50	ug/L			12/02/19 03:31	1
1,3-Dichloropropane	ND		1.0	ug/L			12/02/19 03:31	1
1,4-Dichlorobenzene	ND		0.50	ug/L			12/02/19 03:31	1
2,2-Dichloropropane	ND		1.0	ug/L			12/02/19 03:31	1
2-Butanone	ND		5.0	ug/L			12/02/19 03:31	1
2-Chlorotoluene	ND		0.50	ug/L			12/02/19 03:31	1
2-Hexanone	ND		10	ug/L			12/02/19 03:31	1
4-Chlorotoluene	ND		0.50	ug/L			12/02/19 03:31	1
4-Methyl-2-pentanone	ND		5.0	ug/L			12/02/19 03:31	1
Acetone	ND		10	ug/L			12/02/19 03:31	1
Benzene	ND		0.50	ug/L			12/02/19 03:31	1
Bromobenzene	ND		0.50	ug/L			12/02/19 03:31	1
Bromochloromethane	ND		1.0	ug/L			12/02/19 03:31	1
Bromodichloromethane	ND		0.50	ug/L			12/02/19 03:31	1
Bromoform	ND		0.50	ug/L			12/02/19 03:31	1
Bromomethane	ND		2.0	ug/L			12/02/19 03:31	1
cis-1,2-Dichloroethene	0.75		0.50	ug/L			12/02/19 03:31	1
cis-1,3-Dichloropropene	ND		0.50	ug/L			12/02/19 03:31	1
Carbon disulfide	ND		10	ug/L			12/02/19 03:31	1
Carbon tetrachloride	ND		0.50	ug/L			12/02/19 03:31	1
Chlorobenzene	ND		0.50	ug/L			12/02/19 03:31	1
Chloroethane	ND		0.50	ug/L			12/02/19 03:31	1
Chloroform	ND		0.50	ug/L			12/02/19 03:31	1
Chloromethane	ND		5.0	ug/L			12/02/19 03:31	1
Dibromochloromethane	ND		0.50	ug/L			12/02/19 03:31	1
Dibromomethane	ND		0.50	ug/L			12/02/19 03:31	1
Dichlorodifluoromethane	ND		1.0	ug/L			12/02/19 03:31	1
Ethylbenzene	ND		0.50	ug/L			12/02/19 03:31	1
Isopropylbenzene	ND		0.50	ug/L			12/02/19 03:31	1
Methylene Chloride	ND		1.0	ug/L			12/02/19 03:31	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50	ug/L			12/02/19 03:31	1
Naphthalene	ND		1.0	ug/L			12/02/19 03:31	1

Eurofins Calscience LLC

Client Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: MW-31

Date Collected: 11/19/19 15:48

Date Received: 11/19/19 17:38

Lab Sample ID: 570-13325-3

Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
n-Butylbenzene	ND		0.50	ug/L			12/02/19 03:31	1
N-Propylbenzene	ND		0.50	ug/L			12/02/19 03:31	1
o-Xylene	ND		0.50	ug/L			12/02/19 03:31	1
m,p-Xylene	ND		1.0	ug/L			12/02/19 03:31	1
p-Isopropyltoluene	ND		0.50	ug/L			12/02/19 03:31	1
sec-Butylbenzene	ND		0.50	ug/L			12/02/19 03:31	1
Styrene	ND		0.50	ug/L			12/02/19 03:31	1
trans-1,2-Dichloroethene	ND		0.50	ug/L			12/02/19 03:31	1
trans-1,3-Dichloropropene	ND		0.50	ug/L			12/02/19 03:31	1
tert-Butylbenzene	ND		0.50	ug/L			12/02/19 03:31	1
Tetrachloroethene	0.54		0.50	ug/L			12/02/19 03:31	1
Toluene	ND		0.50	ug/L			12/02/19 03:31	1
Trichloroethene	11		0.50	ug/L			12/02/19 03:31	1
Trichlorofluoromethane	ND		0.50	ug/L			12/02/19 03:31	1
Vinyl acetate	ND		5.0	ug/L			12/02/19 03:31	1
Vinyl chloride	ND		0.50	ug/L			12/02/19 03:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		80 - 128		12/02/19 03:31	1
4-Bromofluorobenzene (Surr)	92		68 - 120		12/02/19 03:31	1
Dibromofluoromethane	91		80 - 127		12/02/19 03:31	1
Toluene-d8 (Surr)	98		80 - 120		12/02/19 03:31	1

Client Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Method: 8260B - Volatile Organic Compounds (GC/MS) - DL

Client Sample ID: MW-08
Date Collected: 11/19/19 11:45
Date Received: 11/19/19 17:38

Lab Sample ID: 570-13325-2
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	76	H	2.0	ug/L	-		12/04/19 06:50	4
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		80 - 128				12/04/19 06:50	4
4-Bromofluorobenzene (Surr)	100		68 - 120				12/04/19 06:50	4
Dibromofluoromethane	101		80 - 127				12/04/19 06:50	4
Toluene-d8 (Surr)	106		80 - 120				12/04/19 06:50	4

Client Sample ID: MW-31
Date Collected: 11/19/19 15:48
Date Received: 11/19/19 17:38

Lab Sample ID: 570-13325-3
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	230	H	5.0	ug/L	-		12/04/19 07:18	10
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		80 - 128				12/04/19 07:18	10
4-Bromofluorobenzene (Surr)	97		68 - 120				12/04/19 07:18	10
Dibromofluoromethane	102		80 - 127				12/04/19 07:18	10
Toluene-d8 (Surr)	102		80 - 120				12/04/19 07:18	10

Client Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Method: 8270C SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Client Sample ID: MW-08
Date Collected: 11/19/19 11:45
Date Received: 11/19/19 17:38

Lab Sample ID: 570-13325-2
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.7		0.50	ug/L	—	11/21/19 14:42	11/22/19 18:13	1
Isotope Dilution	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	47		15 - 150			11/21/19 14:42	11/22/19 18:13	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	98		46 - 128			11/21/19 14:42	11/22/19 18:13	1

Client Sample ID: MW-31
Date Collected: 11/19/19 15:48
Date Received: 11/19/19 17:38

Lab Sample ID: 570-13325-3
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	9.5		0.50	ug/L	—	11/21/19 14:42	11/22/19 18:28	1
Isotope Dilution	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	57		15 - 150			11/21/19 14:42	11/22/19 18:28	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	94		46 - 128			11/21/19 14:42	11/22/19 18:28	1

Surrogate Summary

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (80-128)	BFB (68-120)	DBFM (80-127)	TOL (80-120)
570-13237-A-3 MS	Matrix Spike	102	102	97	99
570-13237-A-3 MSD	Matrix Spike Duplicate	102	98	97	99
570-13325-1	TB-111919B	101	90	95	98
570-13325-2	MW-08	103	93	88	100
570-13325-2 - DL	MW-08	109	100	101	106
570-13325-3	MW-31	101	92	91	98
570-13325-3 - DL	MW-31	110	97	102	102
LCS 570-36101/1012	Lab Control Sample	97	103	101	97
LCS 570-36575/4	Lab Control Sample	102	105	98	101
LCSD 570-36101/13	Lab Control Sample Dup	96	100	99	99
LCSD 570-36575/26	Lab Control Sample Dup	103	103	99	100
MB 570-36101/16	Method Blank	99	84	95	100
MB 570-36575/7	Method Blank	110	99	102	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane

TOL = Toluene-d8 (Surr)

Method: 8270C SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	NBZ (46-128)
570-13325-2	MW-08	98
570-13325-3	MW-31	94
570-13425-B-3-A MSD	Matrix Spike Duplicate	88
570-13425-C-3-A MS	Matrix Spike	95
LCS 570-34445/2-A	Lab Control Sample	99
LCSD 570-34445/3-A	Lab Control Sample Dup	97
MB 570-34445/1-A	Method Blank	100

Surrogate Legend

NBZ = Nitrobenzene-d5

Isotope Dilution Summary

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Method: 8270C SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DXE (15-150)
570-13325-2	MW-08	47
570-13325-3	MW-31	57
570-13425-B-3-A MSD	Matrix Spike Duplicate	47
570-13425-C-3-A MS	Matrix Spike	50
LCS 570-34445/2-A	Lab Control Sample	51
LCSD 570-34445/3-A	Lab Control Sample Dup	48
MB 570-34445/1-A	Method Blank	45

Surrogate Legend

DXE = 1,4-Dioxane-d8

QC Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 570-36101/16

Matrix: Water

Analysis Batch: 36101

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.50	ug/L			12/01/19 23:42	1
1,1,1-Trichloroethane	ND		0.50	ug/L			12/01/19 23:42	1
1,1,2,2-Tetrachloroethane	ND		0.50	ug/L			12/01/19 23:42	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50	ug/L			12/01/19 23:42	1
1,1,2-Trichloroethane	ND		0.50	ug/L			12/01/19 23:42	1
1,1-Dichloroethane	ND		0.50	ug/L			12/01/19 23:42	1
1,1-Dichloroethene	ND		0.50	ug/L			12/01/19 23:42	1
1,1-Dichloropropene	ND		0.50	ug/L			12/01/19 23:42	1
1,2,3-Trichlorobenzene	ND		0.50	ug/L			12/01/19 23:42	1
1,2,3-Trichloropropane	ND		1.0	ug/L			12/01/19 23:42	1
1,2,4-Trichlorobenzene	ND		0.50	ug/L			12/01/19 23:42	1
1,2,4-Trimethylbenzene	ND		0.50	ug/L			12/01/19 23:42	1
1,2-Dibromo-3-Chloropropane	ND		5.0	ug/L			12/01/19 23:42	1
1,2-Dibromoethane	ND		0.50	ug/L			12/01/19 23:42	1
1,2-Dichlorobenzene	ND		0.50	ug/L			12/01/19 23:42	1
1,2-Dichloroethane	ND		0.50	ug/L			12/01/19 23:42	1
1,2-Dichloropropane	ND		0.50	ug/L			12/01/19 23:42	1
1,3,5-Trimethylbenzene	ND		0.50	ug/L			12/01/19 23:42	1
1,3-Dichlorobenzene	ND		0.50	ug/L			12/01/19 23:42	1
1,3-Dichloropropane	ND		1.0	ug/L			12/01/19 23:42	1
1,4-Dichlorobenzene	ND		0.50	ug/L			12/01/19 23:42	1
2,2-Dichloropropane	ND		1.0	ug/L			12/01/19 23:42	1
2-Butanone	ND		5.0	ug/L			12/01/19 23:42	1
2-Chlorotoluene	ND		0.50	ug/L			12/01/19 23:42	1
2-Hexanone	ND		10	ug/L			12/01/19 23:42	1
4-Chlorotoluene	ND		0.50	ug/L			12/01/19 23:42	1
4-Methyl-2-pentanone	ND		5.0	ug/L			12/01/19 23:42	1
Acetone	ND		10	ug/L			12/01/19 23:42	1
Benzene	ND		0.50	ug/L			12/01/19 23:42	1
Bromobenzene	ND		0.50	ug/L			12/01/19 23:42	1
Bromochloromethane	ND		1.0	ug/L			12/01/19 23:42	1
Bromodichloromethane	ND		0.50	ug/L			12/01/19 23:42	1
Bromoform	ND		0.50	ug/L			12/01/19 23:42	1
Bromomethane	ND		2.0	ug/L			12/01/19 23:42	1
cis-1,2-Dichloroethene	ND		0.50	ug/L			12/01/19 23:42	1
cis-1,3-Dichloropropene	ND		0.50	ug/L			12/01/19 23:42	1
Carbon disulfide	ND		10	ug/L			12/01/19 23:42	1
Carbon tetrachloride	ND		0.50	ug/L			12/01/19 23:42	1
Chlorobenzene	ND		0.50	ug/L			12/01/19 23:42	1
Chloroethane	ND		0.50	ug/L			12/01/19 23:42	1
Chloroform	ND		0.50	ug/L			12/01/19 23:42	1
Chloromethane	ND		5.0	ug/L			12/01/19 23:42	1
Dibromochloromethane	ND		0.50	ug/L			12/01/19 23:42	1
Dibromomethane	ND		0.50	ug/L			12/01/19 23:42	1
Dichlorodifluoromethane	ND		1.0	ug/L			12/01/19 23:42	1
Ethylbenzene	ND		0.50	ug/L			12/01/19 23:42	1
Isopropylbenzene	ND		0.50	ug/L			12/01/19 23:42	1
Methylene Chloride	ND		1.0	ug/L			12/01/19 23:42	1

Eurofins Calscience LLC

QC Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 570-36101/16

Matrix: Water

Analysis Batch: 36101

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl-t-Butyl Ether (MTBE)	ND		0.50	ug/L			12/01/19 23:42	1
Naphthalene	ND		1.0	ug/L			12/01/19 23:42	1
n-Butylbenzene	ND		0.50	ug/L			12/01/19 23:42	1
N-Propylbenzene	ND		0.50	ug/L			12/01/19 23:42	1
o-Xylene	ND		0.50	ug/L			12/01/19 23:42	1
m,p-Xylene	ND		1.0	ug/L			12/01/19 23:42	1
p-Isopropyltoluene	ND		0.50	ug/L			12/01/19 23:42	1
sec-Butylbenzene	ND		0.50	ug/L			12/01/19 23:42	1
Styrene	ND		0.50	ug/L			12/01/19 23:42	1
trans-1,2-Dichloroethene	ND		0.50	ug/L			12/01/19 23:42	1
trans-1,3-Dichloropropene	ND		0.50	ug/L			12/01/19 23:42	1
tert-Butylbenzene	ND		0.50	ug/L			12/01/19 23:42	1
Tetrachloroethene	ND		0.50	ug/L			12/01/19 23:42	1
Toluene	ND		0.50	ug/L			12/01/19 23:42	1
Trichloroethene	ND		0.50	ug/L			12/01/19 23:42	1
Trichlorofluoromethane	ND		0.50	ug/L			12/01/19 23:42	1
Vinyl acetate	ND		5.0	ug/L			12/01/19 23:42	1
Vinyl chloride	ND		0.50	ug/L			12/01/19 23:42	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		80 - 128		12/01/19 23:42	1
4-Bromofluorobenzene (Surr)	84		68 - 120		12/01/19 23:42	1
Dibromofluoromethane	95		80 - 127		12/01/19 23:42	1
Toluene-d8 (Surr)	100		80 - 120		12/01/19 23:42	1

Lab Sample ID: LCS 570-36101/1012

Matrix: Water

Analysis Batch: 36101

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	10.0	11.13		ug/L		111	77 - 120
1,2-Dibromoethane	10.0	10.51		ug/L		105	80 - 120
1,2-Dichlorobenzene	10.0	9.943		ug/L		99	80 - 120
1,2-Dichloroethane	10.0	9.836		ug/L		98	80 - 122
Benzene	10.0	10.32		ug/L		103	80 - 120
Carbon tetrachloride	10.0	10.39		ug/L		104	80 - 129
Chlorobenzene	10.0	10.46		ug/L		105	80 - 120
Ethylbenzene	10.0	11.11		ug/L		111	80 - 120
Methyl-t-Butyl Ether (MTBE)	10.0	10.76		ug/L		108	75 - 123
o-Xylene	10.0	10.96		ug/L		110	80 - 120
m,p-Xylene	20.0	21.84		ug/L		109	80 - 120
Toluene	10.0	10.11		ug/L		101	80 - 120
Trichloroethene	10.0	10.22		ug/L		102	80 - 120
Vinyl chloride	10.0	10.80		ug/L		108	63 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		80 - 128
4-Bromofluorobenzene (Surr)	103		68 - 120

Eurofins Calscience LLC

QC Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 570-36101/1012

Matrix: Water

Analysis Batch: 36101

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
Dibromofluoromethane	101		80 - 127
Toluene-d8 (Surr)	97		80 - 120

Lab Sample ID: LCSD 570-36101/13

Matrix: Water

Analysis Batch: 36101

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	10.0	10.31		ug/L		103	77 - 120	8	26
1,2-Dibromoethane	10.0	10.05		ug/L		101	80 - 120	4	32
1,2-Dichlorobenzene	10.0	10.29		ug/L		103	80 - 120	3	30
1,2-Dichloroethane	10.0	9.871		ug/L		99	80 - 122	0	23
Benzene	10.0	9.901		ug/L		99	80 - 120	4	22
Carbon tetrachloride	10.0	9.766		ug/L		98	80 - 129	6	36
Chlorobenzene	10.0	9.839		ug/L		98	80 - 120	6	29
Ethylbenzene	10.0	10.18		ug/L		102	80 - 120	9	25
Methyl-t-Butyl Ether (MTBE)	10.0	10.63		ug/L		106	75 - 123	1	27
o-Xylene	10.0	10.31		ug/L		103	80 - 120	6	30
m,p-Xylene	20.0	19.98		ug/L		100	80 - 120	9	30
Toluene	10.0	9.708		ug/L		97	80 - 120	4	28
Trichloroethene	10.0	9.963		ug/L		100	80 - 120	3	25
Vinyl chloride	10.0	9.910		ug/L		99	63 - 135	9	30

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	96		80 - 128
4-Bromofluorobenzene (Surr)	100		68 - 120
Dibromofluoromethane	99		80 - 127
Toluene-d8 (Surr)	99		80 - 120

Lab Sample ID: 570-13237-A-3 MS

Matrix: Water

Analysis Batch: 36101

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	ND		10.0	9.638		ug/L		96	66 - 126
1,2-Dibromoethane	ND		10.0	9.828		ug/L		98	75 - 126
1,2-Dichlorobenzene	ND		10.0	10.00		ug/L		100	75 - 125
1,2-Dichloroethane	ND		10.0	10.28		ug/L		103	75 - 127
Benzene	ND		10.0	10.02		ug/L		100	75 - 125
Carbon tetrachloride	ND		10.0	9.588		ug/L		96	69 - 135
Chlorobenzene	ND		10.0	9.993		ug/L		100	75 - 125
Ethylbenzene	ND	F2	10.0	10.23		ug/L		102	75 - 125
Methyl-t-Butyl Ether (MTBE)	ND		10.0	9.922		ug/L		99	71 - 131
o-Xylene	ND		10.0	10.34		ug/L		103	75 - 127
m,p-Xylene	ND		20.0	20.28		ug/L		101	75 - 125
Toluene	ND		10.0	9.921		ug/L		99	75 - 125
Trichloroethene	ND		10.0	10.08		ug/L		101	75 - 125
Vinyl chloride	ND		10.0	10.04		ug/L		100	52 - 142

Eurofins Calscience LLC

QC Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 570-13237-A-3 MS

Matrix: Water

Analysis Batch: 36101

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	102		80 - 128
4-Bromofluorobenzene (Surr)	102		68 - 120
Dibromofluoromethane	97		80 - 127
Toluene-d8 (Surr)	99		80 - 120

Lab Sample ID: 570-13237-A-3 MSD

Matrix: Water

Analysis Batch: 36101

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	ND		10.0	8.605		ug/L		86	66 - 126	11	20
1,2-Dibromoethane	ND		10.0	8.556		ug/L		86	75 - 126	14	20
1,2-Dichlorobenzene	ND		10.0	9.085		ug/L		91	75 - 125	10	20
1,2-Dichloroethane	ND		10.0	9.528		ug/L		95	75 - 127	8	20
Benzene	ND		10.0	8.977		ug/L		90	75 - 125	11	20
Carbon tetrachloride	ND		10.0	8.310		ug/L		83	69 - 135	14	20
Chlorobenzene	ND		10.0	8.576		ug/L		86	75 - 125	15	20
Ethylbenzene	ND	F2	10.0	8.232	F2	ug/L		82	75 - 125	22	20
Methyl-t-Butyl Ether (MTBE)	ND		10.0	9.272		ug/L		93	71 - 131	7	20
o-Xylene	ND		10.0	8.979		ug/L		90	75 - 127	14	20
m,p-Xylene	ND		20.0	17.28		ug/L		86	75 - 125	16	20
Toluene	ND		10.0	8.671		ug/L		87	75 - 125	13	20
Trichloroethene	ND		10.0	8.897		ug/L		89	75 - 125	13	20
Vinyl chloride	ND		10.0	9.885		ug/L		99	52 - 142	2	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	102		80 - 128
4-Bromofluorobenzene (Surr)	98		68 - 120
Dibromofluoromethane	97		80 - 127
Toluene-d8 (Surr)	99		80 - 120

Lab Sample ID: MB 570-36575/7

Matrix: Water

Analysis Batch: 36575

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.50	ug/L			12/03/19 23:52	1
1,1,1-Trichloroethane	ND		0.50	ug/L			12/03/19 23:52	1
1,1,2,2-Tetrachloroethane	ND		0.50	ug/L			12/03/19 23:52	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50	ug/L			12/03/19 23:52	1
1,1,2-Trichloroethane	ND		0.50	ug/L			12/03/19 23:52	1
1,1-Dichloroethane	ND		0.50	ug/L			12/03/19 23:52	1
1,1-Dichloroethene	ND		0.50	ug/L			12/03/19 23:52	1
1,1-Dichloropropene	ND		0.50	ug/L			12/03/19 23:52	1
1,2,3-Trichlorobenzene	ND		0.50	ug/L			12/03/19 23:52	1
1,2,3-Trichloropropane	ND		1.0	ug/L			12/03/19 23:52	1
1,2,4-Trichlorobenzene	ND		0.50	ug/L			12/03/19 23:52	1
1,2,4-Trimethylbenzene	ND		0.50	ug/L			12/03/19 23:52	1

Eurofins Calscience LLC

QC Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 570-36575/7

Matrix: Water

Analysis Batch: 36575

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromo-3-Chloropropane	ND		5.0	ug/L			12/03/19 23:52	1
1,2-Dibromoethane	ND		0.50	ug/L			12/03/19 23:52	1
1,2-Dichlorobenzene	ND		0.50	ug/L			12/03/19 23:52	1
1,2-Dichloroethane	ND		0.50	ug/L			12/03/19 23:52	1
1,2-Dichloropropane	ND		0.50	ug/L			12/03/19 23:52	1
1,3,5-Trimethylbenzene	ND		0.50	ug/L			12/03/19 23:52	1
1,3-Dichlorobenzene	ND		0.50	ug/L			12/03/19 23:52	1
1,3-Dichloropropane	ND		1.0	ug/L			12/03/19 23:52	1
1,4-Dichlorobenzene	ND		0.50	ug/L			12/03/19 23:52	1
2,2-Dichloropropane	ND		1.0	ug/L			12/03/19 23:52	1
2-Butanone	ND		5.0	ug/L			12/03/19 23:52	1
2-Chlorotoluene	ND		0.50	ug/L			12/03/19 23:52	1
2-Hexanone	ND		10	ug/L			12/03/19 23:52	1
4-Chlorotoluene	ND		0.50	ug/L			12/03/19 23:52	1
4-Methyl-2-pentanone	ND		5.0	ug/L			12/03/19 23:52	1
Acetone	ND		10	ug/L			12/03/19 23:52	1
Benzene	ND		0.50	ug/L			12/03/19 23:52	1
Bromobenzene	ND		0.50	ug/L			12/03/19 23:52	1
Bromochloromethane	ND		1.0	ug/L			12/03/19 23:52	1
Bromodichloromethane	ND		0.50	ug/L			12/03/19 23:52	1
Bromoform	ND		0.50	ug/L			12/03/19 23:52	1
Bromomethane	ND		2.0	ug/L			12/03/19 23:52	1
cis-1,2-Dichloroethene	ND		0.50	ug/L			12/03/19 23:52	1
cis-1,3-Dichloropropene	ND		0.50	ug/L			12/03/19 23:52	1
Carbon disulfide	ND		10	ug/L			12/03/19 23:52	1
Carbon tetrachloride	ND		0.50	ug/L			12/03/19 23:52	1
Chlorobenzene	ND		0.50	ug/L			12/03/19 23:52	1
Chloroethane	ND		0.50	ug/L			12/03/19 23:52	1
Chloroform	ND		0.50	ug/L			12/03/19 23:52	1
Chloromethane	ND		5.0	ug/L			12/03/19 23:52	1
Dibromochloromethane	ND		0.50	ug/L			12/03/19 23:52	1
Dibromomethane	ND		0.50	ug/L			12/03/19 23:52	1
Dichlorodifluoromethane	ND		1.0	ug/L			12/03/19 23:52	1
Ethylbenzene	ND		0.50	ug/L			12/03/19 23:52	1
Isopropylbenzene	ND		0.50	ug/L			12/03/19 23:52	1
Methylene Chloride	ND		1.0	ug/L			12/03/19 23:52	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50	ug/L			12/03/19 23:52	1
Naphthalene	ND		1.0	ug/L			12/03/19 23:52	1
n-Butylbenzene	ND		0.50	ug/L			12/03/19 23:52	1
N-Propylbenzene	ND		0.50	ug/L			12/03/19 23:52	1
o-Xylene	ND		0.50	ug/L			12/03/19 23:52	1
m,p-Xylene	ND		1.0	ug/L			12/03/19 23:52	1
p-Isopropyltoluene	ND		0.50	ug/L			12/03/19 23:52	1
sec-Butylbenzene	ND		0.50	ug/L			12/03/19 23:52	1
Styrene	ND		0.50	ug/L			12/03/19 23:52	1
trans-1,2-Dichloroethene	ND		0.50	ug/L			12/03/19 23:52	1
trans-1,3-Dichloropropene	ND		0.50	ug/L			12/03/19 23:52	1
tert-Butylbenzene	ND		0.50	ug/L			12/03/19 23:52	1
Tetrachloroethene	ND		0.50	ug/L			12/03/19 23:52	1

Eurofins Calscience LLC

QC Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 570-36575/7

Matrix: Water

Analysis Batch: 36575

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	ND		0.50	ug/L			12/03/19 23:52	1
Trichloroethene	ND		0.50	ug/L			12/03/19 23:52	1
Trichlorofluoromethane	ND		0.50	ug/L			12/03/19 23:52	1
Vinyl acetate	ND		5.0	ug/L			12/03/19 23:52	1
Vinyl chloride	ND		0.50	ug/L			12/03/19 23:52	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		80 - 128		12/03/19 23:52	1
4-Bromofluorobenzene (Surr)	99		68 - 120		12/03/19 23:52	1
Dibromofluoromethane	102		80 - 127		12/03/19 23:52	1
Toluene-d8 (Surr)	101		80 - 120		12/03/19 23:52	1

Lab Sample ID: LCS 570-36575/4

Matrix: Water

Analysis Batch: 36575

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	10.0	10.69		ug/L		107	77 - 120
1,2-Dibromoethane	10.0	9.718		ug/L		97	80 - 120
1,2-Dichlorobenzene	10.0	9.672		ug/L		97	80 - 120
1,2-Dichloroethane	10.0	10.16		ug/L		102	80 - 122
Benzene	10.0	9.170		ug/L		92	80 - 120
Carbon tetrachloride	10.0	9.035		ug/L		90	80 - 129
Chlorobenzene	10.0	9.644		ug/L		96	80 - 120
Ethylbenzene	10.0	9.870		ug/L		99	80 - 120
Methyl-t-Butyl Ether (MTBE)	10.0	8.567		ug/L		86	75 - 123
o-Xylene	10.0	10.30		ug/L		103	80 - 120
m,p-Xylene	20.0	20.17		ug/L		101	80 - 120
Toluene	10.0	9.488		ug/L		95	80 - 120
Trichloroethene	10.0	9.790		ug/L		98	80 - 120
Vinyl chloride	10.0	10.39		ug/L		104	63 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	102		80 - 128
4-Bromofluorobenzene (Surr)	105		68 - 120
Dibromofluoromethane	98		80 - 127
Toluene-d8 (Surr)	101		80 - 120

Lab Sample ID: LCSD 570-36575/26

Matrix: Water

Analysis Batch: 36575

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	103		80 - 128
4-Bromofluorobenzene (Surr)	103		68 - 120
Dibromofluoromethane	99		80 - 127
Toluene-d8 (Surr)	100		80 - 120

Eurofins Calscience LLC

QC Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Method: 8270C SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Lab Sample ID: MB 570-34445/1-A

Matrix: Water

Analysis Batch: 34714

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 34445

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.50	ug/L		11/21/19 14:42	11/22/19 15:08	1
Isotope Dilution	%Recovery	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	45		15 - 150			11/21/19 14:42	11/22/19 15:08	1
Surrogate	%Recovery	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	100		46 - 128			11/21/19 14:42	11/22/19 15:08	1

Lab Sample ID: LCS 570-34445/2-A

Matrix: Water

Analysis Batch: 34714

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 34445

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits	
1,4-Dioxane	20.0	20.59		ug/L		103	57 - 136	
Isotope Dilution	%Recovery	LCS Qualifier	Limits					
1,4-Dioxane-d8	51		15 - 150					
Surrogate	%Recovery	LCS Qualifier	Limits					
Nitrobenzene-d5	99		46 - 128					

Lab Sample ID: LCSD 570-34445/3-A

Matrix: Water

Analysis Batch: 34714

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 34445

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,4-Dioxane	20.0	21.40		ug/L		107	57 - 136	4	20
Isotope Dilution	%Recovery	LCSD Qualifier	Limits						
1,4-Dioxane-d8	48		15 - 150						
Surrogate	%Recovery	LCSD Qualifier	Limits						
Nitrobenzene-d5	97		46 - 128						

Lab Sample ID: 570-13425-B-3-A MSD

Matrix: Water

Analysis Batch: 34714

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 34445

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,4-Dioxane	ND		20.0	21.55		ug/L		108	45 - 139	4	17
Isotope Dilution	%Recovery	MSD Qualifier	Limits								
1,4-Dioxane-d8	47		15 - 150								
Surrogate	%Recovery	MSD Qualifier	Limits								
Nitrobenzene-d5	88		46 - 128								

Eurofins Calscience LLC

QC Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Method: 8270C SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution) (Continued)

Lab Sample ID: 570-13425-C-3-A MS

Matrix: Water

Analysis Batch: 34714

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 34445

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	ND		20.0	20.66		ug/L		103	45 - 139
	MS	MS							
Isotope Dilution	%Recovery	Qualifier	Limits						
1,4-Dioxane-d8	50		15 - 150						
	MS	MS							
Surrogate	%Recovery	Qualifier	Limits						
Nitrobenzene-d5	95		46 - 128						

QC Association Summary

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

GC/MS VOA

Analysis Batch: 36101

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-13325-1	TB-111919B	Total/NA	Water	8260B	
570-13325-2	MW-08	Total/NA	Water	8260B	
570-13325-3	MW-31	Total/NA	Water	8260B	
MB 570-36101/16	Method Blank	Total/NA	Water	8260B	
LCS 570-36101/1012	Lab Control Sample	Total/NA	Water	8260B	
LCSD 570-36101/13	Lab Control Sample Dup	Total/NA	Water	8260B	
570-13237-A-3 MS	Matrix Spike	Total/NA	Water	8260B	
570-13237-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 36575

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-13325-2 - DL	MW-08	Total/NA	Water	8260B	
570-13325-3 - DL	MW-31	Total/NA	Water	8260B	
MB 570-36575/7	Method Blank	Total/NA	Water	8260B	
LCS 570-36575/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 570-36575/26	Lab Control Sample Dup	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 34445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-13325-2	MW-08	Total/NA	Water	3510C	
570-13325-3	MW-31	Total/NA	Water	3510C	
MB 570-34445/1-A	Method Blank	Total/NA	Water	3510C	
LCS 570-34445/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 570-34445/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	
570-13425-B-3-A MSD	Matrix Spike Duplicate	Total/NA	Water	3510C	
570-13425-C-3-A MS	Matrix Spike	Total/NA	Water	3510C	

Analysis Batch: 34714

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-13325-2	MW-08	Total/NA	Water	8270C SIM ID	34445
570-13325-3	MW-31	Total/NA	Water	8270C SIM ID	34445
MB 570-34445/1-A	Method Blank	Total/NA	Water	8270C SIM ID	34445
LCS 570-34445/2-A	Lab Control Sample	Total/NA	Water	8270C SIM ID	34445
LCSD 570-34445/3-A	Lab Control Sample Dup	Total/NA	Water	8270C SIM ID	34445
570-13425-B-3-A MSD	Matrix Spike Duplicate	Total/NA	Water	8270C SIM ID	34445
570-13425-C-3-A MS	Matrix Spike	Total/NA	Water	8270C SIM ID	34445

Lab Chronicle

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Client Sample ID: TB-111919B

Lab Sample ID: 570-13325-1

Date Collected: 11/19/19 08:00

Matrix: Water

Date Received: 11/19/19 17:38

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	20 mL	20 mL	36101	12/02/19 02:34	UX77	ECL 2
Instrument ID: GCMSUU										

Client Sample ID: MW-08

Lab Sample ID: 570-13325-2

Date Collected: 11/19/19 11:45

Matrix: Water

Date Received: 11/19/19 17:38

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B	DL	4	20 mL	20 mL	36575	12/04/19 06:50	UJHB	ECL 2
Instrument ID: GCMSL										
Total/NA	Analysis	8260B		1	20 mL	20 mL	36101	12/02/19 03:02	UX77	ECL 2
Instrument ID: GCMSUU										
Total/NA	Prep	3510C			100 mL	10 mL	34445	11/21/19 14:42	USUL	ECL 1
Total/NA	Analysis	8270C SIM ID		1			34714	11/22/19 18:13	XF3X	ECL 1
Instrument ID: GCMSDDD										

Client Sample ID: MW-31

Lab Sample ID: 570-13325-3

Date Collected: 11/19/19 15:48

Matrix: Water

Date Received: 11/19/19 17:38

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B	DL	10	20 mL	20 mL	36575	12/04/19 07:18	UJHB	ECL 2
Instrument ID: GCMSL										
Total/NA	Analysis	8260B		1	20 mL	20 mL	36101	12/02/19 03:31	UX77	ECL 2
Instrument ID: GCMSUU										
Total/NA	Prep	3510C			100 mL	10 mL	34445	11/21/19 14:42	USUL	ECL 1
Total/NA	Analysis	8270C SIM ID		1			34714	11/22/19 18:28	XF3X	ECL 1
Instrument ID: GCMSDDD										

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

Accreditation/Certification Summary

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Laboratory: Eurofins Calscience LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arizona	State	AZ0781	03-13-20
California	State	2944	09-29-20
Hawaii	State	<cert No.>	07-02-20
Nevada	State	CA00111	07-31-20
Oregon	NELAP	CA300001	01-29-20

Method Summary

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	ECL 2
8270C SIM ID	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	SW846	ECL 1
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	ECL 1
5030C	Purge and Trap	SW846	ECL 2

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

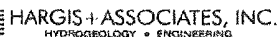
ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

Sample Summary

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Main / 532.30

Job ID: 570-13325-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
570-13325-1	TB-111919B	Water	11/19/19 08:00	11/19/19 17:38	
570-13325-2	MW-08	Water	11/19/19 11:45	11/19/19 17:38	
570-13325-3	MW-31	Water	11/19/19 15:48	11/19/19 17:38	



PROJECT: Raytheon Main

TASK NO.: 532.30

Project Manager Steve Netto

QA Manager Tyler Evans

Phone 858.455.6500

Fax 858.455.6533



570-13325 Chain of Custody

Loc: 570

13325

Date: 11/1/19
Page 1 of 1

Page 1 of 1[illegible]

Total number of containers per analysis:

Relinquished By: / Company:

Date / Time	Location	Activity	Remarks
10/10/2023	...	...	...
10/11/2023	...	...	...
10/12/2023	...	...	...
10/13/2023	...	...	...
10/14/2023	...	...	...
10/15/2023	...	...	...
10/16/2023	...	...	...
10/17/2023	...	...	...
10/18/2023	...	...	...
10/19/2023	...	...	...
10/20/2023	...	...	...
10/21/2023	...	...	...
10/22/2023	...	...	...
10/23/2023	...	...	...
10/24/2023	...	...	...
10/25/2023	...	...	...
10/26/2023	...	...	...
10/27/2023	...	...	...
10/28/2023	...	...	...
10/29/2023	...	...	...
10/30/2023	...	...	...
10/31/2023	...	...	...

Received By: / Company

Date / Time

$$A_{\text{base}} / H^+ + A$$

4/19/14/1761

Danku a

14/19 17

Relinquished By: / Company:

Date / Time	
-------------	--

Received By: / Company

Date / Time

Dannigle GC

11/9/19

	Machete	εα
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1919 17:

Total No. of Containers: 1)	
-----------------------------	--

Instructions

1. Fill out form completely and sign only after verified for completeness
2. Complete in ballpoint pen. Draw one line through error, initial and date correction
3. Indicate the number of sample containers in analytical request space; indicate choice with ✓ or x
4. Note applicable preservatives, special instructions, and deviations from typical environmental samples.
5. Consult project QA documents for specific instructions.

Temperature on receipt

- | | |
|--------------------------|----------------------------|
| ☐ | No. of containers correct |
| ☐ | Received in good condition |
| ☐ | Custody seals secure |
| ☐ | Conforms to COC document |

Send Results to:

Steve Netto

9171 Towne Centre Drive
Suite 375

San Diego, CA 92122

Ph: 858.455.5400

snetto@hargis.com

12/5/2019

2.4/2.9 scb

Login Sample Receipt Checklist

Client: Hargis + Associates, Inc.

Job Number: 570-13325-1

Login Number: 13325

List Source: Eurofins Calscience

List Number: 1

Creator: Castro, Joy

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

GROUNDWATER EXTRACTION AND TREATMENT SYSTEM ANALYTICAL RESULTS



September 24, 2019

Steve Netto
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9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1903282

Client Reference : Raytheon Main GETS Monthly Sample, 532.15

Enclosed are the results for sample(s) received on September 05, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read 'EC', is written over a light blue horizontal line.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-090519	1903282-01	Lab prepared water	9/05/19 8:00	9/05/19 15:09
CEFF	1903282-02	Groundwater	9/05/19 7:40	9/05/19 15:09
CBT	1903282-03	Groundwater	9/05/19 7:50	9/05/19 15:09
POX	1903282-04	Groundwater	9/05/19 8:00	9/05/19 15:09
PF	1903282-05	Groundwater	9/05/19 8:10	9/05/19 15:09
INF	1903282-06	Groundwater	9/05/19 8:20	9/05/19 15:09
EW-02	1903282-07	Groundwater	9/05/19 9:20	9/05/19 15:09
MW-29	1903282-08	Groundwater	9/05/19 9:55	9/05/19 15:09

CASE NARRATIVE

The samples for Bromate by IC-MS/MS analysis were subcontracted to Element with ELAP Cert.# 2652.

Sample Receiving/General Comments:

The following analytes lists were taken from sample containers: Alkalinity - Hydroxide, Bicarbonate, Carbonate, and Total.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: TB-090519

Lab ID: 1903282-01

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
1,1,1-Trichloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
1,1,2-Trichloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
1,1-Dichloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
1,1-Dichloroethene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
1,1-Dichloropropene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
1,2,3-Trichloropropane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
1,2,3-Trichlorobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
1,2,4-Trichlorobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
1,2,4-Trimethylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
1,2-Dibromoethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
1,2-Dichlorobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
1,2-Dichloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
1,2-Dichloropropane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
1,3,5-Trimethylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
1,3-Dichlorobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
1,3-Dichloropropane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
1,4-Dichlorobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
2,2-Dichloropropane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
2-Chlorotoluene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
4-Chlorotoluene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
4-Isopropyltoluene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Benzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Bromobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Bromodichloromethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Bromoform	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Bromomethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Carbon tetrachloride	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Chlorobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Chloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Chloroform	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Chloromethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
cis-1,2-Dichloroethene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
cis-1,3-Dichloropropene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Dibromochloromethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: TB-090519

Lab ID: 1903282-01

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Dichlorodifluoromethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Ethylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Hexachlorobutadiene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Isopropylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
m,p-Xylene	ND	1.0	1	B9I0252	09/09/2019	09/09/19 20:04	
Methylene chloride	ND	1.0	1	B9I0252	09/09/2019	09/09/19 20:04	
n-Butylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
n-Propylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Naphthalene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
o-Xylene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
sec-Butylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Styrene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
tert-Butylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Tetrachloroethene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Toluene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
trans-1,2-Dichloroethene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Trichloroethene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Trichlorofluoromethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Vinyl chloride	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:04	
Surrogate: 1,2-Dichloroethane-d4	130 %	59 - 158		B9I0252	09/09/2019	09/09/19 20:04	
Surrogate: 4-Bromofluorobenzene	123 %	71 - 127		B9I0252	09/09/2019	09/09/19 20:04	
Surrogate: Dibromofluoromethane	116 %	66 - 147		B9I0252	09/09/2019	09/09/19 20:04	
Surrogate: Toluene-d8	138 %	77 - 138		B9I0252	09/09/2019	09/09/19 20:04	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: CEFF

Lab ID: 1903282-02

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
1,1,1-Trichloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
1,1,2-Trichloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
1,1-Dichloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
1,1-Dichloroethene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
1,1-Dichloropropene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
1,2,3-Trichloropropane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
1,2,3-Trichlorobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
1,2,4-Trichlorobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
1,2,4-Trimethylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
1,2-Dibromoethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
1,2-Dichlorobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
1,2-Dichloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
1,2-Dichloropropane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
1,3,5-Trimethylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
1,3-Dichlorobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
1,3-Dichloropropane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
1,4-Dichlorobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
2,2-Dichloropropane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
2-Chlorotoluene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
4-Chlorotoluene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
4-Isopropyltoluene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Benzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Bromobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Bromodichloromethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Bromoform	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Bromomethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Carbon tetrachloride	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Chlorobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Chloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Chloroform	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Chloromethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
cis-1,2-Dichloroethene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
cis-1,3-Dichloropropene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Dibromochloromethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: CEFF

Lab ID: 1903282-02

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Dichlorodifluoromethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Ethylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Hexachlorobutadiene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Isopropylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
m,p-Xylene	ND	1.0	1	B9I0252	09/09/2019	09/09/19 20:28	
Methylene chloride	ND	1.0	1	B9I0252	09/09/2019	09/09/19 20:28	
n-Butylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
n-Propylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Naphthalene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
o-Xylene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
sec-Butylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Styrene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
tert-Butylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Tetrachloroethene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Toluene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
trans-1,2-Dichloroethene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Trichloroethene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Trichlorofluoromethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Vinyl chloride	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:28	
Surrogate: 1,2-Dichloroethane-d4	126 %	59 - 158		B9I0252	09/09/2019	09/09/19 20:28	
Surrogate: 4-Bromofluorobenzene	116 %	71 - 127		B9I0252	09/09/2019	09/09/19 20:28	
Surrogate: Dibromofluoromethane	126 %	66 - 147		B9I0252	09/09/2019	09/09/19 20:28	
Surrogate: Toluene-d8	133 %	77 - 138		B9I0252	09/09/2019	09/09/19 20:28	



Certificate of Analysis

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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: CEFF

Lab ID: 1903282-02

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9I0371	09/11/2019	09/12/19 10:59	
Surrogate: 1,2-Dichlorobenzene-d4	76.7 %	22 - 117		B9I0371	09/11/2019	09/12/19 10:59	
Surrogate: 2-Fluorobiphenyl	73.0 %	20 - 131		B9I0371	09/11/2019	09/12/19 10:59	
Surrogate: 4-Terphenyl-d14	91.4 %	24 - 135		B9I0371	09/11/2019	09/12/19 10:59	
Surrogate: Nitrobenzene-d5	93.4 %	6 - 124		B9I0371	09/11/2019	09/12/19 10:59	



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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: CBT

Lab ID: 1903282-03

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
1,1,1-Trichloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
1,1,2-Trichloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
1,1-Dichloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
1,1-Dichloroethene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
1,1-Dichloropropene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
1,2,3-Trichloropropane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
1,2,3-Trichlorobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
1,2,4-Trichlorobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
1,2,4-Trimethylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
1,2-Dibromoethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
1,2-Dichlorobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
1,2-Dichloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
1,2-Dichloropropane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
1,3,5-Trimethylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
1,3-Dichlorobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
1,3-Dichloropropane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
1,4-Dichlorobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
2,2-Dichloropropane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
2-Chlorotoluene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
4-Chlorotoluene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
4-Isopropyltoluene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Benzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Bromobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Bromodichloromethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Bromoform	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Bromomethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Carbon tetrachloride	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Chlorobenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Chloroethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Chloroform	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Chloromethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
cis-1,2-Dichloroethene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
cis-1,3-Dichloropropene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Dibromochloromethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: CBT

Lab ID: 1903282-03

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Dichlorodifluoromethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Ethylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Hexachlorobutadiene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Isopropylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
m,p-Xylene	ND	1.0	1	B9I0252	09/09/2019	09/09/19 20:52	
Methylene chloride	ND	1.0	1	B9I0252	09/09/2019	09/09/19 20:52	
n-Butylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
n-Propylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Naphthalene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
o-Xylene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
sec-Butylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Styrene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
tert-Butylbenzene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Tetrachloroethene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Toluene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
trans-1,2-Dichloroethene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Trichloroethene	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Trichlorofluoromethane	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Vinyl chloride	ND	0.50	1	B9I0252	09/09/2019	09/09/19 20:52	
Surrogate: 1,2-Dichloroethane-d4	128 %	59 - 158		B9I0252	09/09/2019	09/09/19 20:52	
Surrogate: 4-Bromofluorobenzene	118 %	71 - 127		B9I0252	09/09/2019	09/09/19 20:52	
Surrogate: Dibromofluoromethane	130 %	66 - 147		B9I0252	09/09/2019	09/09/19 20:52	
Surrogate: Toluene-d8	135 %	77 - 138		B9I0252	09/09/2019	09/09/19 20:52	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: CBT

Lab ID: 1903282-03

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9I0371	09/11/2019	09/12/19 11:25	
Surrogate: 1,2-Dichlorobenzene-d4	71.6 %	22 - 117		B9I0371	09/11/2019	09/12/19 11:25	
Surrogate: 2-Fluorobiphenyl	69.3 %	20 - 131		B9I0371	09/11/2019	09/12/19 11:25	
Surrogate: 4-Terphenyl-d14	84.3 %	24 - 135		B9I0371	09/11/2019	09/12/19 11:25	
Surrogate: Nitrobenzene-d5	88.9 %	6 - 124		B9I0371	09/11/2019	09/12/19 11:25	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: POX

Lab ID: 1903282-04

Alkalinity, Speciated by SM 2320B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Alkalinity, Bicarbonate (as CaCO ₃)	220	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	
Alkalinity, Total (as CaCO ₃)	220	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	

Total Organic Carbon by SM 5310B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Organic Carbon, Total	ND	3.0	1	B9I0362	09/10/2019	09/10/19 13:26	

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
1,1,1-Trichloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
1,1,2-Trichloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
1,1-Dichloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
1,1-Dichloroethene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
1,1-Dichloropropene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
1,2,3-Trichloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
1,2,3-Trichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
1,2,4-Trichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
1,2,4-Trimethylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
1,2-Dibromoethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
1,2-Dichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
1,2-Dichloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
1,2-Dichloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
1,3,5-Trimethylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
1,3-Dichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
1,3-Dichloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
1,4-Dichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
2,2-Dichloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
2-Chlorotoluene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: POX

Lab ID: 1903282-04

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
4-Chlorotoluene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
4-Isopropyltoluene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Benzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Bromobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Bromodichloromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Bromoform	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Bromomethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Carbon tetrachloride	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Chlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Chloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Chloroform	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Chloromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
cis-1,2-Dichloroethene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
cis-1,3-Dichloropropene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Dibromochloromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Dibromomethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Dichlorodifluoromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Ethylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Hexachlorobutadiene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Isopropylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
m,p-Xylene	ND	1.0	1	B9I0296	09/10/2019	09/10/19 13:30	
Methylene chloride	ND	1.0	1	B9I0296	09/10/2019	09/10/19 13:30	
n-Butylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
n-Propylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Naphthalene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
o-Xylene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
sec-Butylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Styrene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
tert-Butylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Tetrachloroethene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Toluene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
trans-1,2-Dichloroethene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Trichloroethene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Trichlorofluoromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	
Vinyl chloride	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:30	

Surrogate: 1,2-Dichloroethane-d4

120 %

59 - 158

B9I0296

09/10/2019

09/10/19 13:30

Surrogate: 4-Bromofluorobenzene

119 %

71 - 127

B9I0296

09/10/2019

09/10/19 13:30



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: POX

Lab ID: 1903282-04

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
<i>Surrogate: Dibromofluoromethane</i>	<i>120 %</i>	<i>66 - 147</i>		B9I0296	09/10/2019	<i>09/10/19 13:30</i>	
<i>Surrogate: Toluene-d8</i>	<i>132 %</i>	<i>77 - 138</i>		B9I0296	09/10/2019	<i>09/10/19 13:30</i>	

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9I0371	09/11/2019	09/12/19 11:52	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>80.1 %</i>	<i>22 - 117</i>		B9I0371	09/11/2019	<i>09/12/19 11:52</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>76.5 %</i>	<i>20 - 131</i>		B9I0371	09/11/2019	<i>09/12/19 11:52</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>97.9 %</i>	<i>24 - 135</i>		B9I0371	09/11/2019	<i>09/12/19 11:52</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>98.5 %</i>	<i>6 - 124</i>		B9I0371	09/11/2019	<i>09/12/19 11:52</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: PF

Lab ID: 1903282-05

UV Absorption by EPA 415.3

Analyst: JL

Analyte	Result (1/cm)	PQL (1/cm)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
UV Absorption	ND	0.01	1	B9I0185	09/06/2019	09/06/19 13:40	

Alkalinity, Speciated by SM 2320B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Alkalinity, Bicarbonate (as CaCO ₃)	220	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	
Alkalinity, Total (as CaCO ₃)	220	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	

Total Suspended Solids (Residue, Non-Filtrable) by SM 2540D

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Residue, Suspended	ND	1.0	1	B9I0316	09/10/2019	09/10/19 13:44	

Total Organic Carbon by SM 5310B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Organic Carbon, Total	ND	3.0	1	B9I0362	09/10/2019	09/10/19 13:39	



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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: INF

Lab ID: 1903282-06

Bromide by Ion Chromatography EPA 300

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Bromide	0.31	0.10	2	B9I0318	09/10/2019	09/10/19 10:25	

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
1,1,1-Trichloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
1,1,2-Trichloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
1,1-Dichloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
1,1-Dichloroethene	58	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
1,1-Dichloropropene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
1,2,3-Trichloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
1,2,3-Trichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
1,2,4-Trichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
1,2,4-Trimethylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
1,2-Dibromoethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
1,2-Dichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
1,2-Dichloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
1,2-Dichloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
1,3,5-Trimethylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
1,3-Dichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
1,3-Dichloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
1,4-Dichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
2,2-Dichloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
2-Chlorotoluene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
4-Chlorotoluene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
4-Isopropyltoluene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Benzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Bromobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Bromodichloromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Bromoform	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Bromomethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Carbon tetrachloride	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Chlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: INF

Lab ID: 1903282-06

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Chloroform	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Chloromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
cis-1,2-Dichloroethene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
cis-1,3-Dichloropropene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Dibromochloromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Dibromomethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Dichlorodifluoromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Ethylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Hexachlorobutadiene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Isopropylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
m,p-Xylene	ND	1.0	1	B9I0296	09/10/2019	09/10/19 13:55	
Methylene chloride	ND	1.0	1	B9I0296	09/10/2019	09/10/19 13:55	
n-Butylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
n-Propylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Naphthalene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
o-Xylene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
sec-Butylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Styrene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
tert-Butylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Tetrachloroethene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Toluene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
trans-1,2-Dichloroethene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Trichloroethene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Trichlorofluoromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Vinyl chloride	ND	0.50	1	B9I0296	09/10/2019	09/10/19 13:55	
Surrogate: 1,2-Dichloroethane-d4	119 %	59 - 158		B9I0296	09/10/2019	09/10/19 13:55	
Surrogate: 4-Bromofluorobenzene	117 %	71 - 127		B9I0296	09/10/2019	09/10/19 13:55	
Surrogate: Dibromofluoromethane	118 %	66 - 147		B9I0296	09/10/2019	09/10/19 13:55	
Surrogate: Toluene-d8	137 %	77 - 138		B9I0296	09/10/2019	09/10/19 13:55	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: INF

Lab ID: 1903282-06

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	37	2.0	1	B9I0369	09/11/2019	09/12/19 10:35	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>79.1 %</i>	<i>34 - 188</i>		<i>B9I0369</i>	<i>09/11/2019</i>	<i>09/12/19 10:35</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>81.1 %</i>	<i>39 - 108</i>		<i>B9I0369</i>	<i>09/11/2019</i>	<i>09/12/19 10:35</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>128 %</i>	<i>71 - 131</i>		<i>B9I0369</i>	<i>09/11/2019</i>	<i>09/12/19 10:35</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>87.5 %</i>	<i>32 - 106</i>		<i>B9I0369</i>	<i>09/11/2019</i>	<i>09/12/19 10:35</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: EW-02

Lab ID: 1903282-07

Bromide by Ion Chromatography EPA 300

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Bromide	0.26	0.10	2	B9I0318	09/10/2019	09/10/19 10:36	

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
1,1,1-Trichloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
1,1,2-Trichloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
1,1-Dichloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
1,1-Dichloroethene	20	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
1,1-Dichloropropene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
1,2,3-Trichloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
1,2,3-Trichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
1,2,4-Trichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
1,2,4-Trimethylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
1,2-Dibromoethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
1,2-Dichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
1,2-Dichloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
1,2-Dichloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
1,3,5-Trimethylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
1,3-Dichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
1,3-Dichloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
1,4-Dichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
2,2-Dichloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
2-Chlorotoluene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
4-Chlorotoluene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
4-Isopropyltoluene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Benzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Bromobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Bromodichloromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Bromoform	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Bromomethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Carbon tetrachloride	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Chlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: EW-02

Lab ID: 1903282-07

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Chloroform	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Chloromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
cis-1,2-Dichloroethene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
cis-1,3-Dichloropropene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Dibromochloromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Dibromomethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Dichlorodifluoromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Ethylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Hexachlorobutadiene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Isopropylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
m,p-Xylene	ND	1.0	1	B9I0296	09/10/2019	09/10/19 14:19	
Methylene chloride	ND	1.0	1	B9I0296	09/10/2019	09/10/19 14:19	
n-Butylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
n-Propylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Naphthalene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
o-Xylene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
sec-Butylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Styrene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
tert-Butylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Tetrachloroethene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Toluene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
trans-1,2-Dichloroethene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Trichloroethene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Trichlorofluoromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
Vinyl chloride	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:19	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>127 %</i>	<i>59 - 158</i>		B9I0296	09/10/2019	<i>09/10/19 14:19</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>120 %</i>	<i>71 - 127</i>		B9I0296	09/10/2019	<i>09/10/19 14:19</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>122 %</i>	<i>66 - 147</i>		B9I0296	09/10/2019	<i>09/10/19 14:19</i>	
<i>Surrogate: Toluene-d8</i>	<i>135 %</i>	<i>77 - 138</i>		B9I0296	09/10/2019	<i>09/10/19 14:19</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: EW-02

Lab ID: 1903282-07

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	10	2.0	1	B9I0369	09/11/2019	09/12/19 11:02	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>78.3 %</i>	<i>34 - 188</i>		B9I0369	09/11/2019	<i>09/12/19 11:02</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>79.8 %</i>	<i>39 - 108</i>		B9I0369	09/11/2019	<i>09/12/19 11:02</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>127 %</i>	<i>71 - 131</i>		B9I0369	09/11/2019	<i>09/12/19 11:02</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>84.2 %</i>	<i>32 - 106</i>		B9I0369	09/11/2019	<i>09/12/19 11:02</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: MW-29

Lab ID: 1903282-08

Bromide by Ion Chromatography EPA 300

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Bromide	0.45	0.10	2	B9I0318	09/10/2019	09/10/19 10:48	

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
1,1,1-Trichloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
1,1,2-Trichloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
1,1-Dichloroethane	3.9	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
1,1-Dichloroethene	220	5.0	10	B9I0296	09/10/2019	09/10/19 15:09	
1,1-Dichloropropene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
1,2,3-Trichloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
1,2,3-Trichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
1,2,4-Trichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
1,2,4-Trimethylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
1,2-Dibromoethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
1,2-Dichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
1,2-Dichloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
1,2-Dichloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
1,3,5-Trimethylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
1,3-Dichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
1,3-Dichloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
1,4-Dichlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
2,2-Dichloropropane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
2-Chlorotoluene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
4-Chlorotoluene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
4-Isopropyltoluene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Benzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Bromobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Bromodichloromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Bromoform	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Bromomethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Carbon tetrachloride	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Chlorobenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: MW-29

Lab ID: 1903282-08

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloroethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Chloroform	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Chloromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
cis-1,2-Dichloroethene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
cis-1,3-Dichloropropene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Dibromochloromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Dibromomethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Dichlorodifluoromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Ethylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Hexachlorobutadiene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Isopropylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
m,p-Xylene	ND	1.0	1	B9I0296	09/10/2019	09/10/19 14:45	
Methylene chloride	ND	1.0	1	B9I0296	09/10/2019	09/10/19 14:45	
n-Butylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
n-Propylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Naphthalene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
o-Xylene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
sec-Butylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Styrene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
tert-Butylbenzene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Tetrachloroethene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Toluene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
trans-1,2-Dichloroethene	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Trichloroethene	4.2	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Trichlorofluoromethane	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Vinyl chloride	ND	0.50	1	B9I0296	09/10/2019	09/10/19 14:45	
Surrogate: 1,2-Dichloroethane-d4	125 %	59 - 158		B9I0296	09/10/2019	09/10/19 15:09	
Surrogate: 1,2-Dichloroethane-d4	138 %	59 - 158		B9I0296	09/10/2019	09/10/19 14:45	
Surrogate: 4-Bromofluorobenzene	119 %	71 - 127		B9I0296	09/10/2019	09/10/19 15:09	
Surrogate: 4-Bromofluorobenzene	119 %	71 - 127		B9I0296	09/10/2019	09/10/19 14:45	
Surrogate: Dibromofluoromethane	126 %	66 - 147		B9I0296	09/10/2019	09/10/19 15:09	
Surrogate: Dibromofluoromethane	140 %	66 - 147		B9I0296	09/10/2019	09/10/19 14:45	
Surrogate: Toluene-d8	138 %	77 - 138		B9I0296	09/10/2019	09/10/19 14:45	
Surrogate: Toluene-d8	136 %	77 - 138		B9I0296	09/10/2019	09/10/19 15:09	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Client Sample ID: MW-29

Lab ID: 1903282-08

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	130	2.0	1	B9I0369	09/11/2019	09/12/19 11:28	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	80.2 %	34 - 188		B9I0369	09/11/2019	09/12/19 11:28	
<i>Surrogate: 2-Fluorobiphenyl</i>	83.7 %	39 - 108		B9I0369	09/11/2019	09/12/19 11:28	
<i>Surrogate: 4-Terphenyl-d14</i>	127 %	71 - 131		B9I0369	09/11/2019	09/12/19 11:28	
<i>Surrogate: Nitrobenzene-d5</i>	87.4 %	32 - 106		B9I0369	09/11/2019	09/12/19 11:28	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

QUALITY CONTROL SECTION

Alkalinity, Speciated by SM 2320B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0315 - No_Prep_WC1_W

Blank (B9I0315-BLK1)

Prepared: 9/10/2019 Analyzed: 9/10/2019

Alkalinity, Bicarbonate (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Total (as CaCO ₃)	ND	5.0	3.4

LCS (B9I0315-BS1)

Prepared: 9/10/2019 Analyzed: 9/10/2019

Alkalinity, Total (as CaCO ₃)	107.000	5.0	3.4	99.9580	107	80 - 120
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Matrix Spike (B9I0315-MS1)

Source: 1903327-02

Prepared: 9/10/2019 Analyzed: 9/10/2019

Alkalinity, Total (as CaCO ₃)	206.000	5.0	3.4	99.9580	104.000	102	80 - 120
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Matrix Spike Dup (B9I0315-MSD1)

Source: 1903327-02

Prepared: 9/10/2019 Analyzed: 9/10/2019

Alkalinity, Total (as CaCO ₃)	206.000	5.0	3.4	99.9580	104.000	102	80 - 120	0.00	20
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Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Total Suspended Solids (Residue, Non-Filtrable) by SM 2540D - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0316 - No_Prep_WC1_W

Blank (B9I0316-BLK1)

Prepared: 9/10/2019 Analyzed: 9/10/2019

Residue, Suspended ND 1.0 1.0

LCS (B9I0316-BS1)

Prepared: 9/10/2019 Analyzed: 9/10/2019

Residue, Suspended 92.0000 10 10 90.4000 102 80 - 120

Duplicate (B9I0316-DUP1)

Source: 1903284-01

Prepared: 9/10/2019 Analyzed: 9/10/2019

Residue, Suspended 62.0000 10 10 61.0000 1.63 10



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Bromide by Ion Chromatography EPA 300 - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0318 - No_Prep_IC1_W

Blank (B9I0318-BLK1)

Prepared: 9/10/2019 Analyzed: 9/10/2019

Bromide ND 0.05 0.02

LCS (B9I0318-BS1)

Prepared: 9/10/2019 Analyzed: 9/10/2019

Bromide 0.988300 0.05 0.02 1.00000 98.8 90 - 110

Duplicate (B9I0318-DUP1)

Source: 1903327-01

Prepared: 9/10/2019 Analyzed: 9/10/2019

Bromide ND 0.25 0.08 ND 20

Matrix Spike (B9I0318-MS1)

Source: 1903327-01

Prepared: 9/10/2019 Analyzed: 9/10/2019

Bromide 2.57080 2.50000 0.00000 103 80 - 120

Matrix Spike (B9I0318-MS2)

Source: 1903324-03

Prepared: 9/10/2019 Analyzed: 9/10/2019

Bromide 2.60430 2.50000 0.0691 101 80 - 120

Matrix Spike Dup (B9I0318-MSD1)

Source: 1903327-01

Prepared: 9/10/2019 Analyzed: 9/10/2019

Bromide 2.56980 2.50000 0.00000 103 80 - 120 0.0389 20



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UV Absorption by EPA 415.3 - Quality Control

Analyte	Result (1/cm)	PQL (1/cm)	MDL (1/cm)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0185 - No_Prep_II_W

Duplicate (B9I0185-DUP1)

Source: 1903282-05

Prepared: 9/6/2019 Analyzed: 9/6/2019

UV Absorption	ND	0.01	0.01		ND			NR	20	
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Total Organic Carbon by SM 5310B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0362 - No_Prep_II_W

Blank (B9I0362-BLK1)

Prepared: 9/10/2019 Analyzed: 9/10/2019

Organic Carbon, Total ND 3.0 0.28

LCS (B9I0362-BS1)

Prepared: 9/10/2019 Analyzed: 9/10/2019

Organic Carbon, Total 20.1400 3.0 0.28 20.0000 101 80 - 120

LCS Dup (B9I0362-BSD1)

Prepared: 9/10/2019 Analyzed: 9/10/2019

Organic Carbon, Total 17.9800 3.0 0.28 20.0000 89.9 80 - 120 11.3 20



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0252 - MSVOA_LL_W

Blank (B9I0252-BLK1)

Prepared: 9/9/2019 Analyzed: 9/9/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0252 - MSVOA_LL_W (continued)

Blank (B9I0252-BLK1) - Continued

Prepared: 9/9/2019 Analyzed: 9/9/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	1.98000	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	26.06		25.0000	104	59 - 158
Surrogate: 4-Bromofluorobenzene	26.95		25.0000	108	71 - 127
Surrogate: Dibromofluoromethane	24.86		25.0000	99.4	66 - 147
Surrogate: Toluene-d8	28.82		25.0000	115	77 - 138

LCS (B9I0252-BS1)

Prepared: 9/9/2019 Analyzed: 9/9/2019

1,1,1,2-Tetrachloroethane	21.2800	0.50	0.11	20.0000	106	71 - 133
1,1,1-Trichloroethane	20.4000	0.50	0.07	20.0000	102	62 - 124
1,1,2,2-Tetrachloroethane	18.7000	0.50	0.36	20.0000	93.5	50 - 131
1,1,2-Trichloroethane	20.9400	0.50	0.25	20.0000	105	77 - 121
1,1-Dichloroethane	21.6600	0.50	0.09	20.0000	108	52 - 130
1,1-Dichloroethene	21.8700	0.50	0.13	20.0000	109	61 - 136
1,1-Dichloropropene	22.5300	0.50	0.13	20.0000	113	80 - 128
1,2,3-Trichloropropane	20.0400	0.50	0.39	20.0000	100	59 - 126
1,2,3-Trichlorobenzene	19.1100	0.50	0.18	20.0000	95.6	69 - 138
1,2,4-Trichlorobenzene	22.0700	0.50	0.16	20.0000	110	78 - 125
1,2,4-Trimethylbenzene	21.2400	0.50	0.14	20.0000	106	70 - 126
1,2-Dibromo-3-chloropropane	22.2300	0.50	0.41	20.0000	111	58 - 127
1,2-Dibromoethane	19.6900	0.50	0.24	20.0000	98.4	76 - 120
1,2-Dichlorobenzene	20.8600	0.50	0.20	20.0000	104	82 - 117
1,2-Dichloroethane	21.7200	0.50	0.20	20.0000	109	66 - 126
1,2-Dichloropropane	20.3300	0.50	0.15	20.0000	102	70 - 117
1,3,5-Trimethylbenzene	22.2300	0.50	0.13	20.0000	111	71 - 125
1,3-Dichlorobenzene	21.3100	0.50	0.16	20.0000	107	81 - 116
1,3-Dichloropropane	20.5900	0.50	0.21	20.0000	103	69 - 124



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0252 - MSVOA_LL_W (continued)

LCS (B9I0252-BS1) - Continued

Prepared: 9/9/2019 Analyzed: 9/9/2019

1,4-Dichlorobenzene	20.8700	0.50	0.17	20.0000		104	80 - 114		
2,2-Dichloropropane	21.8900	0.50	0.38	20.0000		109	58 - 132		
2-Chlorotoluene	21.6900	0.50	0.11	20.0000		108	71 - 119		
4-Chlorotoluene	20.7500	0.50	0.12	20.0000		104	72 - 122		
4-Isopropyltoluene	22.0900	0.50	0.11	20.0000		110	69 - 126		
Benzene	42.1700	0.50	0.13	40.0000		105	80 - 116		
Bromobenzene	21.2100	0.50	0.21	20.0000		106	77 - 118		
Bromodichloromethane	20.2300	0.50	0.14	20.0000		101	73 - 118		
Bromoform	21.4100	0.50	0.20	20.0000		107	65 - 133		
Bromomethane	19.0400	0.50	0.17	20.0000		95.2	7 - 205		
Carbon tetrachloride	19.5200	0.50	0.09	20.0000		97.6	63 - 133		
Chlorobenzene	21.4800	0.50	0.13	20.0000		107	86 - 113		
Chloroethane	19.5100	0.50	0.15	20.0000		97.6	66 - 141		
Chloroform	21.6900	0.50	0.11	20.0000		108	63 - 127		
Chloromethane	17.6400	0.50	0.12	20.0000		88.2	0 - 207		
cis-1,2-Dichloroethene	21.5900	0.50	0.14	20.0000		108	64 - 126		
cis-1,3-Dichloropropene	22.5800	0.50	0.13	20.0000		113	70 - 141		
Dibromochloromethane	23.2300	0.50	0.16	20.0000		116	67 - 135		
Dibromomethane	20.3300	0.50	0.19	20.0000		102	74 - 118		
Dichlorodifluoromethane	16.8600	0.50	0.05	20.0000		84.3	14 - 181		
Ethylbenzene	41.8400	0.50	0.13	40.0000		105	77 - 118		
Hexachlorobutadiene	21.4400	0.50	0.15	20.0000		107	66 - 125		
Isopropylbenzene	23.5300	0.50	0.10	20.0000		118	68 - 137		
m,p-Xylene	43.7400	1.0	0.19	40.0000		109	78 - 126		
Methylene chloride	20.8600	1.0	0.71	20.0000		104	51 - 149		B
n-Butylbenzene	20.9700	0.50	0.11	20.0000		105	63 - 127		
n-Propylbenzene	21.1400	0.50	0.10	20.0000		106	69 - 124		
Naphthalene	19.7400	0.50	0.41	20.0000		98.7	60 - 126		
o-Xylene	45.1100	0.50	0.13	40.0000		113	79 - 126		
sec-Butylbenzene	21.3000	0.50	0.09	20.0000		106	69 - 124		
Styrene	22.6900	0.50	0.13	20.0000		113	80 - 127		
tert-Butylbenzene	22.1000	0.50	0.09	20.0000		110	71 - 124		
Tetrachloroethene	21.5500	0.50	0.10	20.0000		108	73 - 129		
Toluene	43.2900	0.50	0.12	40.0000		108	78 - 121		
trans-1,2-Dichloroethene	20.7700	0.50	0.09	20.0000		104	58 - 141		
Trichloroethene	21.5700	0.50	0.10	20.0000		108	73 - 126		
Trichlorofluoromethane	18.1200	0.50	0.10	20.0000		90.6	62 - 146		
Vinyl chloride	17.6700	0.50	0.05	20.0000		88.4	61 - 137		
Surrogate: 1,2-Dichloroethane-d4	26.26			25.0000		105	59 - 158		
Surrogate: 4-Bromofluorobenzene	28.50			25.0000		114	71 - 127		
Surrogate: Dibromofluoromethane	22.20			25.0000		88.8	66 - 147		



Certificate of Analysis

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Reported : 09/24/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0252 - MSVOA_LL_W (continued)

LCS (B9I0252-BS1) - Continued

Prepared: 9/9/2019 Analyzed: 9/9/2019

Surrogate: Toluene-d8 28.28 25.0000 113 77 - 138

LCS Dup (B9I0252-BSD1)

Prepared: 9/9/2019 Analyzed: 9/9/2019

1,1,1,2-Tetrachloroethane	21.1400	0.50	0.11	20.0000	106	71 - 133	0.660	20	
1,1,1-Trichloroethane	20.7900	0.50	0.07	20.0000	104	62 - 124	1.89	20	
1,1,2,2-Tetrachloroethane	19.8600	0.50	0.36	20.0000	99.3	50 - 131	6.02	20	
1,1,2-Trichloroethane	20.7100	0.50	0.25	20.0000	104	77 - 121	1.10	20	
1,1-Dichloroethane	21.3000	0.50	0.09	20.0000	106	52 - 130	1.68	20	
1,1-Dichloroethene	20.9400	0.50	0.13	20.0000	105	61 - 136	4.34	20	
1,1-Dichloropropene	22.9500	0.50	0.13	20.0000	115	80 - 128	1.85	20	
1,2,3-Trichloropropane	21.0900	0.50	0.39	20.0000	105	59 - 126	5.11	20	
1,2,3-Trichlorobenzene	20.2900	0.50	0.18	20.0000	101	69 - 138	5.99	20	
1,2,4-Trichlorobenzene	23.4200	0.50	0.16	20.0000	117	78 - 125	5.94	20	
1,2,4-Trimethylbenzene	22.0600	0.50	0.14	20.0000	110	70 - 126	3.79	20	
1,2-Dibromo-3-chloropropane	21.4900	0.50	0.41	20.0000	107	58 - 127	3.39	20	
1,2-Dibromoethane	20.9900	0.50	0.24	20.0000	105	76 - 120	6.39	20	
1,2-Dichlorobenzene	21.9100	0.50	0.20	20.0000	110	82 - 117	4.91	20	
1,2-Dichloroethane	22.0800	0.50	0.20	20.0000	110	66 - 126	1.64	20	
1,2-Dichloropropane	21.0500	0.50	0.15	20.0000	105	70 - 117	3.48	20	
1,3,5-Trimethylbenzene	22.8000	0.50	0.13	20.0000	114	71 - 125	2.53	20	
1,3-Dichlorobenzene	21.9400	0.50	0.16	20.0000	110	81 - 116	2.91	20	
1,3-Dichloropropane	20.6200	0.50	0.21	20.0000	103	69 - 124	0.146	20	
1,4-Dichlorobenzene	21.0000	0.50	0.17	20.0000	105	80 - 114	0.621	20	
2,2-Dichloropropane	21.5600	0.50	0.38	20.0000	108	58 - 132	1.52	20	
2-Chlorotoluene	21.9000	0.50	0.11	20.0000	110	71 - 119	0.964	20	
4-Chlorotoluene	21.0900	0.50	0.12	20.0000	105	72 - 122	1.63	20	
4-Isopropyltoluene	22.7100	0.50	0.11	20.0000	114	69 - 126	2.77	20	
Benzene	42.7600	0.50	0.13	40.0000	107	80 - 116	1.39	20	
Bromobenzene	21.8000	0.50	0.21	20.0000	109	77 - 118	2.74	20	
Bromodichloromethane	21.1100	0.50	0.14	20.0000	106	73 - 118	4.26	20	
Bromoform	21.2800	0.50	0.20	20.0000	106	65 - 133	0.609	20	
Bromomethane	19.2100	0.50	0.17	20.0000	96.0	7 - 205	0.889	20	
Carbon tetrachloride	19.3700	0.50	0.09	20.0000	96.8	63 - 133	0.771	20	
Chlorobenzene	21.7400	0.50	0.13	20.0000	109	86 - 113	1.20	20	
Chloroethane	19.0500	0.50	0.15	20.0000	95.2	66 - 141	2.39	20	
Chloroform	21.4500	0.50	0.11	20.0000	107	63 - 127	1.11	20	
Chloromethane	17.8300	0.50	0.12	20.0000	89.2	0 - 207	1.07	20	
cis-1,2-Dichloroethene	21.1800	0.50	0.14	20.0000	106	64 - 126	1.92	20	
cis-1,3-Dichloropropene	23.0200	0.50	0.13	20.0000	115	70 - 141	1.93	20	
Dibromochloromethane	23.5500	0.50	0.16	20.0000	118	67 - 135	1.37	20	
Dibromomethane	20.5000	0.50	0.19	20.0000	102	74 - 118	0.833	20	
Dichlorodifluoromethane	16.5600	0.50	0.05	20.0000	82.8	14 - 181	1.80	20	



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0252 - MSVOA_LL_W (continued)

LCS Dup (B9I0252-BSD1) - Continued

Prepared: 9/9/2019 Analyzed: 9/9/2019

Ethylbenzene	41.5100	0.50	0.13	40.0000		104	77 - 118	0.792	20	
Hexachlorobutadiene	22.2500	0.50	0.15	20.0000		111	66 - 125	3.71	20	
Isopropylbenzene	24.5000	0.50	0.10	20.0000		122	68 - 137	4.04	20	
m,p-Xylene	43.7700	1.0	0.19	40.0000		109	78 - 126	0.0686	20	
Methylene chloride	20.8400	1.0	0.71	20.0000		104	51 - 149	0.0959	20	B
n-Butylbenzene	21.4000	0.50	0.11	20.0000		107	63 - 127	2.03	20	
n-Propylbenzene	22.0000	0.50	0.10	20.0000		110	69 - 124	3.99	20	
Naphthalene	21.8000	0.50	0.41	20.0000		109	60 - 126	9.92	20	
o-Xylene	45.1100	0.50	0.13	40.0000		113	79 - 126	0.00	20	
sec-Butylbenzene	22.0800	0.50	0.09	20.0000		110	69 - 124	3.60	20	
Styrene	22.7100	0.50	0.13	20.0000		114	80 - 127	0.0881	20	
tert-Butylbenzene	23.1900	0.50	0.09	20.0000		116	71 - 124	4.81	20	
Tetrachloroethene	21.8800	0.50	0.10	20.0000		109	73 - 129	1.52	20	
Toluene	44.5600	0.50	0.12	40.0000		111	78 - 121	2.89	20	
trans-1,2-Dichloroethene	20.8700	0.50	0.09	20.0000		104	58 - 141	0.480	20	
Trichloroethene	21.8500	0.50	0.10	20.0000		109	73 - 126	1.29	20	
Trichlorofluoromethane	17.1400	0.50	0.10	20.0000		85.7	62 - 146	5.56	20	
Vinyl chloride	17.0500	0.50	0.05	20.0000		85.2	61 - 137	3.57	20	
Surrogate: 1,2-Dichloroethane-d4	26.14			25.0000		105	59 - 158			
Surrogate: 4-Bromofluorobenzene	30.28			25.0000		121	71 - 127			
Surrogate: Dibromofluoromethane	25.16			25.0000		101	66 - 147			
Surrogate: Toluene-d8	29.88			25.0000		120	77 - 138			



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Reported : 09/24/2019

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0296 - MSVOA_LL_W

Blank (B9I0296-BLK1)

Prepared: 9/10/2019 Analyzed: 9/10/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0296 - MSVOA_LL_W (continued)

Blank (B9I0296-BLK1) - Continued

Prepared: 9/10/2019 Analyzed: 9/10/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	28.74		25.0000	115	59 - 158
Surrogate: 4-Bromofluorobenzene	28.92		25.0000	116	71 - 127
Surrogate: Dibromofluoromethane	24.85		25.0000	99.4	66 - 147
Surrogate: Toluene-d8	31.04		25.0000	124	77 - 138

LCS (B9I0296-BS1)

Prepared: 9/10/2019 Analyzed: 9/10/2019

1,1,1,2-Tetrachloroethane	19.9100	0.50	0.11	20.0000	99.6	71 - 133
1,1,1-Trichloroethane	19.8800	0.50	0.07	20.0000	99.4	62 - 124
1,1,2,2-Tetrachloroethane	18.4800	0.50	0.36	20.0000	92.4	50 - 131
1,1,2-Trichloroethane	20.6300	0.50	0.25	20.0000	103	77 - 121
1,1-Dichloroethane	20.5100	0.50	0.09	20.0000	103	52 - 130
1,1-Dichloroethene	20.3500	0.50	0.13	20.0000	102	61 - 136
1,1-Dichloropropene	21.0900	0.50	0.13	20.0000	105	80 - 128
1,2,3-Trichloropropane	19.8800	0.50	0.39	20.0000	99.4	59 - 126
1,2,3-Trichlorobenzene	18.4800	0.50	0.18	20.0000	92.4	69 - 138
1,2,4-Trichlorobenzene	20.3000	0.50	0.16	20.0000	102	78 - 125
1,2,4-Trimethylbenzene	19.3500	0.50	0.14	20.0000	96.8	70 - 126
1,2-Dibromo-3-chloropropane	19.9800	0.50	0.41	20.0000	99.9	58 - 127
1,2-Dibromoethane	19.7900	0.50	0.24	20.0000	99.0	76 - 120
1,2-Dichlorobenzene	19.9600	0.50	0.20	20.0000	99.8	82 - 117
1,2-Dichloroethane	21.5900	0.50	0.20	20.0000	108	66 - 126
1,2-Dichloropropane	19.7400	0.50	0.15	20.0000	98.7	70 - 117
1,3,5-Trimethylbenzene	20.2700	0.50	0.13	20.0000	101	71 - 125
1,3-Dichlorobenzene	19.8200	0.50	0.16	20.0000	99.1	81 - 116
1,3-Dichloropropane	19.7600	0.50	0.21	20.0000	98.8	69 - 124



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0296 - MSVOA_LL_W (continued)

LCS (B9I0296-BS1) - Continued

Prepared: 9/10/2019 Analyzed: 9/10/2019

1,4-Dichlorobenzene	18.9300	0.50	0.17	20.0000		94.6	80 - 114		
2,2-Dichloropropane	20.5400	0.50	0.38	20.0000		103	58 - 132		
2-Chlorotoluene	19.8100	0.50	0.11	20.0000		99.0	71 - 119		
4-Chlorotoluene	19.0900	0.50	0.12	20.0000		95.4	72 - 122		
4-Isopropyltoluene	19.8000	0.50	0.11	20.0000		99.0	69 - 126		
Benzene	40.5400	0.50	0.13	40.0000		101	80 - 116		
Bromobenzene	19.7200	0.50	0.21	20.0000		98.6	77 - 118		
Bromodichloromethane	19.4600	0.50	0.14	20.0000		97.3	73 - 118		
Bromoform	19.7800	0.50	0.20	20.0000		98.9	65 - 133		
Bromomethane	22.5400	0.50	0.17	20.0000		113	7 - 205		
Carbon tetrachloride	19.6500	0.50	0.09	20.0000		98.2	63 - 133		
Chlorobenzene	20.4300	0.50	0.13	20.0000		102	86 - 113		
Chloroethane	22.2300	0.50	0.15	20.0000		111	66 - 141		
Chloroform	20.2000	0.50	0.11	20.0000		101	63 - 127		
Chloromethane	20.8800	0.50	0.12	20.0000		104	0 - 207		
cis-1,2-Dichloroethene	19.8600	0.50	0.14	20.0000		99.3	64 - 126		
cis-1,3-Dichloropropene	21.4200	0.50	0.13	20.0000		107	70 - 141		
Dibromochloromethane	21.5100	0.50	0.16	20.0000		108	67 - 135		
Dibromomethane	20.1600	0.50	0.19	20.0000		101	74 - 118		
Dichlorodifluoromethane	20.9500	0.50	0.05	20.0000		105	14 - 181		
Ethylbenzene	39.6500	0.50	0.13	40.0000		99.1	77 - 118		
Hexachlorobutadiene	19.4800	0.50	0.15	20.0000		97.4	66 - 125		
Isopropylbenzene	21.3700	0.50	0.10	20.0000		107	68 - 137		
m,p-Xylene	41.4800	1.0	0.19	40.0000		104	78 - 126		
Methylene chloride	19.7300	1.0	0.71	20.0000		98.6	51 - 149		
n-Butylbenzene	18.7400	0.50	0.11	20.0000		93.7	63 - 127		
n-Propylbenzene	19.5200	0.50	0.10	20.0000		97.6	69 - 124		
Naphthalene	18.8600	0.50	0.41	20.0000		94.3	60 - 126		
o-Xylene	43.0500	0.50	0.13	40.0000		108	79 - 126		
sec-Butylbenzene	19.3700	0.50	0.09	20.0000		96.8	69 - 124		
Styrene	21.0400	0.50	0.13	20.0000		105	80 - 127		
tert-Butylbenzene	19.9900	0.50	0.09	20.0000		100	71 - 124		
Tetrachloroethene	20.3900	0.50	0.10	20.0000		102	73 - 129		
Toluene	42.2300	0.50	0.12	40.0000		106	78 - 121		
trans-1,2-Dichloroethene	19.7400	0.50	0.09	20.0000		98.7	58 - 141		
Trichloroethene	20.4200	0.50	0.10	20.0000		102	73 - 126		
Trichlorofluoromethane	20.0800	0.50	0.10	20.0000		100	62 - 146		
Vinyl chloride	20.3400	0.50	0.05	20.0000		102	61 - 137		
Surrogate: 1,2-Dichloroethane-d4	26.44			25.0000		106	59 - 158		
Surrogate: 4-Bromofluorobenzene	30.43			25.0000		122	71 - 127		
Surrogate: Dibromofluoromethane	26.85			25.0000		107	66 - 147		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0296 - MSVOA_LL_W (continued)

LCS (B9I0296-BS1) - Continued

Prepared: 9/10/2019 Analyzed: 9/10/2019

Surrogate: Toluene-d8 29.99 25.0000 120 77 - 138

LCS Dup (B9I0296-BSD1)

Prepared: 9/10/2019 Analyzed: 9/10/2019

1,1,1,2-Tetrachloroethane	17.6600	0.50	0.11	20.0000	88.3	71 - 133	12.0	20	
1,1,1-Trichloroethane	17.1100	0.50	0.07	20.0000	85.6	62 - 124	15.0	20	
1,1,2,2-Tetrachloroethane	16.9600	0.50	0.36	20.0000	84.8	50 - 131	8.58	20	
1,1,2-Trichloroethane	17.6800	0.50	0.25	20.0000	88.4	77 - 121	15.4	20	
1,1-Dichloroethane	17.7800	0.50	0.09	20.0000	88.9	52 - 130	14.3	20	
1,1-Dichloroethene	17.5300	0.50	0.13	20.0000	87.6	61 - 136	14.9	20	
1,1-Dichloropropene	18.3600	0.50	0.13	20.0000	91.8	80 - 128	13.8	20	
1,2,3-Trichloropropane	18.0100	0.50	0.39	20.0000	90.0	59 - 126	9.87	20	
1,2,3-Trichlorobenzene	17.1200	0.50	0.18	20.0000	85.6	69 - 138	7.64	20	
1,2,4-Trichlorobenzene	18.6600	0.50	0.16	20.0000	93.3	78 - 125	8.42	20	
1,2,4-Trimethylbenzene	17.6800	0.50	0.14	20.0000	88.4	70 - 126	9.02	20	
1,2-Dibromo-3-chloropropane	17.1100	0.50	0.41	20.0000	85.6	58 - 127	15.5	20	
1,2-Dibromoethane	17.7200	0.50	0.24	20.0000	88.6	76 - 120	11.0	20	
1,2-Dichlorobenzene	17.8400	0.50	0.20	20.0000	89.2	82 - 117	11.2	20	
1,2-Dichloroethane	18.5900	0.50	0.20	20.0000	93.0	66 - 126	14.9	20	
1,2-Dichloropropane	17.3400	0.50	0.15	20.0000	86.7	70 - 117	12.9	20	
1,3,5-Trimethylbenzene	18.1100	0.50	0.13	20.0000	90.6	71 - 125	11.3	20	
1,3-Dichlorobenzene	18.0000	0.50	0.16	20.0000	90.0	81 - 116	9.62	20	
1,3-Dichloropropane	17.2800	0.50	0.21	20.0000	86.4	69 - 124	13.4	20	
1,4-Dichlorobenzene	17.5300	0.50	0.17	20.0000	87.6	80 - 114	7.68	20	
2,2-Dichloropropane	17.8300	0.50	0.38	20.0000	89.2	58 - 132	14.1	20	
2-Chlorotoluene	18.0700	0.50	0.11	20.0000	90.4	71 - 119	9.19	20	
4-Chlorotoluene	17.1300	0.50	0.12	20.0000	85.6	72 - 122	10.8	20	
4-Isopropyltoluene	17.6500	0.50	0.11	20.0000	88.2	69 - 126	11.5	20	
Benzene	35.0700	0.50	0.13	40.0000	87.7	80 - 116	14.5	20	
Bromobenzene	17.8600	0.50	0.21	20.0000	89.3	77 - 118	9.90	20	
Bromodichloromethane	17.1700	0.50	0.14	20.0000	85.8	73 - 118	12.5	20	
Bromoform	17.0300	0.50	0.20	20.0000	85.2	65 - 133	14.9	20	
Bromomethane	21.3800	0.50	0.17	20.0000	107	7 - 205	5.28	20	
Carbon tetrachloride	16.1400	0.50	0.09	20.0000	80.7	63 - 133	19.6	20	
Chlorobenzene	18.1000	0.50	0.13	20.0000	90.5	86 - 113	12.1	20	
Chloroethane	21.3500	0.50	0.15	20.0000	107	66 - 141	4.04	20	
Chloroform	17.3300	0.50	0.11	20.0000	86.6	63 - 127	15.3	20	
Chloromethane	20.0700	0.50	0.12	20.0000	100	0 - 207	3.96	20	
cis-1,2-Dichloroethene	17.7000	0.50	0.14	20.0000	88.5	64 - 126	11.5	20	
cis-1,3-Dichloropropene	18.8100	0.50	0.13	20.0000	94.0	70 - 141	13.0	20	
Dibromochloromethane	18.8300	0.50	0.16	20.0000	94.2	67 - 135	13.3	20	
Dibromomethane	17.0600	0.50	0.19	20.0000	85.3	74 - 118	16.7	20	
Dichlorodifluoromethane	19.9100	0.50	0.05	20.0000	99.6	14 - 181	5.09	20	



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0296 - MSVOA_LL_W (continued)

LCS Dup (B9I0296-BSD1) - Continued

Prepared: 9/10/2019 Analyzed: 9/10/2019

Ethylbenzene	34.2200	0.50	0.13	40.0000		85.6	77 - 118	14.7	20	
Hexachlorobutadiene	17.4400	0.50	0.15	20.0000		87.2	66 - 125	11.1	20	
Isopropylbenzene	19.1400	0.50	0.10	20.0000		95.7	68 - 137	11.0	20	
m,p-Xylene	36.2800	1.0	0.19	40.0000		90.7	78 - 126	13.4	20	
Methylene chloride	18.1700	1.0	0.71	20.0000		90.8	51 - 149	8.23	20	
n-Butylbenzene	16.7400	0.50	0.11	20.0000		83.7	63 - 127	11.3	20	
n-Propylbenzene	17.3000	0.50	0.10	20.0000		86.5	69 - 124	12.1	20	
Naphthalene	16.7600	0.50	0.41	20.0000		83.8	60 - 126	11.8	20	
o-Xylene	37.1200	0.50	0.13	40.0000		92.8	79 - 126	14.8	20	
sec-Butylbenzene	17.2700	0.50	0.09	20.0000		86.4	69 - 124	11.5	20	
Styrene	18.4000	0.50	0.13	20.0000		92.0	80 - 127	13.4	20	
tert-Butylbenzene	18.1200	0.50	0.09	20.0000		90.6	71 - 124	9.81	20	
Tetrachloroethene	18.3300	0.50	0.10	20.0000		91.6	73 - 129	10.6	20	
Toluene	35.9600	0.50	0.12	40.0000		89.9	78 - 121	16.0	20	
trans-1,2-Dichloroethene	17.6900	0.50	0.09	20.0000		88.4	58 - 141	11.0	20	
Trichloroethene	17.9200	0.50	0.10	20.0000		89.6	73 - 126	13.0	20	
Trichlorofluoromethane	19.2400	0.50	0.10	20.0000		96.2	62 - 146	4.27	20	
Vinyl chloride	19.7900	0.50	0.05	20.0000		99.0	61 - 137	2.74	20	
Surrogate: 1,2-Dichloroethane-d4	24.02			25.0000		96.1	59 - 158			
Surrogate: 4-Bromofluorobenzene	28.33			25.0000		113	71 - 127			
Surrogate: Dibromofluoromethane	24.63			25.0000		98.5	66 - 147			
Surrogate: Toluene-d8	27.71			25.0000		111	77 - 138			



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

1,4-Dioxane by EPA 8270: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0369 - MSSEMI_W

Blank (B9I0369-BLK1)

Prepared: 9/11/2019 Analyzed: 9/12/2019

1,4-Dioxane	ND	2.0	0.84						
Surrogate: 1,2-Dichlorobenzene-d	75.04			100.000	75.0	34 - 188			
Surrogate: 2-Fluorobiphenyl	79.61			100.000	79.6	39 - 108			
Surrogate: 4-Terphenyl-d14	124.7			100.000	125	71 - 131			
Surrogate: Nitrobenzene-d5	83.42			100.000	83.4	32 - 106			

LCS (B9I0369-BS1)

Prepared: 9/11/2019 Analyzed: 9/12/2019

1,4-Dioxane	127.020	2.0	0.84	100.000	127	40 - 159			
Surrogate: 1,2-Dichlorobenzene-d	67.69			100.000	67.7	34 - 188			
Surrogate: 2-Fluorobiphenyl	75.60			100.000	75.6	39 - 108			
Surrogate: 4-Terphenyl-d14	107.9			100.000	108	71 - 131			
Surrogate: Nitrobenzene-d5	79.43			100.000	79.4	32 - 106			

LCS Dup (B9I0369-BSD1)

Prepared: 9/11/2019 Analyzed: 9/12/2019

1,4-Dioxane	121.270	2.0	0.84	100.000	121	40 - 159	4.63	20	
Surrogate: 1,2-Dichlorobenzene-d	71.61			100.000	71.6	34 - 188			
Surrogate: 2-Fluorobiphenyl	78.63			100.000	78.6	39 - 108			
Surrogate: 4-Terphenyl-d14	108.9			100.000	109	71 - 131			
Surrogate: Nitrobenzene-d5	84.14			100.000	84.1	32 - 106			



Certificate of Analysis

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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0371 - MSSEMI_W

Blank (B9I0371-BLK1)

Prepared: 9/11/2019 Analyzed: 9/12/2019

1,4-Dioxane	ND	0.20	0.05						
Surrogate: 1,2-Dichlorobenzene-d	0.8201			1.00000		82.0	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.7990			1.00000		79.9	20 - 131		
Surrogate: 4-Terphenyl-d14	0.9750			1.00000		97.5	24 - 135		
Surrogate: Nitrobenzene-d5	0.8976			1.00000		89.8	6 - 124		

LCS (B9I0371-BS1)

Prepared: 9/11/2019 Analyzed: 9/12/2019

1,4-Dioxane	1.19096	0.20	0.05	1.00000		119	64 - 129		
Surrogate: 1,2-Dichlorobenzene-d	0.5456			1.00000		54.6	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.5329			1.00000		53.3	20 - 131		
Surrogate: 4-Terphenyl-d14	0.6164			1.00000		61.6	24 - 135		
Surrogate: Nitrobenzene-d5	0.6366			1.00000		63.7	6 - 124		

LCS Dup (B9I0371-BSD1)

Prepared: 9/11/2019 Analyzed: 9/12/2019

1,4-Dioxane	1.19819	0.20	0.05	1.00000		120	64 - 129	0.605	20
Surrogate: 1,2-Dichlorobenzene-d	0.5404			1.00000		54.0	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.5419			1.00000		54.2	20 - 131		
Surrogate: 4-Terphenyl-d14	0.6254			1.00000		62.5	24 - 135		
Surrogate: Nitrobenzene-d5	0.6287			1.00000		62.9	6 - 124		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 09/24/2019

Notes and Definitions

B	Analyte detected in the associated method blank.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.

Laboratory Report

September 20, 2019

Advanced Technology Laboratories
PO Box 92797
Long Beach, CA 90809-2797

Attn: Rachelle Arada

Element Job No: 233952
Purchase Order: COD - CC
Project Name: 1903282 / Groundwater
Samples Received: 2
Date Received: 09-06-19

Analysis	Page
Bromate by SOP 5600, Rev 3	2


Michael Shelton
Technical Director
Robert Stead
Senior Chemist

Bromate by SOP 5600, Rev 3
Ion Chromatography-Tandem Mass Spectrometry

Sample preparation: An aliquot of sample was spiked with internal standard (bromate-¹⁸O₃), and diluted with water. The sample solutions were analyzed using IC-MS/MS.

Parts Per Billion (µg/L)

<u>Sample ID</u>	<u>Result</u>
ATL Lab#: 1903282-04 / POX	ND
ATL Lab#: 1903282-06 / INF	ND
Method Blank	ND
Detection Limit	0.5
Date Analyzed: 09-13-19	

Quality Control Summary

Sample ID: ATL Lab#: 1903282-04 / POX

<u>Analyte</u>	<u>Sample Result</u>	<u>Spike Conc</u>	<u>Spike Result</u>	<u>Spike % Rec</u>	<u>Spike Duplicate</u>	<u>Duplicate % Rec</u>	<u>RPD</u>
Bromate	ND	10.0	10.4	104	10.1	101	3
QC Guidelines				80-120		80-120	NMT 15

SUBCONTRACT ORDER

Work Order: 1903282

SENDING LABORATORY:

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Phone: 562.989.4045
Fax: 562.989.6348
Project Manager: Rachelle Arada
(Rachelle.Arada@atlglobal.com)

RECEIVING LABORATORY:

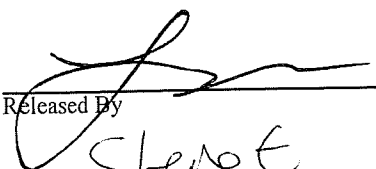
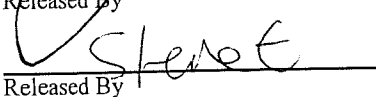
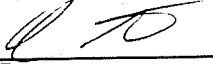
Element Materials Technology
9240 Santa Fe Springs Road
Santa Fe Springs, CA 90670
Phone : (562) 948-2225
Fax: (562) 948-5850
PO#: SC14048- STANDARD TAT

Sampler: Signed

IMPORTANT : Please include Work Order # and PO # in your invoice.

Analysis	Due	Expires	Sampled	Comments
ATL Lab#: 1903282-04 / POX Bromate_ICMS/MS_SUB [Bromate by IC-MS/MS] 1-Poly Unpres - 125mL	09/20/19 17:00	Groundwater 10/03/19 08:00	09/05/19 08:00	
ATL Lab#: 1903282-06 / INF Bromate_ICMS/MS_SUB [Bromate by IC-MS/MS] 1-Poly Unpres - 125mL	09/20/19 17:00	Groundwater 10/03/19 08:20	09/05/19 08:20	

09.06.19 AND
Also has: ① - H
② - F

Released By 	Date 9/6/19 1024	Received By Steve E	Date 9-6-19 10:24
Released By 	Date 9-6-19 11:45	Received By 	Date 09.06.19 11:45 AM

233952

PROJECT: Raytheon Main GETS Monthly Sample

TASK NO.: 532.15

Project Manager Steve Netto

QA Manager Ross Horton

Phone 858.455.6500

Fax 858.455.6533

Sampled By: <u>Ruben Sanchez</u>				SAMPLE COLLECTION		MATRIX		PRESERVATION		CONTAINERS				ANALYSIS REQUESTED										Expected Concentration Range (ppb) for VOAs				SPECIAL HANDLING				Laboratory				
LAB ID	SAMPLE ID	Date	Time	Groundwater	Lab prepared water	Hydrochloric Acid (HCl)	Nitric Acid (HNO ₃)	Sulfuric Acid (H ₂ SO ₄)	Ice	40-ml VOA	125 mL Poly	250 mL Poly	250 mL Glass	1 L Poly	1L Amber	VOCs by EPA 8260B	Bromate by EPA 317	Bromide by EPA 300	Alkalinity by SM2320B	Total Organic Carbon by SM5310B	Total Suspended Solids by SM2540D	UV Absorption EPA 415.3 @254 nm	1,4-Dioxane by EPA 8270C MOD	1,4-Dioxane by EPA 8270 SIM	10 - 10	10 - 100	100 - 1,000	>1,000	24 hr TAT	48 Hour TAT	5 Day TAT	Level IV Data Validation Requested	MSMSD Requested	REMARKS		
1903282-01	TB-090519	9/5/2019	8:00		X	X			X	2						X									X											
-02	CEFF	9/5/2019	7:40	X		X			X	3					1	X								X	X											
-03	CBT	9/5/2019	7:50	X		X			X	3					1	X							X	X												
-04	POX	9/5/2019	8:00	X		X		X	X	5	1	1			1	X	X		X	X			X	X												
-05	PF	9/5/2019	8:10	X				X	X	2		1	1	1					X	X	X	X														
-06	INF	9/5/2019	8:20	X		X			X	3	2				1	X	X	X					X			X										
-07	EW-02	9/5/2019	9:20	X		X			X	3	1				1	X	X					X			X											
-08	MW-29	9/5/2019	9:55	X		X			X	3	1				1	X	X					X			X											

Total number of containers per analysis:				24	5	2	1	1	6	Total No. of Containers: <u>39</u>			
Relinquished By: / Company:		Date / Time	Received By: / Company		Date / Time								
<u>[Signature]</u> H+A		9-5-19 10:52	<u>[Signature]</u>		9-5-19 10:52								
Relinquished By: / Company:		Date / Time	Received By: / Company		Date / Time								
<u>[Signature]</u> H+A		9-5-19 1509	<u>[Signature]</u>		9/5/19 1509								

- ☐ No. of containers correct
☐ Received in good condition
☐ Custody seals secure
☐ Conforms to COC document

Send Results to:
Steve Netto & Ross Horton
 9171 Towne Centre Drive
 Suite 375
 San Diego, CA 92122
 Ph: 858.455.6500
snetto@hargis.com
horton@hargis.com

Instructions

- Fill out form completely and sign only after verified for completeness
- Complete in ballpoint pen. Draw one line through error, initial and date correction
- Indicate the number of sample containers in analytical request space; indicate choice with ✓ or x
- Note applicable preservatives, special instructions, and deviations from typical environmental samples.
- Consult project QA documents for specific instructions.

32 Temperature on receipt

165



September 13, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1903286

Client Reference : Raytheon Main GETS Quarterly Sample, 532.15

Enclosed are the results for sample(s) received on September 05, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read "Edgar Caballero", with a small "En" written below the main signature.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 09/13/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
CEFF	1903286-01	Groundwater	9/05/19 7:40	9/05/19 15:09
POX	1903286-02	Groundwater	9/05/19 8:00	9/05/19 15:09
INF	1903286-03	Groundwater	9/05/19 8:20	9/05/19 15:09
EW-02	1903286-04	Groundwater	9/05/19 9:20	9/05/19 15:09
MW-29	1903286-05	Groundwater	9/05/19 9:55	9/05/19 15:09



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 09/13/2019

Client Sample ID: CEFF

Lab ID: 1903286-01

Total Dissolved Solids (Residue, Filterable) by SM 2540C

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Residue, Dissolved	700	10	1	B9I0363	09/06/2019	09/09/19 14:27	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 09/13/2019

Client Sample ID: POX

Lab ID: 1903286-02

Anions Scan by Ion Chromatography EPA 300.0

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloride	120	5.0	10	B9I0367	09/06/2019	09/06/19 17:59	
Nitrate, as N	5.0	1.0	10	B9I0367	09/06/2019	09/06/19 17:59	
Nitrite, as N	ND	1.0	10	B9I0367	09/06/2019	09/06/19 17:59	D6
ortho-Phosphate, as P	ND	0.50	10	B9I0367	09/06/2019	09/06/19 17:59	D6
Sulfate	140	10	10	B9I0367	09/06/2019	09/06/19 17:59	

UV Absorption by EPA 415.3

Analyst: JL

Analyte	Result (1/cm)	PQL (1/cm)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
UV Absorption	ND	0.01	1	B9I0185	09/06/2019	09/06/19 13:40	

Total Dissolved Solids (Residue, Filterable) by SM 2540C

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Residue, Dissolved	700	10	1	B9I0363	09/06/2019	09/09/19 14:27	

Chemical Oxygen Demand by EPA 410.4

Analyst: DT

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chemical Oxygen Demand	ND	5.0	1	B9I0357	09/11/2019	09/11/19 14:42	



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 09/13/2019

Client Sample ID: INF

Lab ID: 1903286-03

Anions Scan by Ion Chromatography EPA 300.0

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloride	120	5.0	10	B9I0367	09/06/2019	09/06/19 18:10	
Nitrate, as N	5.1	1.0	10	B9I0367	09/06/2019	09/06/19 18:10	
Nitrite, as N	ND	1.0	10	B9I0367	09/06/2019	09/06/19 18:10	D6
ortho-Phosphate, as P	ND	0.50	10	B9I0367	09/06/2019	09/06/19 18:10	D6
Sulfate	150	10	10	B9I0367	09/06/2019	09/06/19 18:10	

UV Absorption by EPA 415.3

Analyst: JL

Analyte	Result (1/cm)	PQL (1/cm)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
UV Absorption	ND	0.01	1	B9I0185	09/06/2019	09/06/19 13:40	

Alkalinity, Speciated by SM 2320B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Alkalinity, Bicarbonate (as CaCO₃)	220	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	
Alkalinity, Total (as CaCO₃)	220	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	

Total Dissolved Solids (Residue, Filterable) by SM 2540C

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Residue, Dissolved	690	10	1	B9I0363	09/06/2019	09/09/19 14:27	

Total Organic Carbon by SM 5310B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Organic Carbon, Total	ND	3.0	1	B9I0362	09/10/2019	09/10/19 13:52	

Chemical Oxygen Demand by EPA 410.4

Analyst: DT

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
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Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 09/13/2019

Client Sample ID: INF

Lab ID: 1903286-03

Chemical Oxygen Demand by EPA 410.4

Analyst: DT

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chemical Oxygen Demand	ND	5.0	1	B9I0357	09/11/2019	09/11/19 14:42	

Total Metals by ICP-AES EPA 6010B

Analyst: VV

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Selenium	ND	0.010	1	B9I0301	09/10/2019	09/11/19 11:36	

Dissolved Metals by ICP-AES EPA 6010B

Analyst: VV

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Calcium	93	0.50	1	B9I0303	09/10/2019	09/11/19 16:43	
Iron	ND	0.50	1	B9I0303	09/10/2019	09/11/19 16:43	
Magnesium	28	0.10	1	B9I0303	09/10/2019	09/11/19 16:43	
Manganese	ND	0.50	1	B9I0303	09/10/2019	09/11/19 16:43	
Selenium	ND	0.010	1	B9I0303	09/10/2019	09/11/19 16:43	
Sodium	76	1.0	1	B9I0303	09/10/2019	09/11/19 16:43	



Certificate of Analysis

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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 09/13/2019

Client Sample ID: EW-02

Lab ID: 1903286-04

Anions Scan by Ion Chromatography EPA 300.0

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloride	100	5.0	10	B9I0367	09/06/2019	09/06/19 18:21	
Nitrate, as N	4.7	1.0	10	B9I0367	09/06/2019	09/06/19 18:21	
Nitrite, as N	ND	1.0	10	B9I0367	09/06/2019	09/06/19 18:21	D6
ortho-Phosphate, as P	ND	0.50	10	B9I0367	09/06/2019	09/06/19 18:21	D6
Sulfate	150	10	10	B9I0367	09/06/2019	09/06/19 18:21	

UV Absorption by EPA 415.3

Analyst: JL

Analyte	Result (1/cm)	PQL (1/cm)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
UV Absorption	ND	0.01	1	B9I0185	09/06/2019	09/06/19 13:40	

Alkalinity, Speciated by SM 2320B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Alkalinity, Bicarbonate (as CaCO ₃)	210	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	
Alkalinity, Total (as CaCO ₃)	210	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	

Total Dissolved Solids (Residue, Filterable) by SM 2540C

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Residue, Dissolved	660	10	1	B9I0363	09/06/2019	09/09/19 14:27	

Total Organic Carbon by SM 5310B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Organic Carbon, Total	ND	3.0	1	B9I0362	09/10/2019	09/10/19 14:07	

Chemical Oxygen Demand by EPA 410.4

Analyst: DT

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
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Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 09/13/2019

Client Sample ID: EW-02

Lab ID: 1903286-04

Chemical Oxygen Demand by EPA 410.4

Analyst: DT

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chemical Oxygen Demand	ND	5.0	1	B9I0357	09/11/2019	09/11/19 14:42	

Total Metals by ICP-AES EPA 6010B

Analyst: VV

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Selenium	ND	0.010	1	B9I0301	09/10/2019	09/11/19 11:38	

Dissolved Metals by ICP-AES EPA 6010B

Analyst: VV

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Calcium	92	0.50	1	B9I0303	09/10/2019	09/11/19 16:50	
Iron	ND	0.50	1	B9I0303	09/10/2019	09/11/19 16:50	
Magnesium	28	0.10	1	B9I0303	09/10/2019	09/11/19 16:50	
Manganese	ND	0.50	1	B9I0303	09/10/2019	09/11/19 16:50	
Selenium	ND	0.010	1	B9I0303	09/10/2019	09/11/19 16:50	
Sodium	74	1.0	1	B9I0303	09/10/2019	09/11/19 16:50	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 09/13/2019

Client Sample ID: MW-29

Lab ID: 1903286-05

Anions Scan by Ion Chromatography EPA 300.0

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloride	180	10	20	B9I0367	09/06/2019	09/06/19 18:33	
Nitrate, as N	7.1	2.0	20	B9I0367	09/06/2019	09/06/19 18:33	
Nitrite, as N	ND	2.0	20	B9I0367	09/06/2019	09/06/19 18:33	D6
ortho-Phosphate, as P	ND	1.0	20	B9I0367	09/06/2019	09/06/19 18:33	D6
Sulfate	140	20	20	B9I0367	09/06/2019	09/06/19 18:33	

UV Absorption by EPA 415.3

Analyst: JL

Analyte	Result (1/cm)	PQL (1/cm)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
UV Absorption	ND	0.01	1	B9I0185	09/06/2019	09/06/19 13:40	

Alkalinity, Speciated by SM 2320B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Alkalinity, Bicarbonate (as CaCO ₃)	260	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	
Alkalinity, Total (as CaCO ₃)	260	5.0	1	B9I0315	09/10/2019	09/10/19 12:00	

Total Dissolved Solids (Residue, Filterable) by SM 2540C

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Residue, Dissolved	830	10	1	B9I0363	09/06/2019	09/09/19 14:27	

Total Organic Carbon by SM 5310B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Organic Carbon, Total	ND	3.0	1	B9I0362	09/10/2019	09/10/19 14:20	

Chemical Oxygen Demand by EPA 410.4

Analyst: DT

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
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Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 09/13/2019

Client Sample ID: MW-29

Lab ID: 1903286-05

Chemical Oxygen Demand by EPA 410.4

Analyst: DT

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chemical Oxygen Demand	ND	5.0	1	B9I0357	09/11/2019	09/11/19 14:42	

Total Metals by ICP-AES EPA 6010B

Analyst: VV

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Selenium	ND	0.010	1	B9I0301	09/10/2019	09/11/19 11:40	

Dissolved Metals by ICP-AES EPA 6010B

Analyst: VV

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Calcium	120	0.50	1	B9I0303	09/10/2019	09/11/19 16:52	
Iron	ND	0.50	1	B9I0303	09/10/2019	09/11/19 16:52	
Magnesium	37	0.10	1	B9I0303	09/10/2019	09/11/19 16:52	
Manganese	ND	0.50	1	B9I0303	09/10/2019	09/11/19 16:52	
Selenium	ND	0.010	1	B9I0303	09/10/2019	09/11/19 16:52	
Sodium	110	1.0	1	B9I0303	09/10/2019	09/11/19 16:52	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 09/13/2019

QUALITY CONTROL SECTION

Alkalinity, Speciated by SM 2320B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0315 - No_Prep_WC1_W

Blank (B9I0315-BLK1)

Prepared: 9/10/2019 Analyzed: 9/10/2019

Alkalinity, Bicarbonate (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Total (as CaCO ₃)	ND	5.0	3.4

LCS (B9I0315-BS1)

Prepared: 9/10/2019 Analyzed: 9/10/2019

Alkalinity, Total (as CaCO ₃)	107.000	5.0	3.4	99.9580	107	80 - 120
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Matrix Spike (B9I0315-MS1)

Source: 1903327-02

Prepared: 9/10/2019 Analyzed: 9/10/2019

Alkalinity, Total (as CaCO ₃)	206.000	5.0	3.4	99.9580	104.000	102	80 - 120
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Matrix Spike Dup (B9I0315-MSD1)

Source: 1903327-02

Prepared: 9/10/2019 Analyzed: 9/10/2019

Alkalinity, Total (as CaCO ₃)	206.000	5.0	3.4	99.9580	104.000	102	80 - 120	0.00	20
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Project Number : Raytheon Main GETS Quarterly Sample,

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Total Dissolved Solids (Residue, Filterable) by SM 2540C - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0363 - No_Prep_WC1_W

Blank (B9I0363-BLK1)

Prepared: 9/6/2019 Analyzed: 9/9/2019

Residue, Dissolved ND 10 10

LCS (B9I0363-BS1)

Prepared: 9/6/2019 Analyzed: 9/9/2019

Residue, Dissolved 998.000 10 10 977.000 102 80 - 120

Duplicate (B9I0363-DUP1)

Source: 1903276-05

Prepared: 9/6/2019 Analyzed: 9/9/2019

Residue, Dissolved 3630.00 33 33 3543.33 2.42 10



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Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 09/13/2019

Anions Scan by Ion Chromatography EPA 300.0 - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0367 - No_Prep_IC1_W

Blank (B9I0367-BLK1)

Prepared: 9/6/2019 Analyzed: 9/6/2019

Chloride	ND	0.50	0.07							
Nitrate, as N	ND	0.10	0.05							
Nitrite, as N	ND	0.10	0.006							
ortho-Phosphate, as P	ND	0.05	0.05							
Sulfate	ND	1.0	0.06							

LCS (B9I0367-BS1)

Prepared: 9/6/2019 Analyzed: 9/6/2019

Chloride	1.01910	0.50	0.07	1.00000	102	90 - 110				
Nitrate, as N	0.994900	0.10	0.05	1.00000	99.5	90 - 110				
Nitrite, as N	0.994400	0.10	0.006	1.00000	99.4	90 - 110				
ortho-Phosphate, as P	0.934200	0.05	0.05	1.00000	93.4	90 - 110				
Sulfate	2.05880	1.0	0.06	2.00000	103	90 - 110				

Duplicate (B9I0367-DUP1)

Source: 1903286-04

Prepared: 9/6/2019 Analyzed: 9/6/2019

Chloride	107.153	5.0	0.71	103.846			3.13	20		
Nitrate, as N	4.77400	1.0	0.48	4.65500			2.52	20		
Nitrite, as N	ND	1.0	0.06	ND				20		
ortho-Phosphate, as P	ND	0.50	0.47	ND				20		
Sulfate	152.444	10	0.63	148.311			2.75	20		

Matrix Spike (B9I0367-MS1)

Source: 1903286-04

Prepared: 9/6/2019 Analyzed: 9/6/2019

Chloride	13.3447		2.50000	10.3846	118	80 - 120				
Nitrate, as N	3.03390		2.50000	0.465500	103	80 - 120				
Nitrite, as N	2.60290		2.50000	0.00000	104	80 - 120				
ortho-Phosphate, as P	3.33970		2.50000	0.00000	134	80 - 120				M1
Sulfate	21.3901		5.00000	14.8311	131	80 - 120				M1

Matrix Spike Dup (B9I0367-MSD1)

Source: 1903286-04

Prepared: 9/6/2019 Analyzed: 9/6/2019

Chloride	13.4211		2.50000	10.3846	121	80 - 120	0.571	20		M1
Nitrate, as N	3.06040		2.50000	0.465500	104	80 - 120	0.870	20		
Nitrite, as N	2.63640		2.50000	0.00000	105	80 - 120	1.28	20		
ortho-Phosphate, as P	3.34470		2.50000	0.00000	134	80 - 120	0.150	20		M1
Sulfate	21.4979		5.00000	14.8311	133	80 - 120	0.503	20		M1



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Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 09/13/2019

UV Absorption by EPA 415.3 - Quality Control

Analyte	Result (1/cm)	PQL (1/cm)	MDL (1/cm)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD RPD	RPD Limit	Notes
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Batch B9I0185 - No_Prep_II_W

Duplicate (B9I0185-DUP1)

Source: 1903282-05

Prepared: 9/6/2019 Analyzed: 9/6/2019

UV Absorption	ND	0.01	0.01		ND			NR	20	
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Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 09/13/2019

Total Organic Carbon by SM 5310B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0362 - No_Prep_II_W

Blank (B9I0362-BLK1)

Prepared: 9/10/2019 Analyzed: 9/10/2019

Organic Carbon, Total ND 3.0 0.28

LCS (B9I0362-BS1)

Prepared: 9/10/2019 Analyzed: 9/10/2019

Organic Carbon, Total 20.1400 3.0 0.28 20.0000 101 80 - 120

LCS Dup (B9I0362-BSD1)

Prepared: 9/10/2019 Analyzed: 9/10/2019

Organic Carbon, Total 17.9800 3.0 0.28 20.0000 89.9 80 - 120 11.3 20



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Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 09/13/2019

Chemical Oxygen Demand by EPA 410.4 - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0357 - Prep_WC1_W

Blank (B9I0357-BLK1)

Prepared: 9/11/2019 Analyzed: 9/11/2019

Chemical Oxygen Demand ND 5.0 4.0

LCS (B9I0357-BS1)

Prepared: 9/11/2019 Analyzed: 9/11/2019

Chemical Oxygen Demand 472.244 5.0 4.0 501.500 94.2 80 - 120

Matrix Spike (B9I0357-MS1)

Source: 1903286-02

Prepared: 9/11/2019 Analyzed: 9/11/2019

Chemical Oxygen Demand 499.826 5.0 4.0 501.500 ND 99.7 80 - 120

Matrix Spike Dup (B9I0357-MSD1)

Source: 1903286-02

Prepared: 9/11/2019 Analyzed: 9/11/2019

Chemical Oxygen Demand 489.550 5.0 4.0 501.500 ND 97.6 80 - 120 2.08 20



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Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 09/13/2019

Total Metals by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0301 - EPA 3010A_W

Blank (B9I0301-BLK1)

Prepared: 9/10/2019 Analyzed: 9/11/2019

Selenium ND 0.010 0.0093

LCS (B9I0301-BS1)

Prepared: 9/10/2019 Analyzed: 9/11/2019

Selenium 0.846162 0.010 0.0093 1.00000 84.6 80 - 120

Matrix Spike (B9I0301-MS1)

Source: 1903260-01

Prepared: 9/10/2019 Analyzed: 9/11/2019

Selenium 2.06270 0.010 0.0093 2.50000 ND 82.5 59 - 135

Matrix Spike Dup (B9I0301-MSD1)

Source: 1903260-01

Prepared: 9/10/2019 Analyzed: 9/11/2019

Selenium 2.10635 0.010 0.0093 2.50000 ND 84.3 59 - 135 2.09 20



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Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 09/13/2019

Dissolved Metals by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0303 - EPA 3010A_W

Blank (B9I0303-BLK1)

Prepared: 9/10/2019 Analyzed: 9/12/2019

Calcium	ND	0.50	0.12							
Iron	ND	0.50	0.011							
Magnesium	ND	0.10	0.021							
Manganese	ND	0.50	0.0046							
Selenium	ND	0.010	0.0093							
Sodium	ND	1.0	0.12							

LCS (B9I0303-BS1)

Prepared: 9/10/2019 Analyzed: 9/11/2019

Calcium	18.0346	0.50	0.12	20.0000		90.2	80 - 120			
Iron	18.4994	0.50	0.011	20.0000		92.5	80 - 120			
Magnesium	18.1074	0.10	0.021	20.0000		90.5	80 - 120			
Manganese	9.37646	0.50	0.0046	10.0000		93.8	80 - 120			
Selenium	0.850168	0.010	0.0093	1.00000		85.0	80 - 120			
Sodium	17.2329	1.0	0.12	20.0000		86.2	80 - 120			

Matrix Spike (B9I0303-MS1)

Source: 1903286-03

Prepared: 9/10/2019 Analyzed: 9/11/2019

Calcium	110.295	0.50	0.12	20.0000	93.4825	84.1	10 - 167			
Iron	18.3265	0.50	0.011	20.0000	0.149495	90.9	39 - 130			
Magnesium	45.6713	0.10	0.021	20.0000	28.2975	86.9	31 - 139			
Manganese	9.36848	0.50	0.0046	10.0000	0.006802	93.6	44 - 125			
Selenium	2.15840	0.010	0.0093	2.50000	ND	86.3	59 - 135			
Sodium	95.3333	1.0	0.12	19.9000	75.7517	98.4	18 - 173			

Matrix Spike Dup (B9I0303-MSD1)

Source: 1903286-03

Prepared: 9/10/2019 Analyzed: 9/11/2019

Calcium	107.532	0.50	0.12	20.0000	93.4825	70.2	10 - 167	2.54	20	
Iron	17.9104	0.50	0.011	20.0000	0.149495	88.8	39 - 130	2.30	20	
Magnesium	44.7038	0.10	0.021	20.0000	28.2975	82.0	31 - 139	2.14	20	
Manganese	9.18706	0.50	0.0046	10.0000	0.006802	91.8	44 - 125	1.96	20	
Selenium	2.10599	0.010	0.0093	2.50000	ND	84.2	59 - 135	2.46	20	
Sodium	93.6488	1.0	0.12	19.9000	75.7517	89.9	18 - 173	1.78	20	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 09/13/2019

Notes and Definitions

M1	Matrix spike recovery outside of acceptance limit. The analytical batch was validated by the laboratory control sample.
D6	Sample required dilution due to high concentration of target analyte.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.

TASK NO.: 532.15

QA Manager Ross Horton

Phone 858.455.6500

Fax 858.455.6533

[illegible]

Instructions

Fill out form completely and sign only after verified for completeness

Complete in ballpoint pen. Draw one line through error, initial and date correction

Indicate the number of sample containers in analytical request space; indicate choice with ✓ or x

Note applicable preservatives, special instructions, and deviations from typical environmental samples.

Consult project QA documents for specific instructions.

Temperature on receipt

Send Results to:
Steve Netto & Ross Horton
9171 Towne Centre Drive
Suite 375
San Diego, CA 92122
Ph: 858.455.6500
snetto@hargis.com
rhorton@hargis.com



September 09, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1903288

Client Reference : Raytheon Main GETS OCSD Quarterly Sample, 532.15

Enclosed are the results for sample(s) received on September 05, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read "Edgar Caballero", with a small "Ar" written below it.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS OCSD Quarterly S

Report To : Steve Netto

Reported : 09/09/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-090519	1903288-01	Lab prepared water	9/05/19 8:00	9/05/19 15:09
CEFF	1903288-02	Groundwater	9/05/19 7:40	9/05/19 15:09



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San Diego , CA 92122

Project Number : Raytheon Main GETS OCSD Quarterly S

Report To : Steve Netto

Reported : 09/09/2019

Client Sample ID: TB-090519

Lab ID: 1903288-01

Volatile Organic Compounds by EPA 624

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1-Trichloroethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
1,1,2-Trichloroethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
1,1-Dichloroethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
1,1-Dichloroethene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
1,2-Dichlorobenzene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
1,2-Dichloroethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
1,2-Dichloropropane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
1,3-Dichlorobenzene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
1,4-Dichlorobenzene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
2-Chloroethyl vinyl ether	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
Acrolein	ND	10	1	B9I0205	09/06/2019	09/06/19 20:25	
Acrylonitrile	ND	10	1	B9I0205	09/06/2019	09/06/19 20:25	
Benzene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
Bromodichloromethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
Bromoform	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
Bromomethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
Carbon tetrachloride	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
Chlorobenzene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
Chloroethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
Chloroform	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
Chloromethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
cis-1,3-Dichloropropene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
Dibromochloromethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
Ethylbenzene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
m,p-Xylene	ND	1.0	1	B9I0205	09/06/2019	09/06/19 20:25	
Methylene chloride	ND	1.0	1	B9I0205	09/06/2019	09/06/19 20:25	
o-Xylene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
Tetrachloroethene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
Toluene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
trans-1,2-Dichloroethene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
trans-1,3-Dichloropropene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
Trichloroethene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
Trichlorofluoromethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	
Vinyl chloride	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:25	

Surrogate: 1,2-Dichloroethane-d4

101 %

59 - 158

B9I0205

09/06/2019

09/06/19 20:25

Surrogate: 4-Bromofluorobenzene

98.9 %

71 - 127

B9I0205

09/06/2019

09/06/19 20:25



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS OCSD Quarterly S

Report To : Steve Netto

Reported : 09/09/2019

Client Sample ID: TB-090519

Lab ID: 1903288-01

Volatile Organic Compounds by EPA 624

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
<i>Surrogate: Dibromofluoromethane</i>	<i>100 %</i>	<i>66 - 147</i>		B9I0205	09/06/2019	09/06/19 20:25	
<i>Surrogate: Toluene-d8</i>	<i>108 %</i>	<i>77 - 138</i>		B9I0205	09/06/2019	09/06/19 20:25	



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Project Number : Raytheon Main GETS OCSO Quarterly S

Report To : Steve Netto

Reported : 09/09/2019

Client Sample ID: CEFF

Lab ID: 1903288-02

Volatile Organic Compounds by EPA 624

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1-Trichloroethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
1,1,2-Trichloroethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
1,1-Dichloroethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
1,1-Dichloroethene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
1,2-Dichlorobenzene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
1,2-Dichloroethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
1,2-Dichloropropane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
1,3-Dichlorobenzene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
1,4-Dichlorobenzene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
2-Chloroethyl vinyl ether	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
Acrolein	ND	10	1	B9I0205	09/06/2019	09/06/19 20:49	
Acrylonitrile	ND	10	1	B9I0205	09/06/2019	09/06/19 20:49	
Benzene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
Bromodichloromethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
Bromoform	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
Bromomethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
Carbon tetrachloride	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
Chlorobenzene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
Chloroethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
Chloroform	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
Chloromethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
cis-1,3-Dichloropropene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
Dibromochloromethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
Ethylbenzene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
m,p-Xylene	ND	1.0	1	B9I0205	09/06/2019	09/06/19 20:49	
Methylene chloride	ND	1.0	1	B9I0205	09/06/2019	09/06/19 20:49	
o-Xylene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
Tetrachloroethene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
Toluene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
trans-1,2-Dichloroethene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
trans-1,3-Dichloropropene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
Trichloroethene	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
Trichlorofluoromethane	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	
Vinyl chloride	ND	0.50	1	B9I0205	09/06/2019	09/06/19 20:49	

Surrogate: 1,2-Dichloroethane-d4

101 %

59 - 158

B9I0205

09/06/2019

09/06/19 20:49

Surrogate: 4-Bromofluorobenzene

106 %

71 - 127

B9I0205

09/06/2019

09/06/19 20:49



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS OCSD Quarterly S:

Report To : Steve Netto

Reported : 09/09/2019

Client Sample ID: CEFF

Lab ID: 1903288-02

Volatile Organic Compounds by EPA 624

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
<i>Surrogate: Dibromofluoromethane</i>	<i>100 %</i>	<i>66 - 147</i>		B9I0205	09/06/2019	09/06/19 20:49	
<i>Surrogate: Toluene-d8</i>	<i>113 %</i>	<i>77 - 138</i>		B9I0205	09/06/2019	09/06/19 20:49	

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	2.0	1	B9I0271	09/09/2019	09/09/19 14:34	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>73.0 %</i>	<i>34 - 188</i>		B9I0271	09/09/2019	09/09/19 14:34	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>76.7 %</i>	<i>39 - 108</i>		B9I0271	09/09/2019	09/09/19 14:34	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>117 %</i>	<i>71 - 131</i>		B9I0271	09/09/2019	09/09/19 14:34	
<i>Surrogate: Nitrobenzene-d5</i>	<i>82.8 %</i>	<i>32 - 106</i>		B9I0271	09/09/2019	09/09/19 14:34	



Certificate of Analysis

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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS OCSD Quarterly S

Report To : Steve Netto

Reported : 09/09/2019

QUALITY CONTROL SECTION

Volatile Organic Compounds by EPA 624 - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0205 - MSVOA_LL_W

Blank (B9I0205-BLK1)

Prepared: 9/6/2019 Analyzed: 9/6/2019

1,1,1-Trichloroethane	ND	0.50	0.07
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3-Dichlorobenzene	ND	0.50	0.16
1,4-Dichlorobenzene	ND	0.50	0.17
2-Chloroethyl vinyl ether	ND	0.50	0.31
Acrolein	ND	10	1.9
Acrylonitrile	ND	10	2.3
Benzene	ND	0.50	0.13
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Ethylbenzene	ND	0.50	0.13
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
o-Xylene	ND	0.50	0.13
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
trans-1,3-Dichloropropene	ND	0.50	0.23
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	22.44	25.0000	89.8	59 - 158
Surrogate: 4-Bromofluorobenzene	25.84	25.0000	103	71 - 127
Surrogate: Dibromofluoromethane	21.88	25.0000	87.5	66 - 147
Surrogate: Toluene-d8	24.97	25.0000	99.9	77 - 138



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS OCSD Quarterly S:

Report To : Steve Netto

Reported : 09/09/2019

Volatile Organic Compounds by EPA 624 - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0205 - MSVOA_LL_W (continued)

LCS (B9I0205-BS1)

Prepared: 9/6/2019 Analyzed: 9/6/2019

1,1,1-Trichloroethane	19.4500	0.50	0.07	20.0000		97.2	62 - 124		
1,1,2,2-Tetrachloroethane	19.7200	0.50	0.36	20.0000		98.6	50 - 131		
1,1,2-Trichloroethane	20.3700	0.50	0.25	20.0000		102	77 - 121		
1,1-Dichloroethane	20.7900	0.50	0.09	20.0000		104	52 - 130		
1,1-Dichloroethene	21.2600	0.50	0.13	20.0000		106	61 - 136		
1,2-Dichlorobenzene	21.1300	0.50	0.20	20.0000		106	82 - 117		
1,2-Dichloroethane	20.7500	0.50	0.20	20.0000		104	66 - 126		
1,2-Dichloropropane	20.5500	0.50	0.15	20.0000		103	70 - 117		
1,3-Dichlorobenzene	21.1500	0.50	0.16	20.0000		106	81 - 116		
1,4-Dichlorobenzene	21.0600	0.50	0.17	20.0000		105	80 - 114		
2-Chloroethyl vinyl ether	9.72000	0.50	0.31	20.0000		48.6	0 - 126		
Acrolein	460.800	10	1.9	200.000		230	1 - 130		L5
Acrylonitrile	201.150	10	2.3	200.000		101	29 - 144		
Benzene	41.1400	0.50	0.13	40.0000		103	80 - 116		
Bromodichloromethane	18.8000	0.50	0.14	20.0000		94.0	73 - 118		
Bromoform	20.2800	0.50	0.20	20.0000		101	65 - 133		
Bromomethane	17.4300	0.50	0.17	20.0000		87.2	7 - 205		
Carbon tetrachloride	18.3500	0.50	0.09	20.0000		91.8	63 - 133		
Chlorobenzene	21.7500	0.50	0.13	20.0000		109	86 - 113		
Chloroethane	20.9300	0.50	0.15	20.0000		105	66 - 141		
Chloroform	19.6800	0.50	0.11	20.0000		98.4	63 - 127		
Chloromethane	18.2200	0.50	0.12	20.0000		91.1	0 - 207		
cis-1,3-Dichloropropene	22.4500	0.50	0.13	20.0000		112	70 - 141		
Dibromochloromethane	22.0200	0.50	0.16	20.0000		110	67 - 135		
Ethylbenzene	40.7400	0.50	0.13	40.0000		102	77 - 118		
m,p-Xylene	43.4700	1.0	0.19	40.0000		109	78 - 126		
Methylene chloride	20.8500	1.0	0.71	20.0000		104	51 - 149		
o-Xylene	44.4600	0.50	0.13	40.0000		111	79 - 126		
Tetrachloroethene	21.5100	0.50	0.10	20.0000		108	73 - 129		
Toluene	41.9600	0.50	0.12	40.0000		105	78 - 121		
trans-1,2-Dichloroethene	20.8100	0.50	0.09	20.0000		104	58 - 141		
trans-1,3-Dichloropropene	18.4600	0.50	0.23	20.0000		92.3	68 - 128		
Trichloroethene	21.5200	0.50	0.10	20.0000		108	73 - 126		
Trichlorofluoromethane	16.5400	0.50	0.10	20.0000		82.7	62 - 146		
Vinyl chloride	19.2600	0.50	0.05	20.0000		96.3	61 - 137		
Surrogate: 1,2-Dichloroethane-d4	22.32			25.0000		89.3	59 - 158		
Surrogate: 4-Bromofluorobenzene	27.22			25.0000		109	71 - 127		
Surrogate: Dibromofluoromethane	22.49			25.0000		90.0	66 - 147		
Surrogate: Toluene-d8	26.11			25.0000		104	77 - 138		

LCS Dup (B9I0205-BS1)

Prepared: 9/6/2019 Analyzed: 9/6/2019

1,1,1-Trichloroethane	18.7900	0.50	0.07	20.0000		94.0	62 - 124	3.45	20
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Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS OCSD Quarterly S

Report To : Steve Netto

Reported : 09/09/2019

Volatile Organic Compounds by EPA 624 - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0205 - MSVOA_LL_W (continued)

LCS Dup (B9I0205-BSD1) - Continued

Prepared: 9/6/2019 Analyzed: 9/6/2019

1,1,2,2-Tetrachloroethane	20.3400	0.50	0.36	20.0000		102	50 - 131	3.10	20	
1,1,2-Trichloroethane	20.0100	0.50	0.25	20.0000		100	77 - 121	1.78	20	
1,1-Dichloroethane	20.3700	0.50	0.09	20.0000		102	52 - 130	2.04	20	
1,1-Dichloroethene	20.6400	0.50	0.13	20.0000		103	61 - 136	2.96	20	
1,2-Dichlorobenzene	21.3500	0.50	0.20	20.0000		107	82 - 117	1.04	20	
1,2-Dichloroethane	20.1000	0.50	0.20	20.0000		100	66 - 126	3.18	20	
1,2-Dichloropropane	20.1900	0.50	0.15	20.0000		101	70 - 117	1.77	20	
1,3-Dichlorobenzene	21.7400	0.50	0.16	20.0000		109	81 - 116	2.75	20	
1,4-Dichlorobenzene	21.2800	0.50	0.17	20.0000		106	80 - 114	1.04	20	
2-Chloroethyl vinyl ether	13.3900	0.50	0.31	20.0000		67.0	0 - 126	31.8	20	R
Acrolein	512.680	10	1.9	200.000		256	1 - 130	10.7	20	L5
Acrylonitrile	211.170	10	2.3	200.000		106	29 - 144	4.86	20	
Benzene	40.5500	0.50	0.13	40.0000		101	80 - 116	1.44	20	
Bromodichloromethane	18.4100	0.50	0.14	20.0000		92.0	73 - 118	2.10	20	
Bromoform	19.6600	0.50	0.20	20.0000		98.3	65 - 133	3.10	20	
Bromomethane	18.6800	0.50	0.17	20.0000		93.4	7 - 205	6.92	20	
Carbon tetrachloride	16.6400	0.50	0.09	20.0000		83.2	63 - 133	9.77	20	
Chlorobenzene	21.0900	0.50	0.13	20.0000		105	86 - 113	3.08	20	
Chloroethane	22.3600	0.50	0.15	20.0000		112	66 - 141	6.61	20	
Chloroform	20.0100	0.50	0.11	20.0000		100	63 - 127	1.66	20	
Chloromethane	20.3900	0.50	0.12	20.0000		102	0 - 207	11.2	20	
cis-1,3-Dichloropropene	22.1500	0.50	0.13	20.0000		111	70 - 141	1.35	20	
Dibromochloromethane	21.3100	0.50	0.16	20.0000		107	67 - 135	3.28	20	
Ethylbenzene	39.8600	0.50	0.13	40.0000		99.6	77 - 118	2.18	20	
m,p-Xylene	42.2300	1.0	0.19	40.0000		106	78 - 126	2.89	20	
Methylene chloride	20.7900	1.0	0.71	20.0000		104	51 - 149	0.288	20	
o-Xylene	43.5500	0.50	0.13	40.0000		109	79 - 126	2.07	20	
Tetrachloroethene	21.7500	0.50	0.10	20.0000		109	73 - 129	1.11	20	
Toluene	41.1800	0.50	0.12	40.0000		103	78 - 121	1.88	20	
trans-1,2-Dichloroethene	20.6300	0.50	0.09	20.0000		103	58 - 141	0.869	20	
trans-1,3-Dichloropropene	18.5700	0.50	0.23	20.0000		92.8	68 - 128	0.594	20	
Trichloroethene	20.8400	0.50	0.10	20.0000		104	73 - 126	3.21	20	
Trichlorofluoromethane	17.3800	0.50	0.10	20.0000		86.9	62 - 146	4.95	20	
Vinyl chloride	20.1900	0.50	0.05	20.0000		101	61 - 137	4.71	20	
Surrogate: 1,2-Dichloroethane-d4	22.98			25.0000		91.9	59 - 158			
Surrogate: 4-Bromofluorobenzene	28.36			25.0000		113	71 - 127			
Surrogate: Dibromofluoromethan	23.29			25.0000		93.2	66 - 147			
Surrogate: Toluene-d8	27.19			25.0000		109	77 - 138			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS OCSD Quarterly S

Report To : Steve Netto

Reported : 09/09/2019

1,4-Dioxane by EPA 8270: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0271 - MSSEMI_W

Blank (B9I0271-BLK1)

Prepared: 9/9/2019 Analyzed: 9/9/2019

1,4-Dioxane	ND	2.0	0.84							
Surrogate: 1,2-Dichlorobenzene-d	77.76			100.000		77.8	34 - 188			
Surrogate: 2-Fluorobiphenyl	81.94			100.000		81.9	39 - 108			
Surrogate: 4-Terphenyl-d14	118.8			100.000		119	71 - 131			
Surrogate: Nitrobenzene-d5	90.19			100.000		90.2	32 - 106			

LCS (B9I0271-BS1)

Prepared: 9/9/2019 Analyzed: 9/9/2019

1,4-Dioxane	115.820	2.0	0.84	100.000		116	40 - 159			
Surrogate: 1,2-Dichlorobenzene-d	68.71			100.000		68.7	34 - 188			
Surrogate: 2-Fluorobiphenyl	74.00			100.000		74.0	39 - 108			
Surrogate: 4-Terphenyl-d14	99.40			100.000		99.4	71 - 131			
Surrogate: Nitrobenzene-d5	82.44			100.000		82.4	32 - 106			

LCS Dup (B9I0271-BSD1)

Prepared: 9/9/2019 Analyzed: 9/9/2019

1,4-Dioxane	115.280	2.0	0.84	100.000		115	40 - 159	0.467	20	
Surrogate: 1,2-Dichlorobenzene-d	68.13			100.000		68.1	34 - 188			
Surrogate: 2-Fluorobiphenyl	75.52			100.000		75.5	39 - 108			
Surrogate: 4-Terphenyl-d14	99.16			100.000		99.2	71 - 131			
Surrogate: Nitrobenzene-d5	82.41			100.000		82.4	32 - 106			



Certificate of Analysis

Hargis & Associates, Inc.

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San Diego , CA 92122

Project Number : Raytheon Main GETS OCSD Quarterly S

Report To : Steve Netto

Reported : 09/09/2019

Notes and Definitions

R	RPD value outside acceptance criteria. Calculation is based on raw values.
L5	Laboratory Control Sample high biased. Sample result/s was non-detect (ND) for the target analyte; therefore reanalysis was not necessary.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.



Page 1 of 1

Fax 858.455.6533

Send Results to:
Steve Netto & Ross Horton
 9171 Towne Centre Drive
 Suite 375
 San Diego, CA 92122
 Ph: 858.455.6500
snetto@hargis.com
rhorton@hargis.com

Consult project QA documents for specific instructions.

Page 12 of 12



September 30, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1903475

Client Reference : Raytheon Main GETS Mid Month Sample, 532.15

Enclosed are the results for sample(s) received on September 19, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read "EC", with a stylized flourish at the end.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-091919	1903475-01	Lab prepared water	9/19/19 8:00	9/19/19 14:45
CEFF	1903475-02	Groundwater	9/19/19 9:20	9/19/19 14:45
CBT	1903475-03	Groundwater	9/19/19 9:25	9/19/19 14:45
POX	1903475-04	Groundwater	9/19/19 9:30	9/19/19 14:45
INF	1903475-05	Groundwater	9/19/19 9:40	9/19/19 14:45
EW-02	1903475-06	Groundwater	9/19/19 10:50	9/19/19 14:45
MW-29	1903475-07	Groundwater	9/19/19 11:10	9/19/19 14:45



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: TB-091919

Lab ID: 1903475-01

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
1,1,1-Trichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
1,1,2-Trichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
1,1-Dichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
1,1-Dichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
1,1-Dichloropropene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
1,2,3-Trichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
1,2,3-Trichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
1,2,4-Trichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
1,2,4-Trimethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
1,2-Dibromoethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
1,2-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
1,2-Dichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
1,2-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
1,3,5-Trimethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
1,3-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
1,3-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
1,4-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
2,2-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
2-Chlorotoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
4-Chlorotoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
4-Isopropyltoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Benzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Bromobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Bromodichloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Bromoform	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Bromomethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Carbon tetrachloride	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Chlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Chloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Chloroform	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Chloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
cis-1,2-Dichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
cis-1,3-Dichloropropene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Dibromochloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: TB-091919

Lab ID: 1903475-01

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Dichlorodifluoromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Ethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Hexachlorobutadiene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Isopropylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
m,p-Xylene	ND	1.0	1	B9I0911	09/29/2019	09/29/19 16:10	
Methylene chloride	ND	1.0	1	B9I0911	09/29/2019	09/29/19 16:10	
n-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
n-Propylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Naphthalene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
o-Xylene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
sec-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Styrene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
tert-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Tetrachloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Toluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
trans-1,2-Dichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Trichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Trichlorofluoromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Vinyl chloride	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:10	
Surrogate: 1,2-Dichloroethane-d4	118 %	59 - 158		B9I0911	09/29/2019	09/29/19 16:10	
Surrogate: 4-Bromofluorobenzene	98.0 %	71 - 127		B9I0911	09/29/2019	09/29/19 16:10	
Surrogate: Dibromofluoromethane	112 %	66 - 147		B9I0911	09/29/2019	09/29/19 16:10	
Surrogate: Toluene-d8	99.9 %	77 - 138		B9I0911	09/29/2019	09/29/19 16:10	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: CEFF

Lab ID: 1903475-02

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
1,1,1-Trichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
1,1,2-Trichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
1,1-Dichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
1,1-Dichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
1,1-Dichloropropene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
1,2,3-Trichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
1,2,3-Trichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
1,2,4-Trichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
1,2,4-Trimethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
1,2-Dibromoethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
1,2-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
1,2-Dichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
1,2-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
1,3,5-Trimethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
1,3-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
1,3-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
1,4-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
2,2-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
2-Chlorotoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
4-Chlorotoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
4-Isopropyltoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Benzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Bromobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Bromodichloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Bromoform	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Bromomethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Carbon tetrachloride	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Chlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Chloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Chloroform	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Chloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
cis-1,2-Dichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
cis-1,3-Dichloropropene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Dibromochloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: CEFF

Lab ID: 1903475-02

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Dichlorodifluoromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Ethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Hexachlorobutadiene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Isopropylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
m,p-Xylene	ND	1.0	1	B9I0911	09/29/2019	09/29/19 16:35	
Methylene chloride	ND	1.0	1	B9I0911	09/29/2019	09/29/19 16:35	
n-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
n-Propylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Naphthalene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
o-Xylene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
sec-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Styrene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
tert-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Tetrachloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Toluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
trans-1,2-Dichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Trichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Trichlorofluoromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Vinyl chloride	ND	0.50	1	B9I0911	09/29/2019	09/29/19 16:35	
Surrogate: 1,2-Dichloroethane-d4	121 %	59 - 158		B9I0911	09/29/2019	09/29/19 16:35	
Surrogate: 4-Bromofluorobenzene	98.3 %	71 - 127		B9I0911	09/29/2019	09/29/19 16:35	
Surrogate: Dibromofluoromethane	113 %	66 - 147		B9I0911	09/29/2019	09/29/19 16:35	
Surrogate: Toluene-d8	105 %	77 - 138		B9I0911	09/29/2019	09/29/19 16:35	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: CEFF

Lab ID: 1903475-02

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9I0802	09/24/2019	09/25/19 14:15	
Surrogate: 1,2-Dichlorobenzene-d4	78.2 %	22 - 117		B9I0802	09/24/2019	09/25/19 14:15	
Surrogate: 2-Fluorobiphenyl	68.3 %	20 - 131		B9I0802	09/24/2019	09/25/19 14:15	
Surrogate: 4-Terphenyl-d14	81.8 %	24 - 135		B9I0802	09/24/2019	09/25/19 14:15	
Surrogate: Nitrobenzene-d5	101 %	6 - 124		B9I0802	09/24/2019	09/25/19 14:15	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: CBT

Lab ID: 1903475-03

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
1,1,1-Trichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
1,1,2-Trichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
1,1-Dichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
1,1-Dichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
1,1-Dichloropropene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
1,2,3-Trichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
1,2,3-Trichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
1,2,4-Trichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
1,2,4-Trimethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
1,2-Dibromoethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
1,2-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
1,2-Dichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
1,2-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
1,3,5-Trimethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
1,3-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
1,3-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
1,4-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
2,2-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
2-Chlorotoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
4-Chlorotoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
4-Isopropyltoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Benzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Bromobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Bromodichloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Bromoform	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Bromomethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Carbon tetrachloride	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Chlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Chloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Chloroform	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Chloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
cis-1,2-Dichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
cis-1,3-Dichloropropene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Dibromochloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: CBT

Lab ID: 1903475-03

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Dichlorodifluoromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Ethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Hexachlorobutadiene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Isopropylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
m,p-Xylene	ND	1.0	1	B9I0911	09/29/2019	09/29/19 17:00	
Methylene chloride	ND	1.0	1	B9I0911	09/29/2019	09/29/19 17:00	
n-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
n-Propylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Naphthalene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
o-Xylene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
sec-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Styrene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
tert-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Tetrachloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Toluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
trans-1,2-Dichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Trichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Trichlorofluoromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Vinyl chloride	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:00	
Surrogate: 1,2-Dichloroethane-d4	122 %	59 - 158		B9I0911	09/29/2019	09/29/19 17:00	
Surrogate: 4-Bromofluorobenzene	97.6 %	71 - 127		B9I0911	09/29/2019	09/29/19 17:00	
Surrogate: Dibromofluoromethane	111 %	66 - 147		B9I0911	09/29/2019	09/29/19 17:00	
Surrogate: Toluene-d8	103 %	77 - 138		B9I0911	09/29/2019	09/29/19 17:00	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: CBT

Lab ID: 1903475-03

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9I0802	09/24/2019	09/25/19 14:42	
Surrogate: 1,2-Dichlorobenzene-d4	79.7 %	22 - 117		B9I0802	09/24/2019	09/25/19 14:42	
Surrogate: 2-Fluorobiphenyl	70.5 %	20 - 131		B9I0802	09/24/2019	09/25/19 14:42	
Surrogate: 4-Terphenyl-d14	81.8 %	24 - 135		B9I0802	09/24/2019	09/25/19 14:42	
Surrogate: Nitrobenzene-d5	104 %	6 - 124		B9I0802	09/24/2019	09/25/19 14:42	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: POX

Lab ID: 1903475-04

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
1,1,1-Trichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
1,1,2-Trichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
1,1-Dichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
1,1-Dichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
1,1-Dichloropropene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
1,2,3-Trichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
1,2,3-Trichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
1,2,4-Trichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
1,2,4-Trimethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
1,2-Dibromoethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
1,2-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
1,2-Dichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
1,2-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
1,3,5-Trimethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
1,3-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
1,3-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
1,4-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
2,2-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
2-Chlorotoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
4-Chlorotoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
4-Isopropyltoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Benzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Bromobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Bromodichloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Bromoform	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Bromomethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Carbon tetrachloride	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Chlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Chloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Chloroform	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Chloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
cis-1,2-Dichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
cis-1,3-Dichloropropene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Dibromochloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: POX

Lab ID: 1903475-04

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Dichlorodifluoromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Ethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Hexachlorobutadiene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Isopropylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
m,p-Xylene	ND	1.0	1	B9I0911	09/29/2019	09/29/19 17:25	
Methylene chloride	ND	1.0	1	B9I0911	09/29/2019	09/29/19 17:25	
n-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
n-Propylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Naphthalene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
o-Xylene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
sec-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Styrene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
tert-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Tetrachloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Toluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
trans-1,2-Dichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Trichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Trichlorofluoromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Vinyl chloride	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:25	
Surrogate: 1,2-Dichloroethane-d4	124 %	59 - 158		B9I0911	09/29/2019	09/29/19 17:25	
Surrogate: 4-Bromofluorobenzene	98.8 %	71 - 127		B9I0911	09/29/2019	09/29/19 17:25	
Surrogate: Dibromofluoromethane	112 %	66 - 147		B9I0911	09/29/2019	09/29/19 17:25	
Surrogate: Toluene-d8	102 %	77 - 138		B9I0911	09/29/2019	09/29/19 17:25	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: POX

Lab ID: 1903475-04

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9I0802	09/24/2019	09/25/19 15:08	
Surrogate: 1,2-Dichlorobenzene-d4	76.5 %	22 - 117		B9I0802	09/24/2019	09/25/19 15:08	
Surrogate: 2-Fluorobiphenyl	63.6 %	20 - 131		B9I0802	09/24/2019	09/25/19 15:08	
Surrogate: 4-Terphenyl-d14	71.3 %	24 - 135		B9I0802	09/24/2019	09/25/19 15:08	
Surrogate: Nitrobenzene-d5	104 %	6 - 124		B9I0802	09/24/2019	09/25/19 15:08	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: INF

Lab ID: 1903475-05

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
1,1,1-Trichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
1,1,2-Trichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
1,1-Dichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
1,1-Dichloroethene	65	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
1,1-Dichloropropene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
1,2,3-Trichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
1,2,3-Trichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
1,2,4-Trichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
1,2,4-Trimethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
1,2-Dibromoethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
1,2-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
1,2-Dichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
1,2-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
1,3,5-Trimethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
1,3-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
1,3-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
1,4-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
2,2-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
2-Chlorotoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
4-Chlorotoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
4-Isopropyltoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Benzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Bromobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Bromodichloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Bromoform	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Bromomethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Carbon tetrachloride	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Chlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Chloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Chloroform	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Chloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
cis-1,2-Dichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
cis-1,3-Dichloropropene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Dibromochloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: INF

Lab ID: 1903475-05

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Dichlorodifluoromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Ethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Hexachlorobutadiene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Isopropylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
m,p-Xylene	ND	1.0	1	B9I0911	09/29/2019	09/29/19 17:50	
Methylene chloride	ND	1.0	1	B9I0911	09/29/2019	09/29/19 17:50	
n-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
n-Propylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Naphthalene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
o-Xylene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
sec-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Styrene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
tert-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Tetrachloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Toluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
trans-1,2-Dichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Trichloroethene	0.67	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Trichlorofluoromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
Vinyl chloride	ND	0.50	1	B9I0911	09/29/2019	09/29/19 17:50	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>124 %</i>	<i>59 - 158</i>		B9I0911	09/29/2019	<i>09/29/19 17:50</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>101 %</i>	<i>71 - 127</i>		B9I0911	09/29/2019	<i>09/29/19 17:50</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>114 %</i>	<i>66 - 147</i>		B9I0911	09/29/2019	<i>09/29/19 17:50</i>	
<i>Surrogate: Toluene-d8</i>	<i>104 %</i>	<i>77 - 138</i>		B9I0911	09/29/2019	<i>09/29/19 17:50</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: INF

Lab ID: 1903475-05

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	34	2.0	1	B9I0788	09/24/2019	09/24/19 14:53	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>70.9 %</i>	<i>34 - 188</i>		B9I0788	09/24/2019	<i>09/24/19 14:53</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>78.6 %</i>	<i>39 - 108</i>		B9I0788	09/24/2019	<i>09/24/19 14:53</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>117 %</i>	<i>71 - 131</i>		B9I0788	09/24/2019	<i>09/24/19 14:53</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>74.1 %</i>	<i>32 - 106</i>		B9I0788	09/24/2019	<i>09/24/19 14:53</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: EW-02

Lab ID: 1903475-06

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
1,1,1-Trichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
1,1,2-Trichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
1,1-Dichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
1,1-Dichloroethene	19	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
1,1-Dichloropropene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
1,2,3-Trichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
1,2,3-Trichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
1,2,4-Trichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
1,2,4-Trimethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
1,2-Dibromoethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
1,2-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
1,2-Dichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
1,2-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
1,3,5-Trimethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
1,3-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
1,3-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
1,4-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
2,2-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
2-Chlorotoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
4-Chlorotoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
4-Isopropyltoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Benzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Bromobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Bromodichloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Bromoform	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Bromomethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Carbon tetrachloride	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Chlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Chloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Chloroform	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Chloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
cis-1,2-Dichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
cis-1,3-Dichloropropene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Dibromochloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: EW-02

Lab ID: 1903475-06

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Dichlorodifluoromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Ethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Hexachlorobutadiene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Isopropylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
m,p-Xylene	ND	1.0	1	B9I0911	09/29/2019	09/29/19 18:15	
Methylene chloride	ND	1.0	1	B9I0911	09/29/2019	09/29/19 18:15	
n-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
n-Propylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Naphthalene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
o-Xylene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
sec-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Styrene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
tert-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Tetrachloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Toluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
trans-1,2-Dichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Trichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Trichlorofluoromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Vinyl chloride	ND	0.50	1	B9I0911	09/29/2019	09/29/19 18:15	
Surrogate: 1,2-Dichloroethane-d4	127 %	59 - 158		B9I0911	09/29/2019	09/29/19 18:15	
Surrogate: 4-Bromofluorobenzene	98.6 %	71 - 127		B9I0911	09/29/2019	09/29/19 18:15	
Surrogate: Dibromofluoromethane	115 %	66 - 147		B9I0911	09/29/2019	09/29/19 18:15	
Surrogate: Toluene-d8	104 %	77 - 138		B9I0911	09/29/2019	09/29/19 18:15	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: EW-02

Lab ID: 1903475-06

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	10	2.0	1	B9I0788	09/24/2019	09/24/19 15:19	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>56.6 %</i>	<i>34 - 188</i>		B9I0788	09/24/2019	<i>09/24/19 15:19</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>61.7 %</i>	<i>39 - 108</i>		B9I0788	09/24/2019	<i>09/24/19 15:19</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>92.9 %</i>	<i>71 - 131</i>		B9I0788	09/24/2019	<i>09/24/19 15:19</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>59.6 %</i>	<i>32 - 106</i>		B9I0788	09/24/2019	<i>09/24/19 15:19</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: MW-29

Lab ID: 1903475-07

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
1,1,1-Trichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
1,1,2-Trichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
1,1-Dichloroethane	1.9	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
1,1-Dichloroethene	150	5.0	10	B9I0911	09/29/2019	09/29/19 20:20	
1,1-Dichloropropene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
1,2,3-Trichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
1,2,3-Trichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
1,2,4-Trichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
1,2,4-Trimethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
1,2-Dibromoethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
1,2-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
1,2-Dichloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
1,2-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
1,3,5-Trimethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
1,3-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
1,3-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
1,4-Dichlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
2,2-Dichloropropane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
2-Chlorotoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
4-Chlorotoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
4-Isopropyltoluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Benzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Bromobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Bromodichloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Bromoform	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Bromomethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Carbon tetrachloride	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Chlorobenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Chloroethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Chloroform	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Chloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
cis-1,2-Dichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
cis-1,3-Dichloropropene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Dibromochloromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: MW-29

Lab ID: 1903475-07

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Dichlorodifluoromethane	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Ethylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Hexachlorobutadiene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Isopropylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
m,p-Xylene	ND	1.0	1	B9I0911	09/29/2019	09/29/19 19:55	
Methylene chloride	ND	1.0	1	B9I0911	09/29/2019	09/29/19 19:55	
n-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
n-Propylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Naphthalene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
o-Xylene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
sec-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Styrene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
tert-Butylbenzene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Tetrachloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Toluene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
trans-1,2-Dichloroethene	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Trichloroethene	1.7	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Trichlorofluoromethane	0.64	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
Vinyl chloride	ND	0.50	1	B9I0911	09/29/2019	09/29/19 19:55	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>125 %</i>	<i>59 - 158</i>		B9I0911	09/29/2019	<i>09/29/19 20:20</i>	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>117 %</i>	<i>59 - 158</i>		B9I0911	09/29/2019	<i>09/29/19 19:55</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>99.0 %</i>	<i>71 - 127</i>		B9I0911	09/29/2019	<i>09/29/19 20:20</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>93.7 %</i>	<i>71 - 127</i>		B9I0911	09/29/2019	<i>09/29/19 19:55</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>113 %</i>	<i>66 - 147</i>		B9I0911	09/29/2019	<i>09/29/19 20:20</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>106 %</i>	<i>66 - 147</i>		B9I0911	09/29/2019	<i>09/29/19 19:55</i>	
<i>Surrogate: Toluene-d8</i>	<i>97.7 %</i>	<i>77 - 138</i>		B9I0911	09/29/2019	<i>09/29/19 19:55</i>	
<i>Surrogate: Toluene-d8</i>	<i>104 %</i>	<i>77 - 138</i>		B9I0911	09/29/2019	<i>09/29/19 20:20</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Client Sample ID: MW-29

Lab ID: 1903475-07

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	120	2.0	1	B9I0788	09/24/2019	09/24/19 15:45	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>67.7 %</i>	<i>34 - 188</i>		B9I0788	09/24/2019	<i>09/24/19 15:45</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>72.3 %</i>	<i>39 - 108</i>		B9I0788	09/24/2019	<i>09/24/19 15:45</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>105 %</i>	<i>71 - 131</i>		B9I0788	09/24/2019	<i>09/24/19 15:45</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>69.7 %</i>	<i>32 - 106</i>		B9I0788	09/24/2019	<i>09/24/19 15:45</i>	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

QUALITY CONTROL SECTION

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0911 - MSVOA_LL_W

Blank (B9I0911-BLK1)

Prepared: 9/29/2019 Analyzed: 9/29/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.21
1,1,1,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.40
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.18



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0911 - MSVOA_LL_W (continued)

Blank (B9I0911-BLK1) - Continued

Prepared: 9/29/2019 Analyzed: 9/29/2019

Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15
Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.23
Vinyl chloride	ND	0.50	0.13

Surrogate: 1,2-Dichloroethane-d4	30.28		25.0000	121	59 - 158
Surrogate: 4-Bromofluorobenzene	24.55		25.0000	98.2	71 - 127
Surrogate: Dibromofluoromethane	27.41		25.0000	110	66 - 147
Surrogate: Toluene-d8	25.59		25.0000	102	77 - 138

LCS (B9I0911-BS1)

Prepared: 9/29/2019 Analyzed: 9/29/2019

1,1,1,2-Tetrachloroethane	18.2800	0.50	0.11	20.0000	91.4	71 - 133
1,1,1-Trichloroethane	20.9600	0.50	0.21	20.0000	105	62 - 124
1,1,2,2-Tetrachloroethane	17.9300	0.50	0.36	20.0000	89.6	50 - 131
1,1,2-Trichloroethane	18.1800	0.50	0.25	20.0000	90.9	77 - 121
1,1-Dichloroethane	21.4900	0.50	0.09	20.0000	107	52 - 130
1,1-Dichloroethene	18.3400	0.50	0.13	20.0000	91.7	61 - 136
1,1-Dichloropropene	19.7400	0.50	0.13	20.0000	98.7	80 - 128
1,2,3-Trichloropropane	17.9700	0.50	0.39	20.0000	89.8	59 - 126
1,2,3-Trichlorobenzene	17.2800	0.50	0.18	20.0000	86.4	69 - 138
1,2,4-Trichlorobenzene	17.2400	0.50	0.16	20.0000	86.2	78 - 125
1,2,4-Trimethylbenzene	18.8100	0.50	0.14	20.0000	94.0	70 - 126
1,2-Dibromo-3-chloropropane	15.4200	0.50	0.41	20.0000	77.1	58 - 127
1,2-Dibromoethane	17.2800	0.50	0.24	20.0000	86.4	76 - 120
1,2-Dichlorobenzene	17.9400	0.50	0.20	20.0000	89.7	82 - 117
1,2-Dichloroethane	20.1700	0.50	0.20	20.0000	101	66 - 126
1,2-Dichloropropane	18.7400	0.50	0.15	20.0000	93.7	70 - 117
1,3,5-Trimethylbenzene	18.8200	0.50	0.13	20.0000	94.1	71 - 125



Certificate of Analysis

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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0911 - MSVOA_LL_W (continued)

LCS (B9I0911-BS1) - Continued

Prepared: 9/29/2019 Analyzed: 9/29/2019

1,3-Dichlorobenzene	18.3200	0.50	0.16	20.0000		91.6	81 - 116		
1,3-Dichloropropane	18.3400	0.50	0.21	20.0000		91.7	69 - 124		
1,4-Dichlorobenzene	17.8800	0.50	0.17	20.0000		89.4	80 - 114		
2,2-Dichloropropane	22.0600	0.50	0.38	20.0000		110	58 - 132		
2-Chlorotoluene	18.7300	0.50	0.11	20.0000		93.6	71 - 119		
4-Chlorotoluene	18.7500	0.50	0.12	20.0000		93.8	72 - 122		
4-Isopropyltoluene	18.7100	0.50	0.11	20.0000		93.6	69 - 126		
Benzene	38.8500	0.50	0.13	40.0000		97.1	80 - 116		
Bromobenzene	17.5400	0.50	0.21	20.0000		87.7	77 - 118		
Bromodichloromethane	18.5000	0.50	0.14	20.0000		92.5	73 - 118		
Bromoform	16.3200	0.50	0.20	20.0000		81.6	65 - 133		
Bromomethane	21.3400	0.50	0.40	20.0000		107	7 - 205		
Carbon tetrachloride	18.9800	0.50	0.09	20.0000		94.9	63 - 133		
Chlorobenzene	18.2700	0.50	0.13	20.0000		91.4	86 - 113		
Chloroethane	20.7100	0.50	0.15	20.0000		104	66 - 141		
Chloroform	20.9600	0.50	0.11	20.0000		105	63 - 127		
Chloromethane	24.6800	0.50	0.12	20.0000		123	0 - 207		
cis-1,2-Dichloroethene	20.3100	0.50	0.14	20.0000		102	64 - 126		
cis-1,3-Dichloropropene	20.8100	0.50	0.13	20.0000		104	70 - 141		
Dibromochloromethane	17.6200	0.50	0.16	20.0000		88.1	67 - 135		
Dibromomethane	18.5400	0.50	0.19	20.0000		92.7	74 - 118		
Dichlorodifluoromethane	25.8200	0.50	0.18	20.0000		129	14 - 181		
Ethylbenzene	37.1900	0.50	0.13	40.0000		93.0	77 - 118		
Hexachlorobutadiene	17.3900	0.50	0.15	20.0000		87.0	66 - 125		
Isopropylbenzene	19.9300	0.50	0.10	20.0000		99.6	68 - 137		
m,p-Xylene	37.5200	1.0	0.19	40.0000		93.8	78 - 126		
Methylene chloride	21.3200	1.0	0.71	20.0000		107	51 - 149		
n-Butylbenzene	19.7200	0.50	0.11	20.0000		98.6	63 - 127		
n-Propylbenzene	19.0100	0.50	0.10	20.0000		95.0	69 - 124		
Naphthalene	16.6100	0.50	0.41	20.0000		83.0	60 - 126		
o-Xylene	37.8200	0.50	0.13	40.0000		94.6	79 - 126		
sec-Butylbenzene	19.0200	0.50	0.09	20.0000		95.1	69 - 124		
Styrene	18.8800	0.50	0.13	20.0000		94.4	80 - 127		
tert-Butylbenzene	18.4000	0.50	0.09	20.0000		92.0	71 - 124		
Tetrachloroethene	17.4900	0.50	0.10	20.0000		87.4	73 - 129		
Toluene	37.3100	0.50	0.12	40.0000		93.3	78 - 121		
trans-1,2-Dichloroethene	20.2200	0.50	0.09	20.0000		101	58 - 141		
Trichloroethene	17.7900	0.50	0.10	20.0000		89.0	73 - 126		
Trichlorofluoromethane	20.8400	0.50	0.23	20.0000		104	62 - 146		
Vinyl chloride	22.3700	0.50	0.13	20.0000		112	61 - 137		

Surrogate: 1,2-Dichloroethane-d4	28.87			25.0000		115	59 - 158		
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Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0911 - MSVOA_LL_W (continued)

LCS (B9I0911-BS1) - Continued

Prepared: 9/29/2019 Analyzed: 9/29/2019

Surrogate: 4-Bromofluorobenzene	25.32		25.0000		101	71 - 127			
Surrogate: Dibromofluoromethane	27.71		25.0000		111	66 - 147			
Surrogate: Toluene-d8	25.37		25.0000		101	77 - 138			

LCS Dup (B9I0911-BSD1)

Prepared: 9/29/2019 Analyzed: 9/29/2019

1,1,1,2-Tetrachloroethane	18.3300	0.50	0.11	20.0000	91.6	71 - 133	0.273	20	
1,1,1-Trichloroethane	21.1500	0.50	0.21	20.0000	106	62 - 124	0.902	20	
1,1,2,2-Tetrachloroethane	18.6200	0.50	0.36	20.0000	93.1	50 - 131	3.78	20	
1,1,2-Trichloroethane	18.9200	0.50	0.25	20.0000	94.6	77 - 121	3.99	20	
1,1-Dichloroethane	21.6400	0.50	0.09	20.0000	108	52 - 130	0.696	20	
1,1-Dichloroethene	18.2000	0.50	0.13	20.0000	91.0	61 - 136	0.766	20	
1,1-Dichloropropene	20.4600	0.50	0.13	20.0000	102	80 - 128	3.58	20	
1,2,3-Trichloropropane	18.5300	0.50	0.39	20.0000	92.6	59 - 126	3.07	20	
1,2,3-Trichlorobenzene	17.6000	0.50	0.18	20.0000	88.0	69 - 138	1.83	20	
1,2,4-Trichlorobenzene	17.2700	0.50	0.16	20.0000	86.4	78 - 125	0.174	20	
1,2,4-Trimethylbenzene	18.5900	0.50	0.14	20.0000	93.0	70 - 126	1.18	20	
1,2-Dibromo-3-chloropropane	17.6300	0.50	0.41	20.0000	88.2	58 - 127	13.4	20	
1,2-Dibromoethane	18.2900	0.50	0.24	20.0000	91.4	76 - 120	5.68	20	
1,2-Dichlorobenzene	17.8300	0.50	0.20	20.0000	89.2	82 - 117	0.615	20	
1,2-Dichloroethane	20.3300	0.50	0.20	20.0000	102	66 - 126	0.790	20	
1,2-Dichloropropane	18.8700	0.50	0.15	20.0000	94.4	70 - 117	0.691	20	
1,3,5-Trimethylbenzene	18.6100	0.50	0.13	20.0000	93.0	71 - 125	1.12	20	
1,3-Dichlorobenzene	17.9100	0.50	0.16	20.0000	89.6	81 - 116	2.26	20	
1,3-Dichloropropane	18.8300	0.50	0.21	20.0000	94.2	69 - 124	2.64	20	
1,4-Dichlorobenzene	17.9200	0.50	0.17	20.0000	89.6	80 - 114	0.223	20	
2,2-Dichloropropane	21.8200	0.50	0.38	20.0000	109	58 - 132	1.09	20	
2-Chlorotoluene	18.4500	0.50	0.11	20.0000	92.2	71 - 119	1.51	20	
4-Chlorotoluene	18.3800	0.50	0.12	20.0000	91.9	72 - 122	1.99	20	
4-Isopropyltoluene	18.3700	0.50	0.11	20.0000	91.8	69 - 126	1.83	20	
Benzene	39.1900	0.50	0.13	40.0000	98.0	80 - 116	0.871	20	
Bromobenzene	18.0200	0.50	0.21	20.0000	90.1	77 - 118	2.70	20	
Bromodichloromethane	18.9200	0.50	0.14	20.0000	94.6	73 - 118	2.24	20	
Bromoform	17.5200	0.50	0.20	20.0000	87.6	65 - 133	7.09	20	
Bromomethane	21.7100	0.50	0.40	20.0000	109	7 - 205	1.72	20	
Carbon tetrachloride	19.4000	0.50	0.09	20.0000	97.0	63 - 133	2.19	20	
Chlorobenzene	18.0900	0.50	0.13	20.0000	90.4	86 - 113	0.990	20	
Chloroethane	21.4100	0.50	0.15	20.0000	107	66 - 141	3.32	20	
Chloroform	20.8300	0.50	0.11	20.0000	104	63 - 127	0.622	20	
Chloromethane	24.7900	0.50	0.12	20.0000	124	0 - 207	0.445	20	
cis-1,2-Dichloroethene	20.5600	0.50	0.14	20.0000	103	64 - 126	1.22	20	
cis-1,3-Dichloropropene	21.0800	0.50	0.13	20.0000	105	70 - 141	1.29	20	
Dibromochloromethane	18.0200	0.50	0.16	20.0000	90.1	67 - 135	2.24	20	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9I0911 - MSVOA_LL_W (continued)

LCS Dup (B9I0911-BSD1) - Continued

Prepared: 9/29/2019 Analyzed: 9/29/2019

Dibromomethane	19.5300	0.50	0.19	20.0000		97.6	74 - 118	5.20	20
Dichlorodifluoromethane	25.9500	0.50	0.18	20.0000		130	14 - 181	0.502	20
Ethylbenzene	36.6000	0.50	0.13	40.0000		91.5	77 - 118	1.60	20
Hexachlorobutadiene	16.8800	0.50	0.15	20.0000		84.4	66 - 125	2.98	20
Isopropylbenzene	19.8800	0.50	0.10	20.0000		99.4	68 - 137	0.251	20
m,p-Xylene	36.8300	1.0	0.19	40.0000		92.1	78 - 126	1.86	20
Methylene chloride	21.8500	1.0	0.71	20.0000		109	51 - 149	2.46	20
n-Butylbenzene	19.1300	0.50	0.11	20.0000		95.6	63 - 127	3.04	20
n-Propylbenzene	18.6400	0.50	0.10	20.0000		93.2	69 - 124	1.97	20
Naphthalene	17.6600	0.50	0.41	20.0000		88.3	60 - 126	6.13	20
o-Xylene	37.5500	0.50	0.13	40.0000		93.9	79 - 126	0.716	20
sec-Butylbenzene	18.8600	0.50	0.09	20.0000		94.3	69 - 124	0.845	20
Styrene	18.8600	0.50	0.13	20.0000		94.3	80 - 127	0.106	20
tert-Butylbenzene	18.3500	0.50	0.09	20.0000		91.8	71 - 124	0.272	20
Tetrachloroethene	16.9000	0.50	0.10	20.0000		84.5	73 - 129	3.43	20
Toluene	37.7500	0.50	0.12	40.0000		94.4	78 - 121	1.17	20
trans-1,2-Dichloroethene	19.9200	0.50	0.09	20.0000		99.6	58 - 141	1.49	20
Trichloroethene	17.7300	0.50	0.10	20.0000		88.6	73 - 126	0.338	20
Trichlorofluoromethane	21.4100	0.50	0.23	20.0000		107	62 - 146	2.70	20
Vinyl chloride	22.3300	0.50	0.13	20.0000		112	61 - 137	0.179	20
Surrogate: 1,2-Dichloroethane-d4	29.38			25.0000		118	59 - 158		
Surrogate: 4-Bromofluorobenzene	24.87			25.0000		99.5	71 - 127		
Surrogate: Dibromofluoromethane	27.49			25.0000		110	66 - 147		
Surrogate: Toluene-d8	25.53			25.0000		102	77 - 138		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

1,4-Dioxane by EPA 8270: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B910788 - MSSEMI_W

Blank (B910788-BLK1)

Prepared: 9/24/2019 Analyzed: 9/24/2019

1,4-Dioxane	ND	2.0	0.84						
Surrogate: 1,2-Dichlorobenzene-d	72.77			100.000		72.8	34 - 188		
Surrogate: 2-Fluorobiphenyl	77.61			100.000		77.6	39 - 108		
Surrogate: 4-Terphenyl-d14	115.5			100.000		115	71 - 131		
Surrogate: Nitrobenzene-d5	76.69			100.000		76.7	32 - 106		

LCS (B910788-BS1)

Prepared: 9/24/2019 Analyzed: 9/24/2019

1,4-Dioxane	116.380	2.0	0.84	100.000		116	40 - 159		
Surrogate: 1,2-Dichlorobenzene-d	65.28			100.000		65.3	34 - 188		
Surrogate: 2-Fluorobiphenyl	72.83			100.000		72.8	39 - 108		
Surrogate: 4-Terphenyl-d14	97.75			100.000		97.8	71 - 131		
Surrogate: Nitrobenzene-d5	71.36			100.000		71.4	32 - 106		

Matrix Spike (B910788-MS1)

Source: 1903502-01

Prepared: 9/24/2019 Analyzed: 9/24/2019

1,4-Dioxane	124.000	2.0	0.84	100.000	ND	124	40 - 159		
Surrogate: 1,2-Dichlorobenzene-d	67.58			100.000		67.6	34 - 188		
Surrogate: 2-Fluorobiphenyl	76.46			100.000		76.5	39 - 108		
Surrogate: 4-Terphenyl-d14	96.11			100.000		96.1	71 - 131		
Surrogate: Nitrobenzene-d5	74.06			100.000		74.1	32 - 106		

Matrix Spike Dup (B910788-MSD1)

Source: 1903502-01

Prepared: 9/24/2019 Analyzed: 9/24/2019

1,4-Dioxane	117.460	2.0	0.84	100.000	ND	117	40 - 159	5.42	20
Surrogate: 1,2-Dichlorobenzene-d	70.98			100.000		71.0	34 - 188		
Surrogate: 2-Fluorobiphenyl	77.66			100.000		77.7	39 - 108		
Surrogate: 4-Terphenyl-d14	102.4			100.000		102	71 - 131		
Surrogate: Nitrobenzene-d5	76.67			100.000		76.7	32 - 106		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B910802 - MSSEMI_W

Blank (B910802-BLK1)

Prepared: 9/24/2019 Analyzed: 9/25/2019

1,4-Dioxane	ND	0.20	0.05						
Surrogate: 1,2-Dichlorobenzene-d	0.7175			1.00000		71.7	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.6293			1.00000		62.9	20 - 131		
Surrogate: 4-Terphenyl-d14	0.8159			1.00000		81.6	24 - 135		
Surrogate: Nitrobenzene-d5	0.8907			1.00000		89.1	6 - 124		

LCS (B910802-BS1)

Prepared: 9/24/2019 Analyzed: 9/25/2019

1,4-Dioxane	1.14740	0.20	0.05	1.00000		115	64 - 129		
Surrogate: 1,2-Dichlorobenzene-d	0.4987			1.00000		49.9	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.4478			1.00000		44.8	20 - 131		
Surrogate: 4-Terphenyl-d14	0.6753			1.00000		67.5	24 - 135		
Surrogate: Nitrobenzene-d5	0.6570			1.00000		65.7	6 - 124		

LCS Dup (B910802-BSD1)

Prepared: 9/24/2019 Analyzed: 9/25/2019

1,4-Dioxane	1.09167	0.20	0.05	1.00000		109	64 - 129	4.98	20
Surrogate: 1,2-Dichlorobenzene-d	0.5021			1.00000		50.2	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.4457			1.00000		44.6	20 - 131		
Surrogate: 4-Terphenyl-d14	0.6546			1.00000		65.5	24 - 135		
Surrogate: Nitrobenzene-d5	0.6682			1.00000		66.8	6 - 124		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 09/30/2019

Notes and Definitions

ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.

PROJECT: Raytheon Main GETS Mid Month Sample

TASK NO.: 532.15

Project Manager Steve Netto

QA Manager Ross Horton

Phone 858.455.6500

Fax 858.455.6533

Sampled By:

Ruben Sanchez

SAMPLE COLLECTION

LAB ID		SAMPLE ID		Date	Time	MATRIX		PRESERVATION				CONTAINERS				ANALYSIS REQUESTED										Expected Concentration Range (ppb) for VOAs				SPECIAL HANDLING				REMARKS	
1907475-01		TB-091919		9/19/2019	8:00	X	X					X	2																						
	CEFF			9/19/2019	9:20	X	X					X	3																						
	CBT			9/19/2019	9:25	X	X					X	3																						
	POX			9/19/2019	9:30	X	X					X	3																						
	INF			9/19/2019	9:40	X	X					X	3																						
	EW-02			9/19/2019	10:50	X	X					X	3																						
	MW-29			9/19/2019	11:10	X	X					X	3																						

Total number of containers per analysis:

20

6

Total No. of Containers: 26

Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
<i>[Signature]</i> H+A	9-19-19 12:57	<i>[Signature]</i>	9-19-19 12:57
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
<i>[Signature]</i> H+A	9-19-19 1445	<i>[Signature]</i>	9-19-19 1445

- ☒ No. of containers correct
☒ Received in good condition
☐ Custody seals secure
☒ Conforms to COC document

Instructions

- Fill out form completely and sign only after verified for completeness
- Complete in ballpoint pen. Draw one line through error, initial and date correction
- Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✗
- Note applicable preservatives, special instructions, and deviations from typical environmental samples.
- Consult project QA documents for specific instructions.

25 °C Temperature on receipt

Send Results to:
Steve Netto & Ross Horton
 9171 Towne Centre Drive
 Suite 375
 San Diego, CA 92122
 Ph: 858.455.6500
snetto@hargis.com
rhorton@hargis.com



October 29, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1903644

Client Reference : Raytheon Main GETS Monthly Sample, 532.15

Enclosed are the results for sample(s) received on October 04, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read 'Edgar Caballero', with a small 'Ar' written below it.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-100419	1903644-01	Lab prepared water	10/04/19 8:00	10/04/19 13:30
CEFF	1903644-02	Groundwater	10/04/19 8:42	10/04/19 13:30
CBT	1903644-03	Groundwater	10/04/19 8:48	10/04/19 13:30
POX	1903644-04	Groundwater	10/04/19 8:52	10/04/19 13:30
PF	1903644-05	Groundwater	10/04/19 9:05	10/04/19 13:30
INF	1903644-06	Groundwater	10/04/19 9:10	10/04/19 13:30
EW-02	1903644-07	Groundwater	10/04/19 10:05	10/04/19 13:30
MW-29	1903644-08	Groundwater	10/04/19 10:30	10/04/19 13:30

CASE NARRATIVE

The samples for Bromate by IC-MS/MS analysis were subcontracted to Element with ELAP Cert.# 2652.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: TB-100419

Lab ID: 1903644-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
1,1,1-Trichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
1,1,2-Trichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
1,1-Dichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
1,1-Dichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
1,1-Dichloropropene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
1,2,3-Trichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
1,2,3-Trichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
1,2,4-Trichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
1,2,4-Trimethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
1,2-Dibromoethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
1,2-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
1,2-Dichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
1,2-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
1,3,5-Trimethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
1,3-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
1,3-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
1,4-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
2,2-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
2-Chlorotoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
4-Chlorotoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
4-Isopropyltoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Benzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Bromobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Bromodichloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Bromoform	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Bromomethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Carbon tetrachloride	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Chlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Chloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Chloroform	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Chloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
cis-1,2-Dichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
cis-1,3-Dichloropropene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Dibromochloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: TB-100419

Lab ID: 1903644-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Dichlorodifluoromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Ethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Hexachlorobutadiene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Isopropylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
m,p-Xylene	ND	1.0	1	B9J0175	10/08/2019	10/08/19 13:23	
Methylene chloride	ND	1.0	1	B9J0175	10/08/2019	10/08/19 13:23	
n-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
n-Propylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Naphthalene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
o-Xylene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
sec-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Styrene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
tert-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Tetrachloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Toluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
trans-1,2-Dichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Trichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Trichlorofluoromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Vinyl chloride	ND	0.50	1	B9J0175	10/08/2019	10/08/19 13:23	
Surrogate: 1,2-Dichloroethane-d4	140 %	59 - 158		B9J0175	10/08/2019	10/08/19 13:23	
Surrogate: 4-Bromofluorobenzene	103 %	71 - 127		B9J0175	10/08/2019	10/08/19 13:23	
Surrogate: Dibromofluoromethane	121 %	66 - 147		B9J0175	10/08/2019	10/08/19 13:23	
Surrogate: Toluene-d8	108 %	77 - 138		B9J0175	10/08/2019	10/08/19 13:23	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: CEFF

Lab ID: 1903644-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
1,1,1-Trichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
1,1,2-Trichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
1,1-Dichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
1,1-Dichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
1,1-Dichloropropene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
1,2,3-Trichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
1,2,3-Trichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
1,2,4-Trichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
1,2,4-Trimethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
1,2-Dibromoethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
1,2-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
1,2-Dichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
1,2-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
1,3,5-Trimethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
1,3-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
1,3-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
1,4-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
2,2-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
2-Chlorotoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
4-Chlorotoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
4-Isopropyltoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Benzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Bromobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Bromodichloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Bromoform	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Bromomethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Carbon tetrachloride	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Chlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Chloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Chloroform	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Chloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
cis-1,2-Dichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
cis-1,3-Dichloropropene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Dibromochloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: CEFF

Lab ID: 1903644-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Dichlorodifluoromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Ethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Hexachlorobutadiene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Isopropylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
m,p-Xylene	ND	1.0	1	B9J0175	10/08/2019	10/08/19 15:52	
Methylene chloride	ND	1.0	1	B9J0175	10/08/2019	10/08/19 15:52	
n-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
n-Propylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Naphthalene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
o-Xylene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
sec-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Styrene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
tert-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Tetrachloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Toluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
trans-1,2-Dichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Trichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Trichlorofluoromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
Vinyl chloride	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:52	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>137 %</i>	<i>59 - 158</i>		B9J0175	10/08/2019	<i>10/08/19 15:52</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>101 %</i>	<i>71 - 127</i>		B9J0175	10/08/2019	<i>10/08/19 15:52</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>115 %</i>	<i>66 - 147</i>		B9J0175	10/08/2019	<i>10/08/19 15:52</i>	
<i>Surrogate: Toluene-d8</i>	<i>106 %</i>	<i>77 - 138</i>		B9J0175	10/08/2019	<i>10/08/19 15:52</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: CEFF

Lab ID: 1903644-02

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	0.42	0.20	1	B9J0378	10/11/2019	10/11/19 16:00	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>65.3 %</i>	<i>22 - 117</i>		B9J0378	10/11/2019	<i>10/11/19 16:00</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>69.3 %</i>	<i>20 - 131</i>		B9J0378	10/11/2019	<i>10/11/19 16:00</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>67.9 %</i>	<i>24 - 135</i>		B9J0378	10/11/2019	<i>10/11/19 16:00</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>75.6 %</i>	<i>6 - 124</i>		B9J0378	10/11/2019	<i>10/11/19 16:00</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: CBT

Lab ID: 1903644-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
1,1,1-Trichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
1,1,2-Trichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
1,1-Dichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
1,1-Dichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
1,1-Dichloropropene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
1,2,3-Trichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
1,2,3-Trichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
1,2,4-Trichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
1,2,4-Trimethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
1,2-Dibromoethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
1,2-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
1,2-Dichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
1,2-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
1,3,5-Trimethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
1,3-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
1,3-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
1,4-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
2,2-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
2-Chlorotoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
4-Chlorotoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
4-Isopropyltoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Benzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Bromobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Bromodichloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Bromoform	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Bromomethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Carbon tetrachloride	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Chlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Chloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Chloroform	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Chloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
cis-1,2-Dichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
cis-1,3-Dichloropropene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Dibromochloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: CBT

Lab ID: 1903644-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Dichlorodifluoromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Ethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Hexachlorobutadiene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Isopropylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
m,p-Xylene	ND	1.0	1	B9J0175	10/08/2019	10/08/19 15:28	
Methylene chloride	ND	1.0	1	B9J0175	10/08/2019	10/08/19 15:28	
n-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
n-Propylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Naphthalene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
o-Xylene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
sec-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Styrene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
tert-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Tetrachloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Toluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
trans-1,2-Dichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Trichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Trichlorofluoromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Vinyl chloride	ND	0.50	1	B9J0175	10/08/2019	10/08/19 15:28	
Surrogate: 1,2-Dichloroethane-d4	139 %	59 - 158		B9J0175	10/08/2019	10/08/19 15:28	
Surrogate: 4-Bromofluorobenzene	98.1 %	71 - 127		B9J0175	10/08/2019	10/08/19 15:28	
Surrogate: Dibromofluoromethane	119 %	66 - 147		B9J0175	10/08/2019	10/08/19 15:28	
Surrogate: Toluene-d8	106 %	77 - 138		B9J0175	10/08/2019	10/08/19 15:28	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: CBT

Lab ID: 1903644-03

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	0.41	0.20	1	B9J0378	10/11/2019	10/11/19 16:26	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>71.9 %</i>	<i>22 - 117</i>		B9J0378	10/11/2019	<i>10/11/19 16:26</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>79.5 %</i>	<i>20 - 131</i>		B9J0378	10/11/2019	<i>10/11/19 16:26</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>71.6 %</i>	<i>24 - 135</i>		B9J0378	10/11/2019	<i>10/11/19 16:26</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>83.1 %</i>	<i>6 - 124</i>		B9J0378	10/11/2019	<i>10/11/19 16:26</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: POX

Lab ID: 1903644-04

Alkalinity, Speciated by SM 2320B

Analyst: BL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Alkalinity, Bicarbonate (as CaCO ₃)	200	5.0	1	B9J0169	10/04/2019	10/07/19 16:23	
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	1	B9J0169	10/04/2019	10/07/19 16:23	
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	1	B9J0169	10/04/2019	10/07/19 16:23	
Alkalinity, Total (as CaCO ₃)	200	5.0	1	B9J0169	10/04/2019	10/07/19 16:23	

Total Organic Carbon by SM 5310B

Analyst: BL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Organic Carbon, Total	ND	3.0	1	B9J0288	10/08/2019	10/08/19 15:46	

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
1,1,1-Trichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
1,1,2-Trichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
1,1-Dichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
1,1-Dichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
1,1-Dichloropropene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
1,2,3-Trichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
1,2,3-Trichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
1,2,4-Trichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
1,2,4-Trimethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
1,2-Dibromoethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
1,2-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
1,2-Dichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
1,2-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
1,3,5-Trimethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
1,3-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
1,3-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
1,4-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
2,2-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
2-Chlorotoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: POX

Lab ID: 1903644-04

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
4-Chlorotoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
4-Isopropyltoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Benzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Bromobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Bromodichloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Bromoform	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Bromomethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Carbon tetrachloride	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Chlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Chloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Chloroform	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Chloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
cis-1,2-Dichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
cis-1,3-Dichloropropene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Dibromochloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Dibromomethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Dichlorodifluoromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Ethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Hexachlorobutadiene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Isopropylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
m,p-Xylene	ND	1.0	1	B9J0175	10/08/2019	10/08/19 12:08	
Methylene chloride	ND	1.0	1	B9J0175	10/08/2019	10/08/19 12:08	
n-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
n-Propylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Naphthalene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
o-Xylene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
sec-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Styrene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
tert-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Tetrachloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Toluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
trans-1,2-Dichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Trichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Trichlorofluoromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Vinyl chloride	ND	0.50	1	B9J0175	10/08/2019	10/08/19 12:08	
Surrogate: 1,2-Dichloroethane-d4	138 %	59 - 158		B9J0175	10/08/2019	10/08/19 12:08	
Surrogate: 4-Bromofluorobenzene	99.1 %	71 - 127		B9J0175	10/08/2019	10/08/19 12:08	



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Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: POX

Lab ID: 1903644-04

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: Dibromofluoromethane	118 %	66 - 147		B9J0175	10/08/2019	10/08/19 12:08	
Surrogate: Toluene-d8	106 %	77 - 138		B9J0175	10/08/2019	10/08/19 12:08	

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9J0378	10/11/2019	10/11/19 16:53	
Surrogate: 1,2-Dichlorobenzene-d4	73.9 %	22 - 117		B9J0378	10/11/2019	10/11/19 16:53	
Surrogate: 2-Fluorobiphenyl	75.1 %	20 - 131		B9J0378	10/11/2019	10/11/19 16:53	
Surrogate: 4-Terphenyl-d14	75.1 %	24 - 135		B9J0378	10/11/2019	10/11/19 16:53	
Surrogate: Nitrobenzene-d5	85.6 %	6 - 124		B9J0378	10/11/2019	10/11/19 16:53	



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Reported : 10/29/2019

Client Sample ID: PF

Lab ID: 1903644-05

UV Absorption by EPA 415.3

Analyst: BL

Analyte	Result (1/cm)	PQL (1/cm)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
UV Absorption	ND	0.01	1	B9J0122	10/04/2019	10/04/19 16:03	

Alkalinity, Speciated by SM 2320B

Analyst: BL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Alkalinity, Bicarbonate (as CaCO ₃)	200	5.0	1	B9J0169	10/04/2019	10/07/19 16:23	
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	1	B9J0169	10/04/2019	10/07/19 16:23	
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	1	B9J0169	10/04/2019	10/07/19 16:23	
Alkalinity, Total (as CaCO ₃)	200	5.0	1	B9J0169	10/04/2019	10/07/19 16:23	

Total Suspended Solids (Residue, Non-Filtrable) by SM 2540D

Analyst: IF

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Residue, Suspended	ND	5.0	1	B9J0197	10/07/2019	10/08/19 14:00	

Total Organic Carbon by SM 5310B

Analyst: BL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Organic Carbon, Total	ND	3.0	1	B9J0288	10/08/2019	10/08/19 16:04	



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: INF

Lab ID: 1903644-06

Bromide by Ion Chromatography EPA 300

Analyst: QD

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Bromide	0.29	0.05	1	B9J0247	10/07/2019	10/07/19 14:51	

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
1,1,1-Trichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
1,1,2-Trichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
1,1-Dichloroethane	0.59	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
1,1-Dichloroethene	42	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
1,1-Dichloropropene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
1,2,3-Trichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
1,2,3-Trichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
1,2,4-Trichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
1,2,4-Trimethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
1,2-Dibromoethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
1,2-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
1,2-Dichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
1,2-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
1,3,5-Trimethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
1,3-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
1,3-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
1,4-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
2,2-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
2-Chlorotoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
4-Chlorotoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
4-Isopropyltoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Benzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Bromobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Bromodichloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Bromoform	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Bromomethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Carbon tetrachloride	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Chlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	



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9171 Towne Centre Drive, Suite 375

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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: INF

Lab ID: 1903644-06

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Chloroform	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Chloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
cis-1,2-Dichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
cis-1,3-Dichloropropene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Dibromochloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Dibromomethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Dichlorodifluoromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Ethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Hexachlorobutadiene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Isopropylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
m,p-Xylene	ND	1.0	1	B9J0175	10/08/2019	10/08/19 17:32	
Methylene chloride	ND	1.0	1	B9J0175	10/08/2019	10/08/19 17:32	
n-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
n-Propylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Naphthalene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
o-Xylene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
sec-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Styrene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
tert-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Tetrachloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Toluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
trans-1,2-Dichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Trichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Trichlorofluoromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Vinyl chloride	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:32	
Surrogate: 1,2-Dichloroethane-d4	140 %	59 - 158		B9J0175	10/08/2019	10/08/19 17:32	
Surrogate: 4-Bromofluorobenzene	102 %	71 - 127		B9J0175	10/08/2019	10/08/19 17:32	
Surrogate: Dibromofluoromethane	115 %	66 - 147		B9J0175	10/08/2019	10/08/19 17:32	
Surrogate: Toluene-d8	105 %	77 - 138		B9J0175	10/08/2019	10/08/19 17:32	



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: INF

Lab ID: 1903644-06

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	29	2.0	1	B9J0301	10/10/2019	10/11/19 04:38	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>77.6 %</i>	<i>34 - 188</i>		B9J0301	10/10/2019	<i>10/11/19 04:38</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>80.0 %</i>	<i>39 - 108</i>		B9J0301	10/10/2019	<i>10/11/19 04:38</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>124 %</i>	<i>71 - 131</i>		B9J0301	10/10/2019	<i>10/11/19 04:38</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>73.9 %</i>	<i>32 - 106</i>		B9J0301	10/10/2019	<i>10/11/19 04:38</i>	



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: EW-02

Lab ID: 1903644-07

Bromide by Ion Chromatography EPA 300

Analyst: QD

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Bromide	0.25	0.05	1	B9J0247	10/07/2019	10/07/19 15:02	

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
1,1,1-Trichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
1,1,2-Trichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
1,1-Dichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
1,1-Dichloroethene	14	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
1,1-Dichloropropene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
1,2,3-Trichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
1,2,3-Trichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
1,2,4-Trichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
1,2,4-Trimethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
1,2-Dibromoethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
1,2-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
1,2-Dichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
1,2-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
1,3,5-Trimethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
1,3-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
1,3-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
1,4-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
2,2-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
2-Chlorotoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
4-Chlorotoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
4-Isopropyltoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Benzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Bromobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Bromodichloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Bromoform	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Bromomethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Carbon tetrachloride	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Chlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: EW-02

Lab ID: 1903644-07

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Chloroform	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Chloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
cis-1,2-Dichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
cis-1,3-Dichloropropene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Dibromochloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Dibromomethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Dichlorodifluoromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Ethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Hexachlorobutadiene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Isopropylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
m,p-Xylene	ND	1.0	1	B9J0175	10/08/2019	10/08/19 17:07	
Methylene chloride	ND	1.0	1	B9J0175	10/08/2019	10/08/19 17:07	
n-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
n-Propylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Naphthalene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
o-Xylene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
sec-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Styrene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
tert-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Tetrachloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Toluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
trans-1,2-Dichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Trichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Trichlorofluoromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Vinyl chloride	ND	0.50	1	B9J0175	10/08/2019	10/08/19 17:07	
Surrogate: 1,2-Dichloroethane-d4	138 %	59 - 158		B9J0175	10/08/2019	10/08/19 17:07	
Surrogate: 4-Bromofluorobenzene	101 %	71 - 127		B9J0175	10/08/2019	10/08/19 17:07	
Surrogate: Dibromofluoromethane	115 %	66 - 147		B9J0175	10/08/2019	10/08/19 17:07	
Surrogate: Toluene-d8	106 %	77 - 138		B9J0175	10/08/2019	10/08/19 17:07	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: EW-02

Lab ID: 1903644-07

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	8.8	2.0	1	B9J0301	10/10/2019	10/11/19 05:04	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>70.1 %</i>	<i>34 - 188</i>		<i>B9J0301</i>	<i>10/10/2019</i>	<i>10/11/19 05:04</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>71.7 %</i>	<i>39 - 108</i>		<i>B9J0301</i>	<i>10/10/2019</i>	<i>10/11/19 05:04</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>115 %</i>	<i>71 - 131</i>		<i>B9J0301</i>	<i>10/10/2019</i>	<i>10/11/19 05:04</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>67.0 %</i>	<i>32 - 106</i>		<i>B9J0301</i>	<i>10/10/2019</i>	<i>10/11/19 05:04</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: MW-29

Lab ID: 1903644-08

Bromide by Ion Chromatography EPA 300

Analyst: QD

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Bromide	0.45	0.05	1	B9J0247	10/07/2019	10/07/19 15:14	

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
1,1,1-Trichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
1,1,2-Trichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
1,1-Dichloroethane	2.2	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
1,1-Dichloroethene	140	5.0	10	B9J0175	10/08/2019	10/08/19 18:47	
1,1-Dichloropropene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
1,2,3-Trichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
1,2,3-Trichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
1,2,4-Trichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
1,2,4-Trimethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
1,2-Dibromoethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
1,2-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
1,2-Dichloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
1,2-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
1,3,5-Trimethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
1,3-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
1,3-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
1,4-Dichlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
2,2-Dichloropropane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
2-Chlorotoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
4-Chlorotoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
4-Isopropyltoluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Benzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Bromobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Bromodichloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Bromoform	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Bromomethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Carbon tetrachloride	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Chlorobenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: MW-29

Lab ID: 1903644-08

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloroethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Chloroform	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Chloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
cis-1,2-Dichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
cis-1,3-Dichloropropene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Dibromochloromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Dibromomethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Dichlorodifluoromethane	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Ethylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Hexachlorobutadiene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Isopropylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
m,p-Xylene	ND	1.0	1	B9J0175	10/08/2019	10/08/19 20:02	
Methylene chloride	ND	1.0	1	B9J0175	10/08/2019	10/08/19 20:02	
n-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
n-Propylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Naphthalene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
o-Xylene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
sec-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Styrene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
tert-Butylbenzene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Tetrachloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Toluene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
trans-1,2-Dichloroethene	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Trichloroethene	1.9	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Trichlorofluoromethane	0.62	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
Vinyl chloride	ND	0.50	1	B9J0175	10/08/2019	10/08/19 20:02	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>144 %</i>	<i>59 - 158</i>		B9J0175	10/08/2019	<i>10/08/19 18:47</i>	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>143 %</i>	<i>59 - 158</i>		B9J0175	10/08/2019	<i>10/08/19 20:02</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>101 %</i>	<i>71 - 127</i>		B9J0175	10/08/2019	<i>10/08/19 18:47</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>102 %</i>	<i>71 - 127</i>		B9J0175	10/08/2019	<i>10/08/19 20:02</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>121 %</i>	<i>66 - 147</i>		B9J0175	10/08/2019	<i>10/08/19 18:47</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>121 %</i>	<i>66 - 147</i>		B9J0175	10/08/2019	<i>10/08/19 20:02</i>	
<i>Surrogate: Toluene-d8</i>	<i>108 %</i>	<i>77 - 138</i>		B9J0175	10/08/2019	<i>10/08/19 20:02</i>	
<i>Surrogate: Toluene-d8</i>	<i>110 %</i>	<i>77 - 138</i>		B9J0175	10/08/2019	<i>10/08/19 18:47</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: MW-29

Lab ID: 1903644-08

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	110	2.0	1	B9J0301	10/10/2019	10/11/19 05:31	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>74.7 %</i>	<i>34 - 188</i>		<i>B9J0301</i>	<i>10/10/2019</i>	<i>10/11/19 05:31</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>76.6 %</i>	<i>39 - 108</i>		<i>B9J0301</i>	<i>10/10/2019</i>	<i>10/11/19 05:31</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>124 %</i>	<i>71 - 131</i>		<i>B9J0301</i>	<i>10/10/2019</i>	<i>10/11/19 05:31</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>70.8 %</i>	<i>32 - 106</i>		<i>B9J0301</i>	<i>10/10/2019</i>	<i>10/11/19 05:31</i>	



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

QUALITY CONTROL SECTION

Alkalinity, Speciated by SM 2320B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0169 - No_Prep_WC1_W

Blank (B9J0169-BLK1)

Prepared: 10/4/2019 Analyzed: 10/7/2019

Alkalinity, Bicarbonate (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Total (as CaCO ₃)	ND	5.0	3.4

LCS (B9J0169-BS1)

Prepared: 10/4/2019 Analyzed: 10/7/2019

Alkalinity, Total (as CaCO ₃)	106.150	5.0	3.4	99.9580	106	80 - 120
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Matrix Spike (B9J0169-MS1)

Source: 1903597-05

Prepared: 10/4/2019 Analyzed: 10/7/2019

Alkalinity, Total (as CaCO ₃)	139.880	5.0	3.4	99.9580	33.7300	106	80 - 120
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Matrix Spike Dup (B9J0169-MSD1)

Source: 1903597-05

Prepared: 10/4/2019 Analyzed: 10/7/2019

Alkalinity, Total (as CaCO ₃)	140.870	5.0	3.4	99.9580	33.7300	107	80 - 120	0.705	20
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Certificate of Analysis

Hargis & Associates, Inc.

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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Total Suspended Solids (Residue, Non-Filtrable) by SM 2540D - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0197 - No_Prep_WC1_W

Blank (B9J0197-BLK1)

Prepared: 10/7/2019 Analyzed: 10/8/2019

Residue, Suspended ND 10 10

LCS (B9J0197-BS1)

Prepared: 10/7/2019 Analyzed: 10/8/2019

Residue, Suspended 99.0000 10 10 93.4000 106 80 - 120

Duplicate (B9J0197-DUP1)

Source: 1903631-01

Prepared: 10/7/2019 Analyzed: 10/8/2019

Residue, Suspended 115.000 10 10 118.000 2.58 10



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Bromide by Ion Chromatography EPA 300 - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0247 - No_Prep_IC1_W

Blank (B9J0247-BLK1)

Prepared: 10/7/2019 Analyzed: 10/7/2019

Bromide ND 0.05 0.02

LCS (B9J0247-BS1)

Prepared: 10/7/2019 Analyzed: 10/7/2019

Bromide 1.00010 1.00000 100 90 - 110

Duplicate (B9J0247-DUP1)

Source: 1903656-03

Prepared: 10/7/2019 Analyzed: 10/7/2019

Bromide 0.01 too low due to 0.05 0.02 NR 20

Matrix Spike (B9J0247-MS1)

Source: 1903656-03

Prepared: 10/7/2019 Analyzed: 10/7/2019

Bromide 2.77200 2.50000 111 80 - 120

Matrix Spike Dup (B9J0247-MSD1)

Source: 1903656-03

Prepared: 10/7/2019 Analyzed: 10/7/2019

Bromide 2.77310 2.50000 111 80 - 120 0.0397 20



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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

UV Absorption by EPA 415.3 - Quality Control

Analyte	Result (1/cm)	PQL (1/cm)	MDL (1/cm)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD RPD	RPD Limit	Notes
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Batch B9J0122 - No_Prep_II_W

Duplicate (B9J0122-DUP1)

Source: 1903644-05

Prepared: 10/4/2019 Analyzed: 10/4/2019

UV Absorption	ND	0.01	0.01		ND			NR	20	
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Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Total Organic Carbon by SM 5310B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0288 - No_Prep_II_W

Blank (B9J0288-BLK1)

Prepared: 10/8/2019 Analyzed: 10/8/2019

Organic Carbon, Total ND 3.0 0.28

LCS (B9J0288-BS1)

Prepared: 10/8/2019 Analyzed: 10/8/2019

Organic Carbon, Total 18.7100 3.0 0.28 20.0000 93.6 80 - 120

LCS Dup (B9J0288-BSD1)

Prepared: 10/8/2019 Analyzed: 10/8/2019

Organic Carbon, Total 18.9400 3.0 0.28 20.0000 94.7 80 - 120 1.22 20

Matrix Spike (B9J0288-MS1)

Source: 1903644-04

Prepared: 10/8/2019 Analyzed: 10/8/2019

Organic Carbon, Total 11.0500 3.0 0.28 20.0000 ND 55.2 80 - 120 M2

Matrix Spike Dup (B9J0288-MSD1)

Source: 1903644-04

Prepared: 10/8/2019 Analyzed: 10/8/2019

Organic Carbon, Total 13.4900 3.0 0.28 20.0000 ND 67.4 80 - 120 19.9 20 M2



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD RPD	RPD Limit	Notes
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Batch B9J0175 - MSVOA_LL_W

Blank (B9J0175-BLK1)

Prepared: 10/8/2019 Analyzed: 10/8/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.21
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.40
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.18
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD RPD	RPD Limit	Notes
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Batch B9J0175 - MSVOA_LL_W (continued)

Blank (B9J0175-BLK1) - Continued

Prepared: 10/8/2019 Analyzed: 10/8/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.23
Vinyl chloride	ND	0.50	0.13

Surrogate: 1,2-Dichloroethane-d4	35.31	25.0000	141	59 - 158
Surrogate: 4-Bromofluorobenzene	25.44	25.0000	102	71 - 127
Surrogate: Dibromofluoromethane	30.33	25.0000	121	66 - 147
Surrogate: Toluene-d8	26.71	25.0000	107	77 - 138

LCS (B9J0175-BS1)

Prepared: 10/8/2019 Analyzed: 10/8/2019

1,1,1,2-Tetrachloroethane	17.8700	0.50	0.11	20.0000	89.4	71 - 133
1,1,1-Trichloroethane	23.3300	0.50	0.21	20.0000	117	62 - 124
1,1,2,2-Tetrachloroethane	19.4800	0.50	0.36	20.0000	97.4	50 - 131
1,1,2-Trichloroethane	19.7500	0.50	0.25	20.0000	98.8	77 - 121
1,1-Dichloroethane	24.1700	0.50	0.09	20.0000	121	52 - 130
1,1-Dichloroethene	18.6500	0.50	0.13	20.0000	93.2	61 - 136
1,1-Dichloropropene	20.6200	0.50	0.13	20.0000	103	80 - 128
1,2,3-Trichloropropane	19.8000	0.50	0.39	20.0000	99.0	59 - 126
1,2,3-Trichlorobenzene	16.9200	0.50	0.18	20.0000	84.6	69 - 138
1,2,4-Trichlorobenzene	17.2400	0.50	0.16	20.0000	86.2	78 - 125
1,2,4-Trimethylbenzene	19.7400	0.50	0.14	20.0000	98.7	70 - 126
1,2-Dibromo-3-chloropropane	16.6400	0.50	0.41	20.0000	83.2	58 - 127
1,2-Dibromoethane	18.0300	0.50	0.24	20.0000	90.2	76 - 120
1,2-Dichlorobenzene	18.2400	0.50	0.20	20.0000	91.2	82 - 117
1,2-Dichloroethane	22.0900	0.50	0.20	20.0000	110	66 - 126
1,2-Dichloropropane	20.6600	0.50	0.15	20.0000	103	70 - 117
1,3,5-Trimethylbenzene	19.4600	0.50	0.13	20.0000	97.3	71 - 125
1,3-Dichlorobenzene	18.2000	0.50	0.16	20.0000	91.0	81 - 116
1,3-Dichloropropane	19.0700	0.50	0.21	20.0000	95.4	69 - 124



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Project Number : Raytheon Main GETS Monthly Sample, 5

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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0175 - MSVOA_LL_W (continued)

LCS (B9J0175-BS1) - Continued

Prepared: 10/8/2019 Analyzed: 10/8/2019

1,4-Dichlorobenzene	18.0100	0.50	0.17	20.0000		90.0	80 - 114		
2,2-Dichloropropane	25.7400	0.50	0.38	20.0000		129	58 - 132		
2-Chlorotoluene	19.5800	0.50	0.11	20.0000		97.9	71 - 119		
4-Chlorotoluene	19.5900	0.50	0.12	20.0000		98.0	72 - 122		
4-Isopropyltoluene	19.3200	0.50	0.11	20.0000		96.6	69 - 126		
Benzene	40.1800	0.50	0.13	40.0000		100	80 - 116		
Bromobenzene	17.5700	0.50	0.21	20.0000		87.8	77 - 118		
Bromodichloromethane	20.1000	0.50	0.14	20.0000		100	73 - 118		
Bromoform	15.7500	0.50	0.20	20.0000		78.8	65 - 133		
Bromomethane	23.2700	0.50	0.40	20.0000		116	7 - 205		
Carbon tetrachloride	20.2200	0.50	0.09	20.0000		101	63 - 133		
Chlorobenzene	18.3200	0.50	0.13	20.0000		91.6	86 - 113		
Chloroethane	21.1000	0.50	0.15	20.0000		106	66 - 141		
Chloroform	23.1900	0.50	0.11	20.0000		116	63 - 127		
Chloromethane	27.2200	0.50	0.12	20.0000		136	0 - 207		
cis-1,2-Dichloroethene	21.6300	0.50	0.14	20.0000		108	64 - 126		
cis-1,3-Dichloropropene	22.1500	0.50	0.13	20.0000		111	70 - 141		
Dibromochloromethane	17.5800	0.50	0.16	20.0000		87.9	67 - 135		
Dibromomethane	20.5200	0.50	0.19	20.0000		103	74 - 118		
Dichlorodifluoromethane	27.4500	0.50	0.18	20.0000		137	14 - 181		
Ethylbenzene	38.5200	0.50	0.13	40.0000		96.3	77 - 118		
Hexachlorobutadiene	16.8500	0.50	0.15	20.0000		84.2	66 - 125		
Isopropylbenzene	20.8600	0.50	0.10	20.0000		104	68 - 137		
m,p-Xylene	38.1600	1.0	0.19	40.0000		95.4	78 - 126		
Methylene chloride	19.7000	1.0	0.71	20.0000		98.5	51 - 149		
n-Butylbenzene	21.3300	0.50	0.11	20.0000		107	63 - 127		
n-Propylbenzene	20.2300	0.50	0.10	20.0000		101	69 - 124		
Naphthalene	16.8800	0.50	0.41	20.0000		84.4	60 - 126		
o-Xylene	38.9200	0.50	0.13	40.0000		97.3	79 - 126		
sec-Butylbenzene	20.2400	0.50	0.09	20.0000		101	69 - 124		
Styrene	19.1200	0.50	0.13	20.0000		95.6	80 - 127		
tert-Butylbenzene	19.3100	0.50	0.09	20.0000		96.6	71 - 124		
Tetrachloroethene	16.8000	0.50	0.10	20.0000		84.0	73 - 129		
Toluene	38.9200	0.50	0.12	40.0000		97.3	78 - 121		
trans-1,2-Dichloroethene	20.9800	0.50	0.09	20.0000		105	58 - 141		
Trichloroethene	17.6200	0.50	0.10	20.0000		88.1	73 - 126		
Trichlorofluoromethane	20.9600	0.50	0.23	20.0000		105	62 - 146		
Vinyl chloride	21.0700	0.50	0.13	20.0000		105	61 - 137		
Surrogate: 1,2-Dichloroethane-d4	33.69			25.0000		135	59 - 158		
Surrogate: 4-Bromofluorobenzene	25.95			25.0000		104	71 - 127		
Surrogate: Dibromofluoromethane	29.76			25.0000		119	66 - 147		



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0175 - MSVOA_LL_W (continued)

LCS (B9J0175-BS1) - Continued

Prepared: 10/8/2019 Analyzed: 10/8/2019

Surrogate: Toluene-d8 26.51 25.0000 106 77 - 138

LCS Dup (B9J0175-BS1)

Prepared: 10/8/2019 Analyzed: 10/8/2019

1,1,1,2-Tetrachloroethane	18.4100	0.50	0.11	20.0000	92.0	71 - 133	2.98	20
1,1,1-Trichloroethane	23.3200	0.50	0.21	20.0000	117	62 - 124	0.0429	20
1,1,2,2-Tetrachloroethane	20.6200	0.50	0.36	20.0000	103	50 - 131	5.69	20
1,1,2-Trichloroethane	20.5000	0.50	0.25	20.0000	102	77 - 121	3.73	20
1,1-Dichloroethane	24.5200	0.50	0.09	20.0000	123	52 - 130	1.44	20
1,1-Dichloroethene	18.3200	0.50	0.13	20.0000	91.6	61 - 136	1.79	20
1,1-Dichloropropene	20.3200	0.50	0.13	20.0000	102	80 - 128	1.47	20
1,2,3-Trichloropropane	20.6000	0.50	0.39	20.0000	103	59 - 126	3.96	20
1,2,3-Trichlorobenzene	17.7800	0.50	0.18	20.0000	88.9	69 - 138	4.96	20
1,2,4-Trichlorobenzene	17.5200	0.50	0.16	20.0000	87.6	78 - 125	1.61	20
1,2,4-Trimethylbenzene	19.7000	0.50	0.14	20.0000	98.5	70 - 126	0.203	20
1,2-Dibromo-3-chloropropane	18.1800	0.50	0.41	20.0000	90.9	58 - 127	8.85	20
1,2-Dibromoethane	19.1000	0.50	0.24	20.0000	95.5	76 - 120	5.76	20
1,2-Dichlorobenzene	18.7200	0.50	0.20	20.0000	93.6	82 - 117	2.60	20
1,2-Dichloroethane	22.8900	0.50	0.20	20.0000	114	66 - 126	3.56	20
1,2-Dichloropropane	20.7700	0.50	0.15	20.0000	104	70 - 117	0.531	20
1,3,5-Trimethylbenzene	19.7000	0.50	0.13	20.0000	98.5	71 - 125	1.23	20
1,3-Dichlorobenzene	18.5400	0.50	0.16	20.0000	92.7	81 - 116	1.85	20
1,3-Dichloropropane	20.6200	0.50	0.21	20.0000	103	69 - 124	7.81	20
1,4-Dichlorobenzene	18.4600	0.50	0.17	20.0000	92.3	80 - 114	2.47	20
2,2-Dichloropropane	25.2500	0.50	0.38	20.0000	126	58 - 132	1.92	20
2-Chlorotoluene	19.7700	0.50	0.11	20.0000	98.8	71 - 119	0.966	20
4-Chlorotoluene	20.0700	0.50	0.12	20.0000	100	72 - 122	2.42	20
4-Isopropyltoluene	19.3600	0.50	0.11	20.0000	96.8	69 - 126	0.207	20
Benzene	40.9600	0.50	0.13	40.0000	102	80 - 116	1.92	20
Bromobenzene	17.9500	0.50	0.21	20.0000	89.8	77 - 118	2.14	20
Bromodichloromethane	20.5200	0.50	0.14	20.0000	103	73 - 118	2.07	20
Bromoform	16.8100	0.50	0.20	20.0000	84.0	65 - 133	6.51	20
Bromomethane	25.0900	0.50	0.40	20.0000	125	7 - 205	7.53	20
Carbon tetrachloride	19.8500	0.50	0.09	20.0000	99.2	63 - 133	1.85	20
Chlorobenzene	18.7600	0.50	0.13	20.0000	93.8	86 - 113	2.37	20
Chloroethane	21.3400	0.50	0.15	20.0000	107	66 - 141	1.13	20
Chloroform	23.8500	0.50	0.11	20.0000	119	63 - 127	2.81	20
Chloromethane	27.1900	0.50	0.12	20.0000	136	0 - 207	0.110	20
cis-1,2-Dichloroethene	22.4800	0.50	0.14	20.0000	112	64 - 126	3.85	20
cis-1,3-Dichloropropene	22.6300	0.50	0.13	20.0000	113	70 - 141	2.14	20
Dibromochloromethane	18.3600	0.50	0.16	20.0000	91.8	67 - 135	4.34	20
Dibromomethane	20.7800	0.50	0.19	20.0000	104	74 - 118	1.26	20
Dichlorodifluoromethane	28.0700	0.50	0.18	20.0000	140	14 - 181	2.23	20



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0175 - MSVOA_LL_W (continued)

LCS Dup (B9J0175-BSD1) - Continued

Prepared: 10/8/2019 Analyzed: 10/8/2019

Ethylbenzene	39.1000	0.50	0.13	40.0000		97.8	77 - 118	1.49	20
Hexachlorobutadiene	16.9300	0.50	0.15	20.0000		84.6	66 - 125	0.474	20
Isopropylbenzene	20.7800	0.50	0.10	20.0000		104	68 - 137	0.384	20
m,p-Xylene	38.9500	1.0	0.19	40.0000		97.4	78 - 126	2.05	20
Methylene chloride	19.9500	1.0	0.71	20.0000		99.8	51 - 149	1.26	20
n-Butylbenzene	21.0200	0.50	0.11	20.0000		105	63 - 127	1.46	20
n-Propylbenzene	20.3000	0.50	0.10	20.0000		102	69 - 124	0.345	20
Naphthalene	18.3700	0.50	0.41	20.0000		91.8	60 - 126	8.45	20
o-Xylene	39.6300	0.50	0.13	40.0000		99.1	79 - 126	1.81	20
sec-Butylbenzene	20.2500	0.50	0.09	20.0000		101	69 - 124	0.0494	20
Styrene	19.6300	0.50	0.13	20.0000		98.2	80 - 127	2.63	20
tert-Butylbenzene	19.1600	0.50	0.09	20.0000		95.8	71 - 124	0.780	20
Tetrachloroethene	17.0000	0.50	0.10	20.0000		85.0	73 - 129	1.18	20
Toluene	38.8700	0.50	0.12	40.0000		97.2	78 - 121	0.129	20
trans-1,2-Dichloroethene	21.7500	0.50	0.09	20.0000		109	58 - 141	3.60	20
Trichloroethene	18.2300	0.50	0.10	20.0000		91.2	73 - 126	3.40	20
Trichlorofluoromethane	21.3500	0.50	0.23	20.0000		107	62 - 146	1.84	20
Vinyl chloride	21.9300	0.50	0.13	20.0000		110	61 - 137	4.00	20
Surrogate: 1,2-Dichloroethane-d4	34.84			25.0000		139	59 - 158		
Surrogate: 4-Bromofluorobenzene	26.40			25.0000		106	71 - 127		
Surrogate: Dibromofluoromethane	30.36			25.0000		121	66 - 147		
Surrogate: Toluene-d8	26.39			25.0000		106	77 - 138		

Duplicate (B9J0175-DUP1)

Source: 1903660-01

Prepared: 10/8/2019 Analyzed: 10/8/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11		ND				20
1,1,1-Trichloroethane	ND	0.50	0.21		ND				20
1,1,2,2-Tetrachloroethane	ND	0.50	0.36		ND				20
1,1,2-Trichloroethane	ND	0.50	0.25		ND				20
1,1-Dichloroethane	ND	0.50	0.09		ND				20
1,1-Dichloroethene	ND	0.50	0.13		ND				20
1,1-Dichloropropene	ND	0.50	0.13		ND				20
1,2,3-Trichloropropane	ND	0.50	0.39		ND				20
1,2,3-Trichlorobenzene	ND	0.50	0.18		ND				20
1,2,4-Trichlorobenzene	ND	0.50	0.16		ND				20
1,2,4-Trimethylbenzene	ND	0.50	0.14		ND				20
1,2-Dibromo-3-chloropropane	ND	0.50	0.41		ND				20
1,2-Dibromoethane	ND	0.50	0.24		ND				20
1,2-Dichlorobenzene	ND	0.50	0.20		ND				20
1,2-Dichloroethane	ND	0.50	0.20		ND				20
1,2-Dichloropropane	ND	0.50	0.15		ND				20
1,3,5-Trimethylbenzene	ND	0.50	0.13		ND				20



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD RPD	RPD Limit	Notes
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Batch B9J0175 - MSVOA_LL_W (continued)

Duplicate (B9J0175-DUP1) - Continued

Source: 1903660-01

Prepared: 10/8/2019 Analyzed: 10/8/2019

1,3-Dichlorobenzene	ND	0.50	0.16		ND				20	
1,3-Dichloropropane	ND	0.50	0.21		ND				20	
1,4-Dichlorobenzene	ND	0.50	0.17		ND				20	
2,2-Dichloropropane	ND	0.50	0.38		ND				20	
2-Chlorotoluene	ND	0.50	0.11		ND				20	
4-Chlorotoluene	ND	0.50	0.12		ND				20	
4-Isopropyltoluene	ND	0.50	0.11		ND				20	
Benzene	ND	0.50	0.13		ND				20	
Bromobenzene	ND	0.50	0.21		ND				20	
Bromodichloromethane	ND	0.50	0.14		ND				20	
Bromoform	ND	0.50	0.20		ND				20	
Bromomethane	ND	0.50	0.40		ND				20	
Carbon tetrachloride	ND	0.50	0.09		ND				20	
Chlorobenzene	ND	0.50	0.13		ND				20	
Chloroethane	ND	0.50	0.15		ND				20	
Chloroform	ND	0.50	0.11		ND				20	
Chloromethane	ND	0.50	0.12		ND				20	
cis-1,2-Dichloroethene	ND	0.50	0.14		ND				20	
cis-1,3-Dichloropropene	ND	0.50	0.13		ND				20	
Dibromochloromethane	ND	0.50	0.16		ND				20	
Dibromomethane	ND	0.50	0.19		ND				20	
Dichlorodifluoromethane	ND	0.50	0.18		ND				20	
Ethylbenzene	ND	0.50	0.13		ND				20	
Hexachlorobutadiene	ND	0.50	0.15		ND				20	
Isopropylbenzene	ND	0.50	0.10		ND				20	
m,p-Xylene	ND	1.0	0.19		ND				20	
Methylene chloride	ND	1.0	0.71		ND				20	
n-Butylbenzene	ND	0.50	0.11		ND				20	
n-Propylbenzene	ND	0.50	0.10		ND				20	
Naphthalene	ND	0.50	0.41		ND				20	
o-Xylene	ND	0.50	0.13		ND				20	
sec-Butylbenzene	ND	0.50	0.09		ND				20	
Styrene	ND	0.50	0.13		ND				20	
tert-Butylbenzene	ND	0.50	0.09		ND				20	
Tetrachloroethene	ND	0.50	0.10		ND				20	
Toluene	ND	0.50	0.12		ND				20	
trans-1,2-Dichloroethene	ND	0.50	0.09		ND				20	
Trichloroethene	ND	0.50	0.10		ND				20	
Trichlorofluoromethane	ND	0.50	0.23		ND				20	
Vinyl chloride	ND	0.50	0.13		ND				20	

Surrogate: 1,2-Dichloroethane-d4

34.15

25.0000

137

59 - 158



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0175 - MSVOA_LL_W (continued)

Duplicate (B9J0175-DUP1) - Continued

Source: 1903660-01

Prepared: 10/8/2019 Analyzed: 10/8/2019

Surrogate: 4-Bromofluorobenzene	24.22		25.0000		96.9	71 - 127			
Surrogate: Dibromofluoromethane	29.27		25.0000		117	66 - 147			
Surrogate: Toluene-d8	26.16		25.0000		105	77 - 138			

Matrix Spike (B9J0175-MS1)

Source: 1903644-04

Prepared: 10/8/2019 Analyzed: 10/8/2019

1,1,1,2-Tetrachloroethane	18.7100	0.50	0.11	20.0000	ND	93.6	71 - 133		
1,1,1-Trichloroethane	23.1600	0.50	0.21	20.0000	ND	116	62 - 124		
1,1,2,2-Tetrachloroethane	21.3700	0.50	0.36	20.0000	ND	107	50 - 131		
1,1,2-Trichloroethane	21.2000	0.50	0.25	20.0000	ND	106	77 - 121		
1,1-Dichloroethane	24.8100	0.50	0.09	20.0000	ND	124	52 - 130		
1,1-Dichloroethene	17.8900	0.50	0.13	20.0000	ND	89.4	61 - 136		
1,1-Dichloropropene	20.2300	0.50	0.13	20.0000	ND	101	80 - 128		
1,2,3-Trichloropropane	20.8600	0.50	0.39	20.0000	ND	104	59 - 126		
1,2,3-Trichlorobenzene	18.1000	0.50	0.18	20.0000	ND	90.5	69 - 138		
1,2,4-Trichlorobenzene	17.5200	0.50	0.16	20.0000	ND	87.6	78 - 125		
1,2,4-Trimethylbenzene	15.5100	0.50	0.14	20.0000	ND	77.6	70 - 126		
1,2-Dibromo-3-chloropropane	18.9700	0.50	0.41	20.0000	ND	94.8	58 - 127		
1,2-Dibromoethane	19.9200	0.50	0.24	20.0000	ND	99.6	76 - 120		
1,2-Dichlorobenzene	18.9400	0.50	0.20	20.0000	ND	94.7	82 - 117		
1,2-Dichloroethane	23.3700	0.50	0.20	20.0000	ND	117	66 - 126		
1,2-Dichloropropane	21.2700	0.50	0.15	20.0000	ND	106	70 - 117		
1,3,5-Trimethylbenzene	18.4600	0.50	0.13	20.0000	ND	92.3	71 - 125		
1,3-Dichlorobenzene	18.7000	0.50	0.16	20.0000	ND	93.5	81 - 116		
1,3-Dichloropropane	20.4500	0.50	0.21	20.0000	ND	102	69 - 124		
1,4-Dichlorobenzene	18.4900	0.50	0.17	20.0000	ND	92.4	80 - 114		
2,2-Dichloropropane	24.9400	0.50	0.38	20.0000	ND	125	58 - 132		
2-Chlorotoluene	20.0600	0.50	0.11	20.0000	ND	100	71 - 119		
4-Chlorotoluene	19.9300	0.50	0.12	20.0000	ND	99.6	72 - 122		
4-Isopropyltoluene	18.7100	0.50	0.11	20.0000	ND	93.6	69 - 126		
Benzene	42.1200	0.50	0.13	40.0000	ND	105	80 - 116		
Bromobenzene	17.9400	0.50	0.21	20.0000	ND	89.7	77 - 118		
Bromodichloromethane	21.0900	0.50	0.14	20.0000	ND	105	73 - 118		
Bromoform	16.7000	0.50	0.20	20.0000	ND	83.5	65 - 133		
Bromomethane	24.1400	0.50	0.40	20.0000	ND	121	7 - 205		
Carbon tetrachloride	20.1400	0.50	0.09	20.0000	ND	101	63 - 133		
Chlorobenzene	18.8900	0.50	0.13	20.0000	ND	94.4	81 - 115		
Chloroethane	19.7100	0.50	0.15	20.0000	ND	98.6	66 - 141		
Chloroform	23.8600	0.50	0.11	20.0000	ND	119	63 - 127		
Chloromethane	26.1300	0.50	0.12	20.0000	ND	131	0 - 207		
cis-1,2-Dichloroethene	23.0900	0.50	0.14	20.0000	ND	115	64 - 126		
cis-1,3-Dichloropropene	23.2800	0.50	0.13	20.0000	ND	116	70 - 141		
Dibromochloromethane	18.1300	0.50	0.16	20.0000	ND	90.6	67 - 135		



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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0175 - MSVOA_LL_W (continued)

Matrix Spike (B9J0175-MS1) - Continued

Source: 1903644-04

Prepared: 10/8/2019 Analyzed: 10/8/2019

Dibromomethane	21.5200	0.50	0.19	20.0000	ND	108	74 - 118			
Dichlorodifluoromethane	24.5200	0.50	0.18	20.0000	ND	123	14 - 181			
Ethylbenzene	38.5000	0.50	0.13	40.0000	ND	96.2	77 - 118			
Hexachlorobutadiene	16.8400	0.50	0.15	20.0000	ND	84.2	66 - 125			
Isopropylbenzene	20.8900	0.50	0.10	20.0000	ND	104	68 - 137			
m,p-Xylene	37.4100	1.0	0.19	40.0000	ND	93.5	78 - 126			
Methylene chloride	19.7600	1.0	0.71	20.0000	ND	98.8	51 - 149			
n-Butylbenzene	20.9800	0.50	0.11	20.0000	ND	105	63 - 127			
n-Propylbenzene	20.4000	0.50	0.10	20.0000	ND	102	69 - 124			
Naphthalene	16.2300	0.50	0.41	20.0000	ND	81.2	60 - 126			
o-Xylene	39.3100	0.50	0.13	40.0000	ND	98.3	79 - 126			
sec-Butylbenzene	20.0300	0.50	0.09	20.0000	ND	100	69 - 124			
Styrene	12.7800	0.50	0.13	20.0000	ND	63.9	80 - 127			M2
tert-Butylbenzene	19.2300	0.50	0.09	20.0000	ND	96.2	71 - 124			
Tetrachloroethene	16.6900	0.50	0.10	20.0000	ND	83.4	73 - 129			
Toluene	40.3800	0.50	0.12	40.0000	ND	101	78 - 121			
trans-1,2-Dichloroethene	21.2900	0.50	0.09	20.0000	ND	106	58 - 141			
Trichloroethene	18.3300	0.50	0.10	20.0000	ND	91.6	73 - 126			
Trichlorofluoromethane	19.0500	0.50	0.23	20.0000	ND	95.2	62 - 146			
Vinyl chloride	20.1400	0.50	0.13	20.0000	ND	101	61 - 137			
Surrogate: 1,2-Dichloroethane-d4	33.56			25.0000		134	59 - 158			
Surrogate: 4-Bromofluorobenzene	25.53			25.0000		102	71 - 127			
Surrogate: Dibromofluoromethane	29.02			25.0000		116	66 - 147			
Surrogate: Toluene-d8	25.70			25.0000		103	77 - 138			

Matrix Spike Dup (B9J0175-MSD1)

Source: 1903644-04

Prepared: 10/8/2019 Analyzed: 10/8/2019

1,1,1,2-Tetrachloroethane	19.0600	0.50	0.11	20.0000	ND	95.3	71 - 133	1.85	20	
1,1,1-Trichloroethane	23.3800	0.50	0.21	20.0000	ND	117	62 - 124	0.945	20	
1,1,2,2-Tetrachloroethane	21.5900	0.50	0.36	20.0000	ND	108	50 - 131	1.02	20	
1,1,2-Trichloroethane	21.3600	0.50	0.25	20.0000	ND	107	77 - 121	0.752	20	
1,1-Dichloroethane	25.0200	0.50	0.09	20.0000	ND	125	52 - 130	0.843	20	
1,1-Dichloroethene	21.5900	0.50	0.13	20.0000	ND	108	61 - 136	18.7	20	
1,1-Dichloropropene	20.8800	0.50	0.13	20.0000	ND	104	80 - 128	3.16	20	
1,2,3-Trichloropropane	21.6400	0.50	0.39	20.0000	ND	108	59 - 126	3.67	20	
1,2,3-Trichlorobenzene	18.1300	0.50	0.18	20.0000	ND	90.6	69 - 138	0.166	20	
1,2,4-Trichlorobenzene	17.5000	0.50	0.16	20.0000	ND	87.5	78 - 125	0.114	20	
1,2,4-Trimethylbenzene	13.8200	0.50	0.14	20.0000	ND	69.1	70 - 126	11.5	20	M2
1,2-Dibromo-3-chloropropane	19.7600	0.50	0.41	20.0000	ND	98.8	58 - 127	4.08	20	
1,2-Dibromoethane	20.3500	0.50	0.24	20.0000	ND	102	76 - 120	2.14	20	
1,2-Dichlorobenzene	18.7500	0.50	0.20	20.0000	ND	93.8	82 - 117	1.01	20	
1,2-Dichloroethane	23.9200	0.50	0.20	20.0000	ND	120	66 - 126	2.33	20	



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0175 - MSVOA_LL_W (continued)

Matrix Spike Dup (B9J0175-MSD1) - Continued

Source: 1903644-04

Prepared: 10/8/2019 Analyzed: 10/8/2019

1,2-Dichloropropane	21.4300	0.50	0.15	20.0000	ND	107	70 - 117	0.749	20	
1,3,5-Trimethylbenzene	17.5500	0.50	0.13	20.0000	ND	87.8	71 - 125	5.05	20	
1,3-Dichlorobenzene	18.4000	0.50	0.16	20.0000	ND	92.0	81 - 116	1.62	20	
1,3-Dichloropropane	21.3000	0.50	0.21	20.0000	ND	106	69 - 124	4.07	20	
1,4-Dichlorobenzene	18.6600	0.50	0.17	20.0000	ND	93.3	80 - 114	0.915	20	
2,2-Dichloropropane	24.5100	0.50	0.38	20.0000	ND	123	58 - 132	1.74	20	
2-Chlorotoluene	19.5200	0.50	0.11	20.0000	ND	97.6	71 - 119	2.73	20	
4-Chlorotoluene	19.8100	0.50	0.12	20.0000	ND	99.0	72 - 122	0.604	20	
4-Isopropyltoluene	17.8500	0.50	0.11	20.0000	ND	89.2	69 - 126	4.70	20	
Benzene	42.0100	0.50	0.13	40.0000	ND	105	80 - 116	0.262	20	
Bromobenzene	18.1800	0.50	0.21	20.0000	ND	90.9	77 - 118	1.33	20	
Bromodichloromethane	20.6900	0.50	0.14	20.0000	ND	103	73 - 118	1.91	20	
Bromoform	17.6300	0.50	0.20	20.0000	ND	88.2	65 - 133	5.42	20	
Bromomethane	23.5600	0.50	0.40	20.0000	ND	118	7 - 205	2.43	20	
Carbon tetrachloride	20.3900	0.50	0.09	20.0000	ND	102	63 - 133	1.23	20	
Chlorobenzene	18.9000	0.50	0.13	20.0000	ND	94.5	81 - 115	0.0529	20	
Chloroethane	20.4800	0.50	0.15	20.0000	ND	102	66 - 141	3.83	20	
Chloroform	24.1400	0.50	0.11	20.0000	ND	121	63 - 127	1.17	20	
Chloromethane	28.7700	0.50	0.12	20.0000	ND	144	0 - 207	9.62	20	
cis-1,2-Dichloroethene	22.5700	0.50	0.14	20.0000	ND	113	64 - 126	2.28	20	
cis-1,3-Dichloropropene	23.5100	0.50	0.13	20.0000	ND	118	70 - 141	0.983	20	
Dibromochloromethane	18.7800	0.50	0.16	20.0000	ND	93.9	67 - 135	3.52	20	
Dibromomethane	22.0300	0.50	0.19	20.0000	ND	110	74 - 118	2.34	20	
Dichlorodifluoromethane	25.3000	0.50	0.18	20.0000	ND	126	14 - 181	3.13	20	
Ethylbenzene	38.7900	0.50	0.13	40.0000	ND	97.0	77 - 118	0.750	20	
Hexachlorobutadiene	16.7100	0.50	0.15	20.0000	ND	83.6	66 - 125	0.775	20	
Isopropylbenzene	20.4500	0.50	0.10	20.0000	ND	102	68 - 137	2.13	20	
m,p-Xylene	37.8300	1.0	0.19	40.0000	ND	94.6	78 - 126	1.12	20	
Methylene chloride	19.7400	1.0	0.71	20.0000	ND	98.7	51 - 149	0.101	20	
n-Butylbenzene	20.1400	0.50	0.11	20.0000	ND	101	63 - 127	4.09	20	
n-Propylbenzene	19.6900	0.50	0.10	20.0000	ND	98.4	69 - 124	3.54	20	
Naphthalene	16.0400	0.50	0.41	20.0000	ND	80.2	60 - 126	1.18	20	
o-Xylene	39.8500	0.50	0.13	40.0000	ND	99.6	79 - 126	1.36	20	
sec-Butylbenzene	19.5600	0.50	0.09	20.0000	ND	97.8	69 - 124	2.37	20	
Styrene	11.4200	0.50	0.13	20.0000	ND	57.1	80 - 127	11.2	20	M2
tert-Butylbenzene	18.7600	0.50	0.09	20.0000	ND	93.8	71 - 124	2.47	20	
Tetrachloroethene	16.6200	0.50	0.10	20.0000	ND	83.1	73 - 129	0.420	20	
Toluene	39.7700	0.50	0.12	40.0000	ND	99.4	78 - 121	1.52	20	
trans-1,2-Dichloroethene	21.3600	0.50	0.09	20.0000	ND	107	58 - 141	0.328	20	
Trichloroethene	18.5500	0.50	0.10	20.0000	ND	92.8	73 - 126	1.19	20	
Trichlorofluoromethane	19.5600	0.50	0.23	20.0000	ND	97.8	62 - 146	2.64	20	
Vinyl chloride	20.5800	0.50	0.13	20.0000	ND	103	61 - 137	2.16	20	



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0175 - MSVOA_LL_W (continued)

Matrix Spike Dup (B9J0175-MSD1) - Continued

Source: 1903644-04

Prepared: 10/8/2019 Analyzed: 10/8/2019

Surrogate: 1,2-Dichloroethane-d4	33.98	25.0000	136	59 - 158
Surrogate: 4-Bromofluorobenzene	25.70	25.0000	103	71 - 127
Surrogate: Dibromofluoromethane	29.37	25.0000	117	66 - 147
Surrogate: Toluene-d8	26.43	25.0000	106	77 - 138



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Report To : Steve Netto

Reported : 10/29/2019

1,4-Dioxane by EPA 8270: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0301 - MSSEMI_W

Blank (B9J0301-BLK1)

Prepared: 10/10/2019 Analyzed: 10/11/2019

1,4-Dioxane	ND	2.0	0.84						
Surrogate: 1,2-Dichlorobenzene-d	72.11			100.000	72.1	34 - 188			
Surrogate: 2-Fluorobiphenyl	75.38			100.000	75.4	39 - 108			
Surrogate: 4-Terphenyl-d14	125.6			100.000	126	71 - 131			
Surrogate: Nitrobenzene-d5	67.49			100.000	67.5	32 - 106			

LCS (B9J0301-BS1)

Prepared: 10/10/2019 Analyzed: 10/11/2019

1,4-Dioxane	103.910	2.0	0.84	100.000	104	40 - 159			
Surrogate: 1,2-Dichlorobenzene-d	62.90			100.000	62.9	34 - 188			
Surrogate: 2-Fluorobiphenyl	73.53			100.000	73.5	39 - 108			
Surrogate: 4-Terphenyl-d14	115.5			100.000	116	71 - 131			
Surrogate: Nitrobenzene-d5	68.48			100.000	68.5	32 - 106			

LCS Dup (B9J0301-BSD1)

Prepared: 10/10/2019 Analyzed: 10/11/2019

1,4-Dioxane	104.730	2.0	0.84	100.000	105	40 - 159	0.786	20	
Surrogate: 1,2-Dichlorobenzene-d	63.27			100.000	63.3	34 - 188			
Surrogate: 2-Fluorobiphenyl	71.61			100.000	71.6	39 - 108			
Surrogate: 4-Terphenyl-d14	108.3			100.000	108	71 - 131			
Surrogate: Nitrobenzene-d5	71.06			100.000	71.1	32 - 106			



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0378 - MSSEMI_W

Blank (B9J0378-BLK1)

Prepared: 10/11/2019 Analyzed: 10/11/2019

1,4-Dioxane	ND	0.20	0.05						
Surrogate: 1,2-Dichlorobenzene-d	0.7511			1.00000		75.1	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.7682			1.00000		76.8	20 - 131		
Surrogate: 4-Terphenyl-d14	0.7831			1.00000		78.3	24 - 135		
Surrogate: Nitrobenzene-d5	0.8420			1.00000		84.2	6 - 124		

LCS (B9J0378-BS1)

Prepared: 10/11/2019 Analyzed: 10/11/2019

1,4-Dioxane	1.28229	0.20	0.05	1.00000		128	64 - 129		
Surrogate: 1,2-Dichlorobenzene-d	0.4845			1.00000		48.4	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.5105			1.00000		51.0	20 - 131		
Surrogate: 4-Terphenyl-d14	0.5496			1.00000		55.0	24 - 135		
Surrogate: Nitrobenzene-d5	0.5549			1.00000		55.5	6 - 124		

LCS Dup (B9J0378-BSD1)

Prepared: 10/11/2019 Analyzed: 10/11/2019

1,4-Dioxane	1.25894	0.20	0.05	1.00000		126	64 - 129	1.84	20
Surrogate: 1,2-Dichlorobenzene-d	0.4873			1.00000		48.7	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.5022			1.00000		50.2	20 - 131		
Surrogate: 4-Terphenyl-d14	0.5516			1.00000		55.2	24 - 135		
Surrogate: Nitrobenzene-d5	0.5672			1.00000		56.7	6 - 124		



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 10/29/2019

Notes and Definitions

M2	Matrix spike recovery outside of acceptance limit due to possible matrix interference. The analytical batch was validated by the laboratory control sample.
CUSTOM	sample dup recovery too low due to necessary dilution
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.

Laboratory Report

October 28, 2019

Advanced Technology Laboratories
PO Box 92797
Long Beach, CA 90809-2797

Attn: Tina Nguyen

Element Job No: 234680
Purchase Order: COD - CC
Project Name: 1903644 / Groundwater
Samples Received: 2
Date Received: 10-07-19

Analysis	Page
Bromate by SOP 5600, Rev 3	2


Michael Shelton
Technical Director
Robert Stead
Senior Chemist

Bromate by SOP 5600, Rev 3
Ion Chromatography-Tandem Mass Spectrometry

Sample preparation: An aliquot of sample was spiked with internal standard (bromate-¹⁸O₃), and diluted with water. The sample solutions were analyzed using IC-MS/MS.

Parts Per Billion (µg/L)

<u>Sample ID</u>	<u>Result</u>
ATL Lab#: 1903644-04 / POX	ND
ATL Lab#: 1903644-06 / INF	ND
Method Blank	ND
Detection Limit	0.5
Date Analyzed: 10-23-19	

Quality Control Summary

Sample ID: ATL Lab#: 1903644-04 / POX

<u>Analyte</u>	<u>Sample Result</u>	<u>Spike Conc</u>	<u>Spike Result</u>	<u>Spike % Rec</u>	<u>Spike Duplicate</u>	<u>Duplicate % Rec</u>	<u>RPD</u>
Bromate	ND	10.0	9.41	94	10.3	103	9
QC Guidelines				80-120		80-120	NMT 15

ADVANCED TECHNOLOGY
LABORATORIES

SUBCONTRACT ORDER

Work Order: 1903644

SENDING LABORATORY:

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Phone: 562.989.4045
Fax: 562.989.6348
Project Manager: Tina Nguyen

RECEIVING LABORATORY:

Element Materials Technology
9240 Santa Fe Springs Road
Santa Fe Springs, CA 90670
Phone : (562) 948-2225
Fax: (562) 948-5850
PO#: SC14135- STANDARD TAT

Sampler: Ruben Sanchez

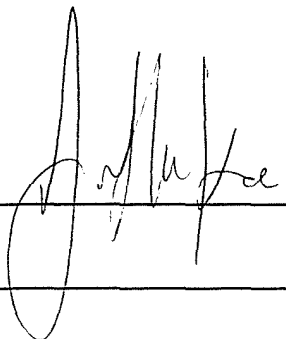
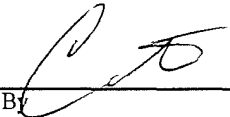
IMPORTANT : Please include Work Order # and PO # in your invoice.

Analysis	Due	Expires	Sampled	Comments
ATL Lab#: 1903644-04 ⁵ / POX Bromate_ICMS/MS_SUB [Bromate by IC-MS/MS] 1-Poly Unpres - 125mL	10/21/19 17:00	Groundwater 11/01/19 08:52	10/04/19 08:52	
ATL Lab#: 1903644-06 ² / INF Bromate_ICMS/MS_SUB [Bromate by IC-MS/MS] 1-Poly Unpres - 125mL	10/21/19 17:00	Groundwater 11/01/19 09:10	10/04/19 09:10	

10.07.19 CR: Also has:

① H

② F

Released By  Date ATL 10/7/19 12:27 Received By  Date 10.07.19 12:27 PM

Released By _____ Date _____ Received By _____ Date _____

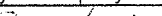
234680

Page 1 of 1

Project Manager Steve Netto
QA Manager Ross Horton
Phone 858.455.6500
Fax 858.455.6533

[illegible]

Total number of containers per analysis:	24	5	2	1	1	6	Total No. of Containers: 39
--	----	---	---	---	---	---	-----------------------------

Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
 H&A	10-4-19 11:40	 H&A	10-4-19 11:40
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
 H&A	10/4/19 1336	 FIDUCIARY	10/4/19 1337

- | | |
|--------------------------|----------------------------|
| ☐ | No. of containers correct |
| ☐ | Received in good condition |
| ☐ | Custody seals secure |
| ☐ | Conforms to COC document |

Send Results to:
Steve Netto & Ross Horton
 9171 Towne Centre Drive
 Suite 375
 San Diego, CA 92122
 Ph: 858.455.6500
snetto@hargis.com
rhorton@hargis.com

Instructions

Fill out form completely and sign only after verified for completeness

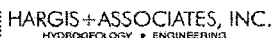
Complete in ballpoint pen. Draw one line through error, initial and date correction

Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ×

Note applicable preservatives, special instructions, and deviations from typical environmental samples.

Consult project QA documents for specific instructions.

O. f. ... Temperature on receipt



PROJECT: Raytheon Main GETS Lab Requested QC

Project Manager Steve Netto
QA Manager Ross Horton
Phone 858.455.6500
Fax 858.455.6533

☒	No. of containers correct
☒	Received in good condition
☐	Custody seals secure
☒	Conforms to COC document

Send Results to:
Steve Netto & Ross Horton
 9171 Towne Centre Drive
 Suite 375
 San Diego, CA 92122
 Ph: 858.455.6500
snetto@hargis.com
rhorton@hargis.com

Fill out form completely and sign only after verified for completeness

complete in ballpoint pen. Draw one line through error, initial and date correction
indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✕
note applicable preservatives, special instructions, and deviations from typical environmental samples.
consult project QA documents for specific instructions.

Page 46 of 46



October 29, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1903855

Client Reference : Raytheon Main GETS Mid Month Sample, 532.15

Enclosed are the results for sample(s) received on October 21, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read 'Edgar Caballero', with a small 'EC' monogram to the left.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-102119	1903855-01	Lab prepared water	10/21/19 8:00	10/21/19 15:35
CEFF	1903855-02	Groundwater	10/21/19 13:52	10/21/19 15:35
CBT	1903855-03	Groundwater	10/21/19 13:55	10/21/19 15:35
POX	1903855-04	Groundwater	10/21/19 13:58	10/21/19 15:35
INF	1903855-05	Groundwater	10/21/19 14:01	10/21/19 15:35
EW-02	1903855-06	Groundwater	10/21/19 14:55	10/21/19 15:35
MW-29	1903855-07	Groundwater	10/21/19 15:12	10/21/19 15:35



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: TB-102119

Lab ID: 1903855-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
1,1,1-Trichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
1,1,2-Trichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
1,1-Dichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
1,1-Dichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
1,1-Dichloropropene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
1,2,3-Trichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
1,2,3-Trichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
1,2,4-Trichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
1,2,4-Trimethylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
1,2-Dibromoethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
1,2-Dichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
1,2-Dichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
1,2-Dichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
1,3,5-Trimethylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
1,3-Dichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
1,3-Dichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
1,4-Dichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
2,2-Dichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
2-Chlorotoluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
4-Chlorotoluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
4-Isopropyltoluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Benzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Bromobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Bromodichloromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Bromoform	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Bromomethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Carbon tetrachloride	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Chlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Chloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Chloroform	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Chloromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
cis-1,2-Dichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
cis-1,3-Dichloropropene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Dibromochloromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: TB-102119

Lab ID: 1903855-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Dichlorodifluoromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Ethylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Hexachlorobutadiene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Isopropylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
m,p-Xylene	ND	1.0	1	B9J0717	10/23/2019	10/23/19 11:18	
Methylene chloride	ND	1.0	1	B9J0717	10/23/2019	10/23/19 11:18	
n-Butylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
n-Propylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Naphthalene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
o-Xylene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
sec-Butylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Styrene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
tert-Butylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Tetrachloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Toluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
trans-1,2-Dichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Trichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Trichlorofluoromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Vinyl chloride	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:18	
Surrogate: 1,2-Dichloroethane-d4	83.8 %	59 - 158		B9J0717	10/23/2019	10/23/19 11:18	
Surrogate: 4-Bromofluorobenzene	103 %	71 - 127		B9J0717	10/23/2019	10/23/19 11:18	
Surrogate: Dibromofluoromethane	92.2 %	66 - 147		B9J0717	10/23/2019	10/23/19 11:18	
Surrogate: Toluene-d8	105 %	77 - 138		B9J0717	10/23/2019	10/23/19 11:18	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: CEFF

Lab ID: 1903855-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
1,1,1-Trichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
1,1,2-Trichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
1,1-Dichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
1,1-Dichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
1,1-Dichloropropene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
1,2,3-Trichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
1,2,3-Trichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
1,2,4-Trichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
1,2,4-Trimethylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
1,2-Dibromoethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
1,2-Dichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
1,2-Dichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
1,2-Dichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
1,3,5-Trimethylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
1,3-Dichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
1,3-Dichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
1,4-Dichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
2,2-Dichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
2-Chlorotoluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
4-Chlorotoluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
4-Isopropyltoluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Benzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Bromobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Bromodichloromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Bromoform	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Bromomethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Carbon tetrachloride	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Chlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Chloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Chloroform	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Chloromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
cis-1,2-Dichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
cis-1,3-Dichloropropene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Dibromochloromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: CEFF

Lab ID: 1903855-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Dichlorodifluoromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Ethylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Hexachlorobutadiene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Isopropylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
m,p-Xylene	ND	1.0	1	B9J0717	10/23/2019	10/23/19 11:43	
Methylene chloride	ND	1.0	1	B9J0717	10/23/2019	10/23/19 11:43	
n-Butylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
n-Propylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Naphthalene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
o-Xylene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
sec-Butylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Styrene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
tert-Butylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Tetrachloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Toluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
trans-1,2-Dichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Trichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Trichlorofluoromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Vinyl chloride	ND	0.50	1	B9J0717	10/23/2019	10/23/19 11:43	
Surrogate: 1,2-Dichloroethane-d4	83.4 %	59 - 158		B9J0717	10/23/2019	10/23/19 11:43	
Surrogate: 4-Bromofluorobenzene	98.9 %	71 - 127		B9J0717	10/23/2019	10/23/19 11:43	
Surrogate: Dibromofluoromethane	90.3 %	66 - 147		B9J0717	10/23/2019	10/23/19 11:43	
Surrogate: Toluene-d8	102 %	77 - 138		B9J0717	10/23/2019	10/23/19 11:43	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: CEFF

Lab ID: 1903855-02

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	1.1	0.20	1	B9J0833	10/25/2019	10/25/19 14:29	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>62.6 %</i>	<i>22 - 117</i>		B9J0833	10/25/2019	<i>10/25/19 14:29</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>79.5 %</i>	<i>20 - 131</i>		B9J0833	10/25/2019	<i>10/25/19 14:29</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>61.2 %</i>	<i>24 - 135</i>		B9J0833	10/25/2019	<i>10/25/19 14:29</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>89.1 %</i>	<i>6 - 124</i>		B9J0833	10/25/2019	<i>10/25/19 14:29</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: CBT

Lab ID: 1903855-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
1,1,1-Trichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
1,1,2-Trichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
1,1-Dichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
1,1-Dichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
1,1-Dichloropropene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
1,2,3-Trichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
1,2,3-Trichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
1,2,4-Trichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
1,2,4-Trimethylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
1,2-Dibromoethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
1,2-Dichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
1,2-Dichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
1,2-Dichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
1,3,5-Trimethylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
1,3-Dichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
1,3-Dichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
1,4-Dichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
2,2-Dichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
2-Chlorotoluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
4-Chlorotoluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
4-Isopropyltoluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Benzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Bromobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Bromodichloromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Bromoform	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Bromomethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Carbon tetrachloride	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Chlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Chloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Chloroform	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Chloromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
cis-1,2-Dichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
cis-1,3-Dichloropropene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Dibromochloromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: CBT

Lab ID: 1903855-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Dichlorodifluoromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Ethylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Hexachlorobutadiene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Isopropylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
m,p-Xylene	ND	1.0	1	B9J0717	10/23/2019	10/23/19 12:08	
Methylene chloride	ND	1.0	1	B9J0717	10/23/2019	10/23/19 12:08	
n-Butylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
n-Propylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Naphthalene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
o-Xylene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
sec-Butylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Styrene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
tert-Butylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Tetrachloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Toluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
trans-1,2-Dichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Trichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Trichlorofluoromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Vinyl chloride	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:08	
Surrogate: 1,2-Dichloroethane-d4	83.0 %	59 - 158		B9J0717	10/23/2019	10/23/19 12:08	
Surrogate: 4-Bromofluorobenzene	98.2 %	71 - 127		B9J0717	10/23/2019	10/23/19 12:08	
Surrogate: Dibromofluoromethane	91.5 %	66 - 147		B9J0717	10/23/2019	10/23/19 12:08	
Surrogate: Toluene-d8	102 %	77 - 138		B9J0717	10/23/2019	10/23/19 12:08	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: CBT

Lab ID: 1903855-03

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	0.54	0.20	1	B9J0833	10/25/2019	10/25/19 15:05	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>61.2 %</i>	<i>22 - 117</i>		B9J0833	10/25/2019	<i>10/25/19 15:05</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>74.2 %</i>	<i>20 - 131</i>		B9J0833	10/25/2019	<i>10/25/19 15:05</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>45.6 %</i>	<i>24 - 135</i>		B9J0833	10/25/2019	<i>10/25/19 15:05</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>83.7 %</i>	<i>6 - 124</i>		B9J0833	10/25/2019	<i>10/25/19 15:05</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: POX

Lab ID: 1903855-04

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
1,1,1-Trichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
1,1,2-Trichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
1,1-Dichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
1,1-Dichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
1,1-Dichloropropene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
1,2,3-Trichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
1,2,3-Trichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
1,2,4-Trichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
1,2,4-Trimethylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
1,2-Dibromoethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
1,2-Dichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
1,2-Dichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
1,2-Dichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
1,3,5-Trimethylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
1,3-Dichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
1,3-Dichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
1,4-Dichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
2,2-Dichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
2-Chlorotoluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
4-Chlorotoluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
4-Isopropyltoluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Benzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Bromobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Bromodichloromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Bromoform	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Bromomethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Carbon tetrachloride	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Chlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Chloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Chloroform	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Chloromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
cis-1,2-Dichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
cis-1,3-Dichloropropene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Dibromochloromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: POX

Lab ID: 1903855-04

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Dichlorodifluoromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Ethylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Hexachlorobutadiene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Isopropylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
m,p-Xylene	ND	1.0	1	B9J0717	10/23/2019	10/23/19 12:33	
Methylene chloride	ND	1.0	1	B9J0717	10/23/2019	10/23/19 12:33	
n-Butylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
n-Propylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Naphthalene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
o-Xylene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
sec-Butylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Styrene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
tert-Butylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Tetrachloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Toluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
trans-1,2-Dichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Trichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Trichlorofluoromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Vinyl chloride	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:33	
Surrogate: 1,2-Dichloroethane-d4	82.4 %	59 - 158		B9J0717	10/23/2019	10/23/19 12:33	
Surrogate: 4-Bromofluorobenzene	96.8 %	71 - 127		B9J0717	10/23/2019	10/23/19 12:33	
Surrogate: Dibromofluoromethane	89.9 %	66 - 147		B9J0717	10/23/2019	10/23/19 12:33	
Surrogate: Toluene-d8	103 %	77 - 138		B9J0717	10/23/2019	10/23/19 12:33	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: POX

Lab ID: 1903855-04

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9J0833	10/25/2019	10/25/19 15:32	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>65.3 %</i>	<i>22 - 117</i>		B9J0833	10/25/2019	<i>10/25/19 15:32</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>84.0 %</i>	<i>20 - 131</i>		B9J0833	10/25/2019	<i>10/25/19 15:32</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>68.9 %</i>	<i>24 - 135</i>		B9J0833	10/25/2019	<i>10/25/19 15:32</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>94.5 %</i>	<i>6 - 124</i>		B9J0833	10/25/2019	<i>10/25/19 15:32</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: INF

Lab ID: 1903855-05

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
1,1,1-Trichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
1,1,2-Trichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
1,1-Dichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
1,1-Dichloroethene	36	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
1,1-Dichloropropene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
1,2,3-Trichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
1,2,3-Trichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
1,2,4-Trichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
1,2,4-Trimethylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
1,2-Dibromoethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
1,2-Dichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
1,2-Dichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
1,2-Dichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
1,3,5-Trimethylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
1,3-Dichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
1,3-Dichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
1,4-Dichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
2,2-Dichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
2-Chlorotoluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
4-Chlorotoluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
4-Isopropyltoluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Benzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Bromobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Bromodichloromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Bromoform	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Bromomethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Carbon tetrachloride	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Chlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Chloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Chloroform	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Chloromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
cis-1,2-Dichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
cis-1,3-Dichloropropene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Dibromochloromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: INF

Lab ID: 1903855-05

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Dichlorodifluoromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Ethylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Hexachlorobutadiene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Isopropylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
m,p-Xylene	ND	1.0	1	B9J0717	10/23/2019	10/23/19 13:23	
Methylene chloride	ND	1.0	1	B9J0717	10/23/2019	10/23/19 13:23	
n-Butylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
n-Propylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Naphthalene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
o-Xylene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
sec-Butylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Styrene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
tert-Butylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Tetrachloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Toluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
trans-1,2-Dichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Trichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Trichlorofluoromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Vinyl chloride	ND	0.50	1	B9J0717	10/23/2019	10/23/19 13:23	
Surrogate: 1,2-Dichloroethane-d4	83.4 %	59 - 158		B9J0717	10/23/2019	10/23/19 13:23	
Surrogate: 4-Bromofluorobenzene	99.5 %	71 - 127		B9J0717	10/23/2019	10/23/19 13:23	
Surrogate: Dibromofluoromethane	90.5 %	66 - 147		B9J0717	10/23/2019	10/23/19 13:23	
Surrogate: Toluene-d8	104 %	77 - 138		B9J0717	10/23/2019	10/23/19 13:23	



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: INF

Lab ID: 1903855-05

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	22	2.0	1	B9J0863	10/25/2019	10/25/19 15:08	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>65.7 %</i>	<i>34 - 188</i>		<i>B9J0863</i>	<i>10/25/2019</i>	<i>10/25/19 15:08</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>70.4 %</i>	<i>39 - 108</i>		<i>B9J0863</i>	<i>10/25/2019</i>	<i>10/25/19 15:08</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>109 %</i>	<i>71 - 131</i>		<i>B9J0863</i>	<i>10/25/2019</i>	<i>10/25/19 15:08</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>65.9 %</i>	<i>32 - 106</i>		<i>B9J0863</i>	<i>10/25/2019</i>	<i>10/25/19 15:08</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: EW-02

Lab ID: 1903855-06

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
1,1,1-Trichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
1,1,2-Trichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
1,1-Dichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
1,1-Dichloroethene	9.2	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
1,1-Dichloropropene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
1,2,3-Trichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
1,2,3-Trichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
1,2,4-Trichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
1,2,4-Trimethylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
1,2-Dibromoethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
1,2-Dichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
1,2-Dichloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
1,2-Dichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
1,3,5-Trimethylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
1,3-Dichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
1,3-Dichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
1,4-Dichlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
2,2-Dichloropropane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
2-Chlorotoluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
4-Chlorotoluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
4-Isopropyltoluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Benzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Bromobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Bromodichloromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Bromoform	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Bromomethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Carbon tetrachloride	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Chlorobenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Chloroethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Chloroform	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Chloromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
cis-1,2-Dichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
cis-1,3-Dichloropropene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Dibromochloromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: EW-02

Lab ID: 1903855-06

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Dichlorodifluoromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Ethylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Hexachlorobutadiene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Isopropylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
m,p-Xylene	ND	1.0	1	B9J0717	10/23/2019	10/23/19 12:58	
Methylene chloride	ND	1.0	1	B9J0717	10/23/2019	10/23/19 12:58	
n-Butylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
n-Propylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Naphthalene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
o-Xylene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
sec-Butylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Styrene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
tert-Butylbenzene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Tetrachloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Toluene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
trans-1,2-Dichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Trichloroethene	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Trichlorofluoromethane	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Vinyl chloride	ND	0.50	1	B9J0717	10/23/2019	10/23/19 12:58	
Surrogate: 1,2-Dichloroethane-d4	84.2 %	59 - 158		B9J0717	10/23/2019	10/23/19 12:58	
Surrogate: 4-Bromofluorobenzene	98.5 %	71 - 127		B9J0717	10/23/2019	10/23/19 12:58	
Surrogate: Dibromofluoromethane	91.8 %	66 - 147		B9J0717	10/23/2019	10/23/19 12:58	
Surrogate: Toluene-d8	105 %	77 - 138		B9J0717	10/23/2019	10/23/19 12:58	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: EW-02

Lab ID: 1903855-06

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	5.6	2.0	1	B9J0863	10/25/2019	10/25/19 15:35	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>62.9 %</i>	<i>34 - 188</i>		<i>B9J0863</i>	<i>10/25/2019</i>	<i>10/25/19 15:35</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>67.4 %</i>	<i>39 - 108</i>		<i>B9J0863</i>	<i>10/25/2019</i>	<i>10/25/19 15:35</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>108 %</i>	<i>71 - 131</i>		<i>B9J0863</i>	<i>10/25/2019</i>	<i>10/25/19 15:35</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>66.7 %</i>	<i>32 - 106</i>		<i>B9J0863</i>	<i>10/25/2019</i>	<i>10/25/19 15:35</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: MW-29

Lab ID: 1903855-07

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
1,1,1-Trichloroethane	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
1,1,2-Trichloroethane	0.56	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
1,1-Dichloroethane	1.3	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
1,1-Dichloroethene	150	5.0	10	B9J0717	10/23/2019	10/23/19 14:13	
1,1-Dichloropropene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
1,2,3-Trichloropropane	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
1,2,3-Trichlorobenzene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
1,2,4-Trichlorobenzene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
1,2,4-Trimethylbenzene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
1,2-Dibromoethane	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
1,2-Dichlorobenzene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
1,2-Dichloroethane	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
1,2-Dichloropropane	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
1,3,5-Trimethylbenzene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
1,3-Dichlorobenzene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
1,3-Dichloropropane	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
1,4-Dichlorobenzene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
2,2-Dichloropropane	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
2-Chlorotoluene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
4-Chlorotoluene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
4-Isopropyltoluene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Benzene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Bromobenzene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Bromodichloromethane	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Bromoform	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Bromomethane	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Carbon tetrachloride	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Chlorobenzene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Chloroethane	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Chloroform	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Chloromethane	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
cis-1,2-Dichloroethene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
cis-1,3-Dichloropropene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Dibromochloromethane	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: MW-29

Lab ID: 1903855-07

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Dichlorodifluoromethane	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Ethylbenzene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Hexachlorobutadiene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Isopropylbenzene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
m,p-Xylene	ND	1.0	1	B9J0766	10/24/2019	10/24/19 10:38	
Methylene chloride	ND	1.0	1	B9J0766	10/24/2019	10/24/19 10:38	
n-Butylbenzene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
n-Propylbenzene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Naphthalene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
o-Xylene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
sec-Butylbenzene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Styrene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
tert-Butylbenzene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Tetrachloroethene	0.55	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Toluene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
trans-1,2-Dichloroethene	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Trichloroethene	1.8	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Trichlorofluoromethane	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
Vinyl chloride	ND	0.50	1	B9J0766	10/24/2019	10/24/19 10:38	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>85.2 %</i>	<i>59 - 158</i>		B9J0717	10/23/2019	<i>10/23/19 14:13</i>	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>82.2 %</i>	<i>59 - 158</i>		B9J0766	10/24/2019	<i>10/24/19 10:38</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>98.0 %</i>	<i>71 - 127</i>		B9J0717	10/23/2019	<i>10/23/19 14:13</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>99.3 %</i>	<i>71 - 127</i>		B9J0766	10/24/2019	<i>10/24/19 10:38</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>89.7 %</i>	<i>66 - 147</i>		B9J0766	10/24/2019	<i>10/24/19 10:38</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>92.0 %</i>	<i>66 - 147</i>		B9J0717	10/23/2019	<i>10/23/19 14:13</i>	
<i>Surrogate: Toluene-d8</i>	<i>103 %</i>	<i>77 - 138</i>		B9J0766	10/24/2019	<i>10/24/19 10:38</i>	
<i>Surrogate: Toluene-d8</i>	<i>104 %</i>	<i>77 - 138</i>		B9J0717	10/23/2019	<i>10/23/19 14:13</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Client Sample ID: MW-29

Lab ID: 1903855-07

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	86	2.0	1	B9J0863	10/25/2019	10/25/19 16:02	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>64.0 %</i>	<i>34 - 188</i>		B9J0863	10/25/2019	<i>10/25/19 16:02</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>69.8 %</i>	<i>39 - 108</i>		B9J0863	10/25/2019	<i>10/25/19 16:02</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>107 %</i>	<i>71 - 131</i>		B9J0863	10/25/2019	<i>10/25/19 16:02</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>66.8 %</i>	<i>32 - 106</i>		B9J0863	10/25/2019	<i>10/25/19 16:02</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

QUALITY CONTROL SECTION

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0717 - MSVOA_LL_W

Blank (B9J0717-BLK1)

Prepared: 10/23/2019 Analyzed: 10/23/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.21
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.40
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.18



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD RPD	RPD Limit	Notes
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Batch B9J0717 - MSVOA_LL_W (continued)

Blank (B9J0717-BLK1) - Continued

Prepared: 10/23/2019 Analyzed: 10/23/2019

Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15
Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.23
Vinyl chloride	ND	0.50	0.13

Surrogate: 1,2-Dichloroethane-d4	20.32	25.0000	81.3	59 - 158
Surrogate: 4-Bromofluorobenzene	24.47	25.0000	97.9	71 - 127
Surrogate: Dibromofluoromethane	22.15	25.0000	88.6	66 - 147
Surrogate: Toluene-d8	25.48	25.0000	102	77 - 138

LCS (B9J0717-BS1)

Prepared: 10/23/2019 Analyzed: 10/23/2019

1,1,1,2-Tetrachloroethane	19.9900	0.50	0.11	20.0000	100	71 - 133
1,1,1-Trichloroethane	17.9100	0.50	0.21	20.0000	89.6	62 - 124
1,1,2,2-Tetrachloroethane	17.0300	0.50	0.36	20.0000	85.2	50 - 131
1,1,2-Trichloroethane	19.8600	0.50	0.25	20.0000	99.3	77 - 121
1,1-Dichloroethane	16.8900	0.50	0.09	20.0000	84.4	52 - 130
1,1-Dichloroethene	19.3500	0.50	0.13	20.0000	96.8	61 - 136
1,1-Dichloropropene	21.4300	0.50	0.13	20.0000	107	80 - 128
1,2,3-Trichloropropane	16.1500	0.50	0.39	20.0000	80.8	59 - 126
1,2,3-Trichlorobenzene	19.9900	0.50	0.18	20.0000	100	69 - 138
1,2,4-Trichlorobenzene	19.7200	0.50	0.16	20.0000	98.6	78 - 125
1,2,4-Trimethylbenzene	17.9800	0.50	0.14	20.0000	89.9	70 - 126
1,2-Dibromo-3-chloropropane	14.2600	0.50	0.41	20.0000	71.3	58 - 127
1,2-Dibromoethane	19.6400	0.50	0.24	20.0000	98.2	76 - 120
1,2-Dichlorobenzene	19.0400	0.50	0.20	20.0000	95.2	82 - 117
1,2-Dichloroethane	17.2200	0.50	0.20	20.0000	86.1	66 - 126
1,2-Dichloropropane	18.1800	0.50	0.15	20.0000	90.9	70 - 117
1,3,5-Trimethylbenzene	17.9800	0.50	0.13	20.0000	89.9	71 - 125



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0717 - MSVOA_LL_W (continued)

LCS (B9J0717-BS1) - Continued

Prepared: 10/23/2019 Analyzed: 10/23/2019

1,3-Dichlorobenzene	18.8700	0.50	0.16	20.0000		94.4	81 - 116		
1,3-Dichloropropane	18.0000	0.50	0.21	20.0000		90.0	69 - 124		
1,4-Dichlorobenzene	18.8800	0.50	0.17	20.0000		94.4	80 - 114		
2,2-Dichloropropane	17.2900	0.50	0.38	20.0000		86.4	58 - 132		
2-Chlorotoluene	17.4800	0.50	0.11	20.0000		87.4	71 - 119		
4-Chlorotoluene	17.6300	0.50	0.12	20.0000		88.2	72 - 122		
4-Isopropyltoluene	18.4000	0.50	0.11	20.0000		92.0	69 - 126		
Benzene	38.2500	0.50	0.13	40.0000		95.6	80 - 116		
Bromobenzene	18.6900	0.50	0.21	20.0000		93.4	77 - 118		
Bromodichloromethane	18.6200	0.50	0.14	20.0000		93.1	73 - 118		
Bromoform	19.9800	0.50	0.20	20.0000		99.9	65 - 133		
Bromomethane	18.3800	0.50	0.40	20.0000		91.9	7 - 205		
Carbon tetrachloride	19.5600	0.50	0.09	20.0000		97.8	63 - 133		
Chlorobenzene	19.4500	0.50	0.13	20.0000		97.2	86 - 113		
Chloroethane	17.2900	0.50	0.15	20.0000		86.4	66 - 141		
Chloroform	17.0700	0.50	0.11	20.0000		85.4	63 - 127		
Chloromethane	16.8000	0.50	0.12	20.0000		84.0	0 - 207		
cis-1,2-Dichloroethene	17.5600	0.50	0.14	20.0000		87.8	64 - 126		
cis-1,3-Dichloropropene	20.8500	0.50	0.13	20.0000		104	70 - 141		
Dibromochloromethane	19.6400	0.50	0.16	20.0000		98.2	67 - 135		
Dibromomethane	19.4500	0.50	0.19	20.0000		97.2	74 - 118		
Dichlorodifluoromethane	20.7600	0.50	0.18	20.0000		104	14 - 181		
Ethylbenzene	37.7400	0.50	0.13	40.0000		94.4	77 - 118		
Hexachlorobutadiene	21.1300	0.50	0.15	20.0000		106	66 - 125		
Isopropylbenzene	19.0900	0.50	0.10	20.0000		95.4	68 - 137		
m,p-Xylene	38.2800	1.0	0.19	40.0000		95.7	78 - 126		
Methylene chloride	15.5000	1.0	0.71	20.0000		77.5	51 - 149		
n-Butylbenzene	17.9900	0.50	0.11	20.0000		90.0	63 - 127		
n-Propylbenzene	17.6100	0.50	0.10	20.0000		88.0	69 - 124		
Naphthalene	17.7800	0.50	0.41	20.0000		88.9	60 - 126		
o-Xylene	38.9100	0.50	0.13	40.0000		97.3	79 - 126		
sec-Butylbenzene	18.2500	0.50	0.09	20.0000		91.2	69 - 124		
Styrene	20.0200	0.50	0.13	20.0000		100	80 - 127		
tert-Butylbenzene	18.5200	0.50	0.09	20.0000		92.6	71 - 124		
Tetrachloroethene	20.9100	0.50	0.10	20.0000		105	73 - 129		
Toluene	40.6900	0.50	0.12	40.0000		102	78 - 121		
trans-1,2-Dichloroethene	17.6100	0.50	0.09	20.0000		88.0	58 - 141		
Trichloroethene	20.4200	0.50	0.10	20.0000		102	73 - 126		
Trichlorofluoromethane	18.3600	0.50	0.23	20.0000		91.8	62 - 146		
Vinyl chloride	18.3500	0.50	0.13	20.0000		91.8	61 - 137		

Surrogate: 1,2-Dichloroethane-d4 19.93 25.0000 79.7 59 - 158



Certificate of Analysis

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San Diego , CA 92122

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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0717 - MSVOA_LL_W (continued)

LCS (B9J0717-BS1) - Continued

Prepared: 10/23/2019 Analyzed: 10/23/2019

Surrogate: 4-Bromofluorobenzene	25.00		25.0000		100	71 - 127			
Surrogate: Dibromofluoromethane	22.93		25.0000		91.7	66 - 147			
Surrogate: Toluene-d8	25.86		25.0000		103	77 - 138			

LCS Dup (B9J0717-BSD1)

Prepared: 10/23/2019 Analyzed: 10/23/2019

1,1,1,2-Tetrachloroethane	19.5700	0.50	0.11	20.0000	97.8	71 - 133	2.12	20	
1,1,1-Trichloroethane	17.7900	0.50	0.21	20.0000	89.0	62 - 124	0.672	20	
1,1,2,2-Tetrachloroethane	16.0000	0.50	0.36	20.0000	80.0	50 - 131	6.24	20	
1,1,2-Trichloroethane	18.7600	0.50	0.25	20.0000	93.8	77 - 121	5.70	20	
1,1-Dichloroethane	16.9100	0.50	0.09	20.0000	84.6	52 - 130	0.118	20	
1,1-Dichloroethene	20.0400	0.50	0.13	20.0000	100	61 - 136	3.50	20	
1,1-Dichloropropene	20.9700	0.50	0.13	20.0000	105	80 - 128	2.17	20	
1,2,3-Trichloropropane	15.0200	0.50	0.39	20.0000	75.1	59 - 126	7.25	20	
1,2,3-Trichlorobenzene	19.2400	0.50	0.18	20.0000	96.2	69 - 138	3.82	20	
1,2,4-Trichlorobenzene	19.2900	0.50	0.16	20.0000	96.4	78 - 125	2.20	20	
1,2,4-Trimethylbenzene	17.8700	0.50	0.14	20.0000	89.4	70 - 126	0.614	20	
1,2-Dibromo-3-chloropropane	13.0900	0.50	0.41	20.0000	65.4	58 - 127	8.56	20	
1,2-Dibromoethane	19.7000	0.50	0.24	20.0000	98.5	76 - 120	0.305	20	
1,2-Dichlorobenzene	18.5600	0.50	0.20	20.0000	92.8	82 - 117	2.55	20	
1,2-Dichloroethane	17.2500	0.50	0.20	20.0000	86.2	66 - 126	0.174	20	
1,2-Dichloropropane	18.2500	0.50	0.15	20.0000	91.2	70 - 117	0.384	20	
1,3,5-Trimethylbenzene	17.9300	0.50	0.13	20.0000	89.6	71 - 125	0.278	20	
1,3-Dichlorobenzene	18.8200	0.50	0.16	20.0000	94.1	81 - 116	0.265	20	
1,3-Dichloropropane	17.4200	0.50	0.21	20.0000	87.1	69 - 124	3.27	20	
1,4-Dichlorobenzene	18.5000	0.50	0.17	20.0000	92.5	80 - 114	2.03	20	
2,2-Dichloropropane	17.6700	0.50	0.38	20.0000	88.4	58 - 132	2.17	20	
2-Chlorotoluene	17.4300	0.50	0.11	20.0000	87.2	71 - 119	0.286	20	
4-Chlorotoluene	17.4500	0.50	0.12	20.0000	87.2	72 - 122	1.03	20	
4-Isopropyltoluene	18.4900	0.50	0.11	20.0000	92.4	69 - 126	0.488	20	
Benzene	38.5700	0.50	0.13	40.0000	96.4	80 - 116	0.833	20	
Bromobenzene	18.4800	0.50	0.21	20.0000	92.4	77 - 118	1.13	20	
Bromodichloromethane	18.4000	0.50	0.14	20.0000	92.0	73 - 118	1.19	20	
Bromoform	19.2900	0.50	0.20	20.0000	96.4	65 - 133	3.51	20	
Bromomethane	18.7600	0.50	0.40	20.0000	93.8	7 - 205	2.05	20	
Carbon tetrachloride	19.6700	0.50	0.09	20.0000	98.4	63 - 133	0.561	20	
Chlorobenzene	19.3500	0.50	0.13	20.0000	96.8	86 - 113	0.515	20	
Chloroethane	17.4200	0.50	0.15	20.0000	87.1	66 - 141	0.749	20	
Chloroform	17.3400	0.50	0.11	20.0000	86.7	63 - 127	1.57	20	
Chloromethane	16.5300	0.50	0.12	20.0000	82.6	0 - 207	1.62	20	
cis-1,2-Dichloroethene	18.1300	0.50	0.14	20.0000	90.6	64 - 126	3.19	20	
cis-1,3-Dichloropropene	20.8200	0.50	0.13	20.0000	104	70 - 141	0.144	20	
Dibromochloromethane	19.2300	0.50	0.16	20.0000	96.2	67 - 135	2.11	20	



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0717 - MSVOA_LL_W (continued)

LCS Dup (B9J0717-BSD1) - Continued

Prepared: 10/23/2019 Analyzed: 10/23/2019

Dibromomethane	19.1000	0.50	0.19	20.0000		95.5	74 - 118	1.82	20
Dichlorodifluoromethane	20.9900	0.50	0.18	20.0000		105	14 - 181	1.10	20
Ethylbenzene	38.1300	0.50	0.13	40.0000		95.3	77 - 118	1.03	20
Hexachlorobutadiene	21.1100	0.50	0.15	20.0000		106	66 - 125	0.0947	20
Isopropylbenzene	18.9700	0.50	0.10	20.0000		94.8	68 - 137	0.631	20
m,p-Xylene	38.3600	1.0	0.19	40.0000		95.9	78 - 126	0.209	20
Methylene chloride	15.3600	1.0	0.71	20.0000		76.8	51 - 149	0.907	20
n-Butylbenzene	17.9300	0.50	0.11	20.0000		89.6	63 - 127	0.334	20
n-Propylbenzene	17.4800	0.50	0.10	20.0000		87.4	69 - 124	0.741	20
Naphthalene	16.9300	0.50	0.41	20.0000		84.6	60 - 126	4.90	20
o-Xylene	38.8900	0.50	0.13	40.0000		97.2	79 - 126	0.0514	20
sec-Butylbenzene	18.2000	0.50	0.09	20.0000		91.0	69 - 124	0.274	20
Styrene	19.7300	0.50	0.13	20.0000		98.6	80 - 127	1.46	20
tert-Butylbenzene	18.4500	0.50	0.09	20.0000		92.2	71 - 124	0.379	20
Tetrachloroethene	21.2200	0.50	0.10	20.0000		106	73 - 129	1.47	20
Toluene	40.6900	0.50	0.12	40.0000		102	78 - 121	0.00	20
trans-1,2-Dichloroethene	17.5800	0.50	0.09	20.0000		87.9	58 - 141	0.171	20
Trichloroethene	20.6500	0.50	0.10	20.0000		103	73 - 126	1.12	20
Trichlorofluoromethane	18.5300	0.50	0.23	20.0000		92.6	62 - 146	0.922	20
Vinyl chloride	18.4700	0.50	0.13	20.0000		92.4	61 - 137	0.652	20
Surrogate: 1,2-Dichloroethane-d4	19.93			25.0000		79.7	59 - 158		
Surrogate: 4-Bromofluorobenzene	25.02			25.0000		100	71 - 127		
Surrogate: Dibromofluoromethane	22.29			25.0000		89.2	66 - 147		
Surrogate: Toluene-d8	25.69			25.0000		103	77 - 138		



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Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD RPD	RPD Limit	Notes
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Batch B9J0766 - MSVOA_LL_W

Blank (B9J0766-BLK1)

Prepared: 10/24/2019 Analyzed: 10/24/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.21
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.40
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.18
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD RPD	RPD Limit	Notes
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Batch B9J0766 - MSVOA_LL_W (continued)

Blank (B9J0766-BLK1) - Continued

Prepared: 10/24/2019 Analyzed: 10/24/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.23
Vinyl chloride	ND	0.50	0.13

Surrogate: 1,2-Dichloroethane-d4	20.31	25.0000	81.2	59 - 158
Surrogate: 4-Bromofluorobenzene	24.87	25.0000	99.5	71 - 127
Surrogate: Dibromofluoromethane	22.42	25.0000	89.7	66 - 147
Surrogate: Toluene-d8	25.65	25.0000	103	77 - 138

LCS (B9J0766-BS1)

Prepared: 10/24/2019 Analyzed: 10/24/2019

1,1,1,2-Tetrachloroethane	19.8700	0.50	0.11	20.0000	99.4	71 - 133
1,1,1-Trichloroethane	17.8400	0.50	0.21	20.0000	89.2	62 - 124
1,1,2,2-Tetrachloroethane	15.9600	0.50	0.36	20.0000	79.8	50 - 131
1,1,2-Trichloroethane	18.9800	0.50	0.25	20.0000	94.9	77 - 121
1,1-Dichloroethane	16.8900	0.50	0.09	20.0000	84.4	52 - 130
1,1-Dichloroethene	19.3100	0.50	0.13	20.0000	96.6	61 - 136
1,1-Dichloropropene	21.8600	0.50	0.13	20.0000	109	80 - 128
1,2,3-Trichloropropane	15.3600	0.50	0.39	20.0000	76.8	59 - 126
1,2,3-Trichlorobenzene	19.4900	0.50	0.18	20.0000	97.4	69 - 138
1,2,4-Trichlorobenzene	19.8700	0.50	0.16	20.0000	99.4	78 - 125
1,2,4-Trimethylbenzene	18.2500	0.50	0.14	20.0000	91.2	70 - 126
1,2-Dibromo-3-chloropropane	13.4300	0.50	0.41	20.0000	67.2	58 - 127
1,2-Dibromoethane	19.6600	0.50	0.24	20.0000	98.3	76 - 120
1,2-Dichlorobenzene	18.8300	0.50	0.20	20.0000	94.2	82 - 117
1,2-Dichloroethane	17.0700	0.50	0.20	20.0000	85.4	66 - 126
1,2-Dichloropropane	18.1500	0.50	0.15	20.0000	90.8	70 - 117
1,3,5-Trimethylbenzene	18.3700	0.50	0.13	20.0000	91.8	71 - 125
1,3-Dichlorobenzene	19.2900	0.50	0.16	20.0000	96.4	81 - 116
1,3-Dichloropropane	17.4900	0.50	0.21	20.0000	87.4	69 - 124



Certificate of Analysis

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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0766 - MSVOA_LL_W (continued)

LCS (B9J0766-BS1) - Continued

Prepared: 10/24/2019 Analyzed: 10/24/2019

1,4-Dichlorobenzene	18.9400	0.50	0.17	20.0000		94.7	80 - 114		
2,2-Dichloropropane	18.0700	0.50	0.38	20.0000		90.4	58 - 132		
2-Chlorotoluene	17.6500	0.50	0.11	20.0000		88.2	71 - 119		
4-Chlorotoluene	17.6800	0.50	0.12	20.0000		88.4	72 - 122		
4-Isopropyltoluene	19.0200	0.50	0.11	20.0000		95.1	69 - 126		
Benzene	38.6700	0.50	0.13	40.0000		96.7	80 - 116		
Bromobenzene	18.8200	0.50	0.21	20.0000		94.1	77 - 118		
Bromodichloromethane	18.4300	0.50	0.14	20.0000		92.2	73 - 118		
Bromoform	19.2200	0.50	0.20	20.0000		96.1	65 - 133		
Bromomethane	20.3800	0.50	0.40	20.0000		102	7 - 205		
Carbon tetrachloride	20.1200	0.50	0.09	20.0000		101	63 - 133		
Chlorobenzene	19.5600	0.50	0.13	20.0000		97.8	86 - 113		
Chloroethane	17.0700	0.50	0.15	20.0000		85.4	66 - 141		
Chloroform	17.3000	0.50	0.11	20.0000		86.5	63 - 127		
Chloromethane	17.3700	0.50	0.12	20.0000		86.8	0 - 207		
cis-1,2-Dichloroethene	17.8000	0.50	0.14	20.0000		89.0	64 - 126		
cis-1,3-Dichloropropene	20.8400	0.50	0.13	20.0000		104	70 - 141		
Dibromochloromethane	19.8300	0.50	0.16	20.0000		99.2	67 - 135		
Dibromomethane	18.7300	0.50	0.19	20.0000		93.6	74 - 118		
Dichlorodifluoromethane	21.3900	0.50	0.18	20.0000		107	14 - 181		
Ethylbenzene	38.4700	0.50	0.13	40.0000		96.2	77 - 118		
Hexachlorobutadiene	21.6300	0.50	0.15	20.0000		108	66 - 125		
Isopropylbenzene	19.3100	0.50	0.10	20.0000		96.6	68 - 137		
m,p-Xylene	38.7400	1.0	0.19	40.0000		96.8	78 - 126		
Methylene chloride	15.2100	1.0	0.71	20.0000		76.0	51 - 149		
n-Butylbenzene	18.3500	0.50	0.11	20.0000		91.8	63 - 127		
n-Propylbenzene	17.8100	0.50	0.10	20.0000		89.0	69 - 124		
Naphthalene	16.6200	0.50	0.41	20.0000		83.1	60 - 126		
o-Xylene	39.3000	0.50	0.13	40.0000		98.2	79 - 126		
sec-Butylbenzene	18.5600	0.50	0.09	20.0000		92.8	69 - 124		
Styrene	20.0800	0.50	0.13	20.0000		100	80 - 127		
tert-Butylbenzene	18.7100	0.50	0.09	20.0000		93.6	71 - 124		
Tetrachloroethene	21.8700	0.50	0.10	20.0000		109	73 - 129		
Toluene	41.3600	0.50	0.12	40.0000		103	78 - 121		
trans-1,2-Dichloroethene	17.4600	0.50	0.09	20.0000		87.3	58 - 141		
Trichloroethene	21.0300	0.50	0.10	20.0000		105	73 - 126		
Trichlorofluoromethane	18.4000	0.50	0.23	20.0000		92.0	62 - 146		
Vinyl chloride	18.1600	0.50	0.13	20.0000		90.8	61 - 137		
Surrogate: 1,2-Dichloroethane-d4	20.06			25.0000		80.2	59 - 158		
Surrogate: 4-Bromofluorobenzene	25.42			25.0000		102	71 - 127		
Surrogate: Dibromofluoromethane	22.76			25.0000		91.0	66 - 147		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0766 - MSVOA_LL_W (continued)

LCS (B9J0766-BS1) - Continued

Prepared: 10/24/2019 Analyzed: 10/24/2019

Surrogate: Toluene-d8 26.25 25.0000 105 77 - 138

LCS Dup (B9J0766-BS1)

Prepared: 10/24/2019 Analyzed: 10/24/2019

1,1,1,2-Tetrachloroethane	20.1700	0.50	0.11	20.0000	101	71 - 133	1.50	20	
1,1,1-Trichloroethane	18.3300	0.50	0.21	20.0000	91.6	62 - 124	2.71	20	
1,1,2,2-Tetrachloroethane	17.3400	0.50	0.36	20.0000	86.7	50 - 131	8.29	20	
1,1,2-Trichloroethane	19.9500	0.50	0.25	20.0000	99.8	77 - 121	4.98	20	
1,1-Dichloroethane	17.3100	0.50	0.09	20.0000	86.6	52 - 130	2.46	20	
1,1-Dichloroethene	19.4200	0.50	0.13	20.0000	97.1	61 - 136	0.568	20	
1,1-Dichloropropene	21.8200	0.50	0.13	20.0000	109	80 - 128	0.183	20	
1,2,3-Trichloropropane	15.9700	0.50	0.39	20.0000	79.8	59 - 126	3.89	20	
1,2,3-Trichlorobenzene	20.2500	0.50	0.18	20.0000	101	69 - 138	3.82	20	
1,2,4-Trichlorobenzene	20.1600	0.50	0.16	20.0000	101	78 - 125	1.45	20	
1,2,4-Trimethylbenzene	18.2300	0.50	0.14	20.0000	91.2	70 - 126	0.110	20	
1,2-Dibromo-3-chloropropane	14.7400	0.50	0.41	20.0000	73.7	58 - 127	9.30	20	
1,2-Dibromoethane	20.8800	0.50	0.24	20.0000	104	76 - 120	6.02	20	
1,2-Dichlorobenzene	19.2700	0.50	0.20	20.0000	96.4	82 - 117	2.31	20	
1,2-Dichloroethane	18.2500	0.50	0.20	20.0000	91.2	66 - 126	6.68	20	
1,2-Dichloropropane	18.8000	0.50	0.15	20.0000	94.0	70 - 117	3.52	20	
1,3,5-Trimethylbenzene	18.5000	0.50	0.13	20.0000	92.5	71 - 125	0.705	20	
1,3-Dichlorobenzene	19.1600	0.50	0.16	20.0000	95.8	81 - 116	0.676	20	
1,3-Dichloropropane	18.4100	0.50	0.21	20.0000	92.0	69 - 124	5.13	20	
1,4-Dichlorobenzene	19.1000	0.50	0.17	20.0000	95.5	80 - 114	0.841	20	
2,2-Dichloropropane	18.0800	0.50	0.38	20.0000	90.4	58 - 132	0.0553	20	
2-Chlorotoluene	17.7500	0.50	0.11	20.0000	88.8	71 - 119	0.565	20	
4-Chlorotoluene	17.7400	0.50	0.12	20.0000	88.7	72 - 122	0.339	20	
4-Isopropyltoluene	18.7700	0.50	0.11	20.0000	93.8	69 - 126	1.32	20	
Benzene	39.6100	0.50	0.13	40.0000	99.0	80 - 116	2.40	20	
Bromobenzene	19.1100	0.50	0.21	20.0000	95.6	77 - 118	1.53	20	
Bromodichloromethane	19.1600	0.50	0.14	20.0000	95.8	73 - 118	3.88	20	
Bromoform	20.6300	0.50	0.20	20.0000	103	65 - 133	7.08	20	
Bromomethane	20.4700	0.50	0.40	20.0000	102	7 - 205	0.441	20	
Carbon tetrachloride	20.3600	0.50	0.09	20.0000	102	63 - 133	1.19	20	
Chlorobenzene	20.0300	0.50	0.13	20.0000	100	86 - 113	2.37	20	
Chloroethane	17.5100	0.50	0.15	20.0000	87.6	66 - 141	2.54	20	
Chloroform	17.6600	0.50	0.11	20.0000	88.3	63 - 127	2.06	20	
Chloromethane	18.8700	0.50	0.12	20.0000	94.4	0 - 207	8.28	20	
cis-1,2-Dichloroethene	18.0100	0.50	0.14	20.0000	90.0	64 - 126	1.17	20	
cis-1,3-Dichloropropene	21.4700	0.50	0.13	20.0000	107	70 - 141	2.98	20	
Dibromochloromethane	20.3900	0.50	0.16	20.0000	102	67 - 135	2.78	20	
Dibromomethane	19.4700	0.50	0.19	20.0000	97.4	74 - 118	3.87	20	
Dichlorodifluoromethane	21.3300	0.50	0.18	20.0000	107	14 - 181	0.281	20	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0766 - MSVOA_LL_W (continued)

LCS Dup (B9J0766-BSD1) - Continued

Prepared: 10/24/2019 Analyzed: 10/24/2019

Ethylbenzene	38.8800	0.50	0.13	40.0000		97.2	77 - 118	1.06	20
Hexachlorobutadiene	21.3700	0.50	0.15	20.0000		107	66 - 125	1.21	20
Isopropylbenzene	19.3800	0.50	0.10	20.0000		96.9	68 - 137	0.362	20
m,p-Xylene	39.1000	1.0	0.19	40.0000		97.8	78 - 126	0.925	20
Methylene chloride	16.0200	1.0	0.71	20.0000		80.1	51 - 149	5.19	20
n-Butylbenzene	18.0600	0.50	0.11	20.0000		90.3	63 - 127	1.59	20
n-Propylbenzene	17.8600	0.50	0.10	20.0000		89.3	69 - 124	0.280	20
Naphthalene	18.0600	0.50	0.41	20.0000		90.3	60 - 126	8.30	20
o-Xylene	40.0000	0.50	0.13	40.0000		100	79 - 126	1.77	20
sec-Butylbenzene	18.4500	0.50	0.09	20.0000		92.2	69 - 124	0.594	20
Styrene	20.4200	0.50	0.13	20.0000		102	80 - 127	1.68	20
tert-Butylbenzene	18.9100	0.50	0.09	20.0000		94.6	71 - 124	1.06	20
Tetrachloroethene	21.4200	0.50	0.10	20.0000		107	73 - 129	2.08	20
Toluene	41.8700	0.50	0.12	40.0000		105	78 - 121	1.23	20
trans-1,2-Dichloroethene	18.0300	0.50	0.09	20.0000		90.2	58 - 141	3.21	20
Trichloroethene	21.4000	0.50	0.10	20.0000		107	73 - 126	1.74	20
Trichlorofluoromethane	18.6300	0.50	0.23	20.0000		93.2	62 - 146	1.24	20
Vinyl chloride	18.8300	0.50	0.13	20.0000		94.2	61 - 137	3.62	20
Surrogate: 1,2-Dichloroethane-d4	19.87			25.0000		79.5	59 - 158		
Surrogate: 4-Bromofluorobenzene	24.44			25.0000		97.8	71 - 127		
Surrogate: Dibromofluoromethane	22.76			25.0000		91.0	66 - 147		
Surrogate: Toluene-d8	25.28			25.0000		101	77 - 138		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

1,4-Dioxane by EPA 8270: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0863 - MSSEMI_W

Blank (B9J0863-BLK1)

Prepared: 10/25/2019 Analyzed: 10/25/2019

1,4-Dioxane	ND	2.0	0.84						
Surrogate: 1,2-Dichlorobenzene-d	66.21			100.000	66.2	34 - 188			
Surrogate: 2-Fluorobiphenyl	71.13			100.000	71.1	39 - 108			
Surrogate: 4-Terphenyl-d14	112.3			100.000	112	71 - 131			
Surrogate: Nitrobenzene-d5	68.39			100.000	68.4	32 - 106			

LCS (B9J0863-BS1)

Prepared: 10/25/2019 Analyzed: 10/25/2019

1,4-Dioxane	98.1800	2.0	0.84	100.000	98.2	40 - 159			
Surrogate: 1,2-Dichlorobenzene-d	66.73			100.000	66.7	34 - 188			
Surrogate: 2-Fluorobiphenyl	77.66			100.000	77.7	39 - 108			
Surrogate: 4-Terphenyl-d14	113.7			100.000	114	71 - 131			
Surrogate: Nitrobenzene-d5	71.02			100.000	71.0	32 - 106			

LCS Dup (B9J0863-BSD1)

Prepared: 10/25/2019 Analyzed: 10/25/2019

1,4-Dioxane	100.210	2.0	0.84	100.000	100	40 - 159	2.05	20	
Surrogate: 1,2-Dichlorobenzene-d	54.26			100.000	54.3	34 - 188			
Surrogate: 2-Fluorobiphenyl	71.39			100.000	71.4	39 - 108			
Surrogate: 4-Terphenyl-d14	115.3			100.000	115	71 - 131			
Surrogate: Nitrobenzene-d5	60.22			100.000	60.2	32 - 106			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9J0833 - MSSEMI_W

Blank (B9J0833-BLK1)

Prepared: 10/25/2019 Analyzed: 10/25/2019

1,4-Dioxane	ND	0.20	0.05						
Surrogate: 1,2-Dichlorobenzene-d	0.6557			1.00000	65.6	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.8161			1.00000	81.6	20 - 131			
Surrogate: 4-Terphenyl-d14	0.7092			1.00000	70.9	24 - 135			
Surrogate: Nitrobenzene-d5	0.9392			1.00000	93.9	6 - 124			

LCS (B9J0833-BS1)

Prepared: 10/25/2019 Analyzed: 10/25/2019

1,4-Dioxane	1.20003	0.20	0.05	1.00000	120	64 - 129			
Surrogate: 1,2-Dichlorobenzene-d	0.4644			1.00000	46.4	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.5508			1.00000	55.1	20 - 131			
Surrogate: 4-Terphenyl-d14	0.4911			1.00000	49.1	24 - 135			
Surrogate: Nitrobenzene-d5	0.6088			1.00000	60.9	6 - 124			

LCS Dup (B9J0833-BSD1)

Prepared: 10/25/2019 Analyzed: 10/25/2019

1,4-Dioxane	1.15938	0.20	0.05	1.00000	116	64 - 129	3.45	20	
Surrogate: 1,2-Dichlorobenzene-d	0.4619			1.00000	46.2	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.5436			1.00000	54.4	20 - 131			
Surrogate: 4-Terphenyl-d14	0.4870			1.00000	48.7	24 - 135			
Surrogate: Nitrobenzene-d5	0.5884			1.00000	58.8	6 - 124			



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 10/29/2019

Notes and Definitions

ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.



December 18, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1904035

Client Reference : Raytheon Main GETS Monthly Sample, 532.15

Enclosed are the results for sample(s) received on November 06, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

This is an amended report. Please disregard all previous documentation that corresponds to the page(s) enclosed.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read 'Edgar Caballero', with a small 'EC' monogram to the left.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-110619	1904035-01	Lab prepared water	11/06/19 8:00	11/06/19 15:42
CEFF	1904035-02	Groundwater	11/06/19 8:30	11/06/19 15:42
CBT	1904035-03	Groundwater	11/06/19 8:35	11/06/19 15:42
POX	1904035-04	Groundwater	11/06/19 8:40	11/06/19 15:42
PF	1904035-05	Groundwater	11/06/19 8:50	11/06/19 15:42
INF	1904035-06	Groundwater	11/06/19 8:55	11/06/19 15:42
EW-02	1904035-07	Groundwater	11/06/19 9:30	11/06/19 15:42
MW-29	1904035-08	Groundwater	11/06/19 9:50	11/06/19 15:42

CASE NARRATIVE

Samples for Bromate analysis was subcontracted to Element with ELAP Cert.# 2652.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: TB-110619

Lab ID: 1904035-01

Volatile Organic Compounds by EPA 8260B

Analyst: KL/

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
1,1,1-Trichloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
1,1,2-Trichloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
1,1-Dichloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
1,1-Dichloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
1,1-Dichloropropene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
1,2,3-Trichloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
1,2,3-Trichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
1,2,4-Trichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
1,2,4-Trimethylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
1,2-Dibromoethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
1,2-Dichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
1,2-Dichloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
1,2-Dichloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
1,3,5-Trimethylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
1,3-Dichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
1,3-Dichloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
1,4-Dichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
2,2-Dichloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
2-Chlorotoluene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
4-Chlorotoluene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
4-Isopropyltoluene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Benzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Bromobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Bromodichloromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Bromoform	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Bromomethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Carbon tetrachloride	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Chlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Chloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Chloroform	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Chloromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
cis-1,2-Dichloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
cis-1,3-Dichloropropene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Dibromochloromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: TB-110619

Lab ID: 1904035-01

Volatile Organic Compounds by EPA 8260B

Analyst: KL/

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Dichlorodifluoromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Ethylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Hexachlorobutadiene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Isopropylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
m,p-Xylene	ND	1.0	1	B9K0140	11/07/2019	11/07/19 13:31	
Methylene chloride	ND	1.0	1	B9K0140	11/07/2019	11/07/19 13:31	
n-Butylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
n-Propylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Naphthalene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
o-Xylene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
sec-Butylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Styrene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
tert-Butylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Tetrachloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Toluene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
trans-1,2-Dichloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Trichloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Trichlorofluoromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Vinyl chloride	ND	0.50	1	B9K0140	11/07/2019	11/07/19 13:31	
Surrogate: 1,2-Dichloroethane-d4	75.4 %	59 - 158		B9K0140	11/07/2019	11/07/19 13:31	
Surrogate: 4-Bromofluorobenzene	80.7 %	71 - 127		B9K0140	11/07/2019	11/07/19 13:31	
Surrogate: Dibromofluoromethane	79.4 %	66 - 147		B9K0140	11/07/2019	11/07/19 13:31	
Surrogate: Toluene-d8	90.7 %	77 - 138		B9K0140	11/07/2019	11/07/19 13:31	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: CEFF

Lab ID: 1904035-02

Volatile Organic Compounds by EPA 8260B

Analyst: KL/

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
1,1,1-Trichloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
1,1,2-Trichloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
1,1-Dichloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
1,1-Dichloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
1,1-Dichloropropene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
1,2,3-Trichloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
1,2,3-Trichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
1,2,4-Trichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
1,2,4-Trimethylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
1,2-Dibromoethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
1,2-Dichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
1,2-Dichloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
1,2-Dichloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
1,3,5-Trimethylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
1,3-Dichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
1,3-Dichloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
1,4-Dichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
2,2-Dichloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
2-Chlorotoluene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
4-Chlorotoluene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
4-Isopropyltoluene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Benzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Bromobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Bromodichloromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Bromoform	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Bromomethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Carbon tetrachloride	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Chlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Chloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Chloroform	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Chloromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
cis-1,2-Dichloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
cis-1,3-Dichloropropene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Dibromochloromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: CEFF

Lab ID: 1904035-02

Volatile Organic Compounds by EPA 8260B

Analyst: KL/

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Dichlorodifluoromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Ethylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Hexachlorobutadiene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Isopropylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
m,p-Xylene	ND	1.0	1	B9K0140	11/07/2019	11/07/19 15:43	
Methylene chloride	ND	1.0	1	B9K0140	11/07/2019	11/07/19 15:43	
n-Butylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
n-Propylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Naphthalene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
o-Xylene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
sec-Butylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Styrene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
tert-Butylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Tetrachloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Toluene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
trans-1,2-Dichloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Trichloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Trichlorofluoromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Vinyl chloride	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:43	
Surrogate: 1,2-Dichloroethane-d4	67.8 %	59 - 158		B9K0140	11/07/2019	11/07/19 15:43	
Surrogate: 4-Bromofluorobenzene	73.3 %	71 - 127		B9K0140	11/07/2019	11/07/19 15:43	
Surrogate: Dibromofluoromethane	72.7 %	66 - 147		B9K0140	11/07/2019	11/07/19 15:43	
Surrogate: Toluene-d8	83.3 %	77 - 138		B9K0140	11/07/2019	11/07/19 15:43	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: CEFF

Lab ID: 1904035-02

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9K0223	11/11/2019	11/12/19 17:00	
Surrogate: 1,2-Dichlorobenzene-d4	63.7 %	22 - 117		B9K0223	11/11/2019	11/12/19 17:00	
Surrogate: 2-Fluorobiphenyl	84.6 %	20 - 131		B9K0223	11/11/2019	11/12/19 17:00	
Surrogate: 4-Terphenyl-d14	103 %	24 - 135		B9K0223	11/11/2019	11/12/19 17:00	
Surrogate: Nitrobenzene-d5	64.9 %	6 - 124		B9K0223	11/11/2019	11/12/19 17:00	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: CBT

Lab ID: 1904035-03

Volatile Organic Compounds by EPA 8260B

Analyst: KL/

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
1,1,1-Trichloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
1,1,2-Trichloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
1,1-Dichloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
1,1-Dichloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
1,1-Dichloropropene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
1,2,3-Trichloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
1,2,3-Trichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
1,2,4-Trichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
1,2,4-Trimethylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
1,2-Dibromoethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
1,2-Dichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
1,2-Dichloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
1,2-Dichloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
1,3,5-Trimethylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
1,3-Dichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
1,3-Dichloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
1,4-Dichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
2,2-Dichloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
2-Chlorotoluene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
4-Chlorotoluene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
4-Isopropyltoluene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Benzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Bromobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Bromodichloromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Bromoform	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Bromomethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Carbon tetrachloride	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Chlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Chloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Chloroform	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Chloromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
cis-1,2-Dichloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
cis-1,3-Dichloropropene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Dibromochloromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: CBT

Lab ID: 1904035-03

Volatile Organic Compounds by EPA 8260B

Analyst: KL/

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Dichlorodifluoromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Ethylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Hexachlorobutadiene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Isopropylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
m,p-Xylene	ND	1.0	1	B9K0140	11/07/2019	11/07/19 16:08	
Methylene chloride	ND	1.0	1	B9K0140	11/07/2019	11/07/19 16:08	
n-Butylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
n-Propylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Naphthalene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
o-Xylene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
sec-Butylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Styrene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
tert-Butylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Tetrachloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Toluene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
trans-1,2-Dichloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Trichloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Trichlorofluoromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Vinyl chloride	ND	0.50	1	B9K0140	11/07/2019	11/07/19 16:08	
Surrogate: 1,2-Dichloroethane-d4	66.4 %	59 - 158		B9K0140	11/07/2019	11/07/19 16:08	
Surrogate: 4-Bromofluorobenzene	71.2 %	71 - 127		B9K0140	11/07/2019	11/07/19 16:08	
Surrogate: Dibromofluoromethane	71.5 %	66 - 147		B9K0140	11/07/2019	11/07/19 16:08	
Surrogate: Toluene-d8	80.7 %	77 - 138		B9K0140	11/07/2019	11/07/19 16:08	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: CBT

Lab ID: 1904035-03

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9K0223	11/11/2019	11/12/19 17:27	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>71.5 %</i>	<i>22 - 117</i>		B9K0223	11/11/2019	<i>11/12/19 17:27</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>98.4 %</i>	<i>20 - 131</i>		B9K0223	11/11/2019	<i>11/12/19 17:27</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>115 %</i>	<i>24 - 135</i>		B9K0223	11/11/2019	<i>11/12/19 17:27</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>73.0 %</i>	<i>6 - 124</i>		B9K0223	11/11/2019	<i>11/12/19 17:27</i>	



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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: POX

Lab ID: 1904035-04

Alkalinity, Speciated by SM 2320B

Analyst: UT

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Alkalinity, Bicarbonate (as CaCO ₃)	210	5.0	1	B9K0217	11/11/2019	11/11/19 14:54	
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	1	B9K0217	11/11/2019	11/11/19 14:54	
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	1	B9K0217	11/11/2019	11/11/19 14:54	
Alkalinity, Total (as CaCO ₃)	210	5.0	1	B9K0217	11/11/2019	11/11/19 14:54	

Total Organic Carbon by SM 5310B

Analyst: UYEN

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Organic Carbon, Total	ND	3.0	1	B9K0311	11/14/2019	11/14/19 08:14	

Volatile Organic Compounds by EPA 8260B

Analyst: KL/

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
1,1,1-Trichloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
1,1,2-Trichloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
1,1-Dichloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
1,1-Dichloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
1,1-Dichloropropene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
1,2,3-Trichloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
1,2,3-Trichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
1,2,4-Trichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
1,2,4-Trimethylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
1,2-Dibromoethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
1,2-Dichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
1,2-Dichloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
1,2-Dichloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
1,3,5-Trimethylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
1,3-Dichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
1,3-Dichloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
1,4-Dichlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
2,2-Dichloropropane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: POX

Lab ID: 1904035-04

Volatile Organic Compounds by EPA 8260B

Analyst: KL/

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
2-Chlorotoluene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
4-Chlorotoluene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
4-Isopropyltoluene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Benzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Bromobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Bromodichloromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Bromoform	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Bromomethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Carbon tetrachloride	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Chlorobenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Chloroethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Chloroform	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Chloromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
cis-1,2-Dichloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
cis-1,3-Dichloropropene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Dibromochloromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Dibromomethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Dichlorodifluoromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Ethylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Hexachlorobutadiene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Isopropylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
m,p-Xylene	ND	1.0	1	B9K0140	11/07/2019	11/07/19 15:12	
Methylene chloride	ND	1.0	1	B9K0140	11/07/2019	11/07/19 15:12	
n-Butylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
n-Propylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Naphthalene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
o-Xylene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
sec-Butylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Styrene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
tert-Butylbenzene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Tetrachloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Toluene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
trans-1,2-Dichloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Trichloroethene	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Trichlorofluoromethane	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Vinyl chloride	ND	0.50	1	B9K0140	11/07/2019	11/07/19 15:12	
Surrogate: 1,2-Dichloroethane-d4	69.7 %	59 - 158		B9K0140	11/07/2019	11/07/19 15:12	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: POX

Lab ID: 1904035-04

Volatile Organic Compounds by EPA 8260B

Analyst: KL/

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: 4-Bromofluorobenzene	75.0 %	71 - 127		B9K0140	11/07/2019	11/07/19 15:12	
Surrogate: Dibromofluoromethane	74.9 %	66 - 147		B9K0140	11/07/2019	11/07/19 15:12	
Surrogate: Toluene-d8	85.4 %	77 - 138		B9K0140	11/07/2019	11/07/19 15:12	

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9K0223	11/11/2019	11/12/19 17:53	
Surrogate: 1,2-Dichlorobenzene-d4	75.4 %	22 - 117		B9K0223	11/11/2019	11/12/19 17:53	
Surrogate: 2-Fluorobiphenyl	106 %	20 - 131		B9K0223	11/11/2019	11/12/19 17:53	
Surrogate: 4-Terphenyl-d14	113 %	24 - 135		B9K0223	11/11/2019	11/12/19 17:53	
Surrogate: Nitrobenzene-d5	77.4 %	6 - 124		B9K0223	11/11/2019	11/12/19 17:53	



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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: PF

Lab ID: 1904035-05

UV Absorption by EPA 415.3

Analyst: UT

Analyte	Result (1/cm)	PQL (1/cm)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
UV Absorption	ND	0.01	1	B9K0165	11/07/2019	11/07/19 16:22	

Alkalinity, Speciated by SM 2320B

Analyst: UT

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Alkalinity, Bicarbonate (as CaCO₃)	220	5.0	1	B9K0217	11/11/2019	11/11/19 14:54	
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	1	B9K0217	11/11/2019	11/11/19 14:54	
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	1	B9K0217	11/11/2019	11/11/19 14:54	
Alkalinity, Total (as CaCO₃)	220	5.0	1	B9K0217	11/11/2019	11/11/19 14:54	

Total Suspended Solids (Residue, Non-Filtrable) by SM 2540D

Analyst: UT

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Residue, Suspended	ND	1.0	1	B9K0200	11/08/2019	11/08/19 10:16	

Total Organic Carbon by SM 5310B

Analyst: UYEN

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Organic Carbon, Total	ND	3.0	1	B9K0311	11/14/2019	11/14/19 08:14	



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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: INF

Lab ID: 1904035-06

Bromide by Ion Chromatography EPA 300

Analyst: uyen

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Bromide	0.39	0.05	1	B9K0267	11/07/2019	11/07/19 20:01	

Volatile Organic Compounds by EPA 8260B

Analyst: KL/

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
1,1,1-Trichloroethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
1,1,2-Trichloroethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
1,1-Dichloroethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
1,1-Dichloroethene	4.5	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
1,1-Dichloropropene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
1,2,3-Trichloropropane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
1,2,3-Trichlorobenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
1,2,4-Trichlorobenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
1,2,4-Trimethylbenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
1,2-Dibromoethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
1,2-Dichlorobenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
1,2-Dichloroethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
1,2-Dichloropropane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
1,3,5-Trimethylbenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
1,3-Dichlorobenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
1,3-Dichloropropane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
1,4-Dichlorobenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
2,2-Dichloropropane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
2-Chlorotoluene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
4-Chlorotoluene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
4-Isopropyltoluene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Benzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Bromobenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Bromodichloromethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Bromoform	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Bromomethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Carbon tetrachloride	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Chlorobenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: INF

Lab ID: 1904035-06

Volatile Organic Compounds by EPA 8260B

Analyst: KL/

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloroethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Chloroform	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Chloromethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
cis-1,2-Dichloroethene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
cis-1,3-Dichloropropene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Dibromochloromethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Dibromomethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Dichlorodifluoromethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Ethylbenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Hexachlorobutadiene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Isopropylbenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
m,p-Xylene	ND	1.0	1	B9K0170	11/11/2019	11/11/19 15:36	
Methylene chloride	ND	1.0	1	B9K0170	11/11/2019	11/11/19 15:36	
n-Butylbenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
n-Propylbenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Naphthalene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
o-Xylene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
sec-Butylbenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Styrene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
tert-Butylbenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Tetrachloroethene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Toluene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
trans-1,2-Dichloroethene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Trichloroethene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Trichlorofluoromethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Vinyl chloride	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:36	
Surrogate: 1,2-Dichloroethane-d4	85.8 %	59 - 158		B9K0170	11/11/2019	11/11/19 15:36	
Surrogate: 4-Bromofluorobenzene	99.2 %	71 - 127		B9K0170	11/11/2019	11/11/19 15:36	
Surrogate: Dibromofluoromethane	91.1 %	66 - 147		B9K0170	11/11/2019	11/11/19 15:36	
Surrogate: Toluene-d8	103 %	77 - 138		B9K0170	11/11/2019	11/11/19 15:36	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: INF

Lab ID: 1904035-06

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	28	2.0	1	B9K0222	11/11/2019	11/13/19 20:14	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>62.6 %</i>	<i>34 - 188</i>		B9K0222	11/11/2019	<i>11/13/19 20:14</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>57.1 %</i>	<i>39 - 108</i>		B9K0222	11/11/2019	<i>11/13/19 20:14</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>80.1 %</i>	<i>71 - 131</i>		B9K0222	11/11/2019	<i>11/13/19 20:14</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>70.9 %</i>	<i>32 - 106</i>		B9K0222	11/11/2019	<i>11/13/19 20:14</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: EW-02

Lab ID: 1904035-07

Bromide by Ion Chromatography EPA 300

Analyst: uyen

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Bromide	0.34	0.05	1	B9K0267	11/07/2019	11/07/19 20:47	

Volatile Organic Compounds by EPA 8260B

Analyst: KL/

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
1,1,1-Trichloroethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
1,1,2-Trichloroethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
1,1-Dichloroethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
1,1-Dichloroethene	3.3	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
1,1-Dichloropropene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
1,2,3-Trichloropropane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
1,2,3-Trichlorobenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
1,2,4-Trichlorobenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
1,2,4-Trimethylbenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
1,2-Dibromoethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
1,2-Dichlorobenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
1,2-Dichloroethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
1,2-Dichloropropane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
1,3,5-Trimethylbenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
1,3-Dichlorobenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
1,3-Dichloropropane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
1,4-Dichlorobenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
2,2-Dichloropropane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
2-Chlorotoluene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
4-Chlorotoluene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
4-Isopropyltoluene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Benzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Bromobenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Bromodichloromethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Bromoform	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Bromomethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Carbon tetrachloride	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Chlorobenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: EW-02

Lab ID: 1904035-07

Volatile Organic Compounds by EPA 8260B

Analyst: KL/

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloroethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Chloroform	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Chloromethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
cis-1,2-Dichloroethene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
cis-1,3-Dichloropropene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Dibromochloromethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Dibromomethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Dichlorodifluoromethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Ethylbenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Hexachlorobutadiene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Isopropylbenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
m,p-Xylene	ND	1.0	1	B9K0170	11/11/2019	11/11/19 15:11	
Methylene chloride	ND	1.0	1	B9K0170	11/11/2019	11/11/19 15:11	
n-Butylbenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
n-Propylbenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Naphthalene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
o-Xylene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
sec-Butylbenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Styrene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
tert-Butylbenzene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Tetrachloroethene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Toluene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
trans-1,2-Dichloroethene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Trichloroethene	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Trichlorofluoromethane	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Vinyl chloride	ND	0.50	1	B9K0170	11/11/2019	11/11/19 15:11	
Surrogate: 1,2-Dichloroethane-d4	83.0 %	59 - 158		B9K0170	11/11/2019	11/11/19 15:11	
Surrogate: 4-Bromofluorobenzene	98.6 %	71 - 127		B9K0170	11/11/2019	11/11/19 15:11	
Surrogate: Dibromofluoromethane	89.1 %	66 - 147		B9K0170	11/11/2019	11/11/19 15:11	
Surrogate: Toluene-d8	104 %	77 - 138		B9K0170	11/11/2019	11/11/19 15:11	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: EW-02

Lab ID: 1904035-07

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	9.4	2.0	1	B9K0222	11/11/2019	11/13/19 20:40	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>61.8 %</i>	<i>34 - 188</i>		B9K0222	11/11/2019	<i>11/13/19 20:40</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>56.3 %</i>	<i>39 - 108</i>		B9K0222	11/11/2019	<i>11/13/19 20:40</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>81.1 %</i>	<i>71 - 131</i>		B9K0222	11/11/2019	<i>11/13/19 20:40</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>67.5 %</i>	<i>32 - 106</i>		B9K0222	11/11/2019	<i>11/13/19 20:40</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: MW-29

Lab ID: 1904035-08

Bromide by Ion Chromatography EPA 300

Analyst: uyen

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Bromide	0.64	0.05	1	B9K0267	11/07/2019	11/07/19 20:58	

Volatile Organic Compounds by EPA 8260B

Analyst: KL/

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
1,1,1-Trichloroethane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
1,1,2,2-Tetrachloroethane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
1,1,2-Trichloroethane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
1,1-Dichloroethane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
1,1-Dichloroethene	140	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
1,1-Dichloropropene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
1,2,3-Trichloropropane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
1,2,3-Trichlorobenzene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
1,2,4-Trichlorobenzene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
1,2,4-Trimethylbenzene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
1,2-Dibromo-3-chloropropane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
1,2-Dibromoethane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
1,2-Dichlorobenzene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
1,2-Dichloroethane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
1,2-Dichloropropane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
1,3,5-Trimethylbenzene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
1,3-Dichlorobenzene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
1,3-Dichloropropane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
1,4-Dichlorobenzene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
2,2-Dichloropropane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
2-Chlorotoluene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
4-Chlorotoluene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
4-Isopropyltoluene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Benzene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Bromobenzene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Bromodichloromethane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Bromoform	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Bromomethane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Carbon tetrachloride	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Chlorobenzene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: MW-29

Lab ID: 1904035-08

Volatile Organic Compounds by EPA 8260B

Analyst: KL/

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloroethane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Chloroform	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Chloromethane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
cis-1,2-Dichloroethene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
cis-1,3-Dichloropropene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Dibromochloromethane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Dibromomethane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Dichlorodifluoromethane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Ethylbenzene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Hexachlorobutadiene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Isopropylbenzene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
m,p-Xylene	ND	10	10	B9K0170	11/11/2019	11/11/19 16:01	
Methylene chloride	ND	10	10	B9K0170	11/11/2019	11/11/19 16:01	
n-Butylbenzene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
n-Propylbenzene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Naphthalene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
o-Xylene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
sec-Butylbenzene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Styrene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
tert-Butylbenzene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Tetrachloroethene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Toluene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
trans-1,2-Dichloroethene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Trichloroethene	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Trichlorofluoromethane	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Vinyl chloride	ND	5.0	10	B9K0170	11/11/2019	11/11/19 16:01	
Surrogate: 1,2-Dichloroethane-d4	84.0 %	59 - 158		B9K0170	11/11/2019	11/11/19 16:01	
Surrogate: 4-Bromofluorobenzene	98.0 %	71 - 127		B9K0170	11/11/2019	11/11/19 16:01	
Surrogate: Dibromofluoromethane	89.0 %	66 - 147		B9K0170	11/11/2019	11/11/19 16:01	
Surrogate: Toluene-d8	104 %	77 - 138		B9K0170	11/11/2019	11/11/19 16:01	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Client Sample ID: MW-29

Lab ID: 1904035-08

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	100	2.0	1	B9K0222	11/11/2019	11/13/19 21:06	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>56.0 %</i>	<i>34 - 188</i>		B9K0222	11/11/2019	<i>11/13/19 21:06</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>53.7 %</i>	<i>39 - 108</i>		B9K0222	11/11/2019	<i>11/13/19 21:06</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>81.7 %</i>	<i>71 - 131</i>		B9K0222	11/11/2019	<i>11/13/19 21:06</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>62.7 %</i>	<i>32 - 106</i>		B9K0222	11/11/2019	<i>11/13/19 21:06</i>	



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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

QUALITY CONTROL SECTION

Alkalinity, Speciated by SM 2320B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0217 - No_Prep_WC1_W

Blank (B9K0217-BLK1)

Prepared: 11/11/2019 Analyzed: 11/11/2019

Alkalinity, Bicarbonate (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Total (as CaCO ₃)	ND	5.0	3.4

LCS (B9K0217-BS1)

Prepared: 11/11/2019 Analyzed: 11/11/2019

Alkalinity, Total (as CaCO ₃)	88.8900	5.0	3.4	99.9580	88.9	80 - 120
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Matrix Spike (B9K0217-MS1)

Source: 1904009-03

Prepared: 11/11/2019 Analyzed: 11/11/2019

Alkalinity, Total (as CaCO ₃)	157.410	5.0	3.4	99.9580	61.1100	96.3	80 - 120
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Matrix Spike Dup (B9K0217-MSD1)

Source: 1904009-03

Prepared: 11/11/2019 Analyzed: 11/11/2019

Alkalinity, Total (as CaCO ₃)	156.480	5.0	3.4	99.9580	61.1100	95.4	80 - 120	0.593	20
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Certificate of Analysis

Hargis & Associates, Inc.

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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Total Suspended Solids (Residue, Non-Filtrable) by SM 2540D - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD RPD	RPD Limit	Notes
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Batch B9K0200 - No_Prep_WC1_W

Blank (B9K0200-BLK1)

Prepared: 11/8/2019 Analyzed: 11/8/2019

Residue, Suspended ND 10 10

LCS (B9K0200-BS1)

Prepared: 11/8/2019 Analyzed: 11/8/2019

Residue, Suspended 100.000 10 10 93.4000 107 80 - 120

Duplicate (B9K0200-DUP1)

Source: 1904029-01

Prepared: 11/8/2019 Analyzed: 11/8/2019

Residue, Suspended 31.0000 10 10 33.0000 6.25 10



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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Bromide by Ion Chromatography EPA 300 - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0267 - No_Prep_IC1_W

Blank (B9K0267-BLK1)

Prepared: 11/7/2019 Analyzed: 11/7/2019

Bromide ND 0.05 0.02

LCS (B9K0267-BS1)

Prepared: 11/7/2019 Analyzed: 11/7/2019

Bromide 1.09480 0.05 0.02 1.00000 109 90 - 110

Duplicate (B9K0267-DUP1)

Source: 1904035-06

Prepared: 11/7/2019 Analyzed: 11/7/2019

Bromide 0.411200 0.05 0.02 0.392300 4.70 20

Matrix Spike (B9K0267-MS1)

Source: 1904035-06

Prepared: 11/7/2019 Analyzed: 11/7/2019

Bromide 2.75860 0.05 0.02 2.50000 0.392300 94.7 80 - 120

Matrix Spike Dup (B9K0267-MSD1)

Source: 1904035-06

Prepared: 11/7/2019 Analyzed: 11/7/2019

Bromide 2.74760 0.05 0.02 2.50000 0.392300 94.2 80 - 120 0.400 20



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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Total Organic Carbon by SM 5310B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0311 - No_Prep_II_W

Blank (B9K0311-BLK1)

Prepared: 11/14/2019 Analyzed: 11/14/2019

Organic Carbon, Total ND 3.0 0.28

LCS (B9K0311-BS1)

Prepared: 11/14/2019 Analyzed: 11/14/2019

Organic Carbon, Total 18.9100 3.0 0.28 20.0000 94.6 80 - 120

LCS Dup (B9K0311-BSD1)

Prepared: 11/14/2019 Analyzed: 11/14/2019

Organic Carbon, Total 18.8000 3.0 0.28 20.0000 94.0 80 - 120 0.583 20



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Project Number : Raytheon Main GETS Monthly Sample, 5

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Reported : 12/18/2019

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0140 - MSVOA_LL_W

Blank (B9K0140-BLK1)

Prepared: 11/7/2019 Analyzed: 11/7/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.21
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.40
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.18
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD RPD	RPD Limit	Notes
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Batch B9K0140 - MSVOA_LL_W (continued)

Blank (B9K0140-BLK1) - Continued

Prepared: 11/7/2019 Analyzed: 11/7/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.23
Vinyl chloride	ND	0.50	0.13

Surrogate: 1,2-Dichloroethane-d4	22.28	25.0000	89.1	59 - 158
Surrogate: 4-Bromofluorobenzene	24.28	25.0000	97.1	71 - 127
Surrogate: Dibromofluoromethane	23.45	25.0000	93.8	66 - 147
Surrogate: Toluene-d8	27.18	25.0000	109	77 - 138

LCS (B9K0140-BS1)

Prepared: 11/7/2019 Analyzed: 11/7/2019

1,1,1,2-Tetrachloroethane	19.9400	0.50	0.11	20.0000	99.7	71 - 133
1,1,1-Trichloroethane	19.3900	0.50	0.21	20.0000	97.0	62 - 124
1,1,2,2-Tetrachloroethane	15.2700	0.50	0.36	20.0000	76.4	50 - 131
1,1,2-Trichloroethane	20.0600	0.50	0.25	20.0000	100	77 - 121
1,1-Dichloroethane	17.4000	0.50	0.09	20.0000	87.0	52 - 130
1,1-Dichloroethene	20.5700	0.50	0.13	20.0000	103	61 - 136
1,1-Dichloropropene	21.9000	0.50	0.13	20.0000	110	80 - 128
1,2,3-Trichloropropane	14.7700	0.50	0.39	20.0000	73.8	59 - 126
1,2,3-Trichlorobenzene	19.5200	0.50	0.18	20.0000	97.6	69 - 138
1,2,4-Trichlorobenzene	19.9100	0.50	0.16	20.0000	99.6	78 - 125
1,2,4-Trimethylbenzene	17.8200	0.50	0.14	20.0000	89.1	70 - 126
1,2-Dibromo-3-chloropropane	13.1200	0.50	0.41	20.0000	65.6	58 - 127
1,2-Dibromoethane	20.6600	0.50	0.24	20.0000	103	76 - 120
1,2-Dichlorobenzene	18.8100	0.50	0.20	20.0000	94.0	82 - 117
1,2-Dichloroethane	18.4100	0.50	0.20	20.0000	92.0	66 - 126
1,2-Dichloropropane	19.0900	0.50	0.15	20.0000	95.4	70 - 117
1,3,5-Trimethylbenzene	18.0300	0.50	0.13	20.0000	90.2	71 - 125
1,3-Dichlorobenzene	19.0400	0.50	0.16	20.0000	95.2	81 - 116
1,3-Dichloropropane	17.2500	0.50	0.21	20.0000	86.2	69 - 124



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0140 - MSVOA_LL_W (continued)

LCS (B9K0140-BS1) - Continued

Prepared: 11/7/2019 Analyzed: 11/7/2019

1,4-Dichlorobenzene	18.9100	0.50	0.17	20.0000		94.6	80 - 114		
2,2-Dichloropropane	19.0200	0.50	0.38	20.0000		95.1	58 - 132		
2-Chlorotoluene	17.1700	0.50	0.11	20.0000		85.8	71 - 119		
4-Chlorotoluene	17.3200	0.50	0.12	20.0000		86.6	72 - 122		
4-Isopropyltoluene	18.5700	0.50	0.11	20.0000		92.8	69 - 126		
Benzene	39.5900	0.50	0.13	40.0000		99.0	80 - 116		
Bromobenzene	18.4800	0.50	0.21	20.0000		92.4	77 - 118		
Bromodichloromethane	19.5900	0.50	0.14	20.0000		98.0	73 - 118		
Bromoform	19.4200	0.50	0.20	20.0000		97.1	65 - 133		
Bromomethane	22.0300	0.50	0.40	20.0000		110	7 - 205		
Carbon tetrachloride	21.2800	0.50	0.09	20.0000		106	63 - 133		
Chlorobenzene	19.6500	0.50	0.13	20.0000		98.2	86 - 113		
Chloroethane	18.0800	0.50	0.15	20.0000		90.4	66 - 141		
Chloroform	18.0600	0.50	0.11	20.0000		90.3	63 - 127		
Chloromethane	17.6000	0.50	0.12	20.0000		88.0	0 - 207		
cis-1,2-Dichloroethene	18.2700	0.50	0.14	20.0000		91.4	64 - 126		
cis-1,3-Dichloropropene	22.0400	0.50	0.13	20.0000		110	70 - 141		
Dibromochloromethane	19.1400	0.50	0.16	20.0000		95.7	67 - 135		
Dibromomethane	19.8900	0.50	0.19	20.0000		99.4	74 - 118		
Dichlorodifluoromethane	21.1200	0.50	0.18	20.0000		106	14 - 181		
Ethylbenzene	37.6100	0.50	0.13	40.0000		94.0	77 - 118		
Hexachlorobutadiene	22.6200	0.50	0.15	20.0000		113	66 - 125		
Isopropylbenzene	18.8900	0.50	0.10	20.0000		94.4	68 - 137		
m,p-Xylene	38.5900	1.0	0.19	40.0000		96.5	78 - 126		
Methylene chloride	21.2900	1.0	0.71	20.0000		106	51 - 149		
n-Butylbenzene	17.8400	0.50	0.11	20.0000		89.2	63 - 127		
n-Propylbenzene	17.3300	0.50	0.10	20.0000		86.6	69 - 124		
Naphthalene	16.1200	0.50	0.41	20.0000		80.6	60 - 126		
o-Xylene	38.9100	0.50	0.13	40.0000		97.3	79 - 126		
sec-Butylbenzene	18.0800	0.50	0.09	20.0000		90.4	69 - 124		
Styrene	19.6400	0.50	0.13	20.0000		98.2	80 - 127		
tert-Butylbenzene	18.5100	0.50	0.09	20.0000		92.6	71 - 124		
Tetrachloroethene	21.9100	0.50	0.10	20.0000		110	73 - 129		
Toluene	43.0900	0.50	0.12	40.0000		108	78 - 121		
trans-1,2-Dichloroethene	18.1700	0.50	0.09	20.0000		90.8	58 - 141		
Trichloroethene	21.9600	0.50	0.10	20.0000		110	73 - 126		
Trichlorofluoromethane	20.0100	0.50	0.23	20.0000		100	62 - 146		
Vinyl chloride	19.0900	0.50	0.13	20.0000		95.4	61 - 137		
Surrogate: 1,2-Dichloroethane-d4	22.61			25.0000		90.4	59 - 158		
Surrogate: 4-Bromofluorobenzene	25.81			25.0000		103	71 - 127		
Surrogate: Dibromofluoromethane	24.24			25.0000		97.0	66 - 147		



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0140 - MSVOA_LL_W (continued)

LCS (B9K0140-BS1) - Continued

Prepared: 11/7/2019 Analyzed: 11/7/2019

Surrogate: Toluene-d8 28.46 25.0000 114 77 - 138

LCS Dup (B9K0140-BSD1)

Prepared: 11/7/2019 Analyzed: 11/7/2019

1,1,1,2-Tetrachloroethane	19.9100	0.50	0.11	20.0000	99.6	71 - 133	0.151	20	
1,1,1-Trichloroethane	18.8000	0.50	0.21	20.0000	94.0	62 - 124	3.09	20	
1,1,2,2-Tetrachloroethane	15.3700	0.50	0.36	20.0000	76.8	50 - 131	0.653	20	
1,1,2-Trichloroethane	20.3200	0.50	0.25	20.0000	102	77 - 121	1.29	20	
1,1-Dichloroethane	17.0000	0.50	0.09	20.0000	85.0	52 - 130	2.33	20	
1,1-Dichloroethene	19.7900	0.50	0.13	20.0000	99.0	61 - 136	3.87	20	
1,1-Dichloropropene	21.9300	0.50	0.13	20.0000	110	80 - 128	0.137	20	
1,2,3-Trichloropropane	14.7300	0.50	0.39	20.0000	73.6	59 - 126	0.271	20	
1,2,3-Trichlorobenzene	19.2600	0.50	0.18	20.0000	96.3	69 - 138	1.34	20	
1,2,4-Trichlorobenzene	19.0300	0.50	0.16	20.0000	95.2	78 - 125	4.52	20	
1,2,4-Trimethylbenzene	16.7700	0.50	0.14	20.0000	83.8	70 - 126	6.07	20	
1,2-Dibromo-3-chloropropane	12.3300	0.50	0.41	20.0000	61.6	58 - 127	6.21	20	
1,2-Dibromoethane	20.9900	0.50	0.24	20.0000	105	76 - 120	1.58	20	
1,2-Dichlorobenzene	18.2000	0.50	0.20	20.0000	91.0	82 - 117	3.30	20	
1,2-Dichloroethane	18.2100	0.50	0.20	20.0000	91.0	66 - 126	1.09	20	
1,2-Dichloropropane	18.8700	0.50	0.15	20.0000	94.4	70 - 117	1.16	20	
1,3,5-Trimethylbenzene	17.0500	0.50	0.13	20.0000	85.2	71 - 125	5.59	20	
1,3-Dichlorobenzene	18.1500	0.50	0.16	20.0000	90.8	81 - 116	4.79	20	
1,3-Dichloropropane	17.4000	0.50	0.21	20.0000	87.0	69 - 124	0.866	20	
1,4-Dichlorobenzene	17.9500	0.50	0.17	20.0000	89.8	80 - 114	5.21	20	
2,2-Dichloropropane	17.8700	0.50	0.38	20.0000	89.4	58 - 132	6.23	20	
2-Chlorotoluene	16.2300	0.50	0.11	20.0000	81.2	71 - 119	5.63	20	
4-Chlorotoluene	16.4700	0.50	0.12	20.0000	82.4	72 - 122	5.03	20	
4-Isopropyltoluene	17.5900	0.50	0.11	20.0000	88.0	69 - 126	5.42	20	
Benzene	39.2100	0.50	0.13	40.0000	98.0	80 - 116	0.964	20	
Bromobenzene	17.7600	0.50	0.21	20.0000	88.8	77 - 118	3.97	20	
Bromodichloromethane	19.6300	0.50	0.14	20.0000	98.2	73 - 118	0.204	20	
Bromoform	20.1700	0.50	0.20	20.0000	101	65 - 133	3.79	20	
Bromomethane	22.3700	0.50	0.40	20.0000	112	7 - 205	1.53	20	
Carbon tetrachloride	20.8800	0.50	0.09	20.0000	104	63 - 133	1.90	20	
Chlorobenzene	19.4300	0.50	0.13	20.0000	97.2	86 - 113	1.13	20	
Chloroethane	17.6600	0.50	0.15	20.0000	88.3	66 - 141	2.35	20	
Chloroform	17.5900	0.50	0.11	20.0000	88.0	63 - 127	2.64	20	
Chloromethane	16.9300	0.50	0.12	20.0000	84.6	0 - 207	3.88	20	
cis-1,2-Dichloroethene	17.7300	0.50	0.14	20.0000	88.6	64 - 126	3.00	20	
cis-1,3-Dichloropropene	21.8700	0.50	0.13	20.0000	109	70 - 141	0.774	20	
Dibromochloromethane	19.4500	0.50	0.16	20.0000	97.2	67 - 135	1.61	20	
Dibromomethane	19.8500	0.50	0.19	20.0000	99.2	74 - 118	0.201	20	
Dichlorodifluoromethane	19.5200	0.50	0.18	20.0000	97.6	14 - 181	7.87	20	



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0140 - MSVOA_LL_W (continued)

LCS Dup (B9K0140-BSD1) - Continued

Prepared: 11/7/2019 Analyzed: 11/7/2019

Ethylbenzene	37.4300	0.50	0.13	40.0000		93.6	77 - 118	0.480	20	
Hexachlorobutadiene	20.9900	0.50	0.15	20.0000		105	66 - 125	7.48	20	
Isopropylbenzene	17.8200	0.50	0.10	20.0000		89.1	68 - 137	5.83	20	
m,p-Xylene	37.7500	1.0	0.19	40.0000		94.4	78 - 126	2.20	20	
Methylene chloride	20.6100	1.0	0.71	20.0000		103	51 - 149	3.25	20	
n-Butylbenzene	16.8300	0.50	0.11	20.0000		84.2	63 - 127	5.83	20	
n-Propylbenzene	16.3100	0.50	0.10	20.0000		81.6	69 - 124	6.06	20	
Naphthalene	16.3800	0.50	0.41	20.0000		81.9	60 - 126	1.60	20	
o-Xylene	38.9200	0.50	0.13	40.0000		97.3	79 - 126	0.0257	20	
sec-Butylbenzene	17.0400	0.50	0.09	20.0000		85.2	69 - 124	5.92	20	
Styrene	19.5700	0.50	0.13	20.0000		97.8	80 - 127	0.357	20	
tert-Butylbenzene	17.5300	0.50	0.09	20.0000		87.6	71 - 124	5.44	20	
Tetrachloroethene	21.3300	0.50	0.10	20.0000		107	73 - 129	2.68	20	
Toluene	42.4800	0.50	0.12	40.0000		106	78 - 121	1.43	20	
trans-1,2-Dichloroethene	17.3900	0.50	0.09	20.0000		87.0	58 - 141	4.39	20	
Trichloroethene	21.4900	0.50	0.10	20.0000		107	73 - 126	2.16	20	
Trichlorofluoromethane	19.0400	0.50	0.23	20.0000		95.2	62 - 146	4.97	20	
Vinyl chloride	18.6400	0.50	0.13	20.0000		93.2	61 - 137	2.39	20	
Surrogate: 1,2-Dichloroethane-d4	22.22			25.0000		88.9	59 - 158			
Surrogate: 4-Bromofluorobenzene	25.44			25.0000		102	71 - 127			
Surrogate: Dibromofluoromethane	24.14			25.0000		96.6	66 - 147			
Surrogate: Toluene-d8	28.25			25.0000		113	77 - 138			

Matrix Spike (B9K0140-MS1)

Source: 1904035-04

Prepared: 11/7/2019 Analyzed: 11/7/2019

1,1,1,2-Tetrachloroethane	16.9400	0.50	0.11	20.0000	ND	84.7	71 - 133			
1,1,1-Trichloroethane	16.7100	0.50	0.21	20.0000	ND	83.6	62 - 124			
1,1,2,2-Tetrachloroethane	13.6100	0.50	0.36	20.0000	ND	68.0	50 - 131			
1,1,2-Trichloroethane	18.0400	0.50	0.25	20.0000	ND	90.2	77 - 121			
1,1-Dichloroethane	15.2300	0.50	0.09	20.0000	0.160000	75.4	52 - 130			
1,1-Dichloroethene	16.8300	0.50	0.13	20.0000	ND	84.2	61 - 136			
1,1-Dichloropropene	18.0700	0.50	0.13	20.0000	ND	90.4	80 - 128			
1,2,3-Trichloropropane	13.2600	0.50	0.39	20.0000	ND	66.3	59 - 126			
1,2,3-Trichlorobenzene	16.8000	0.50	0.18	20.0000	ND	84.0	69 - 138			
1,2,4-Trichlorobenzene	16.6600	0.50	0.16	20.0000	ND	83.3	78 - 125			
1,2,4-Trimethylbenzene	11.8400	0.50	0.14	20.0000	ND	59.2	70 - 126			M2
1,2-Dibromo-3-chloropropane	11.2600	0.50	0.41	20.0000	ND	56.3	58 - 127			M2
1,2-Dibromoethane	18.3400	0.50	0.24	20.0000	ND	91.7	76 - 120			
1,2-Dichlorobenzene	16.2500	0.50	0.20	20.0000	ND	81.2	82 - 117			M2
1,2-Dichloroethane	16.5900	0.50	0.20	20.0000	ND	83.0	66 - 126			
1,2-Dichloropropane	16.3600	0.50	0.15	20.0000	ND	81.8	70 - 117			
1,3,5-Trimethylbenzene	13.9600	0.50	0.13	20.0000	ND	69.8	71 - 125			M2



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Report To : Steve Netto

Reported : 12/18/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0140 - MSVOA_LL_W (continued)

Matrix Spike (B9K0140-MS1) - Continued

Source: 1904035-04

Prepared: 11/7/2019 Analyzed: 11/7/2019

1,3-Dichlorobenzene	15.8700	0.50	0.16	20.0000	ND	79.4	81 - 116			M2
1,3-Dichloropropane	15.3400	0.50	0.21	20.0000	ND	76.7	69 - 124			
1,4-Dichlorobenzene	15.8600	0.50	0.17	20.0000	ND	79.3	80 - 114			M2
2,2-Dichloropropane	15.9400	0.50	0.38	20.0000	ND	79.7	58 - 132			
2-Chlorotoluene	14.3400	0.50	0.11	20.0000	ND	71.7	71 - 119			
4-Chlorotoluene	14.6200	0.50	0.12	20.0000	ND	73.1	72 - 122			
4-Isopropyltoluene	14.9900	0.50	0.11	20.0000	ND	75.0	69 - 126			
Benzene	34.3400	0.50	0.13	40.0000	ND	85.8	80 - 116			
Bromobenzene	15.7600	0.50	0.21	20.0000	ND	78.8	77 - 118			
Bromodichloromethane	17.0800	0.50	0.14	20.0000	ND	85.4	73 - 118			
Bromoform	17.1800	0.50	0.20	20.0000	ND	85.9	65 - 133			
Bromomethane	19.0900	0.50	0.40	20.0000	ND	95.4	7 - 205			
Carbon tetrachloride	18.1700	0.50	0.09	20.0000	ND	90.8	63 - 133			
Chlorobenzene	16.6700	0.50	0.13	20.0000	ND	83.4	81 - 115			
Chloroethane	15.1900	0.50	0.15	20.0000	ND	76.0	66 - 141			
Chloroform	15.6400	0.50	0.11	20.0000	ND	78.2	63 - 127			
Chloromethane	15.0600	0.50	0.12	20.0000	ND	75.3	0 - 207			
cis-1,2-Dichloroethene	15.8700	0.50	0.14	20.0000	ND	79.4	64 - 126			
cis-1,3-Dichloropropene	18.9800	0.50	0.13	20.0000	ND	94.9	70 - 141			
Dibromochloromethane	16.6900	0.50	0.16	20.0000	ND	83.4	67 - 135			
Dibromomethane	17.9400	0.50	0.19	20.0000	ND	89.7	74 - 118			
Dichlorodifluoromethane	17.6000	0.50	0.18	20.0000	ND	88.0	14 - 181			
Ethylbenzene	31.7500	0.50	0.13	40.0000	ND	79.4	77 - 118			
Hexachlorobutadiene	18.0600	0.50	0.15	20.0000	ND	90.3	66 - 125			
Isopropylbenzene	15.5500	0.50	0.10	20.0000	ND	77.8	68 - 137			
m,p-Xylene	31.6100	1.0	0.19	40.0000	ND	79.0	78 - 126			
Methylene chloride	13.1100	1.0	0.71	20.0000	ND	65.6	51 - 149			
n-Butylbenzene	14.4600	0.50	0.11	20.0000	ND	72.3	63 - 127			
n-Propylbenzene	14.3300	0.50	0.10	20.0000	ND	71.6	69 - 124			
Naphthalene	12.6200	0.50	0.41	20.0000	ND	63.1	60 - 126			
o-Xylene	32.6100	0.50	0.13	40.0000	ND	81.5	79 - 126			
sec-Butylbenzene	14.9500	0.50	0.09	20.0000	ND	74.8	69 - 124			
Styrene	10.7700	0.50	0.13	20.0000	ND	53.8	80 - 127			M2
tert-Butylbenzene	15.3400	0.50	0.09	20.0000	ND	76.7	71 - 124			
Tetrachloroethene	18.2400	0.50	0.10	20.0000	ND	91.2	73 - 129			
Toluene	37.0600	0.50	0.12	40.0000	ND	92.6	78 - 121			
trans-1,2-Dichloroethene	15.0100	0.50	0.09	20.0000	ND	75.0	58 - 141			
Trichloroethene	18.7600	0.50	0.10	20.0000	ND	93.8	73 - 126			
Trichlorofluoromethane	17.1100	0.50	0.23	20.0000	ND	85.6	62 - 146			
Vinyl chloride	16.0700	0.50	0.13	20.0000	ND	80.4	61 - 137			

Surrogate: 1,2-Dichloroethane-d4

19.59

25.0000

78.4

59 - 158



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0140 - MSVOA_LL_W (continued)

Matrix Spike (B9K0140-MS1) - Continued

Source: 1904035-04

Prepared: 11/7/2019 Analyzed: 11/7/2019

Surrogate: 4-Bromofluorobenzene	21.96		25.0000		87.8	71 - 127			
Surrogate: Dibromofluoromethane	21.40		25.0000		85.6	66 - 147			
Surrogate: Toluene-d8	24.34		25.0000		97.4	77 - 138			

Matrix Spike Dup (B9K0140-MSD1)

Source: 1904035-04

Prepared: 11/7/2019 Analyzed: 11/7/2019

1,1,1,2-Tetrachloroethane	16.3400	0.50	0.11	20.0000	ND	81.7	71 - 133	3.61	20	
1,1,1-Trichloroethane	15.8000	0.50	0.21	20.0000	ND	79.0	62 - 124	5.60	20	
1,1,2,2-Tetrachloroethane	13.3100	0.50	0.36	20.0000	ND	66.6	50 - 131	2.23	20	
1,1,2-Trichloroethane	16.9900	0.50	0.25	20.0000	ND	85.0	77 - 121	5.99	20	
1,1-Dichloroethane	14.4500	0.50	0.09	20.0000	0.160000	71.4	52 - 130	5.26	20	
1,1-Dichloroethene	15.6300	0.50	0.13	20.0000	ND	78.2	61 - 136	7.39	20	
1,1-Dichloropropene	18.2100	0.50	0.13	20.0000	ND	91.0	80 - 128	0.772	20	
1,2,3-Trichloropropane	12.8200	0.50	0.39	20.0000	ND	64.1	59 - 126	3.37	20	
1,2,3-Trichlorobenzene	16.3300	0.50	0.18	20.0000	ND	81.6	69 - 138	2.84	20	
1,2,4-Trichlorobenzene	16.4100	0.50	0.16	20.0000	ND	82.0	78 - 125	1.51	20	
1,2,4-Trimethylbenzene	9.53000	0.50	0.14	20.0000	ND	47.6	70 - 126	21.6	20	M2, R
1,2-Dibromo-3-chloropropane	11.1800	0.50	0.41	20.0000	ND	55.9	58 - 127	0.713	20	M2
1,2-Dibromoethane	17.7600	0.50	0.24	20.0000	ND	88.8	76 - 120	3.21	20	
1,2-Dichlorobenzene	15.6300	0.50	0.20	20.0000	ND	78.2	82 - 117	3.89	20	M2
1,2-Dichloroethane	15.9100	0.50	0.20	20.0000	ND	79.6	66 - 126	4.18	20	
1,2-Dichloropropane	15.6200	0.50	0.15	20.0000	ND	78.1	70 - 117	4.63	20	
1,3,5-Trimethylbenzene	12.9400	0.50	0.13	20.0000	ND	64.7	71 - 125	7.58	20	M2
1,3-Dichlorobenzene	15.5300	0.50	0.16	20.0000	ND	77.6	81 - 116	2.17	20	M2
1,3-Dichloropropane	15.0300	0.50	0.21	20.0000	ND	75.2	69 - 124	2.04	20	
1,4-Dichlorobenzene	15.3600	0.50	0.17	20.0000	ND	76.8	80 - 114	3.20	20	M2
2,2-Dichloropropane	14.9300	0.50	0.38	20.0000	ND	74.6	58 - 132	6.54	20	
2-Chlorotoluene	13.8100	0.50	0.11	20.0000	ND	69.0	71 - 119	3.77	20	M2
4-Chlorotoluene	13.9700	0.50	0.12	20.0000	ND	69.8	72 - 122	4.55	20	M2
4-Isopropyltoluene	13.9200	0.50	0.11	20.0000	ND	69.6	69 - 126	7.40	20	
Benzene	32.7300	0.50	0.13	40.0000	ND	81.8	80 - 116	4.80	20	
Bromobenzene	15.4500	0.50	0.21	20.0000	ND	77.2	77 - 118	1.99	20	
Bromodichloromethane	16.3300	0.50	0.14	20.0000	ND	81.6	73 - 118	4.49	20	
Bromoform	16.5000	0.50	0.20	20.0000	ND	82.5	65 - 133	4.04	20	
Bromomethane	18.7100	0.50	0.40	20.0000	ND	93.6	7 - 205	2.01	20	
Carbon tetrachloride	17.6200	0.50	0.09	20.0000	ND	88.1	63 - 133	3.07	20	
Chlorobenzene	15.8900	0.50	0.13	20.0000	ND	79.4	81 - 115	4.79	20	M2
Chloroethane	14.6700	0.50	0.15	20.0000	ND	73.4	66 - 141	3.48	20	
Chloroform	15.1500	0.50	0.11	20.0000	ND	75.8	63 - 127	3.18	20	
Chloromethane	15.8500	0.50	0.12	20.0000	ND	79.2	0 - 207	5.11	20	
cis-1,2-Dichloroethene	15.5100	0.50	0.14	20.0000	ND	77.6	64 - 126	2.29	20	
cis-1,3-Dichloropropene	18.2100	0.50	0.13	20.0000	ND	91.0	70 - 141	4.14	20	
Dibromochloromethane	16.1700	0.50	0.16	20.0000	ND	80.8	67 - 135	3.16	20	



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0140 - MSVOA_LL_W (continued)

Matrix Spike Dup (B9K0140-MSD1) - Continued

Source: 1904035-04

Prepared: 11/7/2019 Analyzed: 11/7/2019

Dibromomethane	16.9200	0.50	0.19	20.0000	ND	84.6	74 - 118	5.85	20	
Dichlorodifluoromethane	16.8100	0.50	0.18	20.0000	ND	84.0	14 - 181	4.59	20	
Ethylbenzene	30.3700	0.50	0.13	40.0000	ND	75.9	77 - 118	4.44	20	M2
Hexachlorobutadiene	17.5600	0.50	0.15	20.0000	ND	87.8	66 - 125	2.81	20	
Isopropylbenzene	15.1500	0.50	0.10	20.0000	ND	75.8	68 - 137	2.61	20	
m,p-Xylene	29.5700	1.0	0.19	40.0000	ND	73.9	78 - 126	6.67	20	M2
Methylene chloride	12.6000	1.0	0.71	20.0000	ND	63.0	51 - 149	3.97	20	
n-Butylbenzene	13.8900	0.50	0.11	20.0000	ND	69.4	63 - 127	4.02	20	
n-Propylbenzene	13.7200	0.50	0.10	20.0000	ND	68.6	69 - 124	4.35	20	M2
Naphthalene	11.6800	0.50	0.41	20.0000	ND	58.4	60 - 126	7.74	20	M2
o-Xylene	31.4700	0.50	0.13	40.0000	ND	78.7	79 - 126	3.56	20	M2
sec-Butylbenzene	14.3500	0.50	0.09	20.0000	ND	71.8	69 - 124	4.10	20	
Styrene	7.67000	0.50	0.13	20.0000	ND	38.4	80 - 127	33.6	20	M2, R
tert-Butylbenzene	14.9700	0.50	0.09	20.0000	ND	74.8	71 - 124	2.44	20	
Tetrachloroethene	17.5700	0.50	0.10	20.0000	ND	87.8	73 - 129	3.74	20	
Toluene	35.3900	0.50	0.12	40.0000	ND	88.5	78 - 121	4.61	20	
trans-1,2-Dichloroethene	14.3300	0.50	0.09	20.0000	ND	71.6	58 - 141	4.64	20	
Trichloroethene	17.8900	0.50	0.10	20.0000	ND	89.4	73 - 126	4.75	20	
Trichlorofluoromethane	16.3600	0.50	0.23	20.0000	ND	81.8	62 - 146	4.48	20	
Vinyl chloride	15.5400	0.50	0.13	20.0000	ND	77.7	61 - 137	3.35	20	
Surrogate: 1,2-Dichloroethane-d4	18.87			25.0000		75.5	59 - 158			
Surrogate: 4-Bromofluorobenzene	21.40			25.0000		85.6	71 - 127			
Surrogate: Dibromofluoromethane	20.71			25.0000		82.8	66 - 147			
Surrogate: Toluene-d8	23.86			25.0000		95.4	77 - 138			



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Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD RPD	RPD Limit	Notes
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Batch B9K0170 - MSVOA_LL_W

Blank (B9K0170-BLK1)

Prepared: 11/11/2019 Analyzed: 11/11/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.21
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.40
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.18
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD RPD	RPD Limit	Notes
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Batch B9K0170 - MSVOA_LL_W (continued)

Blank (B9K0170-BLK1) - Continued

Prepared: 11/11/2019 Analyzed: 11/11/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.23
Vinyl chloride	ND	0.50	0.13

Surrogate: 1,2-Dichloroethane-d4	20.42	25.0000	81.7	59 - 158
Surrogate: 4-Bromofluorobenzene	24.56	25.0000	98.2	71 - 127
Surrogate: Dibromofluoromethane	22.35	25.0000	89.4	66 - 147
Surrogate: Toluene-d8	25.46	25.0000	102	77 - 138

LCS (B9K0170-BS1)

Prepared: 11/11/2019 Analyzed: 11/11/2019

1,1,1,2-Tetrachloroethane	17.6200	0.50	0.11	20.0000	88.1	71 - 133
1,1,1-Trichloroethane	14.9600	0.50	0.21	20.0000	74.8	62 - 124
1,1,2,2-Tetrachloroethane	13.2500	0.50	0.36	20.0000	66.2	50 - 131
1,1,2-Trichloroethane	16.1000	0.50	0.25	20.0000	80.5	77 - 121
1,1-Dichloroethane	13.7900	0.50	0.09	20.0000	69.0	52 - 130
1,1-Dichloroethene	15.8600	0.50	0.13	20.0000	79.3	61 - 136
1,1-Dichloropropene	18.0700	0.50	0.13	20.0000	90.4	80 - 128
1,2,3-Trichloropropane	12.7900	0.50	0.39	20.0000	64.0	59 - 126
1,2,3-Trichlorobenzene	17.5700	0.50	0.18	20.0000	87.8	69 - 138
1,2,4-Trichlorobenzene	17.6600	0.50	0.16	20.0000	88.3	78 - 125
1,2,4-Trimethylbenzene	15.6400	0.50	0.14	20.0000	78.2	70 - 126
1,2-Dibromo-3-chloropropane	11.5400	0.50	0.41	20.0000	57.7	58 - 127
1,2-Dibromoethane	16.8800	0.50	0.24	20.0000	84.4	76 - 120
1,2-Dichlorobenzene	16.5000	0.50	0.20	20.0000	82.5	82 - 117
1,2-Dichloroethane	15.1800	0.50	0.20	20.0000	75.9	66 - 126
1,2-Dichloropropane	15.4100	0.50	0.15	20.0000	77.0	70 - 117
1,3,5-Trimethylbenzene	15.8000	0.50	0.13	20.0000	79.0	71 - 125
1,3-Dichlorobenzene	16.7200	0.50	0.16	20.0000	83.6	81 - 116
1,3-Dichloropropane	14.9600	0.50	0.21	20.0000	74.8	69 - 124

L4



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0170 - MSVOA_LL_W (continued)

LCS (B9K0170-BS1) - Continued

Prepared: 11/11/2019 Analyzed: 11/11/2019

1,4-Dichlorobenzene	16.7200	0.50	0.17	20.0000		83.6	80 - 114		
2,2-Dichloropropane	15.0100	0.50	0.38	20.0000		75.0	58 - 132		
2-Chlorotoluene	15.1700	0.50	0.11	20.0000		75.8	71 - 119		
4-Chlorotoluene	15.2500	0.50	0.12	20.0000		76.2	72 - 122		
4-Isopropyltoluene	16.3100	0.50	0.11	20.0000		81.6	69 - 126		
Benzene	31.7900	0.50	0.13	40.0000		79.5	80 - 116		L4
Bromobenzene	16.6300	0.50	0.21	20.0000		83.2	77 - 118		
Bromodichloromethane	16.2500	0.50	0.14	20.0000		81.2	73 - 118		
Bromoform	17.4300	0.50	0.20	20.0000		87.2	65 - 133		
Bromomethane	19.7300	0.50	0.40	20.0000		98.6	7 - 205		
Carbon tetrachloride	17.7500	0.50	0.09	20.0000		88.8	63 - 133		
Chlorobenzene	17.2200	0.50	0.13	20.0000		86.1	86 - 113		
Chloroethane	13.8400	0.50	0.15	20.0000		69.2	66 - 141		
Chloroform	14.3800	0.50	0.11	20.0000		71.9	63 - 127		
Chloromethane	14.2500	0.50	0.12	20.0000		71.2	0 - 207		
cis-1,2-Dichloroethene	14.5200	0.50	0.14	20.0000		72.6	64 - 126		
cis-1,3-Dichloropropene	18.3200	0.50	0.13	20.0000		91.6	70 - 141		
Dibromochloromethane	17.0400	0.50	0.16	20.0000		85.2	67 - 135		
Dibromomethane	16.0700	0.50	0.19	20.0000		80.4	74 - 118		
Dichlorodifluoromethane	16.3000	0.50	0.18	20.0000		81.5	14 - 181		
Ethylbenzene	32.5100	0.50	0.13	40.0000		81.3	77 - 118		
Hexachlorobutadiene	19.7100	0.50	0.15	20.0000		98.6	66 - 125		
Isopropylbenzene	16.3700	0.50	0.10	20.0000		81.8	68 - 137		
m,p-Xylene	33.4800	1.0	0.19	40.0000		83.7	78 - 126		
Methylene chloride	16.0100	1.0	0.71	20.0000		80.0	51 - 149		
n-Butylbenzene	15.6000	0.50	0.11	20.0000		78.0	63 - 127		
n-Propylbenzene	15.0100	0.50	0.10	20.0000		75.0	69 - 124		
Naphthalene	14.2200	0.50	0.41	20.0000		71.1	60 - 126		
o-Xylene	33.7700	0.50	0.13	40.0000		84.4	79 - 126		
sec-Butylbenzene	15.8000	0.50	0.09	20.0000		79.0	69 - 124		
Styrene	17.1200	0.50	0.13	20.0000		85.6	80 - 127		
tert-Butylbenzene	16.2900	0.50	0.09	20.0000		81.4	71 - 124		
Tetrachloroethene	19.0500	0.50	0.10	20.0000		95.2	73 - 129		
Toluene	34.8500	0.50	0.12	40.0000		87.1	78 - 121		
trans-1,2-Dichloroethene	14.0500	0.50	0.09	20.0000		70.2	58 - 141		
Trichloroethene	18.1900	0.50	0.10	20.0000		91.0	73 - 126		
Trichlorofluoromethane	15.9100	0.50	0.23	20.0000		79.6	62 - 146		
Vinyl chloride	15.0900	0.50	0.13	20.0000		75.4	61 - 137		
Surrogate: 1,2-Dichloroethane-d4	19.84			25.0000		79.4	59 - 158		
Surrogate: 4-Bromofluorobenzene	25.25			25.0000		101	71 - 127		
Surrogate: Dibromofluoromethane	21.61			25.0000		86.4	66 - 147		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0170 - MSVOA_LL_W (continued)

LCS (B9K0170-BS1) - Continued

Prepared: 11/11/2019 Analyzed: 11/11/2019

Surrogate: Toluene-d8 26.31 25.0000 105 77 - 138

LCS Dup (B9K0170-BSD1)

Prepared: 11/11/2019 Analyzed: 11/11/2019

1,1,1,2-Tetrachloroethane	19.2300	0.50	0.11	20.0000	96.2	71 - 133	8.74	20	
1,1,1-Trichloroethane	16.9200	0.50	0.21	20.0000	84.6	62 - 124	12.3	20	
1,1,2,2-Tetrachloroethane	15.7600	0.50	0.36	20.0000	78.8	50 - 131	17.3	20	
1,1,2-Trichloroethane	19.2200	0.50	0.25	20.0000	96.1	77 - 121	17.7	20	
1,1-Dichloroethane	15.0900	0.50	0.09	20.0000	75.4	52 - 130	9.00	20	
1,1-Dichloroethene	17.8000	0.50	0.13	20.0000	89.0	61 - 136	11.5	20	
1,1-Dichloropropene	20.7100	0.50	0.13	20.0000	104	80 - 128	13.6	20	
1,2,3-Trichloropropane	15.5200	0.50	0.39	20.0000	77.6	59 - 126	19.3	20	
1,2,3-Trichlorobenzene	19.8400	0.50	0.18	20.0000	99.2	69 - 138	12.1	20	
1,2,4-Trichlorobenzene	19.8200	0.50	0.16	20.0000	99.1	78 - 125	11.5	20	
1,2,4-Trimethylbenzene	17.2800	0.50	0.14	20.0000	86.4	70 - 126	9.96	20	
1,2-Dibromo-3-chloropropane	14.2300	0.50	0.41	20.0000	71.2	58 - 127	20.9	20	R
1,2-Dibromoethane	19.8600	0.50	0.24	20.0000	99.3	76 - 120	16.2	20	
1,2-Dichlorobenzene	18.5500	0.50	0.20	20.0000	92.8	82 - 117	11.7	20	
1,2-Dichloroethane	17.5200	0.50	0.20	20.0000	87.6	66 - 126	14.3	20	
1,2-Dichloropropane	17.5500	0.50	0.15	20.0000	87.8	70 - 117	13.0	20	
1,3,5-Trimethylbenzene	17.2700	0.50	0.13	20.0000	86.4	71 - 125	8.89	20	
1,3-Dichlorobenzene	18.8500	0.50	0.16	20.0000	94.2	81 - 116	12.0	20	
1,3-Dichloropropane	17.3000	0.50	0.21	20.0000	86.5	69 - 124	14.5	20	
1,4-Dichlorobenzene	18.2700	0.50	0.17	20.0000	91.4	80 - 114	8.86	20	
2,2-Dichloropropane	16.2400	0.50	0.38	20.0000	81.2	58 - 132	7.87	20	
2-Chlorotoluene	16.8800	0.50	0.11	20.0000	84.4	71 - 119	10.7	20	
4-Chlorotoluene	16.8100	0.50	0.12	20.0000	84.0	72 - 122	9.73	20	
4-Isopropyltoluene	17.9000	0.50	0.11	20.0000	89.5	69 - 126	9.30	20	
Benzene	36.3800	0.50	0.13	40.0000	91.0	80 - 116	13.5	20	
Bromobenzene	18.5800	0.50	0.21	20.0000	92.9	77 - 118	11.1	20	
Bromodichloromethane	18.6000	0.50	0.14	20.0000	93.0	73 - 118	13.5	20	
Bromoform	20.2900	0.50	0.20	20.0000	101	65 - 133	15.2	20	
Bromomethane	21.6300	0.50	0.40	20.0000	108	7 - 205	9.19	20	
Carbon tetrachloride	19.5500	0.50	0.09	20.0000	97.8	63 - 133	9.65	20	
Chlorobenzene	18.6800	0.50	0.13	20.0000	93.4	86 - 113	8.13	20	
Chloroethane	15.3900	0.50	0.15	20.0000	77.0	66 - 141	10.6	20	
Chloroform	15.7000	0.50	0.11	20.0000	78.5	63 - 127	8.78	20	
Chloromethane	15.0800	0.50	0.12	20.0000	75.4	0 - 207	5.66	20	
cis-1,2-Dichloroethene	16.1900	0.50	0.14	20.0000	81.0	64 - 126	10.9	20	
cis-1,3-Dichloropropene	20.6500	0.50	0.13	20.0000	103	70 - 141	12.0	20	
Dibromochloromethane	19.7200	0.50	0.16	20.0000	98.6	67 - 135	14.6	20	
Dibromomethane	18.9300	0.50	0.19	20.0000	94.6	74 - 118	16.3	20	
Dichlorodifluoromethane	17.8000	0.50	0.18	20.0000	89.0	14 - 181	8.80	20	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0170 - MSVOA_LL_W (continued)

LCS Dup (B9K0170-BSD1) - Continued

Prepared: 11/11/2019 Analyzed: 11/11/2019

Ethylbenzene	36.3800	0.50	0.13	40.0000		91.0	77 - 118	11.2	20	
Hexachlorobutadiene	21.8100	0.50	0.15	20.0000		109	66 - 125	10.1	20	
Isopropylbenzene	18.3000	0.50	0.10	20.0000		91.5	68 - 137	11.1	20	
m,p-Xylene	36.9000	1.0	0.19	40.0000		92.2	78 - 126	9.72	20	
Methylene chloride	17.5200	1.0	0.71	20.0000		87.6	51 - 149	9.01	20	
n-Butylbenzene	17.0600	0.50	0.11	20.0000		85.3	63 - 127	8.94	20	
n-Propylbenzene	16.6500	0.50	0.10	20.0000		83.2	69 - 124	10.4	20	
Naphthalene	17.1300	0.50	0.41	20.0000		85.6	60 - 126	18.6	20	
o-Xylene	37.5700	0.50	0.13	40.0000		93.9	79 - 126	10.7	20	
sec-Butylbenzene	17.4200	0.50	0.09	20.0000		87.1	69 - 124	9.75	20	
Styrene	19.0100	0.50	0.13	20.0000		95.0	80 - 127	10.5	20	
tert-Butylbenzene	18.1300	0.50	0.09	20.0000		90.6	71 - 124	10.7	20	
Tetrachloroethene	20.7400	0.50	0.10	20.0000		104	73 - 129	8.49	20	
Toluene	39.8300	0.50	0.12	40.0000		99.6	78 - 121	13.3	20	
trans-1,2-Dichloroethene	15.7400	0.50	0.09	20.0000		78.7	58 - 141	11.3	20	
Trichloroethene	20.4500	0.50	0.10	20.0000		102	73 - 126	11.7	20	
Trichlorofluoromethane	17.4600	0.50	0.23	20.0000		87.3	62 - 146	9.29	20	
Vinyl chloride	16.8400	0.50	0.13	20.0000		84.2	61 - 137	11.0	20	
Surrogate: 1,2-Dichloroethane-d4	19.80			25.0000		79.2	59 - 158			
Surrogate: 4-Bromofluorobenzene	25.12			25.0000		100	71 - 127			
Surrogate: Dibromofluoromethane	21.73			25.0000		86.9	66 - 147			
Surrogate: Toluene-d8	26.05			25.0000		104	77 - 138			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

1,4-Dioxane by EPA 8270: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0222 - MSSEMI_W

Blank (B9K0222-BLK2)

Prepared: 11/11/2019 Analyzed: 11/13/2019

1,4-Dioxane	ND	2.0	0.84						
Surrogate: 1,2-Dichlorobenzene-d4	62.46			100.000	62.5	34 - 188			
Surrogate: 2-Fluorobiphenyl	55.14			100.000	55.1	39 - 108			
Surrogate: 4-Terphenyl-d14	80.81			100.000	80.8	71 - 131			
Surrogate: Nitrobenzene-d5	68.17			100.000	68.2	32 - 106			

LCS (B9K0222-BS2)

Prepared: 11/11/2019 Analyzed: 11/13/2019

1,4-Dioxane	99.8400	2.0	0.84	100.000	99.8	40 - 159			
Surrogate: 1,2-Dichlorobenzene-d4	47.64			100.000	47.6	34 - 188			
Surrogate: 2-Fluorobiphenyl	59.07			100.000	59.1	39 - 108			
Surrogate: 4-Terphenyl-d14	142.0			100.000	142	71 - 131			S15
Surrogate: Nitrobenzene-d5	72.52			100.000	72.5	32 - 106			

LCS Dup (B9K0222-BSD2)

Prepared: 11/11/2019 Analyzed: 11/13/2019

1,4-Dioxane	97.5600	2.0	0.84	100.000	97.6	40 - 159	2.31	20	
Surrogate: 1,2-Dichlorobenzene-d4	50.06			100.000	50.1	34 - 188			
Surrogate: 2-Fluorobiphenyl	60.83			100.000	60.8	39 - 108			
Surrogate: 4-Terphenyl-d14	141.8			100.000	142	71 - 131			S15
Surrogate: Nitrobenzene-d5	76.00			100.000	76.0	32 - 106			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0223 - MSSEMI_W

Blank (B9K0223-BLK1)

Prepared: 11/11/2019 Analyzed: 11/12/2019

1,4-Dioxane	ND	0.20	0.05						
Surrogate: 1,2-Dichlorobenzene-d4	0.7709			1.00000		77.1	22 - 117		
Surrogate: 2-Fluorobiphenyl	1.334			1.00000		133	20 - 131		S1
Surrogate: 4-Terphenyl-d14	1.199			1.00000		120	24 - 135		
Surrogate: Nitrobenzene-d5	0.7524			1.00000		75.2	6 - 124		

LCS (B9K0223-BS1)

Prepared: 11/11/2019 Analyzed: 11/12/2019

1,4-Dioxane	1.18922	0.20	0.05	1.00000		119	64 - 129		
Surrogate: 1,2-Dichlorobenzene-d4	0.6474			1.00000		64.7	22 - 117		
Surrogate: 2-Fluorobiphenyl	1.283			1.00000		128	20 - 131		
Surrogate: 4-Terphenyl-d14	1.284			1.00000		128	24 - 135		
Surrogate: Nitrobenzene-d5	0.6484			1.00000		64.8	6 - 124		

LCS Dup (B9K0223-BSD1)

Prepared: 11/11/2019 Analyzed: 11/12/2019

1,4-Dioxane	1.19406	0.20	0.05	1.00000		119	64 - 129	0.406	20
Surrogate: 1,2-Dichlorobenzene-d4	0.6592			1.00000		65.9	22 - 117		
Surrogate: 2-Fluorobiphenyl	1.293			1.00000		129	20 - 131		
Surrogate: 4-Terphenyl-d14	1.258			1.00000		126	24 - 135		
Surrogate: Nitrobenzene-d5	0.6534			1.00000		65.3	6 - 124		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 12/18/2019

Notes and Definitions

S15	Surrogate recovery outside laboratory acceptance limit. However, the surrogate is not associated with the target analyte.
S1	Surrogate recovery was above laboratory acceptance limit. No associated target analyte was detected in the sample.
R	RPD value outside acceptance criteria. Calculation is based on raw values.
M2	Matrix spike recovery outside of acceptance limit due to possible matrix interference. The analytical batch was validated by the laboratory control sample.
L4	Laboratory Control Sample outside of control limit but within Marginal Exceedance (ME) limit.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.

Laboratory Report

November 27, 2019

Advanced Technology Laboratories
PO Box 92797
Long Beach, CA 90809-2797

Attn: Tina Nguyen

Element Job No: 235417
Purchase Order: COD - CC
Project Name: 1904035 / Groundwater
Samples Received: 2
Date Received: 11-07-19

Analysis	Page
Bromate by SOP 5600, Rev 3	2



Michael Shelton
Technical Director



Albert Alvarez
Senior Chemist

Bromate by SOP 5600, Rev 3
Ion Chromatography-Tandem Mass Spectrometry

Sample preparation: An aliquot of sample was spiked with internal standard (bromate-¹⁸O₃), and diluted with water. The sample solutions were analyzed using IC-MS/MS.

Parts Per Billion (µg/L)

<u>Sample ID</u>	<u>Result</u>
ATL Lab#: 1904035-04 / POX	ND
ATL Lab#: 1904035-06 / INF	ND
Method Blank	ND
Detection Limit	0.5

Date Analyzed: 11-22-19

Quality Control Summary

Sample ID: ATL Lab#: 1904035-04 / POX

<u>Analyte</u>	<u>Sample Result</u>	<u>Spike Conc</u>	<u>Spike Result</u>	<u>Spike % Rec</u>	<u>Spike Duplicate</u>	<u>Duplicate % Rec</u>	<u>RPD</u>
Bromate	ND	10.0	10.1	101	11.1	111	10
QC Guidelines				80-120		80-120	NMT 15

ADVANCED TECHNOLOGY
 LABORATORIES

SUBCONTRACT ORDER

Work Order: 1904035

SENDING LABORATORY:

Advanced Technology Laboratories
 3275 Walnut Avenue
 Signal Hill, CA 90755
 Phone: 562.989.4045
 Fax: 562.989.6348
 Project Manager: Tina Nguyen

RECEIVING LABORATORY:

Element Materials Technology
 9240 Santa Fe Springs Road
 Santa Fe Springs, CA 90670
 Phone : (562) 948-2225
 Fax: (562) 948-5850
 PO#: SC14208- STANDARD TAT

✗

Sampler: Ruben Sanchez

IMPORTANT : Please include Work Order # and PO # in your invoice.

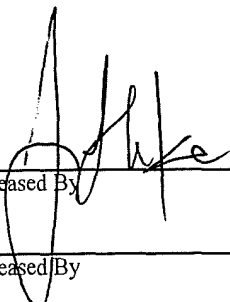
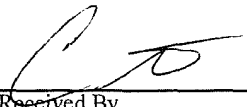
Analysis	Due	Expires	Sampled	Comments
ATL Lab#: 1904035-04 [✓] ① / POX Bromate_ICMS/MS_SUB [Bromate by IC-MS/MS] 1-Poly Unpres - 125mL	11/21/19 17:00	Groundwater 12/04/19 08:40	11/06/19 08:40	
ATL Lab#: 1904035-06 [✓] ② / INF Bromate_ICMS/MS_SUB [Bromate by IC-MS/MS] 1-Poly Unpres - 125mL	11/21/19 17:00	Groundwater 12/04/19 08:55	11/06/19 08:55	

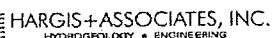
11-07-19 CR: ALSO HAS.

① H

② F

235417

 Released By	11/7/19 13:30 Date	 Received By	11-07-19 1:30 PM Date



PROJECT: Raytheon Main GETS Monthly Sample

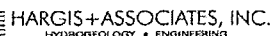
Project Manager Steve Netto
QA Manager Ross Horton
Phone 858.455.6500
Fax 858.455.6533

Total number of containers per analysis:				24	5	2	1	1
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time					
<i>[Signature]</i> / H+A	11-6-19 10:55	<i>[Signature]</i> H+A	11-6-19 10:55					
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time					
<i>[Signature]</i> H+A	15-142 11-6-19	<i>[Signature]</i>	11-6-19 1542					

Send Results to:
Steve Netto & Ross Horton
9171 Towne Centre Drive
Suite 375
San Diego, CA 92122
Ph: 858.455.6500
snetto@hargis.com
rhorton@hargis.com

1. Fill out form completely and sign only after verified for completeness
2. Complete in ballpoint pen. Draw one line through error, initial and date correction
3. Indicate the number of sample containers in analytical request space; indicate choice with ✓ or x
4. Note applicable preservatives, special instructions, and deviations from typical environmental samples.
5. Consult project QA documents for specific instructions.

ICE



Page 1 of 1

Fax 858.455.6533

Total No. of Containers: 8

- Send Results to:
Steve Netto & Ross Horton
 9171 Towne Centre Drive
 Suite 375
 San Diego, CA 92122
 Ph: 858.455.6500
snetto@hargis.com
rhorton@hargis.com

Instructions

completely and sign

ballpoint pen. Draw

3. Indicate the

4. Note applicable

5. Consult project QA documents for specific instructions.

1.8 Temperature on receipt
TCE



December 04, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1904232

Client Reference : Raytheon Main GETS Mid Month Sample, 532.15

Enclosed are the results for sample(s) received on November 21, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read "Edgar Caballero", with a small "Ar" written below the main signature.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-112119	1904232-01	Lab prepared water	11/21/19 8:00	11/21/19 15:50
CEFF	1904232-02	Groundwater	11/21/19 8:15	11/21/19 15:50
CBT	1904232-03	Groundwater	11/21/19 8:20	11/21/19 15:50
POX	1904232-04	Groundwater	11/21/19 8:30	11/21/19 15:50
INF	1904232-05	Groundwater	11/21/19 8:35	11/21/19 15:50
EW-02	1904232-06	Groundwater	11/21/19 9:05	11/21/19 15:50
MW-29	1904232-07	Groundwater	11/21/19 9:25	11/21/19 15:50



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: TB-112119

Lab ID: 1904232-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
1,1,1-Trichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
1,1,2-Trichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
1,1-Dichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
1,1-Dichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
1,1-Dichloropropene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
1,2,3-Trichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
1,2,3-Trichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
1,2,4-Trichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
1,2,4-Trimethylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
1,2-Dibromoethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
1,2-Dichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
1,2-Dichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
1,2-Dichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
1,3,5-Trimethylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
1,3-Dichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
1,3-Dichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
1,4-Dichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
2,2-Dichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
2-Chlorotoluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
4-Chlorotoluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
4-Isopropyltoluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Benzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Bromobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Bromodichloromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Bromoform	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Bromomethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Carbon tetrachloride	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Chlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Chloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Chloroform	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Chloromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
cis-1,2-Dichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
cis-1,3-Dichloropropene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Dibromochloromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: TB-112119

Lab ID: 1904232-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Dichlorodifluoromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Ethylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Hexachlorobutadiene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Isopropylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
m,p-Xylene	ND	1.0	1	B9K0656	11/27/2019	11/27/19 13:28	
Methylene chloride	ND	1.0	1	B9K0656	11/27/2019	11/27/19 13:28	
n-Butylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
n-Propylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Naphthalene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
o-Xylene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
sec-Butylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Styrene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
tert-Butylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Tetrachloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Toluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
trans-1,2-Dichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Trichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Trichlorofluoromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Vinyl chloride	ND	0.50	1	B9K0656	11/27/2019	11/27/19 13:28	
Surrogate: 1,2-Dichloroethane-d4	112 %	59 - 158		B9K0656	11/27/2019	11/27/19 13:28	
Surrogate: 4-Bromofluorobenzene	103 %	71 - 127		B9K0656	11/27/2019	11/27/19 13:28	
Surrogate: Dibromofluoromethane	105 %	66 - 147		B9K0656	11/27/2019	11/27/19 13:28	
Surrogate: Toluene-d8	105 %	77 - 138		B9K0656	11/27/2019	11/27/19 13:28	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: CEFF

Lab ID: 1904232-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
1,1,1-Trichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
1,1,2-Trichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
1,1-Dichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
1,1-Dichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
1,1-Dichloropropene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
1,2,3-Trichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
1,2,3-Trichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
1,2,4-Trichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
1,2,4-Trimethylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
1,2-Dibromoethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
1,2-Dichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
1,2-Dichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
1,2-Dichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
1,3,5-Trimethylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
1,3-Dichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
1,3-Dichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
1,4-Dichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
2,2-Dichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
2-Chlorotoluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
4-Chlorotoluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
4-Isopropyltoluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Benzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Bromobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Bromodichloromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Bromoform	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Bromomethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Carbon tetrachloride	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Chlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Chloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Chloroform	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Chloromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
cis-1,2-Dichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
cis-1,3-Dichloropropene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Dibromochloromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: CEFF

Lab ID: 1904232-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Dichlorodifluoromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Ethylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Hexachlorobutadiene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Isopropylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
m,p-Xylene	ND	1.0	1	B9K0656	11/27/2019	11/27/19 15:44	
Methylene chloride	ND	1.0	1	B9K0656	11/27/2019	11/27/19 15:44	
n-Butylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
n-Propylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Naphthalene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
o-Xylene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
sec-Butylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Styrene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
tert-Butylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Tetrachloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Toluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
trans-1,2-Dichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Trichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Trichlorofluoromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Vinyl chloride	ND	0.50	1	B9K0656	11/27/2019	11/27/19 15:44	
Surrogate: 1,2-Dichloroethane-d4	116 %	59 - 158		B9K0656	11/27/2019	11/27/19 15:44	
Surrogate: 4-Bromofluorobenzene	106 %	71 - 127		B9K0656	11/27/2019	11/27/19 15:44	
Surrogate: Dibromofluoromethane	108 %	66 - 147		B9K0656	11/27/2019	11/27/19 15:44	
Surrogate: Toluene-d8	108 %	77 - 138		B9K0656	11/27/2019	11/27/19 15:44	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: CEFF

Lab ID: 1904232-02

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9K0661	11/26/2019	11/27/19 14:19	
Surrogate: 1,2-Dichlorobenzene-d4	107 %	22 - 117		B9K0661	11/26/2019	11/27/19 14:19	
Surrogate: 2-Fluorobiphenyl	118 %	20 - 131		B9K0661	11/26/2019	11/27/19 14:19	
Surrogate: 4-Terphenyl-d14	136 %	24 - 135		B9K0661	11/26/2019	11/27/19 14:19	S1
Surrogate: Nitrobenzene-d5	129 %	6 - 124		B9K0661	11/26/2019	11/27/19 14:19	S1



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: CBT

Lab ID: 1904232-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
1,1,1-Trichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
1,1,2-Trichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
1,1-Dichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
1,1-Dichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
1,1-Dichloropropene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
1,2,3-Trichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
1,2,3-Trichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
1,2,4-Trichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
1,2,4-Trimethylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
1,2-Dibromoethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
1,2-Dichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
1,2-Dichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
1,2-Dichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
1,3,5-Trimethylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
1,3-Dichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
1,3-Dichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
1,4-Dichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
2,2-Dichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
2-Chlorotoluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
4-Chlorotoluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
4-Isopropyltoluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Benzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Bromobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Bromodichloromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Bromoform	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Bromomethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Carbon tetrachloride	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Chlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Chloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Chloroform	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Chloromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
cis-1,2-Dichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
cis-1,3-Dichloropropene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Dibromochloromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: CBT

Lab ID: 1904232-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Dichlorodifluoromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Ethylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Hexachlorobutadiene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Isopropylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
m,p-Xylene	ND	1.0	1	B9K0656	11/27/2019	11/27/19 16:07	
Methylene chloride	ND	1.0	1	B9K0656	11/27/2019	11/27/19 16:07	
n-Butylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
n-Propylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Naphthalene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
o-Xylene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
sec-Butylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Styrene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
tert-Butylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Tetrachloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Toluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
trans-1,2-Dichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Trichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Trichlorofluoromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Vinyl chloride	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:07	
Surrogate: 1,2-Dichloroethane-d4	118 %	59 - 158		B9K0656	11/27/2019	11/27/19 16:07	
Surrogate: 4-Bromofluorobenzene	105 %	71 - 127		B9K0656	11/27/2019	11/27/19 16:07	
Surrogate: Dibromofluoromethane	109 %	66 - 147		B9K0656	11/27/2019	11/27/19 16:07	
Surrogate: Toluene-d8	106 %	77 - 138		B9K0656	11/27/2019	11/27/19 16:07	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: CBT

Lab ID: 1904232-03

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9K0661	11/26/2019	11/27/19 14:45	
Surrogate: 1,2-Dichlorobenzene-d4	99.7 %	22 - 117		B9K0661	11/26/2019	11/27/19 14:45	
Surrogate: 2-Fluorobiphenyl	112 %	20 - 131		B9K0661	11/26/2019	11/27/19 14:45	
Surrogate: 4-Terphenyl-d14	133 %	24 - 135		B9K0661	11/26/2019	11/27/19 14:45	
Surrogate: Nitrobenzene-d5	121 %	6 - 124		B9K0661	11/26/2019	11/27/19 14:45	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: POX

Lab ID: 1904232-04

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
1,1,1-Trichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
1,1,2-Trichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
1,1-Dichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
1,1-Dichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
1,1-Dichloropropene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
1,2,3-Trichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
1,2,3-Trichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
1,2,4-Trichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
1,2,4-Trimethylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
1,2-Dibromoethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
1,2-Dichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
1,2-Dichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
1,2-Dichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
1,3,5-Trimethylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
1,3-Dichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
1,3-Dichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
1,4-Dichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
2,2-Dichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
2-Chlorotoluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
4-Chlorotoluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
4-Isopropyltoluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Benzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Bromobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Bromodichloromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Bromoform	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Bromomethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Carbon tetrachloride	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Chlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Chloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Chloroform	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Chloromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
cis-1,2-Dichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
cis-1,3-Dichloropropene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Dibromochloromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: POX

Lab ID: 1904232-04

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Dichlorodifluoromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Ethylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Hexachlorobutadiene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Isopropylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
m,p-Xylene	ND	1.0	1	B9K0656	11/27/2019	11/27/19 16:29	
Methylene chloride	ND	1.0	1	B9K0656	11/27/2019	11/27/19 16:29	
n-Butylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
n-Propylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Naphthalene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
o-Xylene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
sec-Butylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Styrene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
tert-Butylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Tetrachloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Toluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
trans-1,2-Dichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Trichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Trichlorofluoromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Vinyl chloride	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:29	
Surrogate: 1,2-Dichloroethane-d4	118 %	59 - 158		B9K0656	11/27/2019	11/27/19 16:29	
Surrogate: 4-Bromofluorobenzene	103 %	71 - 127		B9K0656	11/27/2019	11/27/19 16:29	
Surrogate: Dibromofluoromethane	109 %	66 - 147		B9K0656	11/27/2019	11/27/19 16:29	
Surrogate: Toluene-d8	108 %	77 - 138		B9K0656	11/27/2019	11/27/19 16:29	



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San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: POX

Lab ID: 1904232-04

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9K0661	11/26/2019	11/27/19 15:11	
Surrogate: 1,2-Dichlorobenzene-d4	108 %	22 - 117		B9K0661	11/26/2019	11/27/19 15:11	
Surrogate: 2-Fluorobiphenyl	119 %	20 - 131		B9K0661	11/26/2019	11/27/19 15:11	
Surrogate: 4-Terphenyl-d14	128 %	24 - 135		B9K0661	11/26/2019	11/27/19 15:11	
Surrogate: Nitrobenzene-d5	128 %	6 - 124		B9K0661	11/26/2019	11/27/19 15:11	S1



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: INF

Lab ID: 1904232-05

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
1,1,1-Trichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
1,1,2-Trichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
1,1-Dichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
1,1-Dichloroethene	59	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
1,1-Dichloropropene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
1,2,3-Trichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
1,2,3-Trichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
1,2,4-Trichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
1,2,4-Trimethylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
1,2-Dibromoethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
1,2-Dichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
1,2-Dichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
1,2-Dichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
1,3,5-Trimethylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
1,3-Dichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
1,3-Dichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
1,4-Dichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
2,2-Dichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
2-Chlorotoluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
4-Chlorotoluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
4-Isopropyltoluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Benzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Bromobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Bromodichloromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Bromoform	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Bromomethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Carbon tetrachloride	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Chlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Chloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Chloroform	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Chloromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
cis-1,2-Dichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
cis-1,3-Dichloropropene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Dibromochloromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: INF

Lab ID: 1904232-05

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Dichlorodifluoromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Ethylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Hexachlorobutadiene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Isopropylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
m,p-Xylene	ND	1.0	1	B9K0656	11/27/2019	11/27/19 16:52	
Methylene chloride	ND	1.0	1	B9K0656	11/27/2019	11/27/19 16:52	
n-Butylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
n-Propylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Naphthalene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
o-Xylene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
sec-Butylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Styrene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
tert-Butylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Tetrachloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Toluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
trans-1,2-Dichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Trichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Trichlorofluoromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Vinyl chloride	ND	0.50	1	B9K0656	11/27/2019	11/27/19 16:52	
Surrogate: 1,2-Dichloroethane-d4	116 %	59 - 158		B9K0656	11/27/2019	11/27/19 16:52	
Surrogate: 4-Bromofluorobenzene	104 %	71 - 127		B9K0656	11/27/2019	11/27/19 16:52	
Surrogate: Dibromofluoromethane	107 %	66 - 147		B9K0656	11/27/2019	11/27/19 16:52	
Surrogate: Toluene-d8	107 %	77 - 138		B9K0656	11/27/2019	11/27/19 16:52	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: INF

Lab ID: 1904232-05

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	36	2.0	1	B9K0679	11/27/2019	12/02/19 20:49	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>55.0 %</i>	<i>34 - 188</i>		B9K0679	11/27/2019	<i>12/02/19 20:49</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>74.2 %</i>	<i>39 - 108</i>		B9K0679	11/27/2019	<i>12/02/19 20:49</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>87.8 %</i>	<i>71 - 131</i>		B9K0679	11/27/2019	<i>12/02/19 20:49</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>65.0 %</i>	<i>32 - 106</i>		B9K0679	11/27/2019	<i>12/02/19 20:49</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: EW-02

Lab ID: 1904232-06

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
1,1,1-Trichloroethane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
1,1,2-Trichloroethane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
1,1-Dichloroethane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
1,1-Dichloroethene	18	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
1,1-Dichloropropene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
1,2,3-Trichloropropane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
1,2,3-Trichlorobenzene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
1,2,4-Trichlorobenzene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
1,2,4-Trimethylbenzene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
1,2-Dibromoethane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
1,2-Dichlorobenzene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
1,2-Dichloroethane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
1,2-Dichloropropane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
1,3,5-Trimethylbenzene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
1,3-Dichlorobenzene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
1,3-Dichloropropane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
1,4-Dichlorobenzene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
2,2-Dichloropropane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
2-Chlorotoluene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
4-Chlorotoluene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
4-Isopropyltoluene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Benzene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Bromobenzene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Bromodichloromethane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Bromoform	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Bromomethane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Carbon tetrachloride	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Chlorobenzene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Chloroethane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Chloroform	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Chloromethane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
cis-1,2-Dichloroethene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
cis-1,3-Dichloropropene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Dibromochloromethane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: EW-02

Lab ID: 1904232-06

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Dichlorodifluoromethane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Ethylbenzene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Hexachlorobutadiene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Isopropylbenzene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
m,p-Xylene	ND	1.0	1	B9L0030	12/03/2019	12/03/19 13:51	
Methylene chloride	ND	1.0	1	B9L0030	12/03/2019	12/03/19 13:51	
n-Butylbenzene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
n-Propylbenzene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Naphthalene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
o-Xylene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
sec-Butylbenzene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Styrene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
tert-Butylbenzene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Tetrachloroethene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Toluene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
trans-1,2-Dichloroethene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Trichloroethene	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Trichlorofluoromethane	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Vinyl chloride	ND	0.50	1	B9L0030	12/03/2019	12/03/19 13:51	
Surrogate: 1,2-Dichloroethane-d4	110 %	59 - 158		B9L0030	12/03/2019	12/03/19 13:51	
Surrogate: 4-Bromofluorobenzene	99.2 %	71 - 127		B9L0030	12/03/2019	12/03/19 13:51	
Surrogate: Dibromofluoromethane	92.2 %	66 - 147		B9L0030	12/03/2019	12/03/19 13:51	
Surrogate: Toluene-d8	95.5 %	77 - 138		B9L0030	12/03/2019	12/03/19 13:51	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: EW-02

Lab ID: 1904232-06

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	11	2.0	1	B9K0679	11/27/2019	12/02/19 21:15	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>57.0 %</i>	<i>34 - 188</i>		<i>B9K0679</i>	<i>11/27/2019</i>	<i>12/02/19 21:15</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>76.6 %</i>	<i>39 - 108</i>		<i>B9K0679</i>	<i>11/27/2019</i>	<i>12/02/19 21:15</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>90.8 %</i>	<i>71 - 131</i>		<i>B9K0679</i>	<i>11/27/2019</i>	<i>12/02/19 21:15</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>63.3 %</i>	<i>32 - 106</i>		<i>B9K0679</i>	<i>11/27/2019</i>	<i>12/02/19 21:15</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: MW-29

Lab ID: 1904232-07

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
1,1,1-Trichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
1,1,2-Trichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
1,1-Dichloroethane	2.0	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
1,1-Dichloroethene	180	5.0	10	B9L0030	12/03/2019	12/03/19 14:16	
1,1-Dichloropropene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
1,2,3-Trichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
1,2,3-Trichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
1,2,4-Trichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
1,2,4-Trimethylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
1,2-Dibromoethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
1,2-Dichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
1,2-Dichloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
1,2-Dichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
1,3,5-Trimethylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
1,3-Dichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
1,3-Dichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
1,4-Dichlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
2,2-Dichloropropane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
2-Chlorotoluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
4-Chlorotoluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
4-Isopropyltoluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Benzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Bromobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Bromodichloromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Bromoform	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Bromomethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Carbon tetrachloride	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Chlorobenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Chloroethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Chloroform	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Chloromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
cis-1,2-Dichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
cis-1,3-Dichloropropene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Dibromochloromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: MW-29

Lab ID: 1904232-07

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Dichlorodifluoromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Ethylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Hexachlorobutadiene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Isopropylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
m,p-Xylene	ND	1.0	1	B9K0656	11/27/2019	11/27/19 17:38	
Methylene chloride	ND	1.0	1	B9K0656	11/27/2019	11/27/19 17:38	
n-Butylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
n-Propylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Naphthalene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
o-Xylene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
sec-Butylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Styrene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
tert-Butylbenzene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Tetrachloroethene	0.57	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Toluene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
trans-1,2-Dichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Trichloroethene	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Trichlorofluoromethane	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
Vinyl chloride	ND	0.50	1	B9K0656	11/27/2019	11/27/19 17:38	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>111 %</i>	<i>59 - 158</i>		B9L0030	12/03/2019	<i>12/03/19 14:16</i>	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>118 %</i>	<i>59 - 158</i>		B9K0656	11/27/2019	<i>11/27/19 17:38</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>99.0 %</i>	<i>71 - 127</i>		B9L0030	12/03/2019	<i>12/03/19 14:16</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>102 %</i>	<i>71 - 127</i>		B9K0656	11/27/2019	<i>11/27/19 17:38</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>96.3 %</i>	<i>66 - 147</i>		B9L0030	12/03/2019	<i>12/03/19 14:16</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>110 %</i>	<i>66 - 147</i>		B9K0656	11/27/2019	<i>11/27/19 17:38</i>	
<i>Surrogate: Toluene-d8</i>	<i>106 %</i>	<i>77 - 138</i>		B9K0656	11/27/2019	<i>11/27/19 17:38</i>	
<i>Surrogate: Toluene-d8</i>	<i>96.0 %</i>	<i>77 - 138</i>		B9L0030	12/03/2019	<i>12/03/19 14:16</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Client Sample ID: MW-29

Lab ID: 1904232-07

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	130	2.0	1	B9K0679	11/27/2019	12/02/19 21:42	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>54.3 %</i>	<i>34 - 188</i>		B9K0679	11/27/2019	<i>12/02/19 21:42</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>71.1 %</i>	<i>39 - 108</i>		B9K0679	11/27/2019	<i>12/02/19 21:42</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>85.4 %</i>	<i>71 - 131</i>		B9K0679	11/27/2019	<i>12/02/19 21:42</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>59.7 %</i>	<i>32 - 106</i>		B9K0679	11/27/2019	<i>12/02/19 21:42</i>	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

QUALITY CONTROL SECTION

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0656 - MSVOA_LL_W

Blank (B9K0656-BLK1)

Prepared: 11/27/2019 Analyzed: 11/27/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.21
1,1,1,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.40
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.18



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San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

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Reported : 12/04/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0656 - MSVOA_LL_W (continued)

Blank (B9K0656-BLK1) - Continued

Prepared: 11/27/2019 Analyzed: 11/27/2019

Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15
Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.23
Vinyl chloride	ND	0.50	0.13

Surrogate: 1,2-Dichloroethane-d4	25.95		25.0000	104	59 - 158
Surrogate: 4-Bromofluorobenzene	26.85		25.0000	107	71 - 127
Surrogate: Dibromofluoromethane	24.91		25.0000	99.6	66 - 147
Surrogate: Toluene-d8	25.93		25.0000	104	77 - 138

LCS (B9K0656-BS1)

Prepared: 11/27/2019 Analyzed: 11/27/2019

1,1,1,2-Tetrachloroethane	22.4900	0.50	0.11	20.0000	112	71 - 133
1,1,1-Trichloroethane	19.2200	0.50	0.21	20.0000	96.1	62 - 124
1,1,2,2-Tetrachloroethane	20.5900	0.50	0.36	20.0000	103	50 - 131
1,1,2-Trichloroethane	19.4400	0.50	0.25	20.0000	97.2	77 - 121
1,1-Dichloroethane	18.4800	0.50	0.09	20.0000	92.4	52 - 130
1,1-Dichloroethene	18.0800	0.50	0.13	20.0000	90.4	61 - 136
1,1-Dichloropropene	21.7400	0.50	0.13	20.0000	109	80 - 128
1,2,3-Trichloropropane	20.3800	0.50	0.39	20.0000	102	59 - 126
1,2,3-Trichlorobenzene	21.0000	0.50	0.18	20.0000	105	69 - 138
1,2,4-Trichlorobenzene	20.1600	0.50	0.16	20.0000	101	78 - 125
1,2,4-Trimethylbenzene	20.7000	0.50	0.14	20.0000	104	70 - 126
1,2-Dibromo-3-chloropropane	18.4000	0.50	0.41	20.0000	92.0	58 - 127
1,2-Dibromoethane	19.9400	0.50	0.24	20.0000	99.7	76 - 120
1,2-Dichlorobenzene	20.5300	0.50	0.20	20.0000	103	82 - 117
1,2-Dichloroethane	19.1700	0.50	0.20	20.0000	95.8	66 - 126
1,2-Dichloropropane	19.7400	0.50	0.15	20.0000	98.7	70 - 117
1,3,5-Trimethylbenzene	23.0500	0.50	0.13	20.0000	115	71 - 125



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Project Number : Raytheon Main GETS Mid Month Sample

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Reported : 12/04/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0656 - MSVOA_LL_W (continued)

LCS (B9K0656-BS1) - Continued

Prepared: 11/27/2019 Analyzed: 11/27/2019

1,3-Dichlorobenzene	20.7600	0.50	0.16	20.0000		104	81 - 116			
1,3-Dichloropropane	20.5300	0.50	0.21	20.0000		103	69 - 124			
1,4-Dichlorobenzene	19.5500	0.50	0.17	20.0000		97.8	80 - 114			
2,2-Dichloropropane	20.4900	0.50	0.38	20.0000		102	58 - 132			
2-Chlorotoluene	21.8500	0.50	0.11	20.0000		109	71 - 119			
4-Chlorotoluene	22.1400	0.50	0.12	20.0000		111	72 - 122			
4-Isopropyltoluene	20.6600	0.50	0.11	20.0000		103	69 - 126			
Benzene	40.7500	0.50	0.13	40.0000		102	80 - 116			
Bromobenzene	20.9500	0.50	0.21	20.0000		105	77 - 118			
Bromodichloromethane	20.6400	0.50	0.14	20.0000		103	73 - 118			
Bromoform	19.1000	0.50	0.20	20.0000		95.5	65 - 133			
Bromomethane	31.1100	0.50	0.40	20.0000		156	7 - 205			
Carbon tetrachloride	20.9600	0.50	0.09	20.0000		105	63 - 133			
Chlorobenzene	20.1100	0.50	0.13	20.0000		101	86 - 113			
Chloroethane	22.5500	0.50	0.15	20.0000		113	66 - 141			
Chloroform	18.4500	0.50	0.11	20.0000		92.2	63 - 127			
Chloromethane	21.0700	0.50	0.12	20.0000		105	0 - 207			
cis-1,2-Dichloroethene	18.7200	0.50	0.14	20.0000		93.6	64 - 126			
cis-1,3-Dichloropropene	18.9900	0.50	0.13	20.0000		95.0	70 - 141			
Dibromochloromethane	20.0300	0.50	0.16	20.0000		100	67 - 135			
Dibromomethane	19.7900	0.50	0.19	20.0000		99.0	74 - 118			
Dichlorodifluoromethane	21.1800	0.50	0.18	20.0000		106	14 - 181			
Ethylbenzene	44.7900	0.50	0.13	40.0000		112	77 - 118			
Hexachlorobutadiene	21.9700	0.50	0.15	20.0000		110	66 - 125			
Isopropylbenzene	22.9200	0.50	0.10	20.0000		115	68 - 137			
m,p-Xylene	44.8200	1.0	0.19	40.0000		112	78 - 126			
Methylene chloride	18.7500	1.0	0.71	20.0000		93.8	51 - 149			
n-Butylbenzene	20.3700	0.50	0.11	20.0000		102	63 - 127			
n-Propylbenzene	23.1200	0.50	0.10	20.0000		116	69 - 124			
Naphthalene	16.8800	0.50	0.41	20.0000		84.4	60 - 126			
o-Xylene	47.7400	0.50	0.13	40.0000		119	79 - 126			
sec-Butylbenzene	23.4200	0.50	0.09	20.0000		117	69 - 124			
Styrene	20.6000	0.50	0.13	20.0000		103	80 - 127			
tert-Butylbenzene	23.0200	0.50	0.09	20.0000		115	71 - 124			
Tetrachloroethene	20.3400	0.50	0.10	20.0000		102	73 - 129			
Toluene	41.4000	0.50	0.12	40.0000		104	78 - 121			
trans-1,2-Dichloroethene	18.2900	0.50	0.09	20.0000		91.4	58 - 141			
Trichloroethene	19.4300	0.50	0.10	20.0000		97.2	73 - 126			
Trichlorofluoromethane	20.0200	0.50	0.23	20.0000		100	62 - 146			
Vinyl chloride	19.3600	0.50	0.13	20.0000		96.8	61 - 137			

Surrogate: 1,2-Dichloroethane-d4	23.06			25.0000		92.2	59 - 158			
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Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0656 - MSVOA_LL_W (continued)

LCS (B9K0656-BS1) - Continued

Prepared: 11/27/2019 Analyzed: 11/27/2019

Surrogate: 4-Bromofluorobenzene	28.29		25.0000		113	71 - 127			
Surrogate: Dibromofluoromethane	23.94		25.0000		95.8	66 - 147			
Surrogate: Toluene-d8	26.31		25.0000		105	77 - 138			

LCS Dup (B9K0656-BSD1)

Prepared: 11/27/2019 Analyzed: 11/27/2019

1,1,1,2-Tetrachloroethane	22.7500	0.50	0.11	20.0000	114	71 - 133	1.15	20	
1,1,1-Trichloroethane	19.6500	0.50	0.21	20.0000	98.2	62 - 124	2.21	20	
1,1,2,2-Tetrachloroethane	21.6000	0.50	0.36	20.0000	108	50 - 131	4.79	20	
1,1,2-Trichloroethane	19.7200	0.50	0.25	20.0000	98.6	77 - 121	1.43	20	
1,1-Dichloroethane	18.6800	0.50	0.09	20.0000	93.4	52 - 130	1.08	20	
1,1-Dichloroethene	18.1900	0.50	0.13	20.0000	91.0	61 - 136	0.607	20	
1,1-Dichloropropene	22.4400	0.50	0.13	20.0000	112	80 - 128	3.17	20	
1,2,3-Trichloropropane	21.2600	0.50	0.39	20.0000	106	59 - 126	4.23	20	
1,2,3-Trichlorobenzene	22.3600	0.50	0.18	20.0000	112	69 - 138	6.27	20	
1,2,4-Trichlorobenzene	21.0100	0.50	0.16	20.0000	105	78 - 125	4.13	20	
1,2,4-Trimethylbenzene	20.7400	0.50	0.14	20.0000	104	70 - 126	0.193	20	
1,2-Dibromo-3-chloropropane	19.8600	0.50	0.41	20.0000	99.3	58 - 127	7.63	20	
1,2-Dibromoethane	20.8500	0.50	0.24	20.0000	104	76 - 120	4.46	20	
1,2-Dichlorobenzene	21.2200	0.50	0.20	20.0000	106	82 - 117	3.31	20	
1,2-Dichloroethane	19.4900	0.50	0.20	20.0000	97.4	66 - 126	1.66	20	
1,2-Dichloropropane	20.0500	0.50	0.15	20.0000	100	70 - 117	1.56	20	
1,3,5-Trimethylbenzene	22.9000	0.50	0.13	20.0000	114	71 - 125	0.653	20	
1,3-Dichlorobenzene	21.1100	0.50	0.16	20.0000	106	81 - 116	1.67	20	
1,3-Dichloropropane	21.3900	0.50	0.21	20.0000	107	69 - 124	4.10	20	
1,4-Dichlorobenzene	19.8800	0.50	0.17	20.0000	99.4	80 - 114	1.67	20	
2,2-Dichloropropane	21.1300	0.50	0.38	20.0000	106	58 - 132	3.08	20	
2-Chlorotoluene	22.0300	0.50	0.11	20.0000	110	71 - 119	0.820	20	
4-Chlorotoluene	22.3800	0.50	0.12	20.0000	112	72 - 122	1.08	20	
4-Isopropyltoluene	20.7100	0.50	0.11	20.0000	104	69 - 126	0.242	20	
Benzene	40.5900	0.50	0.13	40.0000	101	80 - 116	0.393	20	
Bromobenzene	21.3900	0.50	0.21	20.0000	107	77 - 118	2.08	20	
Bromodichloromethane	21.2700	0.50	0.14	20.0000	106	73 - 118	3.01	20	
Bromoform	19.9500	0.50	0.20	20.0000	99.8	65 - 133	4.35	20	
Bromomethane	28.2600	0.50	0.40	20.0000	141	7 - 205	9.60	20	
Carbon tetrachloride	21.8600	0.50	0.09	20.0000	109	63 - 133	4.20	20	
Chlorobenzene	20.0700	0.50	0.13	20.0000	100	86 - 113	0.199	20	
Chloroethane	22.6500	0.50	0.15	20.0000	113	66 - 141	0.442	20	
Chloroform	18.6500	0.50	0.11	20.0000	93.2	63 - 127	1.08	20	
Chloromethane	21.8400	0.50	0.12	20.0000	109	0 - 207	3.59	20	
cis-1,2-Dichloroethene	18.8300	0.50	0.14	20.0000	94.2	64 - 126	0.586	20	
cis-1,3-Dichloropropene	19.4900	0.50	0.13	20.0000	97.4	70 - 141	2.60	20	
Dibromochloromethane	21.1000	0.50	0.16	20.0000	106	67 - 135	5.20	20	



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0656 - MSVOA_LL_W (continued)

LCS Dup (B9K0656-BSD1) - Continued

Prepared: 11/27/2019 Analyzed: 11/27/2019

Dibromomethane	20.6800	0.50	0.19	20.0000		103	74 - 118	4.40	20	
Dichlorodifluoromethane	21.7200	0.50	0.18	20.0000		109	14 - 181	2.52	20	
Ethylbenzene	44.7000	0.50	0.13	40.0000		112	77 - 118	0.201	20	
Hexachlorobutadiene	22.1000	0.50	0.15	20.0000		110	66 - 125	0.590	20	
Isopropylbenzene	23.1900	0.50	0.10	20.0000		116	68 - 137	1.17	20	
m,p-Xylene	44.9700	1.0	0.19	40.0000		112	78 - 126	0.334	20	
Methylene chloride	19.1100	1.0	0.71	20.0000		95.6	51 - 149	1.90	20	
n-Butylbenzene	20.5400	0.50	0.11	20.0000		103	63 - 127	0.831	20	
n-Propylbenzene	23.1600	0.50	0.10	20.0000		116	69 - 124	0.173	20	
Naphthalene	18.8200	0.50	0.41	20.0000		94.1	60 - 126	10.9	20	
o-Xylene	47.8400	0.50	0.13	40.0000		120	79 - 126	0.209	20	
sec-Butylbenzene	23.5400	0.50	0.09	20.0000		118	69 - 124	0.511	20	
Styrene	20.4100	0.50	0.13	20.0000		102	80 - 127	0.927	20	
tert-Butylbenzene	22.9800	0.50	0.09	20.0000		115	71 - 124	0.174	20	
Tetrachloroethene	20.5500	0.50	0.10	20.0000		103	73 - 129	1.03	20	
Toluene	41.0600	0.50	0.12	40.0000		103	78 - 121	0.825	20	
trans-1,2-Dichloroethene	18.6200	0.50	0.09	20.0000		93.1	58 - 141	1.79	20	
Trichloroethene	20.1400	0.50	0.10	20.0000		101	73 - 126	3.59	20	
Trichlorofluoromethane	20.3000	0.50	0.23	20.0000		102	62 - 146	1.39	20	
Vinyl chloride	20.3200	0.50	0.13	20.0000		102	61 - 137	4.84	20	
Surrogate: 1,2-Dichloroethane-d4	22.88			25.0000		91.5	59 - 158			
Surrogate: 4-Bromofluorobenzene	27.93			25.0000		112	71 - 127			
Surrogate: Dibromofluoromethane	23.82			25.0000		95.3	66 - 147			
Surrogate: Toluene-d8	25.50			25.0000		102	77 - 138			



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Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9L0030 - MSVOA_LL_W

Blank (B9L0030-BLK1)

Prepared: 12/3/2019 Analyzed: 12/3/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.21
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.40
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.18
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9L0030 - MSVOA_LL_W (continued)

Blank (B9L0030-BLK1) - Continued

Prepared: 12/3/2019 Analyzed: 12/3/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.23
Vinyl chloride	ND	0.50	0.13

Surrogate: 1,2-Dichloroethane-d4	27.09		25.0000	108	59 - 158
Surrogate: 4-Bromofluorobenzene	24.39		25.0000	97.6	71 - 127
Surrogate: Dibromofluoromethane	24.11		25.0000	96.4	66 - 147
Surrogate: Toluene-d8	24.11		25.0000	96.4	77 - 138

LCS (B9L0030-BS1)

Prepared: 12/3/2019 Analyzed: 12/3/2019

1,1,1,2-Tetrachloroethane	20.6500	0.50	0.11	20.0000	103	71 - 133
1,1,1-Trichloroethane	19.5900	0.50	0.21	20.0000	98.0	62 - 124
1,1,2,2-Tetrachloroethane	20.5800	0.50	0.36	20.0000	103	50 - 131
1,1,2-Trichloroethane	19.5000	0.50	0.25	20.0000	97.5	77 - 121
1,1-Dichloroethane	19.7900	0.50	0.09	20.0000	99.0	52 - 130
1,1-Dichloroethene	19.3500	0.50	0.13	20.0000	96.8	61 - 136
1,1-Dichloropropene	19.2600	0.50	0.13	20.0000	96.3	80 - 128
1,2,3-Trichloropropane	21.1500	0.50	0.39	20.0000	106	59 - 126
1,2,3-Trichlorobenzene	19.8600	0.50	0.18	20.0000	99.3	69 - 138
1,2,4-Trichlorobenzene	20.0900	0.50	0.16	20.0000	100	78 - 125
1,2,4-Trimethylbenzene	20.0800	0.50	0.14	20.0000	100	70 - 126
1,2-Dibromo-3-chloropropane	21.3400	0.50	0.41	20.0000	107	58 - 127
1,2-Dibromoethane	19.4900	0.50	0.24	20.0000	97.4	76 - 120
1,2-Dichlorobenzene	20.6100	0.50	0.20	20.0000	103	82 - 117
1,2-Dichloroethane	22.8400	0.50	0.20	20.0000	114	66 - 126
1,2-Dichloropropane	20.8700	0.50	0.15	20.0000	104	70 - 117
1,3,5-Trimethylbenzene	20.1400	0.50	0.13	20.0000	101	71 - 125
1,3-Dichlorobenzene	20.8900	0.50	0.16	20.0000	104	81 - 116
1,3-Dichloropropane	20.9200	0.50	0.21	20.0000	105	69 - 124



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9L0030 - MSVOA_LL_W (continued)

LCS (B9L0030-BS1) - Continued

Prepared: 12/3/2019 Analyzed: 12/3/2019

1,4-Dichlorobenzene	21.0400	0.50	0.17	20.0000		105	80 - 114			
2,2-Dichloropropane	23.6400	0.50	0.38	20.0000		118	58 - 132			
2-Chlorotoluene	20.6000	0.50	0.11	20.0000		103	71 - 119			
4-Chlorotoluene	20.6000	0.50	0.12	20.0000		103	72 - 122			
4-Isopropyltoluene	19.9700	0.50	0.11	20.0000		99.8	69 - 126			
Benzene	38.4400	0.50	0.13	40.0000		96.1	80 - 116			
Bromobenzene	20.8400	0.50	0.21	20.0000		104	77 - 118			
Bromodichloromethane	20.9100	0.50	0.14	20.0000		105	73 - 118			
Bromoform	19.7400	0.50	0.20	20.0000		98.7	65 - 133			
Bromomethane	34.8500	0.50	0.40	20.0000		174	7 - 205			
Carbon tetrachloride	20.5300	0.50	0.09	20.0000		103	63 - 133			
Chlorobenzene	20.4500	0.50	0.13	20.0000		102	86 - 113			
Chloroethane	76.7700	0.50	0.15	20.0000		384	66 - 141			L5
Chloroform	20.8300	0.50	0.11	20.0000		104	63 - 127			
Chloromethane	23.5800	0.50	0.12	20.0000		118	0 - 207			
cis-1,2-Dichloroethene	20.0400	0.50	0.14	20.0000		100	64 - 126			
cis-1,3-Dichloropropene	20.8100	0.50	0.13	20.0000		104	70 - 141			
Dibromochloromethane	20.1400	0.50	0.16	20.0000		101	67 - 135			
Dibromomethane	21.0300	0.50	0.19	20.0000		105	74 - 118			
Dichlorodifluoromethane	25.6500	0.50	0.18	20.0000		128	14 - 181			
Ethylbenzene	40.4000	0.50	0.13	40.0000		101	77 - 118			
Hexachlorobutadiene	20.8000	0.50	0.15	20.0000		104	66 - 125			
Isopropylbenzene	20.1700	0.50	0.10	20.0000		101	68 - 137			
m,p-Xylene	40.3300	1.0	0.19	40.0000		101	78 - 126			
Methylene chloride	20.8400	1.0	0.71	20.0000		104	51 - 149			
n-Butylbenzene	20.3700	0.50	0.11	20.0000		102	63 - 127			
n-Propylbenzene	20.2600	0.50	0.10	20.0000		101	69 - 124			
Naphthalene	19.4100	0.50	0.41	20.0000		97.0	60 - 126			
o-Xylene	41.3500	0.50	0.13	40.0000		103	79 - 126			
sec-Butylbenzene	19.8000	0.50	0.09	20.0000		99.0	69 - 124			
Styrene	20.1900	0.50	0.13	20.0000		101	80 - 127			
tert-Butylbenzene	20.2700	0.50	0.09	20.0000		101	71 - 124			
Tetrachloroethene	20.4700	0.50	0.10	20.0000		102	73 - 129			
Toluene	39.3900	0.50	0.12	40.0000		98.5	78 - 121			
trans-1,2-Dichloroethene	18.7400	0.50	0.09	20.0000		93.7	58 - 141			
Trichloroethene	19.2200	0.50	0.10	20.0000		96.1	73 - 126			
Trichlorofluoromethane	22.0400	0.50	0.23	20.0000		110	62 - 146			
Vinyl chloride	21.4200	0.50	0.13	20.0000		107	61 - 137			
Surrogate: 1,2-Dichloroethane-d4	26.62			25.0000		106	59 - 158			
Surrogate: 4-Bromofluorobenzene	24.88			25.0000		99.5	71 - 127			
Surrogate: Dibromofluoromethane	24.31			25.0000		97.2	66 - 147			



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9L0030 - MSVOA_LL_W (continued)

LCS (B9L0030-BS1) - Continued

Prepared: 12/3/2019 Analyzed: 12/3/2019

Surrogate: Toluene-d8 24.42 25.0000 97.7 77 - 138

LCS Dup (B9L0030-BSD1)

Prepared: 12/3/2019 Analyzed: 12/3/2019

1,1,1,2-Tetrachloroethane	21.8100	0.50	0.11	20.0000	109	71 - 133	5.46	20	
1,1,1-Trichloroethane	18.2600	0.50	0.21	20.0000	91.3	62 - 124	7.03	20	
1,1,2,2-Tetrachloroethane	22.8400	0.50	0.36	20.0000	114	50 - 131	10.4	20	
1,1,2-Trichloroethane	20.5100	0.50	0.25	20.0000	103	77 - 121	5.05	20	
1,1-Dichloroethane	19.0400	0.50	0.09	20.0000	95.2	52 - 130	3.86	20	
1,1-Dichloroethene	17.6700	0.50	0.13	20.0000	88.4	61 - 136	9.08	20	
1,1-Dichloropropene	18.3800	0.50	0.13	20.0000	91.9	80 - 128	4.68	20	
1,2,3-Trichloropropane	23.0900	0.50	0.39	20.0000	115	59 - 126	8.77	20	
1,2,3-Trichlorobenzene	21.1900	0.50	0.18	20.0000	106	69 - 138	6.48	20	
1,2,4-Trichlorobenzene	21.3200	0.50	0.16	20.0000	107	78 - 125	5.94	20	
1,2,4-Trimethylbenzene	20.8400	0.50	0.14	20.0000	104	70 - 126	3.71	20	
1,2-Dibromo-3-chloropropane	23.0400	0.50	0.41	20.0000	115	58 - 127	7.66	20	
1,2-Dibromoethane	19.9100	0.50	0.24	20.0000	99.6	76 - 120	2.13	20	
1,2-Dichlorobenzene	21.8000	0.50	0.20	20.0000	109	82 - 117	5.61	20	
1,2-Dichloroethane	22.8000	0.50	0.20	20.0000	114	66 - 126	0.175	20	
1,2-Dichloropropane	20.6600	0.50	0.15	20.0000	103	70 - 117	1.01	20	
1,3,5-Trimethylbenzene	20.6100	0.50	0.13	20.0000	103	71 - 125	2.31	20	
1,3-Dichlorobenzene	22.1600	0.50	0.16	20.0000	111	81 - 116	5.90	20	
1,3-Dichloropropane	21.4900	0.50	0.21	20.0000	107	69 - 124	2.69	20	
1,4-Dichlorobenzene	21.9800	0.50	0.17	20.0000	110	80 - 114	4.37	20	
2,2-Dichloropropane	21.5500	0.50	0.38	20.0000	108	58 - 132	9.25	20	
2-Chlorotoluene	21.4000	0.50	0.11	20.0000	107	71 - 119	3.81	20	
4-Chlorotoluene	21.7600	0.50	0.12	20.0000	109	72 - 122	5.48	20	
4-Isopropyltoluene	19.9900	0.50	0.11	20.0000	100	69 - 126	0.100	20	
Benzene	38.0200	0.50	0.13	40.0000	95.0	80 - 116	1.10	20	
Bromobenzene	22.3900	0.50	0.21	20.0000	112	77 - 118	7.17	20	
Bromodichloromethane	21.2800	0.50	0.14	20.0000	106	73 - 118	1.75	20	
Bromoform	20.7800	0.50	0.20	20.0000	104	65 - 133	5.13	20	
Bromomethane	29.2700	0.50	0.40	20.0000	146	7 - 205	17.4	20	
Carbon tetrachloride	18.8200	0.50	0.09	20.0000	94.1	63 - 133	8.69	20	
Chlorobenzene	20.6700	0.50	0.13	20.0000	103	86 - 113	1.07	20	
Chloroethane	69.2300	0.50	0.15	20.0000	346	66 - 141	10.3	20	L5
Chloroform	20.1500	0.50	0.11	20.0000	101	63 - 127	3.32	20	
Chloromethane	22.1900	0.50	0.12	20.0000	111	0 - 207	6.07	20	
cis-1,2-Dichloroethene	19.6300	0.50	0.14	20.0000	98.2	64 - 126	2.07	20	
cis-1,3-Dichloropropene	20.7000	0.50	0.13	20.0000	104	70 - 141	0.530	20	
Dibromochloromethane	21.0500	0.50	0.16	20.0000	105	67 - 135	4.42	20	
Dibromomethane	20.6200	0.50	0.19	20.0000	103	74 - 118	1.97	20	
Dichlorodifluoromethane	22.1100	0.50	0.18	20.0000	111	14 - 181	14.8	20	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9L0030 - MSVOA_LL_W (continued)

LCS Dup (B9L0030-BSD1) - Continued

Prepared: 12/3/2019 Analyzed: 12/3/2019

Ethylbenzene	40.5900	0.50	0.13	40.0000		101	77 - 118	0.469	20
Hexachlorobutadiene	21.1300	0.50	0.15	20.0000		106	66 - 125	1.57	20
Isopropylbenzene	20.4500	0.50	0.10	20.0000		102	68 - 137	1.38	20
m,p-Xylene	40.4500	1.0	0.19	40.0000		101	78 - 126	0.297	20
Methylene chloride	19.7700	1.0	0.71	20.0000		98.8	51 - 149	5.27	20
n-Butylbenzene	20.3800	0.50	0.11	20.0000		102	63 - 127	0.0491	20
n-Propylbenzene	20.4500	0.50	0.10	20.0000		102	69 - 124	0.933	20
Naphthalene	20.7500	0.50	0.41	20.0000		104	60 - 126	6.67	20
o-Xylene	41.9800	0.50	0.13	40.0000		105	79 - 126	1.51	20
sec-Butylbenzene	19.8500	0.50	0.09	20.0000		99.2	69 - 124	0.252	20
Styrene	20.8300	0.50	0.13	20.0000		104	80 - 127	3.12	20
tert-Butylbenzene	20.4000	0.50	0.09	20.0000		102	71 - 124	0.639	20
Tetrachloroethene	20.3400	0.50	0.10	20.0000		102	73 - 129	0.637	20
Toluene	39.0700	0.50	0.12	40.0000		97.7	78 - 121	0.816	20
trans-1,2-Dichloroethene	18.0000	0.50	0.09	20.0000		90.0	58 - 141	4.03	20
Trichloroethene	18.7500	0.50	0.10	20.0000		93.8	73 - 126	2.48	20
Trichlorofluoromethane	19.3900	0.50	0.23	20.0000		97.0	62 - 146	12.8	20
Vinyl chloride	19.1500	0.50	0.13	20.0000		95.8	61 - 137	11.2	20
Surrogate: 1,2-Dichloroethane-d4	26.29			25.0000		105	59 - 158		
Surrogate: 4-Bromofluorobenzene	24.84			25.0000		99.4	71 - 127		
Surrogate: Dibromofluoromethane	24.20			25.0000		96.8	66 - 147		
Surrogate: Toluene-d8	24.13			25.0000		96.5	77 - 138		



Certificate of Analysis

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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

1,4-Dioxane by EPA 8270: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0679 - MSSEMI_W

Blank (B9K0679-BLK1)

Prepared: 11/27/2019 Analyzed: 11/27/2019

1,4-Dioxane	ND	2.0	0.84							
Surrogate: 1,2-Dichlorobenzene-d	84.79			100.000		84.8	34 - 188			
Surrogate: 2-Fluorobiphenyl	97.83			100.000		97.8	39 - 108			
Surrogate: 4-Terphenyl-d14	147.0			100.000		147	71 - 131			S15
Surrogate: Nitrobenzene-d5	105.1			100.000		105	32 - 106			

LCS (B9K0679-BS1)

Prepared: 11/27/2019 Analyzed: 11/27/2019

1,4-Dioxane	154.440	2.0	0.84	100.000		154	40 - 159			
Surrogate: 1,2-Dichlorobenzene-d	61.04			100.000		61.0	34 - 188			
Surrogate: 2-Fluorobiphenyl	75.82			100.000		75.8	39 - 108			
Surrogate: 4-Terphenyl-d14	63.82			100.000		63.8	71 - 131			S15
Surrogate: Nitrobenzene-d5	75.76			100.000		75.8	32 - 106			

Matrix Spike (B9K0679-MS1)

Source: 1904199-07

Prepared: 11/27/2019 Analyzed: 12/2/2019

1,4-Dioxane	572.900	4.0	1.7	100.000	357.740	215	40 - 159			M2
Surrogate: 1,2-Dichlorobenzene-d	43.24			100.000		43.2	34 - 188			
Surrogate: 2-Fluorobiphenyl	57.76			100.000		57.8	39 - 108			
Surrogate: 4-Terphenyl-d14	60.60			100.000		60.6	71 - 131			S15
Surrogate: Nitrobenzene-d5	54.18			100.000		54.2	32 - 106			

Matrix Spike Dup (B9K0679-MSD1)

Source: 1904199-07

Prepared: 11/27/2019 Analyzed: 12/2/2019

1,4-Dioxane	523.480	4.0	1.7	100.000	357.740	166	40 - 159	9.02	20	M2
Surrogate: 1,2-Dichlorobenzene-d	42.12			100.000		42.1	34 - 188			
Surrogate: 2-Fluorobiphenyl	57.36			100.000		57.4	39 - 108			
Surrogate: 4-Terphenyl-d14	58.14			100.000		58.1	71 - 131			S15
Surrogate: Nitrobenzene-d5	55.28			100.000		55.3	32 - 106			



Certificate of Analysis

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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
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Batch B9K0661 - MSSEMI_W

Blank (B9K0661-BLK1)

Prepared: 11/26/2019 Analyzed: 11/27/2019

1,4-Dioxane	ND	0.20	0.05						
Surrogate: 1,2-Dichlorobenzene-d	0.7880			1.00000		78.8	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.8073			1.00000		80.7	20 - 131		
Surrogate: 4-Terphenyl-d14	0.9274			1.00000		92.7	24 - 135		
Surrogate: Nitrobenzene-d5	0.8436			1.00000		84.4	6 - 124		

LCS (B9K0661-BS1)

Prepared: 11/26/2019 Analyzed: 11/27/2019

1,4-Dioxane	1.25191	0.20	0.05	1.00000		125	64 - 129		
Surrogate: 1,2-Dichlorobenzene-d	0.5479			1.00000		54.8	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.5489			1.00000		54.9	20 - 131		
Surrogate: 4-Terphenyl-d14	0.5994			1.00000		59.9	24 - 135		
Surrogate: Nitrobenzene-d5	0.5721			1.00000		57.2	6 - 124		

LCS Dup (B9K0661-BSD1)

Prepared: 11/26/2019 Analyzed: 11/27/2019

1,4-Dioxane	1.27763	0.20	0.05	1.00000		128	64 - 129	2.03	20
Surrogate: 1,2-Dichlorobenzene-d	0.5527			1.00000		55.3	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.5517			1.00000		55.2	20 - 131		
Surrogate: 4-Terphenyl-d14	0.6011			1.00000		60.1	24 - 135		
Surrogate: Nitrobenzene-d5	0.5869			1.00000		58.7	6 - 124		



Certificate of Analysis

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Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 12/04/2019

Notes and Definitions

S15	Surrogate recovery outside laboratory acceptance limit. However, the surrogate is not associated with the target analyte.
S1	Surrogate recovery was above laboratory acceptance limit. No associated target analyte was detected in the sample.
M2	Matrix spike recovery outside of acceptance limit due to possible matrix interference. The analytical batch was validated by the laboratory control sample.
L5	Laboratory Control Sample high biased. Sample result/s was non-detect (ND) for the target analyte; therefore reanalysis was not necessary.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.

PROJECT: Raytheon Main GETS Mid Month Sample

TASK NO.: 532.15

Project Manager Steve Netto
QA Manager Ross Horton
Phone 858.455.6500
Fax 858.455.6533

Sampled By:		SAMPLE COLLECTION		MATRIX	PRESERVATION	CONTAINERS	ANALYSIS REQUESTED	Expected Concentration Range (ppb) for VOA's	SPECIAL HANDLING	REMARKS
LAB ID	SAMPLE ID	Date	Time							
Ruben Sanchez										
1909232-01	TB-112119	11/21/2019	8:00	X	X	X	2	X	X	X
-02	CEFF	11/21/2019	8:15	X	X	X	3	X	X	X
-03	CBT	11/21/2019	8:20	X	X	X	3	X	X	X
-04	POX	11/21/2019	8:30	X	X	X	3	X	X	X
-05	INF	11/21/2019	8:35	X	X	X	3	X	X	X
-06	EW-02	11/21/2019	9:05	X	X	X	3	X	X	X
-07	MW-29	11/21/2019	9:25	X	X	X	3	X	X	X
Total number of containers per analysis:						20	6			Total No. of Containers: 26

Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
<i>[Signature]</i> H+A	11-21-19 10:15	<i>[Signature]</i> HAA	11-21-19 10:15
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
<i>[Signature]</i> H+A	11-21-19 15:50	<i>[Signature]</i>	11-21-19 15:50

- ☐ No. of containers correct
☐ Received in good condition
☐ Custody seals secure
☐ Conforms to COC document

Send Results to:
Steve Netto & Ross Horton
 9171 Towne Centre Drive
 Suite 375
 San Diego, CA 92122
 Ph: 858.455.6500
snetto@hargis.com
rhorton@hargis.com

Instructions

- Fill out form completely and sign only after verified for completeness
- Complete in ballpoint pen. Draw one line through error, initial and date correction
- Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✗
- Note applicable preservatives, special instructions, and deviations from typical environmental samples.
- Consult project QA documents for specific instructions.

Temperature on receipt