Edwards Aquifer Habitat Conservation Plan

Addendum to 2019 Expanded Water Quality Monitoring Report

April 2020

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EXECUTIVE SUMMARY

This addendum includes laboratory data that had not yet been received at the time the 2019 Expanded Water Quality Monitoring Report was issued. This addendum includes results of the December 2019 PDS laboratory analyses and the April through December 2019 POCIS laboratory results for the Comal and San Marcos spring complexes.

None of the PDS comparison values were exceeded by the concentrations detected in the Comal and San Marcos spring complexes. Of the 43 PPCP constituents evaluated, 14 were detected in Comal Springs complex samples and 12 were detected in San Marcos Springs complex samples. Some of the analytes detected were also detected in the Extraction Blank analyzed. Tables showing positive detections and the December 2019 stream discharge and specific conductivity graphs for Comal Springs and San Marcos complexes are included. Laboratory reports are attached.

Comal Springs Sampling

Table 1. Comal Springs Passive Diffusion Sampling Results-December 2019

Location	Month 2019	Tetrachloroethene (µg/L)	TPH (µg/L)
HCS410	December	0.022	0.060
HCS420	December	0.082	0.063
HCS430	December	0.106	0.074
HCS440	December	0.071	0.062
FDHCS440	December	0.072	0.071
HCS460	December	0.068	0.070
Texas Commission on Environmental Quality (TCEQ) Acute Surface Water Benchmark For Aquatic Life†	--	3840	NE
TCEQ Chronic Surface Water Benchmark For Aquatic Life†	--	1280	NE
Contact Recreation Water PCL‡	--	148	28,100*

µg/L – micrograms per liter

NE – None established

TPH – total petroleum hydrocarbons

ND – not detected

* Value for C>16-21 Aromatics presented for TPH

† Aquatic Life Surface Water Benchmark Table (TCEQ 2017)

‡ Human Health Surface Water Risk-Based Exposure Levels (RBELs) Table (TCEQ 2015)

Table 2. Comal Springs Pharmaceutical and Personal Care Products (PPCP) POCIS Sampling Results – April through December 2019

Location	Month 2019	Bisphenol A (ng/l)	Caffeine (ng/l)	DEET (ng/l)	Estrone (ng/l)	Galaxolide (HHCB) (ng/l)	Ibuprofen (ng/l)	Naproxen (ng/l)	Oxybenzone (ng/l)	Sucralose (ng/l)	TCEP (ng/l)	TCPP (ng/l)	TDCPP (ng/l)	Testosterone (ng/l)	Triclosan (ng/l)
HCS460	April	61,000	ND	81,000	6,000	340,000	5,100	ND	21,000	ND	17,000	680,000	110,000	ND	52,000
Extraction Blank	April	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
HCS460	June	63,000	14,000	550,000	ND	580,000	55,000	38,000	150,000	ND	29,000	580,000	390,000	ND	19,000
Extraction Blank	June	ND	ND	71,000	ND	60,000	ND	ND	3,700	ND	3,800	63,000	5,700	ND	6,800
HCS460	August	120,000	ND	400,000	ND	770,000	27,000	20,000	230,000	ND	32,000	930,000	390,000	2,900	19,000
Extraction Blank	August	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
HCS460	October	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Extraction Blank	October	1,700	5,000	93,000	ND	110,000	1,400	ND	10,000	6,800	3,800	100,000	3,700	ND	70,000
HCS460	December	9,000	9,600	77,000	ND	150,000	ND	ND	8,300	ND	7,000	180,000	5,500	ND	45,000
Extraction Blank	December	ND	ND	51,000	ND	130,000	ND	ND	2,800	ND	3,100	120,000	6,300	ND	9,700

DEET - N,N-Diethyl-meta-toluamide

HHCB - 1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8-hexamethylcyclopenta--2-benzopyran

TCEP - Tris(2-carboxyethyl)phosphine

TCPP - Tris (2-chloroisopropyl)phosphate

TDCPP - Tris(1,3-dichloroisopropyl)phosphate

ng/L – nanograms per liter

ND – Not detected

NA- Not analyzed

Figure 1. PDS – December 2019 Stream Discharge and Specific Conductivity – Comal Springs Complex (New Channel RTI Station)

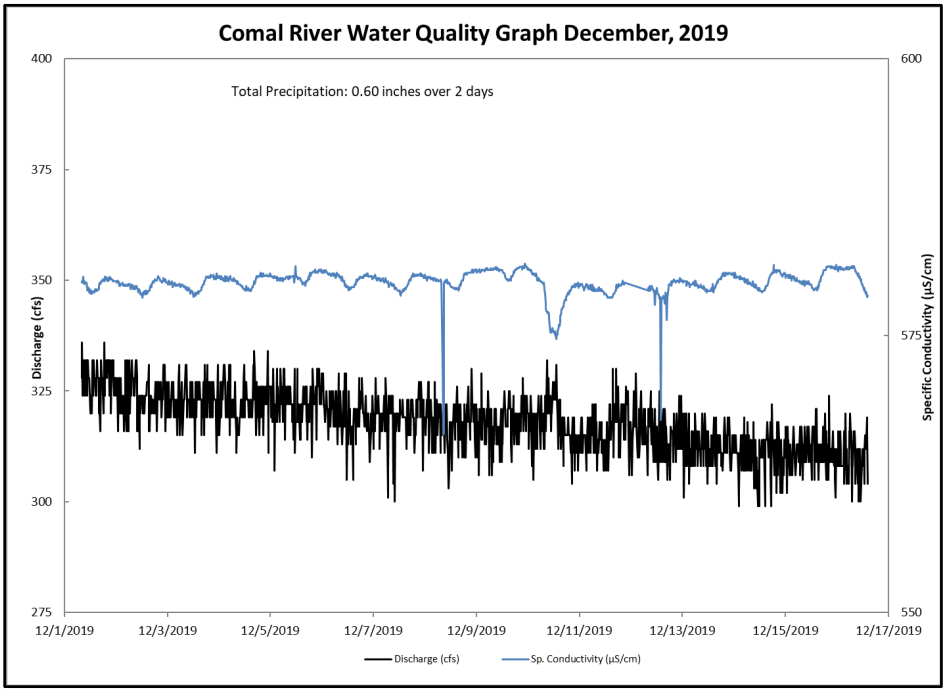
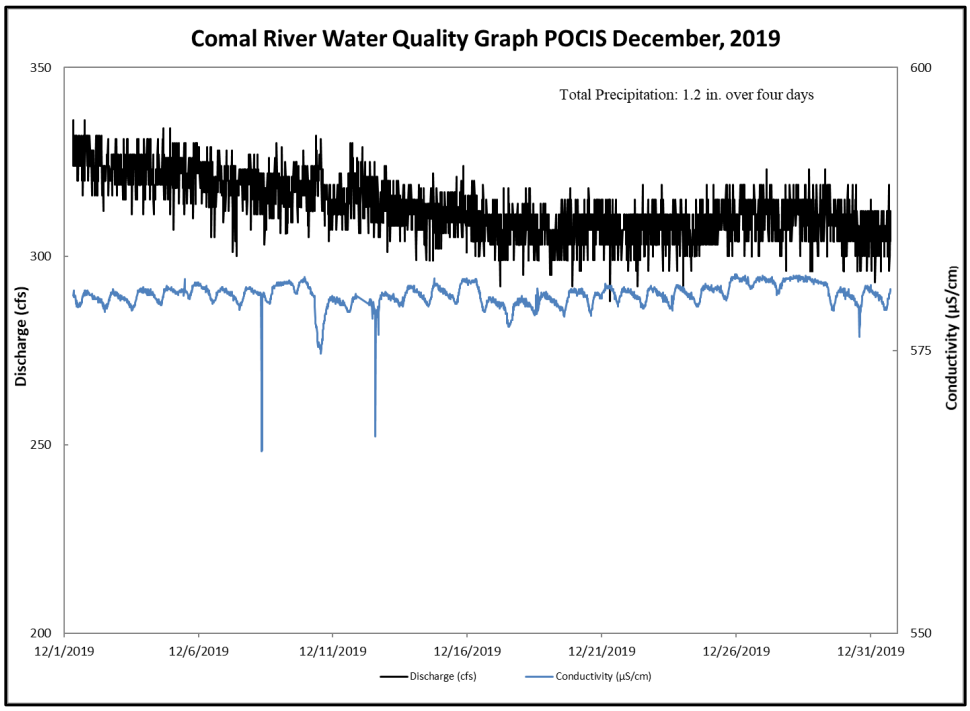


Figure 2. POCIS – December 2019 Stream Discharge and Conductivity – Comal Springs Complex (New Channel RTI Station)



San Marcos Springs Sampling

Table 3. San Marcos Springs Passive Diffusion Sampling Results-December 2019

Location	Month 2019	Tetrachloroethene (µg/L)	TPH (µg/L)
HSM410	December	<0.053	0.066
HSM420	December	0.059	0.062
HSM430	December	0.088	0.064
HSM440	December	0.022	<0.054
HSM450	December	0.017	0.062
FDHSM450	December	0.016	0.065
HSM460	December	0.027	0.063
HSM470	December	0.014	0.078
Texas Commission on Environmental Quality (TCEQ) Acute Surface Water Benchmark For Aquatic Life†	--	3840	NE
TCEQ Chronic Surface Water Benchmark For Aquatic Life†	--	1280	NE
Contact Recreation Water PCL‡	--	148	28,100*

µg/L – micrograms per liter

NE – None established

TPH – total petroleum hydrocarbons

ND – Not detected

* Value for C>16-21 Aromatics presented for TPH

† Aquatic Life Surface Water Benchmark Table (TCEQ 2017)

‡ Human Health Surface Water Risk-Based Exposure Levels (RBELs) Table (TCEQ 2015)

Table 4. San Marcos Springs Pharmaceutical and Personal Care Products (PPCP) POCIS Sampling – April through December 2019

Location	Month 2019	Bisphenol A (ng/l)	Ibuprofen (ng/l)	Naproxen (ng/l)	Triclosan (ng/l)	Caffeine (ng/l)	DEET (ng/l)	Galaxolide (HHCB) (ng/l)	Oxybenzone (ng/l)	Sucralose (ng/l)	TCEP (ng/l)	TCPP (ng/l)	TDCPP (ng/l)
HSM470	April	26,000	3,100	ND	67,000	ND	130,000	180,000	51,000	ND	25,000	660,000	170,000
Extraction Blank	April	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HSM470	June	16,000	20,000	11,000	16,000	11,000	450,000	260,000	24,000	ND	17,000	350,000	130,000
Extraction Blank	June	ND	ND	ND	6,800	ND	71,000	60,000	3,700	ND	3,800	63,000	5,700
HSM470	August	44,000	18,000	14,000	12,000	ND	440,000	320,000	13,000	ND	26,000	650,000	130,000
Extraction Blank	August	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HSM470	October	7,500	4,200	1,600	93,000	16,000	100,000	180,000	15,000	ND	6,800	190,000	21,000
Extraction Blank	October	1,700	1,400	ND	70,000	5,000	93,000	110,000	10,000	6,800	3,800	100,000	3,700
HSM470	December	ND	ND	ND	29,000	4,100	84,000	120,000	ND	ND	6,800	120,000	16,000
Extraction Blank	December	ND	ND	ND	9,700	ND	51,000	130,000	2,800	ND	3,100	120,000	6,300

DEET - N,N-Diethyl-meta-toluamide

HHCB - 1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8-hexamethylcyclopenta--2-benzopyran

TCEP - Tris(2-carboxyethyl)phosphine

TCPP - Tris (2-chloroisopropyl)phosphate

TDCPP - Tris(1,3-dichloroisopropyl)phosphate

ng/L – nanograms per liter

ND – Not detected

NA-Not analyzed

Figure 3. PDS – December 2019 Stream Discharge and Specific Conductivity – San Marcos Spring Complex (Rio Vista RTI Station)

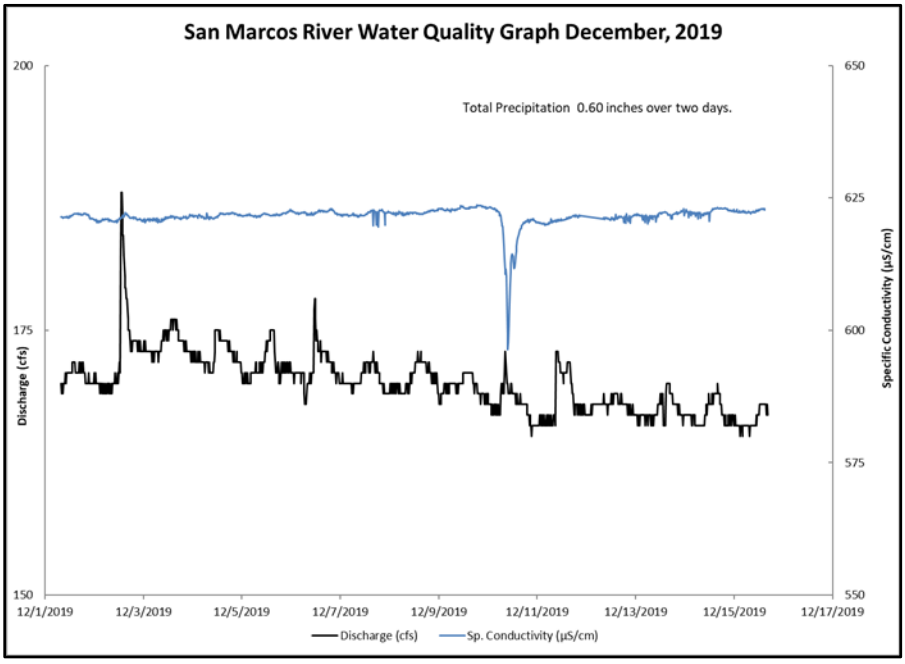
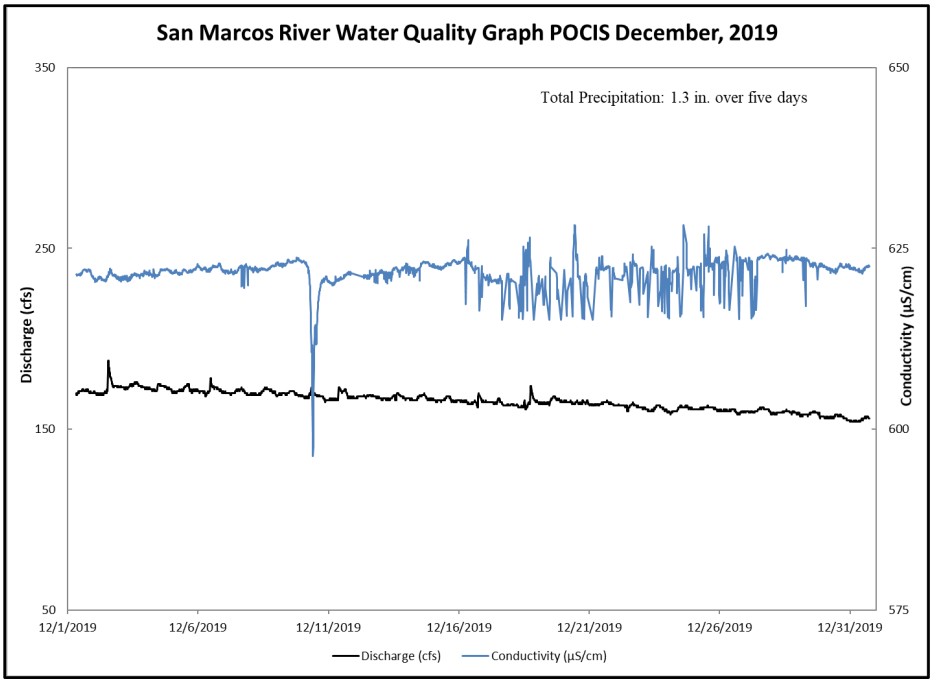


Figure 4. POCIS – December 2019 Stream Discharge and Specific Conductivity- San Marcos Spring Complex (Rio Vista RTI Station)



PDS LABORATORY REPORT

AMPLIFIED GEOCHEMICAL IMAGING, LLC

Laboratory Report

Site: San Marcos and Comal Springs - December 2019

Prepared for:

SWCA Environmental Consultants
6200 UTSA Boulevard
Suite 102
San Antonio, TX
UNITED STATES

Prepared on:
January 7, 2020

Project Summary and Objective

Amplified Geochemical Imaging, LLC. (AGI) provided the AGI Environmental Survey used at:

Comal and San Marcos Rivers - December, 2019

The service provided by AGI included delivery of the required quantity of AGI Universal Samplers, analysis by the method described below for the requested organic compounds, reporting of the data, and contour mapping (as needed).

This report includes results for only the samples noted under the Laboratory Sample Report section. If contour maps are part of the project deliverable, the maps will be prepared and issued under a separate report cover, upon receipt of a usable sitemap (electronic) and compound choices for contouring.

Written/submitted by:

Ray Fenstermacher, P.G.
Project Manager

Reviewed/approved by:

Ian McMullen
Chemist

Analytical data approved by:

Ian McMullen
Chemist

□uality Assurance Statement

The AGI Laboratory, at Amplified Geochemical Imaging's facility in Newark, DE USA, operates under the guidelines of its ISO Standard 17025 DoD ELAP accreditation, and its □uality Assurance Manual, Operating Procedures, and Methods (SOP-□A-0462).

For this project, the analytical method, results, and observations reported do [ ] do not [√] fall within the scope of AGI's ISO 17025 accreditation.

Screening/Concentration Method

The AGI Universal Samplers are analyzed at AGI's fixed laboratory using thermal desorption-gas chromatography/mass spectrometry (TD-GC/MS) instrumentation following modified U.S. EPA Method 8260 (SPG-WI-0292) which includes the following:

- **BFB Tuning Frequency:** A BFB tune is analyzed at the start of each analytical run and after every 30 samples.
- **Initial Calibration:** A minimum of a five point calibration curve is analyzed prior to the analysis of samples.
- **Initial Calibration Verification (ICV):** Following the calibration a second-source reference standard is analyzed to verify the accuracy of the calibration. Acceptance criteria for the ICV is +/- 30%.
- **Linearity of Target Compounds:** If the RSD of any target analyte is less than or equal to 25% then average response factor can be used for quantitation. If the RSD exceeds 25% for a target compound a regression equation can be used for quantitation.
- **Continuing Calibration Verification:** After every 10 samples, and at the end of each analytical batch, a mid-level second-source Reference Standard is analyzed. The acceptance criteria for all target analytes in the reference standards are +/- 50% of the true value.
- **Method Blank:** Analyzed prior to the analysis of field samples and every 30 samples.

Note: Analyte levels reported for the field-deployed AGI Universal Samplers that exceed trip and method blank levels, and/or the reporting limit, are more likely to have originated from on-site sources.

Media Sampled:	WATER
Chemist - sample analysis:	Fatima Niazi
Chemist - data processor:	Fatima Niazi
Chemist - data review:	Ian McMullen

Method deviations: The highest standard values for the following compounds were removed in order to maintain linearity: benzene, toluene, ethylbenzene, m,p,o-xylenes, 124- and 135-trimethylbenzene, naphthalene and acenaphthene.

Please note that data file names ending with R are rerun samples using the second pair of sorbers, in which the original results were not reported. Data file names ending in D are duplicate analysis results for the second set of sorbers from the same sampler, and are reported.

Additional Report Information

- Comments
- Laboratory Sample Report
- Chain of Custody
- Installation and Retrieval Log
- Data Table(s) and Key
- Concentration Calculation Method Summary
- Total Ion Chromatograms

Project Specific Comments

All samplers were returned and analyzed including the trip blank samples 00750619 and 00750620.

Survey period [1]	Samplers were installed on December 2, 2019 and retrieved on December 16, 2019 for an exposure period of 14 days.	
Tamper seal intact:	Yes	
Date received:	12/18/19 12:30 pm	By: Darlene Yellowdy
COC returned:	Yes	
Comments:	None	

1 - Installation start to end of retrieval, as reported. See installation and retrieval log for individual deployment and retrieval dates and times (i.e., sampler exposure time).

General Comments

Analytical QA/QC

Laboratory instrumentation consists of gas chromatographs equipped with mass selective detectors, coupled with automated thermal desorption units. Sample preparation involves cutting the tip off the bottom of the AGI Universal Sampler, and transferring one or more "sorbers" to a thermal desorption tube for analysis. The insertion/retrieval cord prevents soil, water and other interferences from coming in contact with the adsorbent. No further sample preparation is required. Any replicate sorbers not consumed in the initial analysis will be discarded fifteen (15) days from the date of the laboratory report.

Data are archived and stored in a secure manner as per AGI's □uality Assurance program (SOP-□A-0462).

Total petroleum hydrocarbons (TPH), gasoline-range petroleum hydrocarbons (GRPH), and/or diesel range petroleum hydrocarbons (DRPH), when reported, are calculated using the area under the peaks observed in m/z 55 and 57 selected ion chromatograms. □uantitation of the mass values was performed using the response factor for a specific alkane (present in the calibration standards). TPH values include the entire chromatogram and provide estimates for aliphatic hydrocarbon ranges of C4 to C20. GRPH and DRPH include only the relevant regions of the chromatograms and provide estimates for C4 to C10 and C10 to C20 aliphatic hydrocarbons, respectively.

Trip blanks were provided to document potential exposures that were not part of the signal of interest (e.g., impact during sampler shipment, installation and/or retrieval, and storage). The trip blanks are identically manufactured and packaged AGI Universal Samplers to those samplers deployed in the field . The trip blanks remain unopened during all phases of the project. Levels reported on the trip blanks may indicate potential impact to the samplers other than the contaminant source of interest.

Unresolved peak envelopes (UPEs) are represented as a series of compound peaks clustered together around a central gas chromatograph elution time in the total ion chromatogram. UPEs may be indicative of complex fluid mixtures. UPEs observed early in the chromatograms are considered to indicate presence of more volatile fluids, while UPEs observed later in the chromatogram may indicate the presence of less volatile fluids. Multiple UPEs may indicate the presence of multiple complex fluids.

Total ion chromatograms (TICs) are included in the Attachments. The eight-digit serial number of each sampler is incorporated in the TIC identification (e.g., 12345678.D represents AGI Universal Sampler 12345678).

General Comments

Soil Gas Sampling

For soil gas sampling, the AGI Environmental Survey reports mass levels migrating through the open pore spaces of the soil and diffusing through the sampler membrane for sorption by the engineered, hydrophobic adsorbents, housed within the membrane tube. During the migration of the soil gas away from the source to the AGI Universal Sampler, the vapors are subject to a variety of attenuation factors. The soil gas masses reported on the samplers compare favorably with the concentrations reported in the soil or groundwater (e.g., where soil gas levels are reported at greater levels to other sampled locations on the site, the matrix data should reveal the same pattern, and vice versa). However, due to a variety of factors, a perfect comparison between matrix data and soil gas levels can rarely be achieved.

Soil gas concentrations (□g/m3) are calculated following the method described in the Additional Report Information section.

Soil gas signals reported by this method cannot be correlated specifically to soil adsorbed, groundwater, and /or free-phase contamination. The soil gas signal reported from each AGI Universal Sampler can evolve from all of these sources. Differentiation between soil and groundwater contamination can only be achieved with prior knowledge of the site history (i.e., the site is known to have groundwater contamination only).

Air Sampling

For indoor, outdoor, and crawlspace air sampling, the AGI Environmental Survey reports mass levels present in the air and diffusing through the sampler membrane for sorption by the engineered adsorbents housed within the membrane tube.

Air concentrations (□g/m3) are calculated following the method described in the Additional Report Information section.

Groundwater and Sediment Porewater Sampling

For groundwater and sediment porewater sampling, the AGI Environmental Survey reports the mass levels of compounds present in the water which, when coming in contact with the sampler membrane, partitions out of solution, and diffuses through the sampler membrane for sorption by the engineered adsorbents.

Water concentrations (□g/L) are calculated using the quantified mass, exposure period and the compound specific uptake rate. The rates were measured under controlled experimental conditions. The uptake rates are corrected for water pressure (depth of the AGI Universal Sampler below the water table), water temperature and the aquifer flow rate. For sediment porewater, the uptake rate is corrected for the reduced volume of water in the sediment, by multiplying the uptake rate by the pore water fraction.

Laboratory Sample Report

AGI Sample ID	Field ID	Sample Type
00750605	HCS410	FIELD_SAMPLE
00750606	HCS420	FIELD_SAMPLE
00750607	HCS430	FIELD_SAMPLE
00750608	HCS440	FIELD_SAMPLE
00750609	FDHCS440	FIELD_SAMPLE
00750610	HCS460	FIELD_SAMPLE
00750611	HSM410	FIELD_SAMPLE
00750612	HSM420	FIELD_SAMPLE
00750613	HSM430	FIELD_SAMPLE
00750614	HSM440	FIELD_SAMPLE
00750615	HSM450	FIELD_SAMPLE
00750616	FDHSM450	FIELD_SAMPLE
00750617	HSM460	FIELD_SAMPLE
00750618	HSM470	FIELD_SAMPLE
00750619	Trip Blank	TRIP_BLANK
00750620	Unused	TRIP_BLANK

Total # Field Samples: 14
Total # Trip Blanks: 2
Total # Unused: 0

AMPLIFIED GEOCHEMICAL IMAGING LLC

210 Executive Drive
Newark, Delaware 19702 USA
ph: +1-302-266-2428
www.agisurveys.net

AGI Universal Passive Sampler Chain of Custody
Soil gas and/or Air Sampling

Production Order #: ENV T02182

Customer Name: SWCA Environmental Consultants

Address: 6200 UTSA Boulevard
Suite 102
San Antonio, TX 78249
USA

Site Name: Comal and San Marcos Springs - December 2019

Site Address:

Project Manager: PHIL PEARCE

Serial # of Samplers Shipped
00750605 - 00750620

# of Samplers for Installation 14
Total Samplers Shipped 16
Total Samplers Received 16
Total Samplers Installed 14

# of Trip Blanks 2
Pieces
Pieces
Pieces

Serial # of Trip Blanks (Client Decides)

00750619		

Insertion Rods

Tips Shipped: 0

Rod Bodies Shipped 0

Prepared By:

Verified By:

Installation Method: (Circle those that apply)
Slide Hammer Hammer Drill Auger
Other

Installation Performed By:
Name: DEBBIE DURAN
Company: SWCA

Retrieval Performed By:
Name: DEBBIE DURAN
Company: SWCA

Installation Start Date / Time: 12/2/2019 9:48 AM
Installation Complete Date / Time: 12/2/2019 13:45 PM

Retrieval Start Date / Time: 12/16/19 9:39
Retrieval Complete Date / Time: 12/16/19 13:40

Total Samplers Retrieved: 14
Total Samplers Lost In Field: 0
Total Unused Samplers Returned: 1

Insertion Rod Sections Returned:

Relinquished By: Date/Time 11/15/19
Company: AGI 2:00PM

Received By: Debbie Duran Date/Time
Company: SWCA 11/19/19 4:30PM

Relinquished By: Debbie Duran Date/Time
Company: SWCA 12/17/19 4:00PM

Received By: Marlene Lilly 12/18/19 Date/Time
Company: AGI 12:30 PM

AMPLIFIED GEOCHEMICAL IMAGING, LLC
210 Executive Drive, Suite 1
Newark, DE USA 19702-3335
ph: 302-266-2428

AGI Project No. ENV T02182
Site Name: Comal and San Marcos Springs - December 2019
Site Location: New Braunfels, Texas and San Marcos, Texas

AGI Water Sampling
Installation & Retrieval Log

Company Name: SWCA Environmental Consultants
Location: New Braunfels Texas and San Marcos, Texas
Samples collected by: Debbie Duran

*** Optional or as needed**

					WATER QUALITY MONITORING						YES / NO	
SAMPLER SERIAL NO.	WELL ID	SAMPLE TYPE (Field Sample, Trip Blank, Field Blank, etc.)	INSTALLATION DATE & TIME MM/DD/YYYY HH:MM (24 Hour) ex. 12/30/2000 13:00	RETRIEVAL DATE & TIME MM/DD/YYYY HH:MM (24 Hour) ex. 12/30/2000 15:00	INSTALLATION DEPTH FROM TOP OF CASING (feet)	DEPTH TO WATER FROM TOP OF CASING (feet)	SCREENED INTERVAL FROM TOP OF CASING (feet)	WATER TEMPERATURE AT MODULE DEPTH (deg C)	FLOW RATE THROUGH SCREEN: HIGH OR LOW (HIGH = flow > than 10 m/day; LOW = flow < 10 m/day)	OBSERVATIONS/COMMENTS* (e.g., observations, location description, missing, pulled from well, etc. - as needed)	EVIDENCE OF LIQUID PETROLEUM HYDROCARBONS?	ODOR ?
00750605	HCS410	FIELD_SAMPLE	12/2/16 10:04	12/16/19 9:55	2.6'			23.53			No	No
00750606	HCS420	FIELD_SAMPLE	12/2/16 10:15	12/16/19 10:00	1.7'			23.53			No	No
00750607	HCS430	FIELD_SAMPLE	12/2/16 9:48	12/16/19 9:39	2.1'			23.53			No	No
00750608	HCS440	FIELD_SAMPLE	12/2/19 10:24	12/16/19 10:14	3.2'			23.53			No	No
00750609	FDHCS440	FIELD_SAMPLE	12/2/19 10:24	12/16/19 10:11	1.7'			23.53			No	No
00750610	HCS460	FIELD_SAMPLE	12/2/19 10:36	12/16/19 10:25	1.4'			23.53			No	No
00750611	HSM410	FIELD_SAMPLE	12/2/19 11:23	12/16/19 11:06	1.5'			22.8			No	No
00750612	HSM420	FIELD_SAMPLE	12/2/19 11:40	12/16/19 11:20	3.1'			22.8			No	No
00750613	HSM430	FIELD_SAMPLE	12/2/19 12:40	12/16/19 11:28	2.5'			22.8			No	No
00750614	HSM440	FIELD_SAMPLE	12/2/19 12:56	12/16/19 12:48	2.5'			22.8			No	No
00750615	HSM450	FIELD_SAMPLE	12/2/19 13:13	12/16/19 13:01	3.3'			22.8			No	No
00750616	FDHSM450	FIELD_SAMPLE	12/2/19 13:13	12/16/19 13:01	3.1'			22.8			No	No
00750617	HSM460	FIELD_SAMPLE	12/2/19 13:23	12/16/19 13:16	2.1'			22.8			No	No
00750618	HSM470	FIELD_SAMPLE	12/2/19 13:45	12/16/19 13:40	1.8'			22.8			No	No
00750619	Trip Blank	TRIP_BLANK										
00750620		UNUSED										

SPG-FCD-8930 Water R5

AMPLIFIED GEOCHEMICAL IMAGING, LLC
210 EXECUTIVE DRIVE, SUITE 1, NEWARK, DE 19702
SWCA ENVIRONMENTAL CONSULTANTS, TX
STANDARD TARGET VOCs/SVOCs
COMAL AND SAN MARCOS SPRINGS - DECEMBER 2019
ORDER # T02182

DATAFILE	FIELD	DATE													
NAME	ID	ANALYZED	DF	TPH, ug	MTBE, ug	t12DCE, ug	11DCA, ug	c12DCE, ug	CHCl3, ug	111TCA, ug	12DCA, ug	BENZ, ug	CCl4, ug	TCE, ug	112TCA, ug
RL =				0.50	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
00750605	HCS410	1/2/1920	1	0.67	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750606	HCS420	1/2/1920	1	0.76	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750607	HCS430	1/2/1920	1	1.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750608	HCS440	1/2/1920	1	0.73	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750609	FDHCS440	1/2/1920	1	1.00	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750610	HCS460	1/2/1920	1	0.96	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750611	HSM410	1/2/1920	1	0.80	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750612	HSM420	1/2/1920	1	0.70	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750613	HSM430	1/2/1920	1	0.75	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750614	HSM440	1/2/1920	1	<0.50	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750615	HSM450	1/2/1920	1	0.68	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750616	FDHSM450	1/2/1920	1	0.78	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750617	HSM460	1/2/1920	1	0.73	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750618	HSM470	1/2/1920	1	1.17	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750619	Trip Blank	1/2/1920	1	0.82	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750620	Trip Blank	1/2/1920	1	<0.50	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
BLK-2	METHOD BLANK	1/2/1920	1	<0.50	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

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COMAL AND SAN MARCOS SPRINGS - DECEMBER 2019
ORDER # T02182

DATAFILE														
NAME	TOL, ug	OCT, ug	PCE, ug	ClBENZ, ug	1112TetCA, ug	ETBENZ, ug	mpXYL, ug	oXYL, ug	1122TetCA, ug	135TMB, ug	124TMB, ug	13DCB, ug	14DCB, ug	12DCB, ug
RL =	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
00750605	<0.02	<0.02	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750606	<0.02	<0.02	0.46	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750607	<0.02	<0.02	0.62	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750608	<0.02	<0.02	0.39	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750609	<0.02	<0.02	0.40	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750610	<0.02	<0.02	0.37	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750611	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750612	<0.02	<0.02	0.31	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750613	<0.02	<0.02	0.49	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750614	<0.02	<0.02	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750615	<0.02	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750616	<0.02	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750617	<0.02	<0.02	0.13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750618	<0.02	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750619	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
00750620	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
BLK-2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

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DATAFILE											
NAME	UNDEC, ug	NAPH, ug	TRIDEC, ug	2MeNAPH, ug	Acenaphthylene, ug	PENTADEC, ug	Acenaphthene, ug	Fluorene, ug	PHEN, ug	Anthracene, ug	Fluoranthene, ug
RL =	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00750605	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750606	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750607	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750608	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750609	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750610	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750611	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.11	<0.05	<0.05	<0.05
00750612	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05
00750613	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750614	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.13	<0.05	<0.05	<0.05
00750615	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750616	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750617	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750618	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750619	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750620	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BLK-2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

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DATAFILE											
NAME	Pyrene, ug	alpha-BHC, ug	beta-BHC, ug	gama-BHC (Lindane), ug	delta-BHC, ug	Heptachlor, ug	Aldrin, ug	Heptachlor Epoxide, ug	Endosulfan I, ug	4,4-DDE, ug	Dieldrin, ug
RL =	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00750605	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750606	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750607	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750608	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750609	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750610	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750611	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750612	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750613	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750614	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750615	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750616	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750617	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750618	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750619	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750620	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BLK-2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

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COMAL AND SAN MARCOS SPRINGS - DECEMBER 2019
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DATAFILE								
NAME	Endrin, ug	4,4-DDD, ug	Endosulfan II, ug	Endrin Aldehyde, ug	4,4-DDT, ug	Endosulfan Sulfate, ug	Endrin Ketone, ug	Methoxychlor, ug
RL =	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00750605	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750606	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750607	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750608	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750609	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750610	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750611	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750612	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750613	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750614	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750615	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750616	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750617	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750618	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750619	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
00750620	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BLK-2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

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ESTIMATED WATER CONCENTRATIONS
COMAL AND SAN MARCOS SPRINGS - DECEMBER 2019
ORDER # T02182

DATAFILE	FIELD	DATE	DATE	DATE	DATE		estimated								
NAME	ID	INSTALLED	RETRIEVED	RECEIVED	ANALYZED	DF	TPH, ug/L	MTBE, ug/L	t12DCE, ug/L	11DCA, ug/L	c12DCE, ug/L	CHCl3, ug/L	111TCA, ug/L	12DCA, ug/L	BENZ, ug/L
RL =							0.054	0.013	0.008	0.007	0.007	0.007	0.005	0.008	0.006
00750605	HCS410	12/2/2019	12/16/2019	12/18/2019	1/2/1920	1	0.060	<0.013	<0.007	<0.007	<0.007	<0.007	<0.005	<0.008	<0.006
00750606	HCS420	12/2/2019	12/16/2019	12/18/2019	1/2/1920	1	0.063	<0.013	<0.007	<0.007	<0.007	<0.007	<0.005	<0.008	<0.006
00750607	HCS430	12/2/2019	12/16/2019	12/18/2019	1/2/1920	1	0.074	<0.013	<0.007	<0.007	<0.007	<0.007	<0.005	<0.008	<0.006
00750608	HCS440	12/2/2019	12/16/2019	12/18/2019	1/2/1920	1	0.062	<0.013	<0.007	<0.007	<0.007	<0.007	<0.005	<0.008	<0.006
00750609	FDHCS440	12/2/2019	12/16/2019	12/18/2019	1/2/1920	1	0.071	<0.013	<0.007	<0.007	<0.007	<0.007	<0.005	<0.008	<0.006
00750610	HCS460	12/2/2019	12/16/2019	12/18/2019	1/2/1920	1	0.070	<0.013	<0.007	<0.007	<0.007	<0.007	<0.005	<0.008	<0.006
00750611	HSM410	12/2/2019	12/16/2019	12/18/2019	1/2/1920	1	0.066	<0.013	<0.008	<0.007	<0.007	<0.007	<0.005	<0.008	<0.006
00750612	HSM420	12/2/2019	12/16/2019	12/18/2019	1/2/1920	1	0.062	<0.013	<0.008	<0.007	<0.007	<0.007	<0.005	<0.008	<0.006
00750613	HSM430	12/2/2019	12/16/2019	12/18/2019	1/2/1920	1	0.064	<0.013	<0.008	<0.007	<0.007	<0.007	<0.005	<0.008	<0.006
00750614	HSM440	12/2/2019	12/16/2019	12/18/2019	1/2/1920	1	<0.054	<0.013	<0.008	<0.007	<0.007	<0.007	<0.005	<0.008	<0.006
00750615	HSM450	12/2/2019	12/16/2019	12/18/2019	1/2/1920	1	0.062	<0.013	<0.008	<0.007	<0.007	<0.007	<0.005	<0.008	<0.006
00750616	FDHSM450	12/2/2019	12/16/2019	12/18/2019	1/2/1920	1	0.065	<0.013	<0.008	<0.007	<0.007	<0.007	<0.005	<0.008	<0.006
00750617	HSM460	12/2/2019	12/16/2019	12/18/2019	1/2/1920	1	0.063	<0.013	<0.008	<0.007	<0.007	<0.007	<0.005	<0.008	<0.006
00750618	HSM470	12/2/2019	12/16/2019	12/18/2019	1/2/1920	1	0.078	<0.013	<0.008	<0.007	<0.007	<0.007	<0.005	<0.008	<0.006
00750619	Trip Blank	12/2/2019	12/16/2019	12/18/2019	1/2/1920	1	0.066	<0.013	<0.008	<0.007	<0.007	<0.007	<0.005	<0.008	<0.006
00750620	Trip Blank	12/2/2019	12/16/2019	12/18/2019	1/2/1920	1	<0.054	<0.013	<0.008	<0.007	<0.007	<0.007	<0.005	<0.008	<0.006
BLK-2	METHOD BLANK	12/2/2019	12/16/2019	12/18/2019	1/2/1920	1	<0.054	<0.013	<0.008	<0.007	<0.007	<0.007	<0.005	<0.008	<0.006

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ESTIMATED WATER CONCENTRATIONS
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DATAFILE															
NAME	CCl4, ug/L	TCE, ug/L	112TCA, ug/L	TOL, ug/L	OCT, ug/L	PCE, ug/L	ClBENZ, ug/L	1112TetCA, ug/L	ETBENZ, ug/L	mpXYL, ug/L	oXYL, ug/L	1122TetCA, ug/L	135TMB, ug/L	124TMB, ug/L	13DCB, ug/L
RL =	0.005	0.006	0.009	0.006	0.005	0.005	0.006	0.007	0.005	0.005	0.005	0.011	0.005	0.005	0.006
00750605	<0.005	<0.006	<0.009	<0.006	<0.004	0.022	<0.006	<0.007	<0.005	<0.005	<0.005	<0.010	<0.005	<0.005	<0.006
00750606	<0.005	<0.006	<0.009	<0.006	<0.004	0.082	<0.006	<0.007	<0.005	<0.005	<0.005	<0.010	<0.005	<0.005	<0.006
00750607	<0.005	<0.006	<0.009	<0.006	<0.004	0.106	<0.006	<0.007	<0.005	<0.005	<0.005	<0.010	<0.005	<0.005	<0.006
00750608	<0.005	<0.006	<0.009	<0.006	<0.004	0.071	<0.006	<0.007	<0.005	<0.005	<0.005	<0.010	<0.005	<0.005	<0.006
00750609	<0.005	<0.006	<0.009	<0.006	<0.004	0.072	<0.006	<0.007	<0.005	<0.005	<0.005	<0.010	<0.005	<0.005	<0.006
00750610	<0.005	<0.006	<0.009	<0.006	<0.004	0.068	<0.006	<0.007	<0.005	<0.005	<0.005	<0.010	<0.005	<0.005	<0.006
00750611	<0.005	<0.006	<0.010	<0.006	<0.005	<0.005	<0.006	<0.007	<0.005	<0.005	<0.005	<0.011	<0.005	<0.005	<0.006
00750612	<0.005	<0.006	<0.010	<0.006	<0.005	0.059	<0.006	<0.007	<0.005	<0.005	<0.005	<0.011	<0.005	<0.005	<0.006
00750613	<0.005	<0.006	<0.010	<0.006	<0.005	0.088	<0.006	<0.007	<0.005	<0.005	<0.005	<0.011	<0.005	<0.005	<0.006
00750614	<0.005	<0.006	<0.010	<0.006	<0.005	0.022	<0.006	<0.007	<0.005	<0.005	<0.005	<0.011	<0.005	<0.005	<0.006
00750615	<0.005	<0.006	<0.010	<0.006	<0.005	0.017	<0.006	<0.007	<0.005	<0.005	<0.005	<0.011	<0.005	<0.005	<0.006
00750616	<0.005	<0.006	<0.010	<0.006	<0.005	0.016	<0.006	<0.007	<0.005	<0.005	<0.005	<0.011	<0.005	<0.005	<0.006
00750617	<0.005	<0.006	<0.010	<0.006	<0.005	0.027	<0.006	<0.007	<0.005	<0.005	<0.005	<0.011	<0.005	<0.005	<0.006
00750618	<0.005	<0.006	<0.010	<0.006	<0.005	0.014	<0.006	<0.007	<0.005	<0.005	<0.005	<0.011	<0.005	<0.005	<0.006
00750619	<0.005	<0.006	<0.009	<0.006	<0.005	<0.005	<0.006	<0.007	<0.005	<0.005	<0.005	<0.011	<0.005	<0.005	<0.006
00750620	<0.005	<0.006	<0.009	<0.006	<0.005	<0.005	<0.006	<0.007	<0.005	<0.005	<0.005	<0.011	<0.005	<0.005	<0.006
BLK-2	<0.005	<0.006	<0.009	<0.006	<0.005	<0.005	<0.006	<0.007	<0.005	<0.005	<0.005	<0.011	<0.005	<0.005	<0.006

AMPLIFIED GEOCHEMICAL IMAGING, LLC
210 EXECUTIVE DRIVE, SUITE 1, NEWARK, DE 19702
SWCA ENVIRONMENTAL CONSULTANTS, TX
STANDARD TARGET VOCs/SVOCs
ESTIMATED WATER CONCENTRATIONS
COMAL AND SAN MARCOS SPRINGS - DECEMBER 2019
ORDER # T02182

DATAFILE					estimated		estimated	estimated	estimated	estimated
NAME	14DCB, ug/L	12DCB, ug/L	UNDEC, ug/L	NAPH, ug/L	TRIDEC, ug/L	2MeNAPH, ug/L	Acenaphthylene, ug/L	PENTADEC, ug/L	Acenaphthene, ug/L	Fluorene, ug/L
RL =	0.006	0.006	0.020	0.016	0.020	0.013	0.014	0.020	0.014	0.014
00750605	<0.006	<0.006	<0.020	<0.016	<0.020	<0.013	<0.014	<0.020	<0.014	<0.014
00750606	<0.006	<0.006	<0.020	<0.016	<0.020	<0.013	<0.014	<0.020	<0.014	<0.014
00750607	<0.006	<0.006	<0.020	<0.016	<0.020	<0.013	<0.014	<0.020	<0.014	<0.014
00750608	<0.006	<0.006	<0.020	<0.016	<0.020	<0.013	<0.014	<0.020	<0.014	<0.014
00750609	<0.006	<0.006	<0.020	<0.016	<0.020	<0.013	<0.014	<0.020	<0.014	<0.014
00750610	<0.006	<0.006	<0.020	<0.016	<0.020	<0.013	<0.014	<0.020	<0.014	<0.014
00750611	<0.006	<0.006	<0.020	<0.016	<0.020	<0.014	<0.014	<0.020	<0.014	0.029
00750612	<0.006	<0.006	<0.020	<0.016	<0.020	<0.014	<0.014	<0.020	<0.014	0.015
00750613	<0.006	<0.006	<0.020	<0.016	<0.020	<0.014	<0.014	<0.020	<0.014	<0.014
00750614	<0.006	<0.006	<0.020	<0.016	<0.020	<0.014	<0.014	<0.020	<0.014	0.032
00750615	<0.006	<0.006	<0.020	<0.016	<0.020	<0.014	<0.014	<0.020	<0.014	<0.014
00750616	<0.006	<0.006	<0.020	<0.016	<0.020	<0.014	<0.014	<0.020	<0.014	<0.014
00750617	<0.006	<0.006	<0.020	<0.016	<0.020	<0.014	<0.014	<0.020	<0.014	<0.014
00750618	<0.006	<0.006	<0.020	<0.016	<0.020	<0.014	<0.014	<0.020	<0.014	<0.014
00750619	<0.006	<0.006	<0.020	<0.016	<0.020	<0.013	<0.014	<0.020	<0.014	<0.014
00750620	<0.006	<0.006	<0.020	<0.016	<0.020	<0.013	<0.014	<0.020	<0.014	<0.014
BLK-2	<0.006	<0.006	<0.020	<0.016	<0.020	<0.013	<0.014	<0.020	<0.014	<0.014

KEY TO DATA TABLE

UNITS

µg	micrograms, relative mass value
µg/mˆ3	micrograms per cubic meter; estimated soil gas concentration
µg/L	micrograms per Liter; calculated water concentration

DATA QUALIFIERS

>	greater than; value exceeds calibration range, estimated value
<	less than; compound value is below the LOD and RL
J	mass value below LOQ or RL, but above LOD, estimated mass value
E	mass value exceeds upper calibration level, estimated mass value
Q	one or more quality control parameters failed for the compound

ABBREVIATIONS

AVG RL	average reporting limit; calculated based on individual field sample RLs
LOD	limit of detection
LOQ	limit of quantification
MDL	method detection limit
RL	reporting limit

1112TetCA	1,1,1,2-tetrachloroethane
111TCA	1,1,1-trichloroethane
1122TetCA	1,1,2,2-tetrachloroethane
112TCA	1,1,2-trichloroethane
11DCA	1,1-dichloroethane
11DCE	1,1-dichloroethene
124TMB	1,2,4-trimethylbenzene
12DCA	1,2-dichloroethane
12DCB	1,2-dichlorobenzene
135TMB	1,3,5-trimethylbenzene
13DCB	1,3-dichlorobenzene
14DCB	1,4-dichlorobenzene
2MeNAPH	2-methyl naphthalene
BENZ	benzene
BTEX	combined masses of benzene, toluene, ethylbenzene, and total xylenes (Gasoline Range Aromatics)
C11,C13&C15	combined masses of undecane, tridecane, and pentadecane (C11+C13+C15) (Diesel Range Alkanes)
c12DCE	cis-1,2-dichloroethene
CCl4	carbon tetrachloride
CHC13	chloroform
ClBENZ	chlorobenzene
ct12DCE	cis- & trans-1,2-dichloroethene
EtBENZ	ethylbenzene
mpXYL	m-, p-xylene
MTBE	methyl t-butyl ether
NAPH	naphthalene
OCT	octane
oXYL	o-xylene
PCE	tetrachloroethene
PENTADEC	pentadecane
PHEN	phenanthrene
t12DCE	trans-1,2-dichloroethene
TCE	trichloroethene
TMBs	combined masses of 1,3,5-trimethylbenzene and 1,2,4-trimethylbenzene
TOL	toluene
TPH	total petroleum hydrocarbons
TRIDEC	tridecane
UNDEC	undecane
VC	vinyl chloride

SUMMARY OF SAMPLING RATE CALIBRATION FOR AGI UNIVERSAL SAMPLER IN AQUEOUS PHASES

INTRODUCTION:

The Amplified Geochemical Imaging, LLC (AGI) passive vapor sampler is designed to be used for soil gas, water, sediment pore water, and air sampling. This document describes the process used to calibrate the sampler's compound specific sampling or uptake rates in aqueous phases.

Sampling rates are measured following AGI's "Standard Practice for Determining the Sampling Rate of Passive Diffusion Samplers in Various Environmental Media": SPG-SOP-0493. Rates are used to calculate dissolved phase concentrations of volatile and semi-volatile contaminants in water. The calibration process is summarized in three parts: Part 1: shallow water, Part 2: deep water, and Part 3: sediment.

PURPOSE:

The purpose of this document is to:

1. Summarize the test protocol,
2. Summarize the methodology for analysis of data,
3. Present general results for generating concentration calibration of the AGI Universal Sampler

Principle of Operation of the AGI Samper

The AGI Universal Sampler is designed with solid adsorbents enclosed inside a tubular microporous PTFE membrane. When placed in water, the pores and hydrophobic nature of the PTFE keep liquid water from entering the membrane until a water head of about 34 feet is reached. The membrane will not keep water vapor from entering but the adsorbents are very hydrophobic and through testing validated to be unaffected by this moisture vapor. In shallow water, <34', volatile and semi-volatile compounds will partition from the dissolved water into the air phase in the PTFE membrane according to Henry's Law. This partitioning is instantaneous and within seconds-minutes, the compound is adsorbed by the adsorbent inside the sealed tube. Because the diffusivity in air is about 10,000 times higher than the diffusivity in water, the sampling rate is controlled by the water contact area of the membrane that allows the Henry's Law effect to occur. This contact area is set by the membrane diameter and length of the sealed tube, which is fixed in AGI's manufacturing process.

Henry's law as well as diffusivity, which are fundamentally incorporated into the sampling rate, are affected by temperature, T, and follow an Arrhenius equation $H_T = Hr \times \exp([-Ea/R](1/Tr - 1/T))$. Because a 5°C temperature change can make a 15% change in sampling rate, the temperature of the sampled water should be known to get the most precise concentration.

The membrane pore size is also small enough that colloidal particles and microbes cannot pass through the membrane. This keeps the adsorbent from getting contaminated and eliminates any need to add preservative or chilling during storage or transportation.

When the water pressure exceeds the water entry pressure of the membrane, about 34 feet of water, the water becomes in contact with the solid adsorbent. Under this condition the compounds in the water will partition from the water into the solid. The partitioning coefficient, K_{AW}, can be approximated by the octanol-water coefficient, K_{OW}, but has been measured more precisely in the lab for AGI's specific solid adsorbent. The sampling rate is the product of the sampling rate at <34' of water and the K_{AW}.

In sediment, the sampler measures pore-water concentration, which is generally agreed to be the preferred measurement as it is more indicative of bioavailability. In sediment the volumetric

availability of water to the sampler is reduced by the volume fraction solids in the sediment, which typically varies from zero to 35%, but can be has high at 73% in well packed and broad particle size distribution sediments. As a result, sampling rates in sediment are multiplied by the fraction pore water in the sediment to determine concentration.

PART 1: Calibration in shallow water

Part 1 summarizes the work in shallow water generating calibration data, evaluating the physical and chemical factors affecting the sampling rate, and measurement of the actual sampling rates or regression calibration equations needed to determine concentrations.

Sample Generation in water

In this calibration work, solutions of analytes at known concentrations were formulated in clean 4 liter smoked glass jugs by injecting microliter measured amounts of environmental standards using a calibrated syringe into pure or deionized water and stirring for a minimum of 2 hours but generally overnight. Headspace in the jugs was minimized and generally less than 1% by volume during the tests. Jugs were temperature controlled by placing them in a water filled cooler, chilled via a cooper tubing loop in the cooler. Temperature was measured with a certified digital temperature gauge and an average value used for each temperature experiment.

AGI samplers were weighted so they won't float and placed in the jugs at time zero. They were removed at various intervals to generate samples along with duplicates that showed mass increasing with exposure time. The sampler exposure time was selected to span minutes to hours and was generally reduced for high concentration tests to maintain uptake with time in roughly the linear dynamic range. Samplers were removed and dried with a paper towel and returned to their original container for analysis. They were analyzed by AGI's 8260C (SPG-WI-318 or SPG-WI-10028) method in duplicate, which is based on EPA SW846 Method 8260C.

Water samples were also taken and measured at an outside accredited lab using EPA SW846 Method 8260B. The concentrations agreed well with the calculated concentrations based on the standard certification, jug volume, and syringe injection. The variability of the outside lab 8260B values were found to be high, so for the sampling rate calculations we used the concentrations based on syringe dosing.

Calibrations were run at five concentrations, nominally at 6, 24, 118, 590, 1420 ug/L and five temperatures nominally at 5, 10, 15, 20, and 25 degrees centigrade. Samples were taken at 4 different exposure times. Samples were run in duplicate. A total of 176 data points were generated using 28 compounds from AGI's standard compounds list. Tridecane and pentadecane were not evaluated due to their very low solubility in water. In addition, another 23 compounds were tested using an 8260 liquid standard at nominal concentrations of 0.5, 1.0, 5.0, 15, 95, and 470 ug/L at a temperature typical of groundwater, 15°C. This is a living calibration and as additional data are generated, they may be qualified and added to this data set to improve the precision of the sampling rate calibration and broaden the compound list.

Key Variable Effects

As expected from theory, at short to moderate exposure times, mass will increase roughly linearly proportional to exposure time, as well as proportional to concentration, and exponentially with temperature following Arrhenius law. Temperature affects the Henry's law as well as diffusivity in water. Sampling rate is generally independent of concentration and time at mass values significantly below saturation. In the following sections we have characterized the sampling rate for each compound as affected by temperature and also developed calibrations using regression which account for the minor impact of time, and mass.

Concentration using Simple Sampling Rate Determination

A simple way to determine concentration is to measure mass on the AGI sampler, divide by exposure time, and divide by sampling rate, SR.

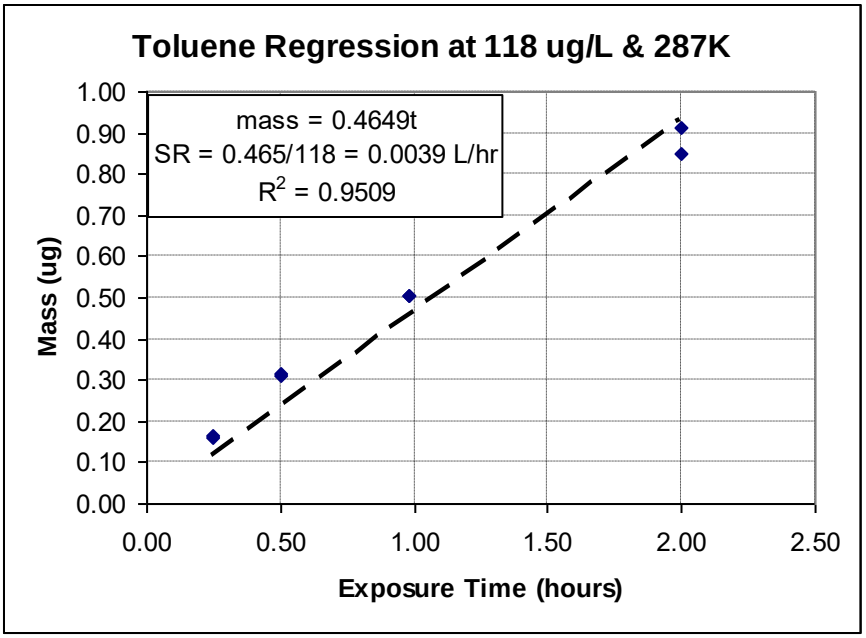
Conc [ug/L] = mass/time/SR (1)

The sampling rate can be determined via measurements of mass versus time at a known concentration and temperature according to the following modification of equation (1).

SR = mass/time/concentration (2)

Sampling rates in L/hr were determined by measuring the trend or regression mass uptake versus time and dividing by the concentration. A measurement like this will use 8 data points (4 times x 2 samples). Such a sampling rate can be measured at any concentration and temperature.

The chart to the right shows a plot of mass versus time for water at 118 ug/L and 287K (actual data from a single run). Slope of 0.465 ug/hr divided by the concentration of 118 ug/L yields a sampling rate, SR, of 0.0039 L/hr.



SR's typically range from about 0.004 to 0.007 L/hr at 15°C. Table A shows SR's measured for our standard compound list at 5 temperatures.

Rigorous Concentration using Regression

A preferred method for determining concentration that will yield improved accuracy over a wide range of concentrations, exposure times, and temperatures is to use all data in a regression analysis, which allows adjustments for the minor non-linear influences of mass and time as well as the effects of temperature. This step is done by regressing equation (1) or a universal version of equation (1):

$$Conc = (mass)^{b} / (time)^{-d} / [-SRo * \exp(-Ea/R/T)] \quad (3)$$

The subtle non-linear effects of mass and time will be evident in the deviation of coefficients b and d from 1.0. This regression generates four constants b, d, SRo, and –Ea/R by regressing ln(conc) versus ln(mass), ln(time), 1/temp. These four constants can be used to determine concentration via the equation:

$$Conc = (mass)^{b} / (time)^{-d} / [-SRo \times \exp(-Ea/R(1/T))] \quad (4)$$

Where conc is in ug/L, mass is in ug, time in hours, T in degrees Kelvin.

Equation (4) an be also expressed at a reference temperature, Tr, such as 15°C by

$$Conc = (mass)^{b} / (time)^{-d} / [-SRr \times \exp(-Ea/R(1/Tr-1/T))] \quad (5)$$

This step allows sampling rates, SRr, at any reference temperature, Tr, and for any analyte to easily be compared. The values of SRr at 293.14K can be found in Table A.

When sampling times are between 0 and 4 hours, using the 4 constant equation (5) is preferred. For concentrations from about 5 to 1500 ug/L one hour exposure times generally give the lowest error, typically with average error of 6-20% and with total error range of 12%-32%. For low concentrations where sampling times are greater than 4 hours, it is preferred to use equation (1) to avoid unrealistic effects from the coefficient d or to set d to 1.0. In such a case SR in equation (1) can be substituted with [SRr x exp(-Ea/R(1/Tr-1/T))] to use an SR representative of the well temperature, T.

The chart to the right is a plot of the calculated concentration from the 4 constant regression compared to the dosed concentration. Agreement is excellent for the 176 data points.

However, there does appear to be a slight high bias of 8.6% over the full range of this data, although it is well within acceptable limits of variability.

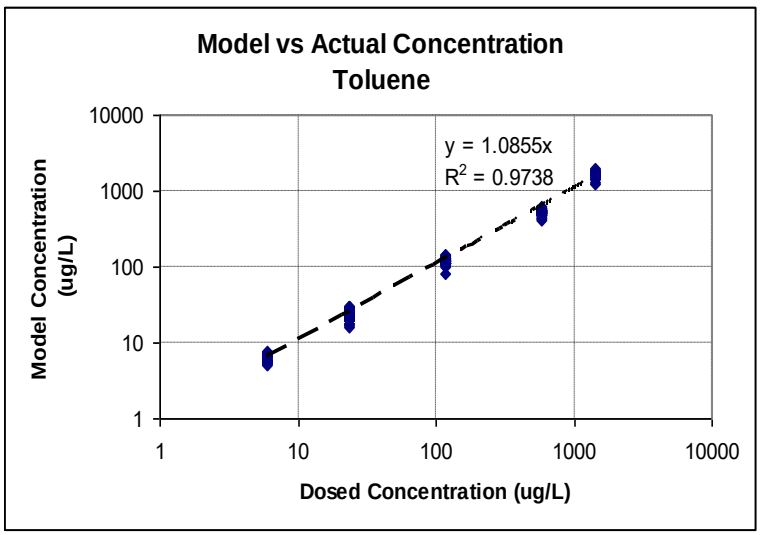


Table B shows the tabulated summary of the 4 constants regression with Rsq values and error estimates for the 4 constants for each analyte. Most regression Rsq values are 0.99 or greater for each analyte. In general, -Ea/R is about 2400+/-400, b is about 0.9, d is about -0.75, and SR(15°C) ranges from .004 L/hr to 0.007 L/hr increasing with MW of the compound.

Error Estimates

The error in the water concentration values will depend on both the error in mass from the analytical method as well as the error in the concentration calibration. Table C shows the error in the mass values from the 8260C low sensitivity method.

The standard error of the regression and standard errors of the constants can be found in table B. For each compound we have measured the error between the derived concentration and the actual concentration. The error tends to be lowest at our recommended exposure time of one hour as shown by the example for Toluene to the right.

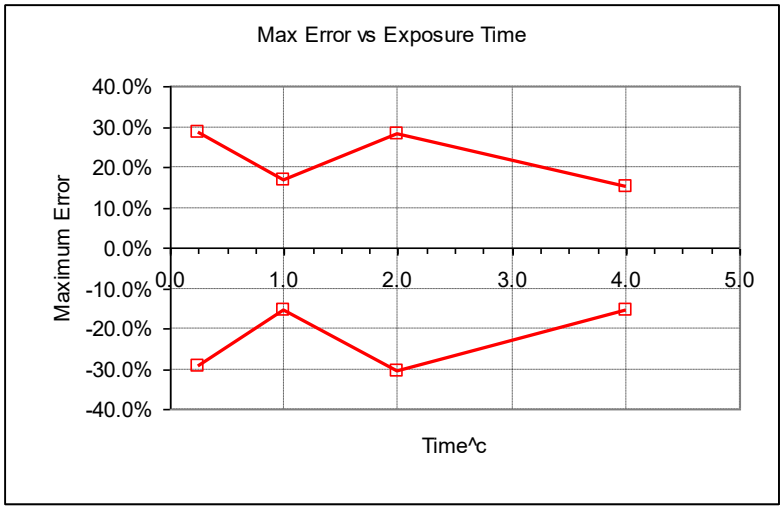
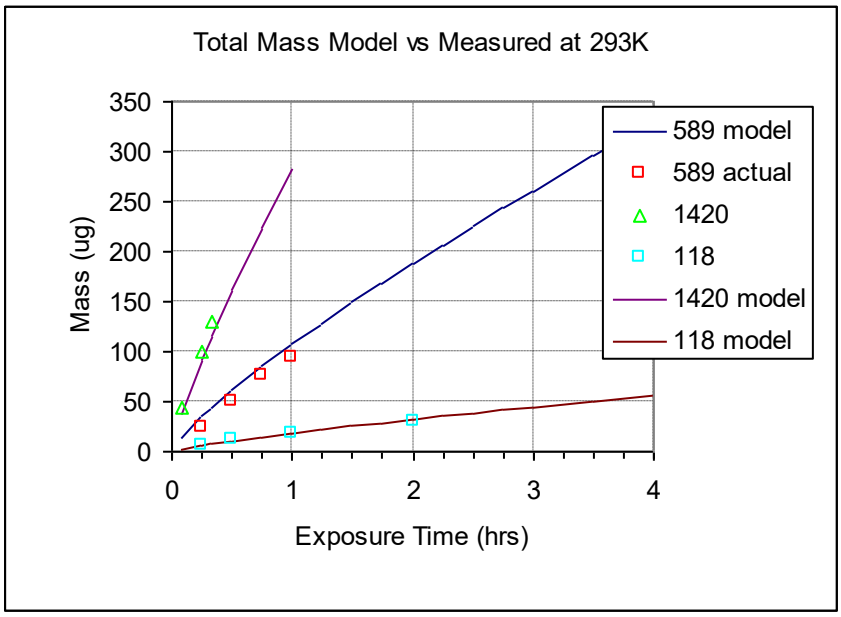


Table D shows the total average error in water concentration by compound as well as the low and high error. The average ranges from about 6% to 20%, which is similar to the analytical method errors. The low and high errors range from 12% to 32% and include contribution from measurement errors in both time and temperature.

Sorbent Saturation

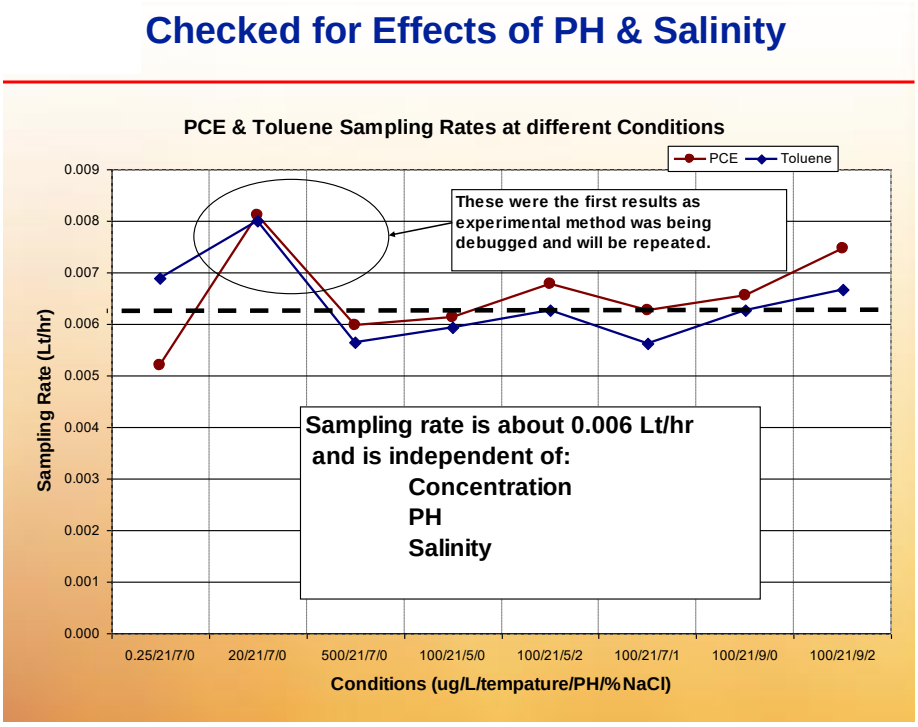
As mass increases on a solid sorbent and approaches saturation, reverse diffusion can occur causing the sampling rate to drop. Eventually the mass level will reach a maximum steady state value at any concentration. A rate of mass uptake with time that deviates significantly from linear, indicates that sorbent saturation could be an issue. When using equation (1), staying in the linear range to avoid the effects of adsorbent saturation is important. We recommend keeping the total mass on the sampler below 50 ug or flagging when this is exceeded.

The 4 constant regression accounts for some of the non linearity allowing good accuracy at higher mass levels. From the experimental data we have found this safe range can be extended to 100 ug or higher as shown in the chart below. This chart compares total mass of all compounds (excluding heavy alkanes, which have solubility issues) versus time in comparison to that predicted from the 4-constant concentration equation.



Effect of PH and Salinity

Because neither PH nor salinity is known to have a significant impact on Henry's law or diffusivity in water, we did not expect them to have a significant impact on sampling rate. To confirm this, experiments were run varying PH from 5 to 9 and NaCl content from 0 to 2%. The chart below shows no significant impact for combinations of PH and NaCl content over this range on the sampling rate of toluene in water at 21°C.

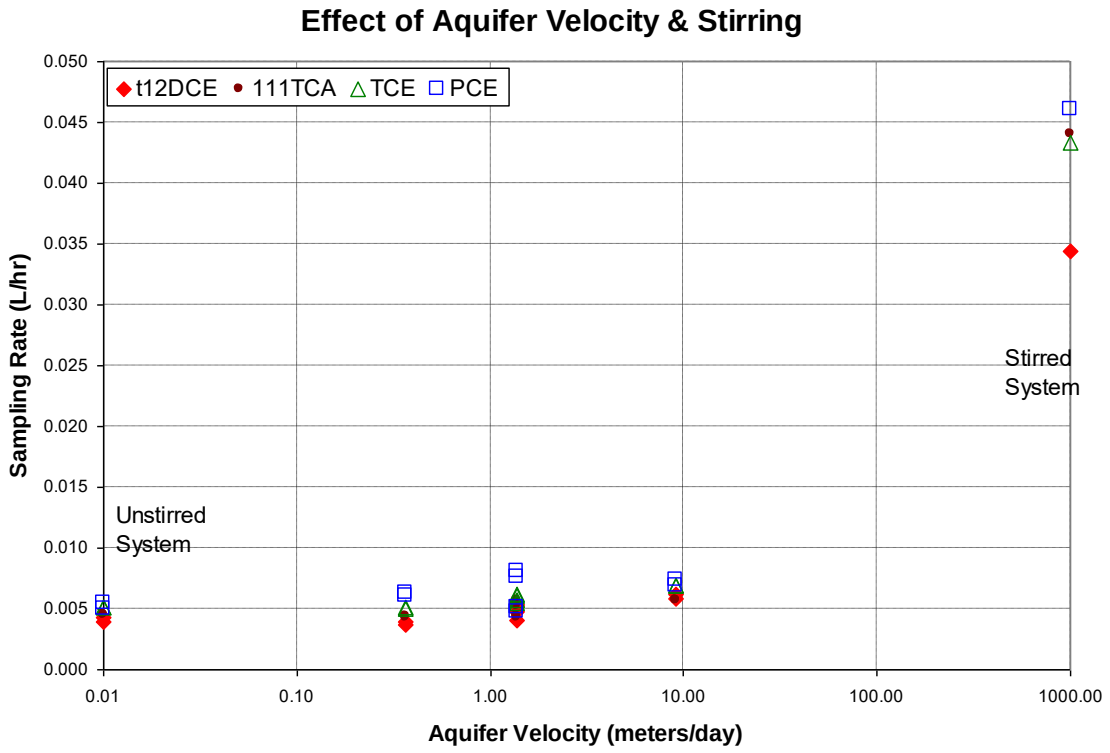


Impact of Aquifer Velocity

The velocity in most aquifers is quite slow, typically a meter/day or less. Occasionally water flow could be much higher such as encountered in karst aquifers, streams or rivers. Mass transfer coefficients are higher in high flow conditions, which will lead to higher sampling rates. We validated that a highly stirred system had sampling rates about 10 times higher than those that were non-stirred. We decided to evaluate the effect of aquifer velocity.

A test apparatus was built comprising a 3" PVC pipe tee filled with clean sand in each of the horizontal straight legs and screened to leave the center open. A test solution was run through this system using a variable flow pump and AGI samplers were placed into the simulated well through the vertical leg of the tee. Tests were run to examine the effect of velocity by varying the pumping rate and hence water velocity.

The chart below shows no significant effect of aquifer velocity up to a speed of about 10 meters/day. At velocities significantly above this, similar to a stirred system, sampling rates are about 10 times higher.

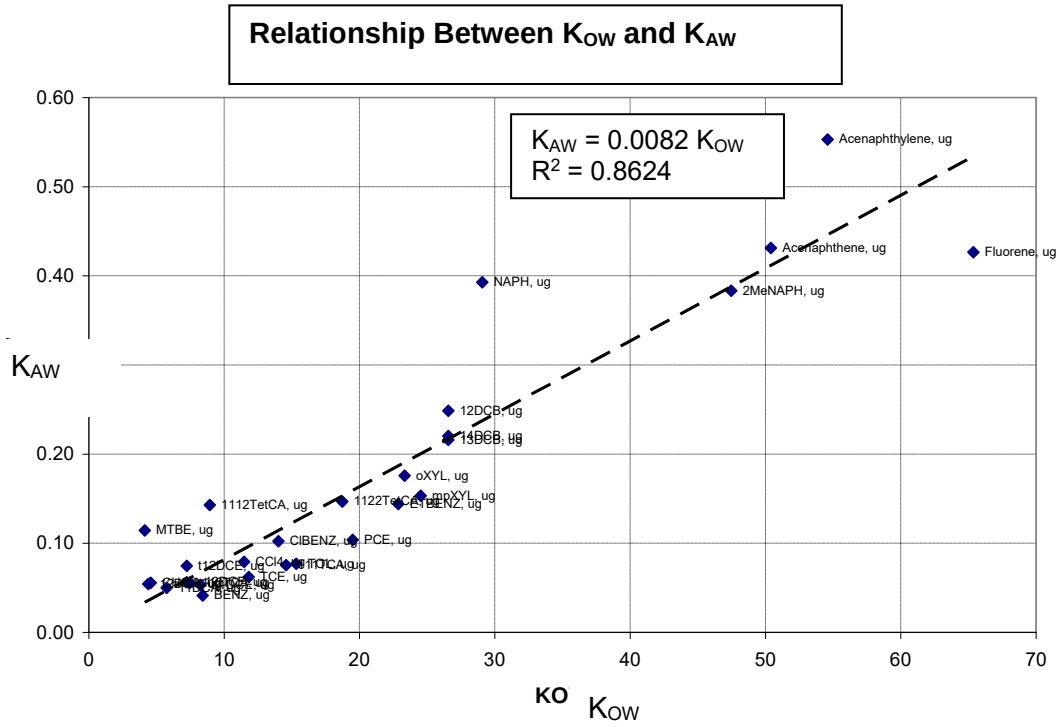


Part 2: Calibration in Deep (>34') water

Part 2 describes the effect of deep water on the AGI sampler and summarizes the effects on sampling rate and concentration measurement.

When the water pressure exceeds the water entry pressure of the membrane, about 34 feet of water, the water becomes in direct contact with the solid adsorbent. Under this condition the compounds in the water will partition from the water into the solid. The portioning coefficient is closely related to the octanol-water coefficient, K_{OW}, but has been measured more precisely in the lab for AGI's specific solid adsorbent, K_{AW}. The sampling rate for deep water is the product of the sampling rate at <34' of water and the K_{AW}.

Measurement of the K_{AW} was done in a one liter stainless steel vessel pressurized with nitrogen to simulate water heads above 34' of water. Pressures of up to 465 psig or 200' of water head were used. The sampling rate change was the same at all pressures above 34' of water. The K_{AW} was determined as the ratio between the mass or sampling rate above 34' of head to the rate at <34' of head and is shown in the chart below.



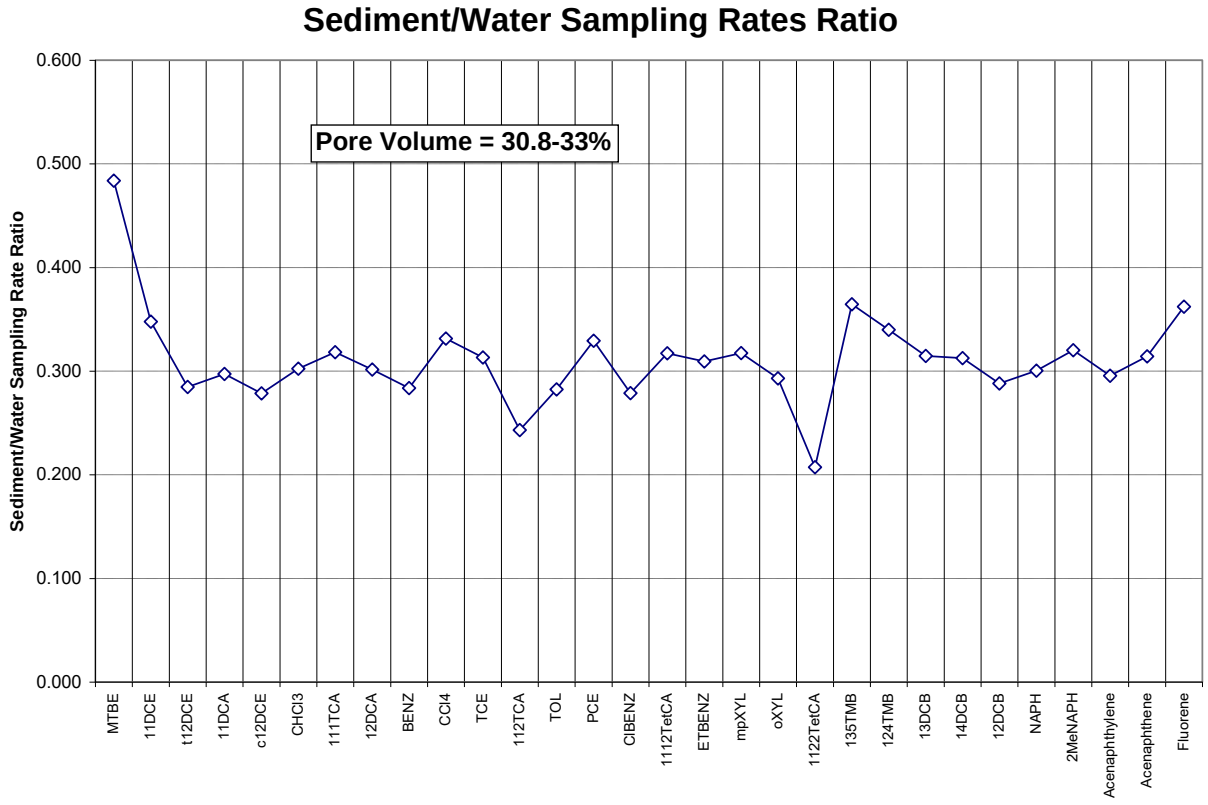
Part 3: Calibration in Sediment

Part 3 describes the effect of sediment solids or sediment pore volume on the sampling rate and concentration measurement.

In sediment, the sampler measures pore water concentration, which is generally agreed to be the preferred measurement as it is more indicative of bioavailability. In sediment the volumetric availability of water to the sampler is reduced by the volume fraction solids in the sediment. As a result sampling rates in sediment are multiplied by the fraction pore water to determine

concentration. Pore water fraction can range from 1.0 for water without sediment to as low as 0.25. Typically most sediments have pore fractions of 0.9 to 0.65.

A sampling rate study was done with water and with water added into a well-packed sorted sand. Pore water fraction in this test was measured between 30.8% and 33% by volume. Below is a plot of the ratio of sampling rates measured in the sediment to open water. The average ratio is equal to the pore water fraction confirming that sampling rate in sediment is on average equal to the product of pore water fraction times the sampling rate in water.



Summary

The AGI Sampler can be used to determine the concentration of volatile and semi-volatile compounds in a water phase. This requires knowing the exposure time and water temperature. It also requires knowing if the sample is above or below 34' of water head and if the water has a velocity above 10 meters/day. Regressions of large amounts of data were used to generate a four constant equation to generate concentration values in water. Potential error in the concentration values is excellent typically less than 25%.

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TABLE A

WATER SAMPLING RATES STANDARD LIST

	SRr 293.14	SR @ 277.54	SR @ 282.44	SR @ 287.84	SR @ 293.24	SR @ 298.94
MTBE	0.0025	0.0014	0.0016	0.0018	0.0022	0.0029
t12DCE	0.0043	0.0028	0.0028	0.0027	0.0037	0.0048
11DCA	0.0047	0.0031	0.0033	0.0033	0.0039	0.0052
c12DCE	0.0046	0.0030	0.0031	0.0031	0.0038	0.0051
CHCl3	0.0046	0.0030	0.0031	0.0031	0.0038	0.0051
111TCA	0.0066	0.0043	0.0047	0.0047	0.0056	0.0076
12DCA	0.0045	0.0029	0.0029	0.0030	0.0036	0.0050
BENZ	0.0050	0.0031	0.0034	0.0035	0.0042	0.0056
CCl4	0.0068	0.0044	0.0048	0.0047	0.0058	0.0080
TCE	0.0052	0.0030	0.0034	0.0034	0.0043	0.0058
112TCA	0.0043	0.0027	0.0027	0.0028	0.0034	0.0048
TOL	0.0056	0.0034	0.0039	0.0039	0.0047	0.0062
OCT	0.0064	0.0046	0.0050	0.0040	0.0058	0.0089
PCE	0.0061	0.0036	0.0043	0.0043	0.0051	0.0069
ClBENZ	0.0054	0.0033	0.0039	0.0040	0.0045	0.0059
1112TetCA	0.0061	0.0037	0.0042	0.0044	0.0050	0.0065
EtBENZ	0.0060	0.0037	0.0045	0.0044	0.0052	0.0069
mpXYL	0.0064	0.0039	0.0048	0.0046	0.0055	0.0072
oXYL	0.0066	0.0041	0.0050	0.0048	0.0057	0.0074
1122TetCA	0.0044	0.0027	0.0029	0.0031	0.0036	0.0046
135TMB	0.0079	0.0046	0.0059	0.0056	0.0071	0.0093
124TMB	0.0078	0.0046	0.0060	0.0055	0.0071	0.0092
13DCB	0.0072	0.0041	0.0055	0.0053	0.0063	0.0080
14DCB	0.0071	0.0040	0.0054	0.0052	0.0062	0.0079
12DCB	0.0070	0.0040	0.0053	0.0051	0.0060	0.0076
UNDEC		0.0026	0.0024	0.0020	0.0031	0.0029
NAPH		0.0041	0.0056	0.0054	0.0064	0.0081
TRIDEC						
2MeNAPH		0.0043	0.0066	0.0066	0.0080	0.0108
PENTADEC						
Total mass	0.1177	0.0822	0.1339	0.1334	0.1773	0.1981

Notes:

Values in L/hr

Total mass does not include UNDEC, TRIDEC, PENTADEC (28 compounds)

AMPLIFIED GEOCHEMICAL IMAGING LLC

TABLE B

4 CONSTANT REGRESSION OUTPUT

	Adjusted Rsq	Standard Error	ln(SR0)	b	-Ea/R	d	Std Error ln(SR0)	Std Error b	Std Error -Ea/R	Std Error d
MTBE	0.997	0.0960	-3.217	0.981	2704	-0.709	0.2881	0.0062	83	0.0082
t12DCE	0.992	0.1659	-1.877	0.905	2147	-0.760	0.4971	0.0100	144	0.0138
11DCA	0.995	0.1272	-1.346	0.916	1965	-0.746	0.3809	0.0077	110	0.0106
c12DCE	0.995	0.1299	-1.905	0.911	2137	-0.751	0.3892	0.0078	112	0.0109
CHCl3	0.996	0.1260	-1.841	0.912	2118	-0.748	0.3776	0.0076	109	0.0105
111TCA	0.995	0.1279	-2.684	0.902	2259	-0.761	0.3836	0.0076	111	0.0106
12DCA	0.995	0.1263	-2.161	0.908	2218	-0.746	0.3786	0.0076	109	0.0106
BENZ	0.995	0.1323	-2.207	0.920	2198	-0.754	0.3965	0.0080	114	0.0110
CCl4	0.994	0.1405	-3.121	0.889	2379	-0.776	0.4220	0.0083	122	0.0116
TCE	0.992	0.1655	-3.338	0.900	2522	-0.772	0.4969	0.0099	144	0.0137
112TCA	0.995	0.1264	-2.412	0.896	2302	-0.724	0.3790	0.0075	109	0.0107
TOL	0.994	0.1426	-2.873	0.916	2364	-0.756	0.4281	0.0087	124	0.0119
OCT	0.938	0.4698	-5.984	0.822	3235	-0.827	1.4231	0.0277	412	0.0388
PCE	0.991	0.1773	-3.780	0.877	2601	-0.775	0.5329	0.0103	154	0.0147
ClBENZ	0.994	0.1457	-2.601	0.911	2292	-0.747	0.4370	0.0088	126	0.0122
1112TetCA	0.996	0.1235	-2.676	0.898	2281	-0.725	0.3705	0.0073	107	0.0104
EtBENZ	0.993	0.1597	-2.930	0.918	2357	-0.752	0.4794	0.0097	138	0.0134
mpXYL	0.992	0.1678	-3.036	0.909	2372	-0.749	0.5037	0.0101	145	0.0140
oXYL	0.993	0.1555	-2.862	0.911	2312	-0.740	0.4667	0.0094	135	0.0131
1122TetCA	0.996	0.1118	-1.971	0.913	2167	-0.691	0.3351	0.0067	97	0.0096
135TMB	0.988	0.2024	-4.435	0.897	2720	-0.738	0.6093	0.0121	176	0.0170
124TMB	0.989	0.1997	-4.126	0.890	2631	-0.731	0.6009	0.0118	173	0.0169
13DCB	0.991	0.1832	-3.422	0.888	2449	-0.730	0.5503	0.0108	159	0.0155
14DCB	0.991	0.1802	-3.263	0.892	2408	-0.724	0.5413	0.0107	156	0.0153
12DCB	0.992	0.1697	-2.970	0.894	2327	-0.716	0.5092	0.0101	147	0.0144
UNDEC	0.694	0.374	-1.406	0.426	1708	-0.806	1.792	0.028	517	0.053
NAPH	0.992	0.166	-3.374	0.915	2430	-0.671	0.497	0.010	144	0.014
TRIDEC										
2MeNAPH	0.984	0.238	-5.498	0.869	2990	-0.689	0.72	0.014	208	0.021
PENTADEC										
Total mass	0.993	0.1543	-6.111	0.907	2419	-0.732	0.4666	0.0093	134	0.0130

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TABLE C

8260C MASS UNCERTAINTY

AGI 8260C Method for Mass using SPG-0008 Samplers

	99% Uncertainty Range +/-	95% Uncertainty Range +/-
MTBE	20%	14%
t12DCE	22%	15%
11DCA	18%	12%
c12DCE	18%	12%
CHCl3	16%	11%
111TCA	18%	12%
12DCA	20%	13%
BENZ	16%	10%
CCl4	19%	12%
TCE	15%	10%
112TCA	18%	12%
TOL	15%	10%
OCT	20%	13%
PCE	16%	11%
ClBENZ	18%	12%
1112TetCA	19%	13%
EtBENZ	18%	12%
mpXYL	18%	12%
oXYL	18%	12%
1122TetCA	23%	15%
135TMB	21%	14%
124TMB	20%	14%
13DCB	19%	13%
14DCB	19%	13%
12DCB	20%	14%
NAPH	21%	14%
2MeNAPH	25%	17%

AMPLIFIED GEOCHEMICAL IMAGING LLC

TABLE D

4 CONSTANT WATER CONCENTRATION UNCERTAINTY

ERROR IN CONCENTRATION REPORTING (1)

	Average Error	Minimum Error	Maximum Error
MTBE	6%	-12%	12%
t12DCE	11%	-26%	21%
11DCA	8%	-19%	13%
c12DCE	9%	-19%	15%
CHCl3	9%	-20%	14%
111TCA	9%	-19%	23%
12DCA	10%	-19%	17%
BENZ	8%	-18%	13%
CCl4	10%	-23%	22%
TCE	10%	-21%	14%
112TCA	11%	-21%	21%
TOL	7%	-17%	14%
OCT	20%	-41%	42%
PCE	10%	-24%	15%
ClBENZ	7%	-16%	14%
1112TetCA	8%	-17%	18%
EtBENZ	6%	-19%	14%
mpXYL	7%	-22%	13%
oXYL	7%	-19%	13%
1122TetCA	8%	-16%	17%
135TMB	9%	-23%	17%
124TMB	10%	-28%	19%
13DCB	10%	-22%	17%
14DCB	10%	-22%	17%
12DCB	9%	-23%	17%
NAPH	10%	-24%	21%
2MeNAPH	13%	-32%	30%

(1) For 1 hour exposure, includes error related to mass value from AGI analytical method 8260C

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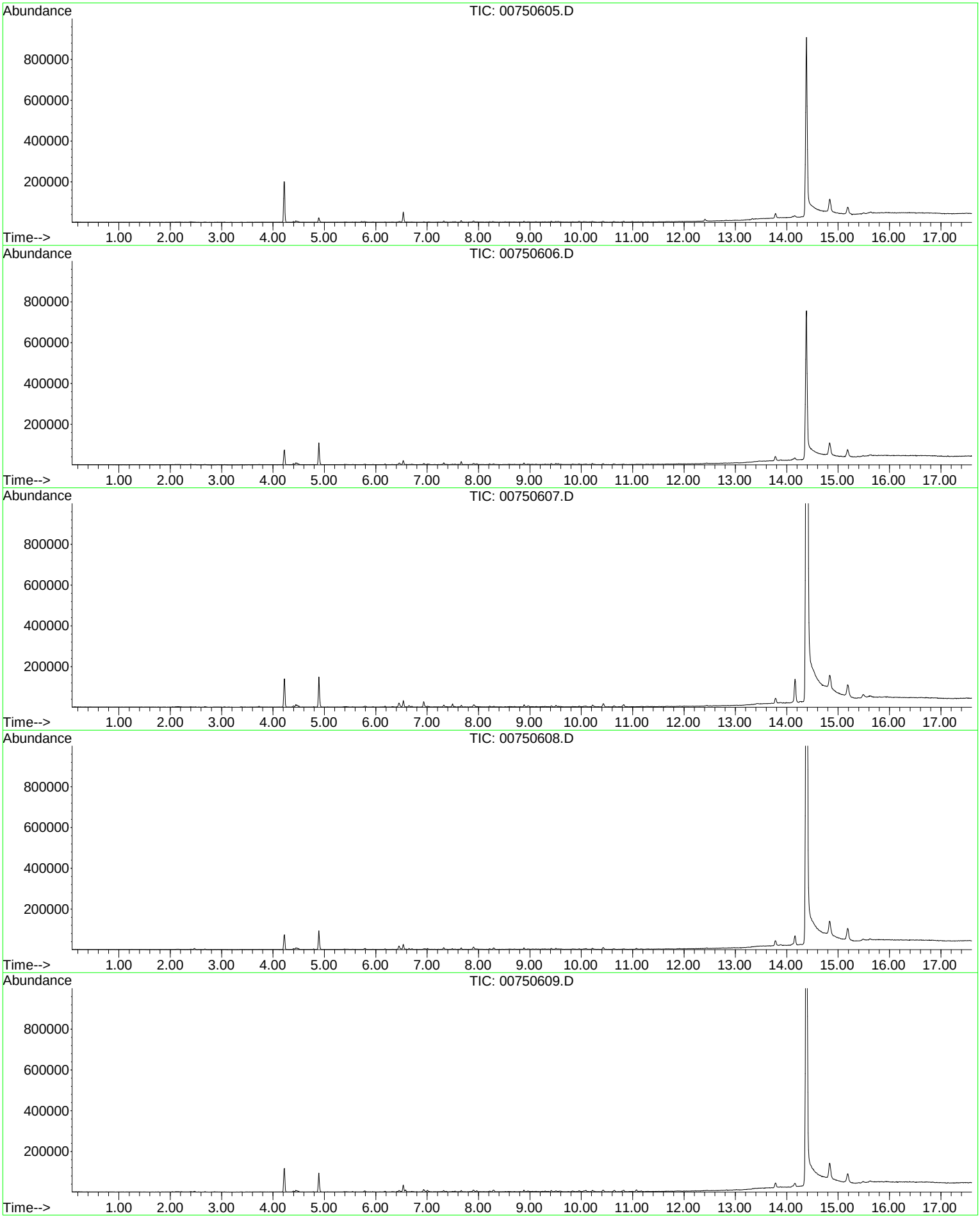
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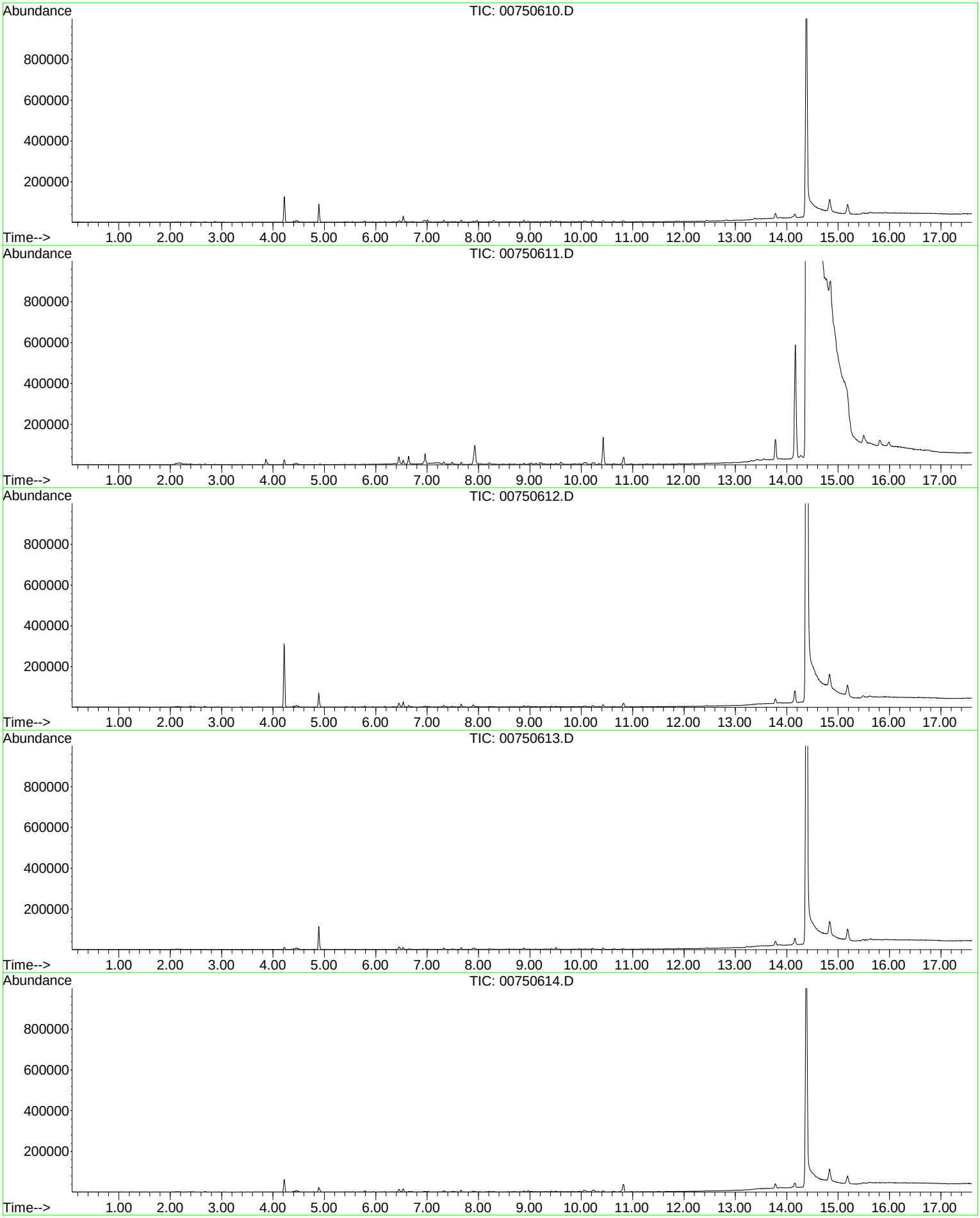
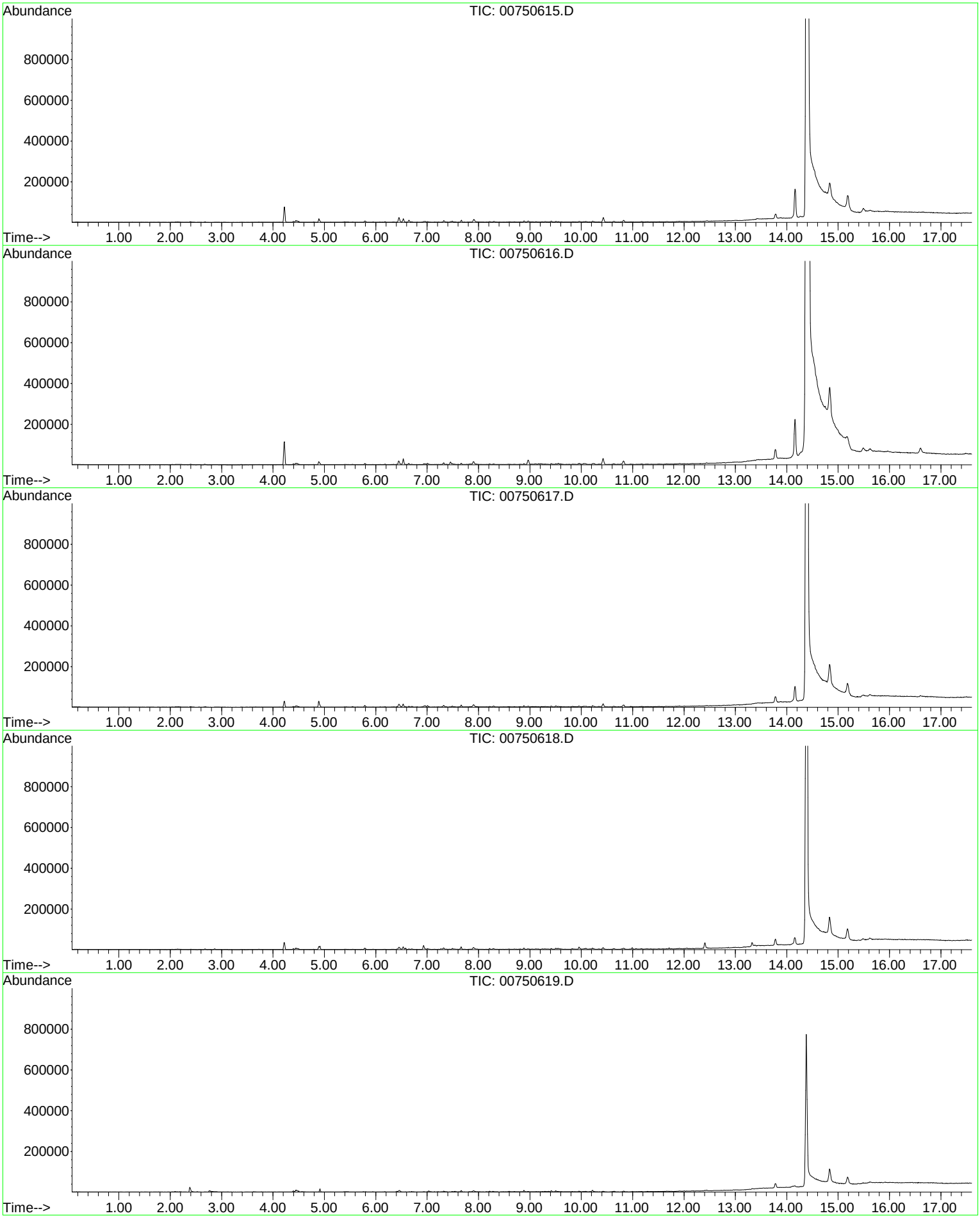
IN NUMERICAL ORDER

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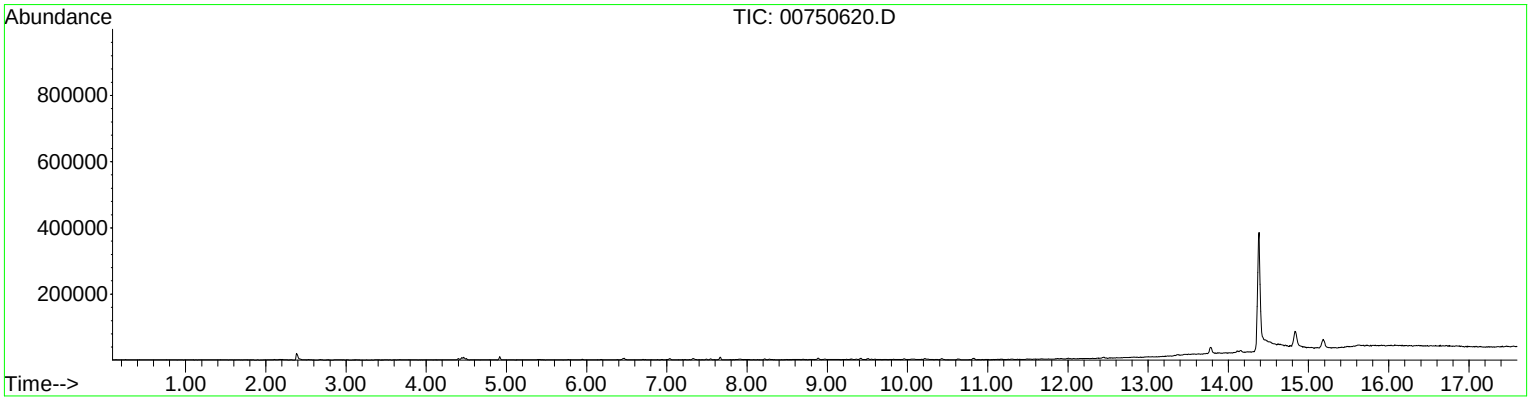
IN NUMERICAL ORDER



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POCIS LABORATORY REPORTS

WECK LABORATORIES, INC.

Certificate of Analysis

FINAL REPORT

Work Orders:	9E07014	**Report Date:**	1/21/2020
		Received Date:	5/7/2019
Project:	EAA Water Quality Program	**Turnaround Time:**	Normal
		Phones:	(210) 877-2847
		Fax:	(210) 877-2848
Attn:	Philip Pearce	**P.O. #:**	
Client:	SWCA Environmental Consultants 6200 UTSA Boulevard, Suite 102 San Antonio, TX 78249	**Billing Code:**	

ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-CA #04229CA • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Philip Pearce,

Enclosed are the results of analyses for samples received 5/07/19 with the Chain-of-Custody document. The samples were received in good condition, at 19.8 °C. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:

Chris Samatmanakit
Project Manager

14859 Clark Avenue,City of Industry CA, 91745 | Phone: (626) 336-2139 | Fax: (626) 336-2634
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SWCA Environmental Consultants
6200 UTSA Boulevard, Suite 102
San Antonio, TX 78249

Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
01/21/2020 12:08

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
HCS460	Philip Pearce	9E07014-01	Water	04/30/19 10:00	
HSM470	Philip Pearce	9E07014-02	Water	04/30/19 10:30	

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San Antonio, TX 78249

Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
01/21/2020 12:08

Sample Results

Sample: HCS460
9E07014-01 (Water)

Sampled: 04/30/19 10:00 by Philip Pearce

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Hormones by LC/MSMS-APCI						
Method: EPA 1694M-APCI **Batch ID:** W9G0034 **Instr:** LCMS02 **Prepared:** 10/09/19 10:49 **Analyst:** kan						
17-a-Estradiol	ND	0.0025	ug/Sample	2.5	10/10/19	
17-a-Ethynylestradiol	ND	0.0025	ug/Sample	2.5	10/10/19	
17-b-Estradiol	ND	0.0025	ug/Sample	2.5	10/10/19	
Diethylstilbestrol	ND	0.012	ug/Sample	2.5	10/10/19	
Epitestosterone	ND	0.0025	ug/Sample	2.5	10/10/19	
Estriol	ND	0.012	ug/Sample	2.5	10/10/19	
Estrone	**0.0060**	0.0025	ug/Sample	2.5	10/10/19	
Progesterone	ND	0.0025	ug/Sample	2.5	10/10/19	
Testosterone	ND	0.0025	ug/Sample	2.5	10/10/19	
PPCPs - Pharmaceuticals by LC/MSMS-ESI-						
Method: EPA 1694M-ESI- **Batch ID:** W9G0035 **Instr:** LCMS02 **Prepared:** 10/09/19 10:50 **Analyst:** kan						
Bisphenol A	**0.061**	0.0025	ug/Sample	2.5	11/22/19	
Diclofenac	ND	0.0025	ug/Sample	2.5	11/22/19	
Gemfibrozil	ND	0.0025	ug/Sample	2.5	11/22/19	
Ibuprofen	**0.0051**	0.0025	ug/Sample	2.5	11/22/19	
Iopromide	ND	0.012	ug/Sample	2.5	11/22/19	
Naproxen	ND	0.0025	ug/Sample	2.5	11/22/19	
Salicylic Acid	ND	0.12	ug/Sample	2.5	11/22/19	
Triclosan	**0.052**	0.0050	ug/Sample	2.5	11/22/19	

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San Antonio, TX 78249

Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
01/21/2020 12:08

Sample Results

(Continued)

Sample: HCS460
9E07014-01RE1 (Water)

Sampled: 04/30/19 10:00 by Philip Pearce

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Pharmaceuticals by LC/MSMS-ESI+						
Method: EPA 1694M-ESI+ **Batch ID:** W9L1595 **Instr:** LCMS02		**Prepared:** 01/13/20 11:06			**Analyst:** kan	
Acetaminophen	ND	0.050	ug/Sample	2.5	01/13/20	
Amoxicillin	ND	0.025	ug/Sample	2.5	01/13/20	
Atenolol	ND	0.0025	ug/Sample	2.5	01/13/20	
Atorvastatin	ND	0.0025	ug/Sample	2.5	01/13/20	
Azithromycin	ND	0.025	ug/Sample	2.5	01/13/20	
Caffeine	ND	0.0025	ug/Sample	2.5	01/13/20	
Carbamazepine	ND	0.0025	ug/Sample	2.5	01/13/20	
Ciprofloxacin	ND	0.012	ug/Sample	2.5	01/13/20	
Cotinine	ND	0.0050	ug/Sample	2.5	01/13/20	
DEET	**0.081**	0.0025	ug/Sample	2.5	01/13/20	
Diazepam	ND	0.0025	ug/Sample	2.5	01/13/20	
Fluoxetine	ND	0.0025	ug/Sample	2.5	01/13/20	
Galaxolide (HHCB)	**0.34**	0.025	ug/Sample	2.5	01/13/20	
Meprobamate	ND	0.0025	ug/Sample	2.5	01/13/20	
Methadone	ND	0.0025	ug/Sample	2.5	01/13/20	
Oxybenzone	**0.021**	0.0025	ug/Sample	2.5	01/13/20	
Phenytoin (Dilantin)	ND	0.0025	ug/Sample	2.5	01/13/20	
Praziquantel	ND	0.0025	ug/Sample	2.5	01/13/20	
Primidone	ND	0.0025	ug/Sample	2.5	01/13/20	
Quinoline	ND	0.0025	ug/Sample	2.5	01/13/20	
Sucralose	ND	0.012	ug/Sample	2.5	01/13/20	
Sulfamethoxazole	ND	0.0025	ug/Sample	2.5	01/13/20	
TCEP	**0.017**	0.0025	ug/Sample	2.5	01/13/20	
TCPP	**0.68**	0.0025	ug/Sample	2.5	01/13/20	E-01
TDCPP	**0.11**	0.0025	ug/Sample	2.5	01/13/20	
Trimethoprim	ND	0.0025	ug/Sample	2.5	01/13/20	

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SWCA Environmental Consultants
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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
01/21/2020 12:08

Sample Results

(Continued)

Sample: HSM470
9E07014-02 (Water)

Sampled: 04/30/19 10:30 by Philip Pearce

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Hormones by LC/MSMS-APCI						
Method: EPA 1694M-APCI **Batch ID:** W9G0034 **Instr:** LCMS02 **Prepared:** 10/09/19 10:49 **Analyst:** kan						
17-a-Estradiol	ND	0.0028	ug/Sample	2.85	10/10/19	
17-a-Ethynylestradiol	ND	0.0028	ug/Sample	2.85	10/10/19	
17-b-Estradiol	ND	0.0028	ug/Sample	2.85	10/10/19	
Diethylstilbestrol	ND	0.014	ug/Sample	2.85	10/10/19	
Epitestosterone	ND	0.0028	ug/Sample	2.85	10/10/19	
Estriol	ND	0.014	ug/Sample	2.85	10/10/19	
Estrone	ND	0.0028	ug/Sample	2.85	10/10/19	
Progesterone	ND	0.0028	ug/Sample	2.85	10/10/19	
Testosterone	ND	0.0028	ug/Sample	2.85	10/10/19	
PPCPs - Pharmaceuticals by LC/MSMS-ESI-						
Method: EPA 1694M-ESI- **Batch ID:** W9G0035 **Instr:** LCMS02 **Prepared:** 10/09/19 10:50 **Analyst:** kan						
Bisphenol A	**0.026**	0.0028	ug/Sample	2.85	11/22/19	
Diclofenac	ND	0.028	ug/Sample	2.85	11/22/19	R-01
Gemfibrozil	ND	0.0028	ug/Sample	2.85	11/22/19	
Ibuprofen	**0.0031**	0.0028	ug/Sample	2.85	11/22/19	
Iopromide	ND	0.014	ug/Sample	2.85	11/22/19	
Naproxen	ND	0.0028	ug/Sample	2.85	11/22/19	
Salicylic Acid	ND	0.14	ug/Sample	2.85	11/22/19	
Triclosan	**0.067**	0.0057	ug/Sample	2.85	11/22/19	

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San Antonio, TX 78249

Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
01/21/2020 12:08

Sample Results

(Continued)

Sample: HSM470
9E07014-02RE1 (Water)

Sampled: 04/30/19 10:30 by Philip Pearce

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Pharmaceuticals by LC/MSMS-ESI+						
Method: EPA 1694M-ESI+ **Batch ID:** W9L1595 **Instr:** LCMS02 **Prepared:** 01/13/20 11:06 **Analyst:** kan						
Acetaminophen	ND	0.057	ug/Sample	2.85	01/13/20	
Amoxicillin	ND	0.028	ug/Sample	2.85	01/13/20	
Atenolol	ND	0.0028	ug/Sample	2.85	01/13/20	
Atorvastatin	ND	0.0028	ug/Sample	2.85	01/13/20	
Azithromycin	ND	0.028	ug/Sample	2.85	01/13/20	
Caffeine	ND	0.0028	ug/Sample	2.85	01/13/20	
Carbamazepine	ND	0.0028	ug/Sample	2.85	01/13/20	
Ciprofloxacin	ND	0.014	ug/Sample	2.85	01/13/20	
Cotinine	ND	0.0057	ug/Sample	2.85	01/13/20	
DEET	**0.13**	0.0028	ug/Sample	2.85	01/13/20	
Diazepam	ND	0.0028	ug/Sample	2.85	01/13/20	
Fluoxetine	ND	0.0028	ug/Sample	2.85	01/13/20	
Galaxolide (HHCB)	**0.18**	0.028	ug/Sample	2.85	01/13/20	
Meprobamate	ND	0.0028	ug/Sample	2.85	01/13/20	
Methadone	ND	0.0028	ug/Sample	2.85	01/13/20	
Oxybenzone	**0.051**	0.0028	ug/Sample	2.85	01/13/20	
Phenytoin (Dilantin)	ND	0.0028	ug/Sample	2.85	01/13/20	
Praziquantel	ND	0.0028	ug/Sample	2.85	01/13/20	
Primidone	ND	0.0028	ug/Sample	2.85	01/13/20	
Quinoline	ND	0.0028	ug/Sample	2.85	01/13/20	
Sucralose	ND	0.014	ug/Sample	2.85	01/13/20	
Sulfamethoxazole	ND	0.0028	ug/Sample	2.85	01/13/20	
TCEP	**0.025**	0.0028	ug/Sample	2.85	01/13/20	
TCPP	**0.66**	0.0028	ug/Sample	2.85	01/13/20	E-01
TDCPP	**0.17**	0.0028	ug/Sample	2.85	01/13/20	
Trimethoprim	ND	0.0028	ug/Sample	2.85	01/13/20	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
01/21/2020 12:08

Quality Control Results

PPCPs - Hormones by LC/MSMS-APCI

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9G0034 - EPA 1694M-APCI										
Blank (W9G0034-BLK1)				**Prepared: 10/09/19 Analyzed: 10/10/19**						
17-a-Estradiol	ND	0.0010	ug/Sample							
17-a-Ethynylestradiol	ND	0.0010	ug/Sample							
17-b-Estradiol	ND	0.0010	ug/Sample							
Diethylstilbestrol	ND	0.0050	ug/Sample							
Epitestosterone	ND	0.0010	ug/Sample							
Estriol	ND	0.0050	ug/Sample							
Estrone	ND	0.0010	ug/Sample							
Progesterone	ND	0.0010	ug/Sample							
Testosterone	ND	0.0010	ug/Sample							
LCS (W9G0034-BS1)				**Prepared: 10/09/19 Analyzed: 10/10/19**						
17-a-Estradiol	0.00860	0.0010	ug/Sample	0.0100		86	50-150			
17-a-Ethynylestradiol	0.0110	0.0010	ug/Sample	0.0100		110	68-159			
17-b-Estradiol	0.0129	0.0010	ug/Sample	0.0100		129	65-146			
Diethylstilbestrol	0.0137	0.0050	ug/Sample	0.0100		137	50-150			
Epitestosterone	0.0100	0.0010	ug/Sample	0.0100		100	50-150			
Estriol	0.0118	0.0050	ug/Sample	0.0100		118	50-150			
Estrone	0.0101	0.0010	ug/Sample	0.0100		101	59-141			
Progesterone	0.00967	0.0010	ug/Sample	0.0100		97	58-154			
Testosterone	0.0113	0.0010	ug/Sample	0.0100		113	60-172			
LCS Dup (W9G0034-BSD1)				**Prepared: 10/09/19 Analyzed: 10/10/19**						
17-a-Estradiol	0.0132	0.0010	ug/Sample	0.0100		132	50-150	42	30	Q-12
17-a-Ethynylestradiol	0.0103	0.0010	ug/Sample	0.0100		103	68-159	7	30	
17-b-Estradiol	0.0137	0.0010	ug/Sample	0.0100		137	65-146	6	30	
Diethylstilbestrol	0.0143	0.0050	ug/Sample	0.0100		143	50-150	4	30	
Epitestosterone	0.0110	0.0010	ug/Sample	0.0100		110	50-150	10	30	
Estriol	0.0124	0.0050	ug/Sample	0.0100		124	50-150	5	30	
Estrone	0.0149	0.0010	ug/Sample	0.0100		149	59-141	38	30	BS-04
Progesterone	0.0111	0.0010	ug/Sample	0.0100		111	58-154	14	30	
Testosterone	0.0131	0.0010	ug/Sample	0.0100		131	60-172	15	30	

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Quality Control Results

(Continued)

PPCPs - Pharmaceuticals by LC/MSMS-ESI-

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9G0035 - EPA 1694M-ESI-										
Blank (W9G0035-BLK1)				**Prepared: 10/09/19 Analyzed: 11/22/19**						
Bisphenol A	ND	0.0010	ug/Sample							
Diclofenac	ND	0.0010	ug/Sample							
Gemfibrozil	ND	0.0010	ug/Sample							
Ibuprofen	ND	0.0010	ug/Sample							
Iopromide	ND	0.0050	ug/Sample							
Naproxen	ND	0.0010	ug/Sample							
Salicylic Acid	ND	0.050	ug/Sample							
Triclosan	ND	0.0020	ug/Sample							
LCS (W9G0035-BS1)				**Prepared: 10/09/19 Analyzed: 11/22/19**						
Bisphenol A	0.0117	0.0010	ug/Sample	0.0100		117	53-168			
Diclofenac	0.0120	0.0010	ug/Sample	0.0100		120	37-218			
Gemfibrozil	0.0114	0.0010	ug/Sample	0.0100		114	76-122			
Ibuprofen	0.0114	0.0010	ug/Sample	0.0100		114	67-139			
Iopromide	0.0649	0.0050	ug/Sample	0.0500		130	0.1-163			
Naproxen	0.0127	0.0010	ug/Sample	0.0100		127	64-138			
Salicylic Acid	0.119	0.050	ug/Sample	0.100		119	56-229			
Triclosan	0.0127	0.0020	ug/Sample	0.0100		127	76-139			
LCS Dup (W9G0035-BSD1)				**Prepared: 10/09/19 Analyzed: 11/22/19**						
Bisphenol A	0.0138	0.0010	ug/Sample	0.0100		138	53-168	16	30	
Diclofenac	0.0132	0.0010	ug/Sample	0.0100		132	37-218	10	30	
Gemfibrozil	0.0127	0.0010	ug/Sample	0.0100		127	76-122	11	30	Q-08
Ibuprofen	0.0128	0.0010	ug/Sample	0.0100		128	67-139	12	30	
Iopromide	0.0719	0.0050	ug/Sample	0.0500		144	0.1-163	10	30	
Naproxen	0.0132	0.0010	ug/Sample	0.0100		132	64-138	4	30	
Salicylic Acid	0.130	0.050	ug/Sample	0.100		130	56-229	9	30	
Triclosan	0.0134	0.0020	ug/Sample	0.0100		134	76-139	5	30	

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Quality Control Results

(Continued)

PPCPs - Pharmaceuticals by LC/MSMS-ESI+

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9L1595 - EPA 1694M-ESI+										
Blank (W9L1595-BLK1)				**Prepared & Analyzed: 01/13/20**						
Acetaminophen	ND	0.020	ug/Sample							
Amoxicillin	ND	0.010	ug/Sample							
Atenolol	ND	0.0010	ug/Sample							
Atorvastatin	ND	0.0010	ug/Sample							
Azithromycin	ND	0.010	ug/Sample							
Caffeine	ND	0.0010	ug/Sample							
Carbamazepine	ND	0.0010	ug/Sample							
Ciprofloxacin	ND	0.0050	ug/Sample							
Cotinine	ND	0.0020	ug/Sample							
DEET	ND	0.0010	ug/Sample							
Diazepam	ND	0.0010	ug/Sample							
Fluoxetine	ND	0.0010	ug/Sample							
Galaxolide (HHCB)	ND	0.010	ug/Sample							
Meprobamate	ND	0.0010	ug/Sample							
Methadone	ND	0.0010	ug/Sample							
Oxybenzone	ND	0.0010	ug/Sample							
Phenytoin (Dilantin)	ND	0.0010	ug/Sample							
Praziquantel	ND	0.0010	ug/Sample							
Primidone	ND	0.0010	ug/Sample							
Quinoline	ND	0.0010	ug/Sample							
Sucralose	ND	0.0050	ug/Sample							
Sulfamethoxazole	ND	0.0010	ug/Sample							
TCEP	ND	0.0010	ug/Sample							
TCPP	ND	0.0010	ug/Sample							
TDCPP	ND	0.0010	ug/Sample							
Trimethoprim	ND	0.0010	ug/Sample							
LCS (W9L1595-BS1)				**Prepared & Analyzed: 01/13/20**						
Acetaminophen	0.205	0.020	ug/Sample	0.200		102	66-156			
Amoxicillin	0.100	0.010	ug/Sample	0.100		100	14-167			
Atenolol	0.0102	0.0010	ug/Sample	0.0100		102	56-164			
Atorvastatin	0.0129	0.0010	ug/Sample	0.0100		129	0.1-173			
Azithromycin	0.106	0.010	ug/Sample	0.100		106	52-166			
Caffeine	0.00848	0.0010	ug/Sample	0.0100		85	55-152			
Carbamazepine	0.00997	0.0010	ug/Sample	0.0100		100	60-135			
Ciprofloxacin	0.0474	0.0050	ug/Sample	0.0500		95	51-168			
Cotinine	0.0103	0.0020	ug/Sample	0.0100		103	68-155			
DEET	0.0115	0.0010	ug/Sample	0.0100		115	45-135			
Diazepam	0.0115	0.0010	ug/Sample	0.0100		115	58-127			
Fluoxetine	0.0106	0.0010	ug/Sample	0.0100		106	55-150			

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Project Manager: Philip Pearce

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01/21/2020 12:08

Quality Control Results

(Continued)

PPCPs - Pharmaceuticals by LC/MSMS-ESI+ (Continued)

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9L1595 - EPA 1694M-ESI+ (Continued)										
LCS (W9L1595-BS1)				**Prepared & Analyzed: 01/13/20**						
Galaxolide (HHCB)	0.0442	0.010	ug/Sample	0.0500		88	50-150			
Meprobamate	0.00964	0.0010	ug/Sample	0.0100		96	11-166			
Methadone	0.0114	0.0010	ug/Sample	0.0100		114	62-137			
Oxybenzone	0.00959	0.0010	ug/Sample	0.0100		96	50-150			
Phenytoin (Dilantin)	0.0104	0.0010	ug/Sample	0.0100		104	69-138			
Praziquantel	0.0112	0.0010	ug/Sample	0.0100		112	50-150			
Primidone	0.00803	0.0010	ug/Sample	0.0100		80	54-147			
Quinoline	0.00500	0.0010	ug/Sample	0.0100		50	50-150			
Sucralose	0.0260	0.0050	ug/Sample	0.0500		52	50-150			
Sulfamethoxazole	0.0111	0.0010	ug/Sample	0.0100		111	60-133			
TCEP	0.0133	0.0010	ug/Sample	0.0100		133	25-149			
TCPP	0.00823	0.0010	ug/Sample	0.0100		82	24-149			
TDCPP	0.00939	0.0010	ug/Sample	0.0100		94	20-158			
Trimethoprim	0.0108	0.0010	ug/Sample	0.0100		108	67-139			
LCS Dup (W9L1595-BSD1)				**Prepared & Analyzed: 01/13/20**						
Acetaminophen	0.224	0.020	ug/Sample	0.200		112	66-156	9	30	
Amoxicillin	0.113	0.010	ug/Sample	0.100		113	14-167	12	30	
Atenolol	0.0121	0.0010	ug/Sample	0.0100		121	56-164	17	30	
Atorvastatin	0.0109	0.0010	ug/Sample	0.0100		109	0.1-173	17	30	
Azithromycin	0.117	0.010	ug/Sample	0.100		117	52-166	10	30	
Caffeine	0.00930	0.0010	ug/Sample	0.0100		93	55-152	9	30	
Carbamazepine	0.0108	0.0010	ug/Sample	0.0100		108	60-135	8	30	
Ciprofloxacin	0.0517	0.0050	ug/Sample	0.0500		103	51-168	9	30	
Cotinine	0.0110	0.0020	ug/Sample	0.0100		110	68-155	7	30	
DEET	0.0123	0.0010	ug/Sample	0.0100		123	45-135	7	30	
Diazepam	0.0114	0.0010	ug/Sample	0.0100		114	58-127	0.9	30	
Fluoxetine	0.0101	0.0010	ug/Sample	0.0100		101	55-150	5	30	
Galaxolide (HHCB)	0.0527	0.010	ug/Sample	0.0500		105	50-150	18	30	
Meprobamate	0.0126	0.0010	ug/Sample	0.0100		126	11-166	27	30	
Methadone	0.0115	0.0010	ug/Sample	0.0100		115	62-137	0.9	30	
Oxybenzone	0.0107	0.0010	ug/Sample	0.0100		107	50-150	11	30	
Phenytoin (Dilantin)	0.0109	0.0010	ug/Sample	0.0100		109	69-138	5	30	
Praziquantel	0.0112	0.0010	ug/Sample	0.0100		112	50-150	0	30	
Primidone	0.0112	0.0010	ug/Sample	0.0100		112	54-147	33	30	Q-12
Quinoline	0.0107	0.0010	ug/Sample	0.0100		107	50-150	73	30	Q-12
Sucralose	0.0480	0.0050	ug/Sample	0.0500		96	50-150	59	30	Q-12
Sulfamethoxazole	0.0120	0.0010	ug/Sample	0.0100		120	60-133	8	30	
TCEP	0.0102	0.0010	ug/Sample	0.0100		102	25-149	26	30	
TCPP	0.0102	0.0010	ug/Sample	0.0100		102	24-149	21	30	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
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Quality Control Results

(Continued)

PPCPs - Pharmaceuticals by LC/MSMS-ESI+ (Continued)

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9L1595 - EPA 1694M-ESI+ (Continued)										
LCS Dup (W9L1595-BSD1)				**Prepared & Analyzed: 01/13/20**						
TDCPP	0.00885	0.0010	ug/Sample	0.0100		88	20-158	6	30	
Trimethoprim	0.0117	0.0010	ug/Sample	0.0100		117	67-139	8	30	

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01/21/2020 12:08

Notes and Definitions

Item	Definition
BS-04	The recovery of this analyte in LCS or LCSD was outside control limit. Sample was accepted based on the remaining LCS, LCSD or LCS-LL.
E-01	The concentration indicated for this analyte is an estimated value above the calibration range.
Q-08	High bias in the QC sample does not affect sample result since analyte was not detected or below the reporting limit.
Q-12	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on the percent recoveries and/or other acceptable QC data.
R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
% Rec	Percent Recovery
Dil	Dilution
dry	Sample results reported on a dry weight basis
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
NR	Not Reportable
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

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WECK LABORATORIES, INC.

Certificate of Analysis

FINAL REPORT

Work Orders: 9G16023

Project: EAA Water Quality Program

Attn: Philip Pearce

Client: SWCA Environmental Consultants
6200 UTSA Boulevard, Suite 102
San Antonio, TX 78249

Report Date: 1/21/2020
Received Date: 7/16/2019
Turnaround Time: Normal
Phones: (210) 877-2847
Fax: (210) 877-2848
P.O. #:
Billing Code:

ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-CA #04229CA • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Philip Pearce,

Enclosed are the results of analyses for samples received 7/16/19 with the Chain-of-Custody document. The samples were received in good condition, at 21.9 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:

Chris Samatmanakit
Project Manager

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
01/21/2020 12:09

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
HCS460	Philip Pearce	9G16023-01	Water	07/16/19 09:50	
HSM470	Philip Pearce	9G16023-02	Water	07/16/19 10:40	
Extraction Blank	Philip Pearce	9G16023-03	Water	07/16/19 00:00	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
01/21/2020 12:09

Sample Results

Sample: HCS460
9G16023-01 (Water)

Sampled: 07/16/19 9:50 by Philip Pearce

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Hormones by LC/MSMS-APCI						
Method: EPA 1694M-APCI **Batch ID:** W9G0034 **Instr:** LCMS02 **Prepared:** 10/09/19 10:49 **Analyst:** kan						
17-a-Estradiol	ND	0.0033	ug/Sample	3.3	10/10/19	
17-a-Ethynylestradiol	ND	0.0033	ug/Sample	3.3	10/10/19	
17-b-Estradiol	ND	0.0033	ug/Sample	3.3	10/10/19	
Diethylstilbestrol	ND	0.016	ug/Sample	3.3	10/10/19	
Epitestosterone	ND	0.0033	ug/Sample	3.3	10/10/19	
Estriol	ND	0.016	ug/Sample	3.3	10/10/19	
Estrone	ND	0.0033	ug/Sample	3.3	10/10/19	
Progesterone	ND	0.0033	ug/Sample	3.3	10/10/19	
Testosterone	ND	0.0033	ug/Sample	3.3	10/10/19	
PPCPs - Pharmaceuticals by LC/MSMS-ESI-						
Method: EPA 1694M-ESI- **Batch ID:** W9G0035 **Instr:** LCMS02 **Prepared:** 10/09/19 10:50 **Analyst:** kan						
Bisphenol A	**0.063**	0.0033	ug/Sample	3.3	11/22/19	
Diclofenac	ND	0.0033	ug/Sample	3.3	11/22/19	
Gemfibrozil	ND	0.0033	ug/Sample	3.3	11/22/19	
Ibuprofen	**0.055**	0.0033	ug/Sample	3.3	11/22/19	
Iopromide	ND	0.016	ug/Sample	3.3	11/22/19	
Naproxen	**0.038**	0.0033	ug/Sample	3.3	11/22/19	
Salicylic Acid	ND	0.16	ug/Sample	3.3	11/22/19	
Triclosan	**0.019**	0.0066	ug/Sample	3.3	11/22/19	

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Reported:
01/21/2020 12:09

Sample Results

(Continued)

Sample: HCS460
9G16023-01RE1 (Water)

Sampled: 07/16/19 9:50 by Philip Pearce

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Pharmaceuticals by LC/MSMS-ESI+						
Method: EPA 1694M-ESI+ **Batch ID:** W9L1595 **Instr:** LCMS02		**Prepared:** 01/13/20 11:06			**Analyst:** kan	
Acetaminophen	ND	0.066	ug/Sample	3.3	01/13/20	
Amoxicillin	ND	0.033	ug/Sample	3.3	01/13/20	
Atenolol	ND	0.0033	ug/Sample	3.3	01/13/20	
Atorvastatin	ND	0.0033	ug/Sample	3.3	01/13/20	
Azithromycin	ND	0.033	ug/Sample	3.3	01/13/20	
Caffeine	**0.014**	0.0033	ug/Sample	3.3	01/13/20	
Carbamazepine	ND	0.0033	ug/Sample	3.3	01/13/20	
Ciprofloxacin	ND	0.016	ug/Sample	3.3	01/13/20	
Cotinine	ND	0.0066	ug/Sample	3.3	01/13/20	
DEET	**0.55**	0.0033	ug/Sample	3.3	01/13/20	E-01
Diazepam	ND	0.0033	ug/Sample	3.3	01/13/20	
Fluoxetine	ND	0.0033	ug/Sample	3.3	01/13/20	
Galaxolide (HHCB)	**0.58**	0.033	ug/Sample	3.3	01/13/20	
Meprobamate	ND	0.0033	ug/Sample	3.3	01/13/20	
Methadone	ND	0.0033	ug/Sample	3.3	01/13/20	
Oxybenzone	**0.15**	0.0033	ug/Sample	3.3	01/13/20	
Phenytoin (Dilantin)	ND	0.0033	ug/Sample	3.3	01/13/20	
Praziquantel	ND	0.0033	ug/Sample	3.3	01/13/20	
Primidone	ND	0.0033	ug/Sample	3.3	01/13/20	
Quinoline	ND	0.0033	ug/Sample	3.3	01/13/20	
Sucralose	ND	0.016	ug/Sample	3.3	01/13/20	
Sulfamethoxazole	ND	0.0033	ug/Sample	3.3	01/13/20	
TCEP	**0.029**	0.0033	ug/Sample	3.3	01/13/20	
TCPP	**0.58**	0.0033	ug/Sample	3.3	01/13/20	E-01
TDCPP	**0.39**	0.0033	ug/Sample	3.3	01/13/20	
Trimethoprim	ND	0.0033	ug/Sample	3.3	01/13/20	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
01/21/2020 12:09

Sample Results

(Continued)

Sample: HSM470
9G16023-02 (Water)

Sampled: 07/16/19 10:40 by Philip Pearce

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Hormones by LC/MSMS-APCI						
Method: EPA 1694M-APCI **Batch ID:** W9G0034 **Instr:** LCMS02 **Prepared:** 10/09/19 10:49 **Analyst:** kan						
17-a-Estradiol	ND	0.0032	ug/Sample	3.25	10/10/19	
17-a-Ethynylestradiol	ND	0.0032	ug/Sample	3.25	10/10/19	I-05
17-b-Estradiol	ND	0.0032	ug/Sample	3.25	10/10/19	
Diethylstilbestrol	ND	0.016	ug/Sample	3.25	10/10/19	
Epitestosterone	ND	0.0032	ug/Sample	3.25	10/10/19	
Estriol	ND	0.24	ug/Sample	3.25	10/10/19	R-01
Estrone	ND	0.016	ug/Sample	3.25	10/10/19	R-01
Progesterone	ND	0.0032	ug/Sample	3.25	10/10/19	
Testosterone	ND	0.0032	ug/Sample	3.25	10/10/19	
PPCPs - Pharmaceuticals by LC/MSMS-ESI-						
Method: EPA 1694M-ESI- **Batch ID:** W9G0035 **Instr:** LCMS02 **Prepared:** 10/09/19 10:50 **Analyst:** kan						
Bisphenol A	**0.016**	0.0032	ug/Sample	3.25	11/22/19	
Diclofenac	ND	0.0032	ug/Sample	3.25	11/22/19	
Gemfibrozil	ND	0.0032	ug/Sample	3.25	11/22/19	
Ibuprofen	**0.020**	0.0032	ug/Sample	3.25	11/22/19	
Iopromide	ND	0.016	ug/Sample	3.25	11/22/19	
Naproxen	**0.011**	0.0032	ug/Sample	3.25	11/22/19	
Salicylic Acid	ND	0.16	ug/Sample	3.25	11/22/19	
Triclosan	**0.016**	0.0065	ug/Sample	3.25	11/22/19	

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Project Manager: Philip Pearce

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01/21/2020 12:09

Sample Results

(Continued)

Sample: HSM470
9G16023-02RE1 (Water)

Sampled: 07/16/19 10:40 by Philip Pearce

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Pharmaceuticals by LC/MSMS-ESI+						
Method: EPA 1694M-ESI+ **Batch ID:** W9L1595 **Instr:** LCMS02 **Prepared:** 01/13/20 11:06 **Analyst:** kan						
Acetaminophen	ND	0.065	ug/Sample	3.25	01/13/20	
Amoxicillin	ND	0.032	ug/Sample	3.25	01/13/20	
Atenolol	ND	0.0032	ug/Sample	3.25	01/13/20	
Atorvastatin	ND	0.0032	ug/Sample	3.25	01/13/20	
Azithromycin	ND	0.032	ug/Sample	3.25	01/13/20	
Caffeine	**0.011**	0.0032	ug/Sample	3.25	01/13/20	
Carbamazepine	ND	0.0032	ug/Sample	3.25	01/13/20	
Ciprofloxacin	ND	0.016	ug/Sample	3.25	01/13/20	
Cotinine	ND	0.0065	ug/Sample	3.25	01/13/20	
DEET	**0.45**	0.0032	ug/Sample	3.25	01/13/20	E-01
Diazepam	ND	0.0032	ug/Sample	3.25	01/13/20	
Fluoxetine	ND	0.0032	ug/Sample	3.25	01/13/20	
Galaxolide (HHCB)	**0.26**	0.032	ug/Sample	3.25	01/13/20	
Meprobamate	ND	0.0032	ug/Sample	3.25	01/13/20	
Methadone	ND	0.0032	ug/Sample	3.25	01/13/20	
Oxybenzone	**0.024**	0.0032	ug/Sample	3.25	01/13/20	
Phenytoin (Dilantin)	ND	0.0032	ug/Sample	3.25	01/13/20	
Praziquantel	ND	0.0032	ug/Sample	3.25	01/13/20	
Primidone	ND	0.0032	ug/Sample	3.25	01/13/20	
Quinoline	ND	0.0032	ug/Sample	3.25	01/13/20	
Sucralose	ND	0.016	ug/Sample	3.25	01/13/20	
Sulfamethoxazole	ND	0.0032	ug/Sample	3.25	01/13/20	
TCEP	**0.017**	0.0032	ug/Sample	3.25	01/13/20	
TCPP	**0.35**	0.0032	ug/Sample	3.25	01/13/20	
TDCPP	**0.13**	0.0032	ug/Sample	3.25	01/13/20	
Trimethoprim	ND	0.0032	ug/Sample	3.25	01/13/20	

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01/21/2020 12:09

Sample Results

(Continued)

Sample: Extraction Blank
9G16023-03 (Water)

Sampled: 07/16/19 0:00 by Philip Pearce

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Hormones by LC/MSMS-APCI						
Method: EPA 1694M-APCI **Batch ID:** W9G0034 **Instr:** LCMS02 **Prepared:** 10/09/19 10:49 **Analyst:** kan						
17-a-Estradiol	ND	0.0034	ug/Sample	3.35	10/10/19	
17-a-Ethynylestradiol	ND	0.0034	ug/Sample	3.35	10/10/19	
17-b-Estradiol	ND	0.0034	ug/Sample	3.35	10/10/19	
Diethylstilbestrol	ND	0.017	ug/Sample	3.35	10/10/19	
Epitestosterone	ND	0.0034	ug/Sample	3.35	10/10/19	
Estriol	ND	0.017	ug/Sample	3.35	10/10/19	
Estrone	ND	0.0034	ug/Sample	3.35	10/10/19	
Progesterone	ND	0.0034	ug/Sample	3.35	10/10/19	
Testosterone	ND	0.0034	ug/Sample	3.35	10/10/19	
PPCPs - Pharmaceuticals by LC/MSMS-ESI-						
Method: EPA 1694M-ESI- **Batch ID:** W9G0035 **Instr:** LCMS02 **Prepared:** 10/09/19 10:50 **Analyst:** kan						
Bisphenol A	ND	0.0034	ug/Sample	3.35	11/22/19	
Diclofenac	ND	0.0034	ug/Sample	3.35	11/22/19	
Gemfibrozil	ND	0.0034	ug/Sample	3.35	11/22/19	
Ibuprofen	ND	0.0034	ug/Sample	3.35	11/22/19	
Iopromide	ND	0.017	ug/Sample	3.35	11/22/19	
Naproxen	ND	0.0034	ug/Sample	3.35	11/22/19	
Salicylic Acid	ND	0.17	ug/Sample	3.35	11/22/19	
Triclosan	**0.0068**	0.0067	ug/Sample	3.35	11/22/19	

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01/21/2020 12:09

Sample Results

(Continued)

Sample: Extraction Blank
9G16023-03RE1 (Water)

Sampled: 07/16/19 0:00 by Philip Pearce

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Pharmaceuticals by LC/MSMS-ESI+						
Method: EPA 1694M-ESI+ **Batch ID:** W9L1595 **Instr:** LCMS02 **Prepared:** 01/13/20 11:06 **Analyst:** kan						
Acetaminophen	ND	0.067	ug/Sample	3.35	01/13/20	
Amoxicillin	ND	0.034	ug/Sample	3.35	01/13/20	
Atenolol	ND	0.0034	ug/Sample	3.35	01/13/20	
Atorvastatin	ND	0.0034	ug/Sample	3.35	01/13/20	
Azithromycin	ND	0.034	ug/Sample	3.35	01/13/20	
Caffeine	ND	0.0034	ug/Sample	3.35	01/13/20	
Carbamazepine	ND	0.0034	ug/Sample	3.35	01/13/20	
Ciprofloxacin	ND	0.017	ug/Sample	3.35	01/13/20	
Cotinine	ND	0.0067	ug/Sample	3.35	01/13/20	
DEET	**0.071**	0.0034	ug/Sample	3.35	01/13/20	
Diazepam	ND	0.0034	ug/Sample	3.35	01/13/20	
Fluoxetine	ND	0.0034	ug/Sample	3.35	01/13/20	
Galaxolide (HHCB)	**0.060**	0.034	ug/Sample	3.35	01/13/20	
Meprobamate	ND	0.0034	ug/Sample	3.35	01/13/20	
Methadone	ND	0.0034	ug/Sample	3.35	01/13/20	
Oxybenzone	**0.0037**	0.0034	ug/Sample	3.35	01/13/20	
Phenytoin (Dilantin)	ND	0.0034	ug/Sample	3.35	01/13/20	
Praziquantel	ND	0.0034	ug/Sample	3.35	01/13/20	
Primidone	ND	0.0034	ug/Sample	3.35	01/13/20	
Quinoline	ND	0.0034	ug/Sample	3.35	01/13/20	
Sucralose	ND	0.017	ug/Sample	3.35	01/13/20	
Sulfamethoxazole	ND	0.0034	ug/Sample	3.35	01/13/20	
TCEP	**0.0038**	0.0034	ug/Sample	3.35	01/13/20	
TCPP	**0.063**	0.0034	ug/Sample	3.35	01/13/20	
TDCPP	**0.0057**	0.0034	ug/Sample	3.35	01/13/20	
Trimethoprim	ND	0.0034	ug/Sample	3.35	01/13/20	

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Quality Control Results

PPCPs - Hormones by LC/MSMS-APCI

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9G0034 - EPA 1694M-APCI										
Blank (W9G0034-BLK1)				**Prepared: 10/09/19 Analyzed: 10/10/19**						
17-a-Estradiol	ND	0.0010	ug/Sample							
17-a-Ethynylestradiol	ND	0.0010	ug/Sample							
17-b-Estradiol	ND	0.0010	ug/Sample							
Diethylstilbestrol	ND	0.0050	ug/Sample							
Epitestosterone	ND	0.0010	ug/Sample							
Estriol	ND	0.0050	ug/Sample							
Estrone	ND	0.0010	ug/Sample							
Progesterone	ND	0.0010	ug/Sample							
Testosterone	ND	0.0010	ug/Sample							
LCS (W9G0034-BS1)				**Prepared: 10/09/19 Analyzed: 10/10/19**						
17-a-Estradiol	0.00860	0.0010	ug/Sample	0.0100		86	50-150			
17-a-Ethynylestradiol	0.0110	0.0010	ug/Sample	0.0100		110	68-159			
17-b-Estradiol	0.0129	0.0010	ug/Sample	0.0100		129	65-146			
Diethylstilbestrol	0.0137	0.0050	ug/Sample	0.0100		137	50-150			
Epitestosterone	0.0100	0.0010	ug/Sample	0.0100		100	50-150			
Estriol	0.0118	0.0050	ug/Sample	0.0100		118	50-150			
Estrone	0.0101	0.0010	ug/Sample	0.0100		101	59-141			
Progesterone	0.00967	0.0010	ug/Sample	0.0100		97	58-154			
Testosterone	0.0113	0.0010	ug/Sample	0.0100		113	60-172			
LCS Dup (W9G0034-BSD1)				**Prepared: 10/09/19 Analyzed: 10/10/19**						
17-a-Estradiol	0.0132	0.0010	ug/Sample	0.0100		132	50-150	42	30	Q-12
17-a-Ethynylestradiol	0.0103	0.0010	ug/Sample	0.0100		103	68-159	7	30	
17-b-Estradiol	0.0137	0.0010	ug/Sample	0.0100		137	65-146	6	30	
Diethylstilbestrol	0.0143	0.0050	ug/Sample	0.0100		143	50-150	4	30	
Epitestosterone	0.0110	0.0010	ug/Sample	0.0100		110	50-150	10	30	
Estriol	0.0124	0.0050	ug/Sample	0.0100		124	50-150	5	30	
Estrone	0.0149	0.0010	ug/Sample	0.0100		149	59-141	38	30	BS-04
Progesterone	0.0111	0.0010	ug/Sample	0.0100		111	58-154	14	30	
Testosterone	0.0131	0.0010	ug/Sample	0.0100		131	60-172	15	30	

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Quality Control Results

(Continued)

PPCPs - Pharmaceuticals by LC/MSMS-ESI-

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9G0035 - EPA 1694M-ESI-										
Blank (W9G0035-BLK1)				**Prepared: 10/09/19 Analyzed: 11/22/19**						
Bisphenol A	ND	0.0010	ug/Sample							
Diclofenac	ND	0.0010	ug/Sample							
Gemfibrozil	ND	0.0010	ug/Sample							
Ibuprofen	ND	0.0010	ug/Sample							
Iopromide	ND	0.0050	ug/Sample							
Naproxen	ND	0.0010	ug/Sample							
Salicylic Acid	ND	0.050	ug/Sample							
Triclosan	ND	0.0020	ug/Sample							
LCS (W9G0035-BS1)				**Prepared: 10/09/19 Analyzed: 11/22/19**						
Bisphenol A	0.0117	0.0010	ug/Sample	0.0100		117	53-168			
Diclofenac	0.0120	0.0010	ug/Sample	0.0100		120	37-218			
Gemfibrozil	0.0114	0.0010	ug/Sample	0.0100		114	76-122			
Ibuprofen	0.0114	0.0010	ug/Sample	0.0100		114	67-139			
Iopromide	0.0649	0.0050	ug/Sample	0.0500		130	0.1-163			
Naproxen	0.0127	0.0010	ug/Sample	0.0100		127	64-138			
Salicylic Acid	0.119	0.050	ug/Sample	0.100		119	56-229			
Triclosan	0.0127	0.0020	ug/Sample	0.0100		127	76-139			
LCS Dup (W9G0035-BSD1)				**Prepared: 10/09/19 Analyzed: 11/22/19**						
Bisphenol A	0.0138	0.0010	ug/Sample	0.0100		138	53-168	16	30	
Diclofenac	0.0132	0.0010	ug/Sample	0.0100		132	37-218	10	30	
Gemfibrozil	0.0127	0.0010	ug/Sample	0.0100		127	76-122	11	30	Q-08
Ibuprofen	0.0128	0.0010	ug/Sample	0.0100		128	67-139	12	30	
Iopromide	0.0719	0.0050	ug/Sample	0.0500		144	0.1-163	10	30	
Naproxen	0.0132	0.0010	ug/Sample	0.0100		132	64-138	4	30	
Salicylic Acid	0.130	0.050	ug/Sample	0.100		130	56-229	9	30	
Triclosan	0.0134	0.0020	ug/Sample	0.0100		134	76-139	5	30	

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Quality Control Results

(Continued)

PPCPs - Pharmaceuticals by LC/MSMS-ESI+

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9L1595 - EPA 1694M-ESI+										
Blank (W9L1595-BLK1)				**Prepared & Analyzed: 01/13/20**						
Acetaminophen	ND	0.020	ug/Sample							
Amoxicillin	ND	0.010	ug/Sample							
Atenolol	ND	0.0010	ug/Sample							
Atorvastatin	ND	0.0010	ug/Sample							
Azithromycin	ND	0.010	ug/Sample							
Caffeine	ND	0.0010	ug/Sample							
Carbamazepine	ND	0.0010	ug/Sample							
Ciprofloxacin	ND	0.0050	ug/Sample							
Cotinine	ND	0.0020	ug/Sample							
DEET	ND	0.0010	ug/Sample							
Diazepam	ND	0.0010	ug/Sample							
Fluoxetine	ND	0.0010	ug/Sample							
Galaxolide (HHCB)	ND	0.010	ug/Sample							
Meprobamate	ND	0.0010	ug/Sample							
Methadone	ND	0.0010	ug/Sample							
Oxybenzone	ND	0.0010	ug/Sample							
Phenytoin (Dilantin)	ND	0.0010	ug/Sample							
Praziquantel	ND	0.0010	ug/Sample							
Primidone	ND	0.0010	ug/Sample							
Quinoline	ND	0.0010	ug/Sample							
Sucralose	ND	0.0050	ug/Sample							
Sulfamethoxazole	ND	0.0010	ug/Sample							
TCEP	ND	0.0010	ug/Sample							
TCPP	ND	0.0010	ug/Sample							
TDCPP	ND	0.0010	ug/Sample							
Trimethoprim	ND	0.0010	ug/Sample							
LCS (W9L1595-BS1)				**Prepared & Analyzed: 01/13/20**						
Acetaminophen	0.205	0.020	ug/Sample	0.200		102	66-156			
Amoxicillin	0.100	0.010	ug/Sample	0.100		100	14-167			
Atenolol	0.0102	0.0010	ug/Sample	0.0100		102	56-164			
Atorvastatin	0.0129	0.0010	ug/Sample	0.0100		129	0.1-173			
Azithromycin	0.106	0.010	ug/Sample	0.100		106	52-166			
Caffeine	0.00848	0.0010	ug/Sample	0.0100		85	55-152			
Carbamazepine	0.00997	0.0010	ug/Sample	0.0100		100	60-135			
Ciprofloxacin	0.0474	0.0050	ug/Sample	0.0500		95	51-168			
Cotinine	0.0103	0.0020	ug/Sample	0.0100		103	68-155			
DEET	0.0115	0.0010	ug/Sample	0.0100		115	45-135			
Diazepam	0.0115	0.0010	ug/Sample	0.0100		115	58-127			
Fluoxetine	0.0106	0.0010	ug/Sample	0.0100		106	55-150			

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Quality Control Results

(Continued)

PPCPs - Pharmaceuticals by LC/MSMS-ESI+ (Continued)

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9L1595 - EPA 1694M-ESI+ (Continued)										
LCS (W9L1595-BS1)				**Prepared & Analyzed: 01/13/20**						
Galaxolide (HHCB)	0.0442	0.010	ug/Sample	0.0500		88	50-150			
Meprobamate	0.00964	0.0010	ug/Sample	0.0100		96	11-166			
Methadone	0.0114	0.0010	ug/Sample	0.0100		114	62-137			
Oxybenzone	0.00959	0.0010	ug/Sample	0.0100		96	50-150			
Phenytoin (Dilantin)	0.0104	0.0010	ug/Sample	0.0100		104	69-138			
Praziquantel	0.0112	0.0010	ug/Sample	0.0100		112	50-150			
Primidone	0.00803	0.0010	ug/Sample	0.0100		80	54-147			
Quinoline	0.00500	0.0010	ug/Sample	0.0100		50	50-150			
Sucralose	0.0260	0.0050	ug/Sample	0.0500		52	50-150			
Sulfamethoxazole	0.0111	0.0010	ug/Sample	0.0100		111	60-133			
TCEP	0.0133	0.0010	ug/Sample	0.0100		133	25-149			
TCPP	0.00823	0.0010	ug/Sample	0.0100		82	24-149			
TDCPP	0.00939	0.0010	ug/Sample	0.0100		94	20-158			
Trimethoprim	0.0108	0.0010	ug/Sample	0.0100		108	67-139			
LCS Dup (W9L1595-BSD1)				**Prepared & Analyzed: 01/13/20**						
Acetaminophen	0.224	0.020	ug/Sample	0.200		112	66-156	9	30	
Amoxicillin	0.113	0.010	ug/Sample	0.100		113	14-167	12	30	
Atenolol	0.0121	0.0010	ug/Sample	0.0100		121	56-164	17	30	
Atorvastatin	0.0109	0.0010	ug/Sample	0.0100		109	0.1-173	17	30	
Azithromycin	0.117	0.010	ug/Sample	0.100		117	52-166	10	30	
Caffeine	0.00930	0.0010	ug/Sample	0.0100		93	55-152	9	30	
Carbamazepine	0.0108	0.0010	ug/Sample	0.0100		108	60-135	8	30	
Ciprofloxacin	0.0517	0.0050	ug/Sample	0.0500		103	51-168	9	30	
Cotinine	0.0110	0.0020	ug/Sample	0.0100		110	68-155	7	30	
DEET	0.0123	0.0010	ug/Sample	0.0100		123	45-135	7	30	
Diazepam	0.0114	0.0010	ug/Sample	0.0100		114	58-127	0.9	30	
Fluoxetine	0.0101	0.0010	ug/Sample	0.0100		101	55-150	5	30	
Galaxolide (HHCB)	0.0527	0.010	ug/Sample	0.0500		105	50-150	18	30	
Meprobamate	0.0126	0.0010	ug/Sample	0.0100		126	11-166	27	30	
Methadone	0.0115	0.0010	ug/Sample	0.0100		115	62-137	0.9	30	
Oxybenzone	0.0107	0.0010	ug/Sample	0.0100		107	50-150	11	30	
Phenytoin (Dilantin)	0.0109	0.0010	ug/Sample	0.0100		109	69-138	5	30	
Praziquantel	0.0112	0.0010	ug/Sample	0.0100		112	50-150	0	30	
Primidone	0.0112	0.0010	ug/Sample	0.0100		112	54-147	33	30	Q-12
Quinoline	0.0107	0.0010	ug/Sample	0.0100		107	50-150	73	30	Q-12
Sucralose	0.0480	0.0050	ug/Sample	0.0500		96	50-150	59	30	Q-12
Sulfamethoxazole	0.0120	0.0010	ug/Sample	0.0100		120	60-133	8	30	
TCEP	0.0102	0.0010	ug/Sample	0.0100		102	25-149	26	30	
TCPP	0.0102	0.0010	ug/Sample	0.0100		102	24-149	21	30	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
01/21/2020 12:09

Quality Control Results

(Continued)

PPCPs - Pharmaceuticals by LC/MSMS-ESI+ (Continued)

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9L1595 - EPA 1694M-ESI+ (Continued)										
LCS Dup (W9L1595-BSD1)				**Prepared & Analyzed: 01/13/20**						
TDCPP	0.00885	0.0010	ug/Sample	0.0100		88	20-158	6	30	
Trimethoprim	0.0117	0.0010	ug/Sample	0.0100		117	67-139	8	30	

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Reported:
01/21/2020 12:09

Notes and Definitions

Item	Definition
BS-04	The recovery of this analyte in LCS or LCSD was outside control limit. Sample was accepted based on the remaining LCS, LCSD or LCS-LL.
E-01	The concentration indicated for this analyte is an estimated value above the calibration range.
I-05	Low internal standard recovery possibly due to matrix interference. The result is suspect.
Q-08	High bias in the QC sample does not affect sample result since analyte was not detected or below the reporting limit.
Q-12	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on the percent recoveries and/or other acceptable QC data.
R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
% Rec	Percent Recovery
Dil	Dilution
dry	Sample results reported on a dry weight basis
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
NR	Not Reportable
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

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WECK LABORATORIES, INC.

Certificate of Analysis

FINAL REPORT

Work Orders: 9I11141

Project: EAA Water Quality Program

Attn: Philip Pearce

Client: SWCA Environmental Consultants
6200 UTSA Boulevard, Suite 102
San Antonio, TX 78249

Report Date: 1/21/2020
Received Date: 9/11/2019
Turnaround Time: Normal
Phones: (210) 877-2847
Fax: (210) 877-2848
P.O. #:
Billing Code:

ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-CA #04229CA • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Philip Pearce,

Enclosed are the results of analyses for samples received 9/11/19 with the Chain-of-Custody document. The samples were received in good condition, at 22.6 °C. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:

Chris Samatmanakit
Project Manager

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
01/21/2020 12:11

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
HCS460	Philip Pearce	9I11141-01	Water	08/30/19 09:53	
HSM470	Philip Pearce	9I11141-02	Water	08/30/19 10:34	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
01/21/2020 12:11

Sample Results

Sample: HCS460
9I11141-01 (Water)

Sampled: 08/30/19 9:53 by Philip Pearce

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Hormones by LC/MSMS-APCI						
Method: EPA 1694M-APCI **Batch ID:** W9G0034 **Instr:** LCMS02 **Prepared:** 10/09/19 10:49 **Analyst:** kan						
17-a-Estradiol	ND	0.0028	ug/Sample	2.85	10/10/19	
17-a-Ethynylestradiol	ND	0.0028	ug/Sample	2.85	10/10/19	
17-b-Estradiol	ND	0.0028	ug/Sample	2.85	10/10/19	
Diethylstilbestrol	ND	0.014	ug/Sample	2.85	10/10/19	
Epitestosterone	ND	0.0028	ug/Sample	2.85	10/10/19	
Estriol	ND	0.014	ug/Sample	2.85	10/10/19	
Estrone	ND	0.0028	ug/Sample	2.85	10/10/19	
Progesterone	ND	0.0028	ug/Sample	2.85	10/10/19	
Testosterone	**0.0029**	0.0028	ug/Sample	2.85	10/10/19	
PPCPs - Pharmaceuticals by LC/MSMS-ESI-						
Method: EPA 1694M-ESI- **Batch ID:** W9G0035 **Instr:** LCMS02 **Prepared:** 10/09/19 10:50 **Analyst:** kan						
Bisphenol A	**0.12**	0.0028	ug/Sample	2.85	11/22/19	
Diclofenac	ND	0.0028	ug/Sample	2.85	11/22/19	
Gemfibrozil	ND	0.0028	ug/Sample	2.85	11/22/19	
Ibuprofen	**0.027**	0.0028	ug/Sample	2.85	11/22/19	
Iopromide	ND	0.014	ug/Sample	2.85	11/22/19	
Naproxen	**0.020**	0.0028	ug/Sample	2.85	11/22/19	
Salicylic Acid	ND	0.14	ug/Sample	2.85	11/22/19	
Triclosan	**0.019**	0.0057	ug/Sample	2.85	11/22/19	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
01/21/2020 12:11

Sample Results

(Continued)

Sample: HCS460
9I11141-01RE1 (Water)

Sampled: 08/30/19 9:53 by Philip Pearce

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Pharmaceuticals by LC/MSMS-ESI+						
Method: EPA 1694M-ESI+ **Batch ID:** W9L1595 **Instr:** LCMS02 **Prepared:** 01/13/20 11:06 **Analyst:** kan						
Acetaminophen	ND	0.057	ug/Sample	2.85	01/13/20	
Amoxicillin	ND	0.028	ug/Sample	2.85	01/13/20	
Atenolol	ND	0.0028	ug/Sample	2.85	01/13/20	
Atorvastatin	ND	0.0028	ug/Sample	2.85	01/13/20	
Azithromycin	ND	0.028	ug/Sample	2.85	01/13/20	
Caffeine	ND	0.0028	ug/Sample	2.85	01/13/20	
Carbamazepine	ND	0.0028	ug/Sample	2.85	01/13/20	
Ciprofloxacin	ND	0.014	ug/Sample	2.85	01/13/20	
Cotinine	ND	0.0057	ug/Sample	2.85	01/13/20	
DEET	**0.40**	0.0028	ug/Sample	2.85	01/13/20	E-01
Diazepam	ND	0.0028	ug/Sample	2.85	01/13/20	
Fluoxetine	ND	0.0028	ug/Sample	2.85	01/13/20	
Galaxolide (HHCB)	**0.77**	0.028	ug/Sample	2.85	01/13/20	
Meprobamate	ND	0.0028	ug/Sample	2.85	01/13/20	
Methadone	ND	0.0028	ug/Sample	2.85	01/13/20	
Oxybenzone	**0.23**	0.0028	ug/Sample	2.85	01/13/20	
Phenytoin (Dilantin)	ND	0.0028	ug/Sample	2.85	01/13/20	
Praziquantel	ND	0.0028	ug/Sample	2.85	01/13/20	
Primidone	ND	0.0028	ug/Sample	2.85	01/13/20	
Quinoline	ND	0.0028	ug/Sample	2.85	01/13/20	
Sucralose	ND	0.014	ug/Sample	2.85	01/13/20	
Sulfamethoxazole	ND	0.0028	ug/Sample	2.85	01/13/20	
TCEP	**0.032**	0.0028	ug/Sample	2.85	01/13/20	
TCPP	**0.93**	0.0028	ug/Sample	2.85	01/13/20	E-01
TDCPP	**0.39**	0.0028	ug/Sample	2.85	01/13/20	E-01
Trimethoprim	ND	0.0028	ug/Sample	2.85	01/13/20	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
01/21/2020 12:11

Sample Results

(Continued)

Sample: HSM470
9I11141-02 (Water)

Sampled: 08/30/19 10:34 by Philip Pearce

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Hormones by LC/MSMS-APCI						
Method: EPA 1694M-APCI **Batch ID:** W9G0034 **Instr:** LCMS02 **Prepared:** 10/09/19 10:49 **Analyst:** kan						
17-a-Estradiol	ND	0.0024	ug/Sample	2.45	10/10/19	
17-a-Ethynylestradiol	ND	0.0024	ug/Sample	2.45	10/10/19	
17-b-Estradiol	ND	0.0024	ug/Sample	2.45	10/10/19	
Diethylstilbestrol	ND	0.012	ug/Sample	2.45	10/10/19	
Epitestosterone	ND	0.0024	ug/Sample	2.45	10/10/19	
Estriol	ND	0.012	ug/Sample	2.45	10/10/19	
Estrone	ND	0.0049	ug/Sample	2.45	10/10/19	R-01
Progesterone	ND	0.0024	ug/Sample	2.45	10/10/19	
Testosterone	ND	0.0024	ug/Sample	2.45	10/10/19	
PPCPs - Pharmaceuticals by LC/MSMS-ESI-						
Method: EPA 1694M-ESI- **Batch ID:** W9G0035 **Instr:** LCMS02 **Prepared:** 10/09/19 10:50 **Analyst:** kan						
Bisphenol A	**0.044**	0.0024	ug/Sample	2.45	11/22/19	
Diclofenac	ND	0.0024	ug/Sample	2.45	11/22/19	
Gemfibrozil	ND	0.0024	ug/Sample	2.45	11/22/19	
Ibuprofen	**0.018**	0.0024	ug/Sample	2.45	11/22/19	
Iopromide	ND	0.012	ug/Sample	2.45	11/22/19	
Naproxen	**0.014**	0.0024	ug/Sample	2.45	11/22/19	
Salicylic Acid	ND	0.12	ug/Sample	2.45	11/22/19	
Triclosan	**0.012**	0.0049	ug/Sample	2.45	11/22/19	

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Project Manager: Philip Pearce

Reported:
01/21/2020 12:11

Sample Results

(Continued)

Sample: HSM470
9I11141-02RE1 (Water)

Sampled: 08/30/19 10:34 by Philip Pearce

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Pharmaceuticals by LC/MSMS-ESI+						
Method: EPA 1694M-ESI+ **Batch ID:** W9L1595 **Instr:** LCMS02		**Prepared:** 01/13/20 11:06			**Analyst:** kan	
Acetaminophen	ND	0.049	ug/Sample	2.45	01/13/20	
Amoxicillin	ND	0.024	ug/Sample	2.45	01/13/20	
Atenolol	ND	0.0024	ug/Sample	2.45	01/13/20	
Atorvastatin	ND	0.0024	ug/Sample	2.45	01/13/20	
Azithromycin	ND	0.024	ug/Sample	2.45	01/13/20	
Caffeine	ND	0.0024	ug/Sample	2.45	01/13/20	
Carbamazepine	ND	0.0024	ug/Sample	2.45	01/13/20	
Ciprofloxacin	ND	0.012	ug/Sample	2.45	01/13/20	
Cotinine	ND	0.0049	ug/Sample	2.45	01/13/20	
DEET	**0.44**	0.0024	ug/Sample	2.45	01/13/20	E-01
Diazepam	ND	0.0024	ug/Sample	2.45	01/13/20	
Fluoxetine	ND	0.0024	ug/Sample	2.45	01/13/20	
Galaxolide (HHCB)	**0.32**	0.024	ug/Sample	2.45	01/13/20	
Meprobamate	ND	0.0024	ug/Sample	2.45	01/13/20	
Methadone	ND	0.0024	ug/Sample	2.45	01/13/20	
Oxybenzone	**0.013**	0.0024	ug/Sample	2.45	01/13/20	
Phenytoin (Dilantin)	ND	0.0024	ug/Sample	2.45	01/13/20	
Praziquantel	ND	0.0024	ug/Sample	2.45	01/13/20	
Primidone	ND	0.0024	ug/Sample	2.45	01/13/20	
Quinoline	ND	0.0024	ug/Sample	2.45	01/13/20	
Sucralose	ND	0.012	ug/Sample	2.45	01/13/20	
Sulfamethoxazole	ND	0.0024	ug/Sample	2.45	01/13/20	
TCEP	**0.026**	0.0024	ug/Sample	2.45	01/13/20	
TCPP	**0.65**	0.0024	ug/Sample	2.45	01/13/20	E-01
TDCPP	**0.13**	0.0024	ug/Sample	2.45	01/13/20	
Trimethoprim	ND	0.0024	ug/Sample	2.45	01/13/20	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
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Quality Control Results

PPCPs - Hormones by LC/MSMS-APCI

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9G0034 - EPA 1694M-APCI										
Blank (W9G0034-BLK1)				**Prepared: 10/09/19 Analyzed: 10/10/19**						
17-a-Estradiol	ND	0.0010	ug/Sample							
17-a-Ethynylestradiol	ND	0.0010	ug/Sample							
17-b-Estradiol	ND	0.0010	ug/Sample							
Diethylstilbestrol	ND	0.0050	ug/Sample							
Epitestosterone	ND	0.0010	ug/Sample							
Estriol	ND	0.0050	ug/Sample							
Estrone	ND	0.0010	ug/Sample							
Progesterone	ND	0.0010	ug/Sample							
Testosterone	ND	0.0010	ug/Sample							
LCS (W9G0034-BS1)				**Prepared: 10/09/19 Analyzed: 10/10/19**						
17-a-Estradiol	0.00860	0.0010	ug/Sample	0.0100		86	50-150			
17-a-Ethynylestradiol	0.0110	0.0010	ug/Sample	0.0100		110	68-159			
17-b-Estradiol	0.0129	0.0010	ug/Sample	0.0100		129	65-146			
Diethylstilbestrol	0.0137	0.0050	ug/Sample	0.0100		137	50-150			
Epitestosterone	0.0100	0.0010	ug/Sample	0.0100		100	50-150			
Estriol	0.0118	0.0050	ug/Sample	0.0100		118	50-150			
Estrone	0.0101	0.0010	ug/Sample	0.0100		101	59-141			
Progesterone	0.00967	0.0010	ug/Sample	0.0100		97	58-154			
Testosterone	0.0113	0.0010	ug/Sample	0.0100		113	60-172			
LCS Dup (W9G0034-BSD1)				**Prepared: 10/09/19 Analyzed: 10/10/19**						
17-a-Estradiol	0.0132	0.0010	ug/Sample	0.0100		132	50-150	42	30	Q-12
17-a-Ethynylestradiol	0.0103	0.0010	ug/Sample	0.0100		103	68-159	7	30	
17-b-Estradiol	0.0137	0.0010	ug/Sample	0.0100		137	65-146	6	30	
Diethylstilbestrol	0.0143	0.0050	ug/Sample	0.0100		143	50-150	4	30	
Epitestosterone	0.0110	0.0010	ug/Sample	0.0100		110	50-150	10	30	
Estriol	0.0124	0.0050	ug/Sample	0.0100		124	50-150	5	30	
Estrone	0.0149	0.0010	ug/Sample	0.0100		149	59-141	38	30	BS-04
Progesterone	0.0111	0.0010	ug/Sample	0.0100		111	58-154	14	30	
Testosterone	0.0131	0.0010	ug/Sample	0.0100		131	60-172	15	30	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
01/21/2020 12:11

Quality Control Results

(Continued)

PPCPs - Pharmaceuticals by LC/MSMS-ESI-

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9G0035 - EPA 1694M-ESI-										
Blank (W9G0035-BLK1)				**Prepared: 10/09/19 Analyzed: 11/22/19**						
Bisphenol A	ND	0.0010	ug/Sample							
Diclofenac	ND	0.0010	ug/Sample							
Gemfibrozil	ND	0.0010	ug/Sample							
Ibuprofen	ND	0.0010	ug/Sample							
Iopromide	ND	0.0050	ug/Sample							
Naproxen	ND	0.0010	ug/Sample							
Salicylic Acid	ND	0.050	ug/Sample							
Triclosan	ND	0.0020	ug/Sample							
LCS (W9G0035-BS1)				**Prepared: 10/09/19 Analyzed: 11/22/19**						
Bisphenol A	0.0117	0.0010	ug/Sample	0.0100		117	53-168			
Diclofenac	0.0120	0.0010	ug/Sample	0.0100		120	37-218			
Gemfibrozil	0.0114	0.0010	ug/Sample	0.0100		114	76-122			
Ibuprofen	0.0114	0.0010	ug/Sample	0.0100		114	67-139			
Iopromide	0.0649	0.0050	ug/Sample	0.0500		130	0.1-163			
Naproxen	0.0127	0.0010	ug/Sample	0.0100		127	64-138			
Salicylic Acid	0.119	0.050	ug/Sample	0.100		119	56-229			
Triclosan	0.0127	0.0020	ug/Sample	0.0100		127	76-139			
LCS Dup (W9G0035-BSD1)				**Prepared: 10/09/19 Analyzed: 11/22/19**						
Bisphenol A	0.0138	0.0010	ug/Sample	0.0100		138	53-168	16	30	
Diclofenac	0.0132	0.0010	ug/Sample	0.0100		132	37-218	10	30	
Gemfibrozil	0.0127	0.0010	ug/Sample	0.0100		127	76-122	11	30	Q-08
Ibuprofen	0.0128	0.0010	ug/Sample	0.0100		128	67-139	12	30	
Iopromide	0.0719	0.0050	ug/Sample	0.0500		144	0.1-163	10	30	
Naproxen	0.0132	0.0010	ug/Sample	0.0100		132	64-138	4	30	
Salicylic Acid	0.130	0.050	ug/Sample	0.100		130	56-229	9	30	
Triclosan	0.0134	0.0020	ug/Sample	0.0100		134	76-139	5	30	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
01/21/2020 12:11

Quality Control Results

(Continued)

PPCPs - Pharmaceuticals by LC/MSMS-ESI+

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9L1595 - EPA 1694M-ESI+										
Blank (W9L1595-BLK1)				**Prepared & Analyzed: 01/13/20**						
Acetaminophen	ND	0.020	ug/Sample							
Amoxicillin	ND	0.010	ug/Sample							
Atenolol	ND	0.0010	ug/Sample							
Atorvastatin	ND	0.0010	ug/Sample							
Azithromycin	ND	0.010	ug/Sample							
Caffeine	ND	0.0010	ug/Sample							
Carbamazepine	ND	0.0010	ug/Sample							
Ciprofloxacin	ND	0.0050	ug/Sample							
Cotinine	ND	0.0020	ug/Sample							
DEET	ND	0.0010	ug/Sample							
Diazepam	ND	0.0010	ug/Sample							
Fluoxetine	ND	0.0010	ug/Sample							
Galaxolide (HHCB)	ND	0.010	ug/Sample							
Meprobamate	ND	0.0010	ug/Sample							
Methadone	ND	0.0010	ug/Sample							
Oxybenzone	ND	0.0010	ug/Sample							
Phenytoin (Dilantin)	ND	0.0010	ug/Sample							
Praziquantel	ND	0.0010	ug/Sample							
Primidone	ND	0.0010	ug/Sample							
Quinoline	ND	0.0010	ug/Sample							
Sucralose	ND	0.0050	ug/Sample							
Sulfamethoxazole	ND	0.0010	ug/Sample							
TCEP	ND	0.0010	ug/Sample							
TCPP	ND	0.0010	ug/Sample							
TDCPP	ND	0.0010	ug/Sample							
Trimethoprim	ND	0.0010	ug/Sample							
LCS (W9L1595-BS1)				**Prepared & Analyzed: 01/13/20**						
Acetaminophen	0.205	0.020	ug/Sample	0.200		102	66-156			
Amoxicillin	0.100	0.010	ug/Sample	0.100		100	14-167			
Atenolol	0.0102	0.0010	ug/Sample	0.0100		102	56-164			
Atorvastatin	0.0129	0.0010	ug/Sample	0.0100		129	0.1-173			
Azithromycin	0.106	0.010	ug/Sample	0.100		106	52-166			
Caffeine	0.00848	0.0010	ug/Sample	0.0100		85	55-152			
Carbamazepine	0.00997	0.0010	ug/Sample	0.0100		100	60-135			
Ciprofloxacin	0.0474	0.0050	ug/Sample	0.0500		95	51-168			
Cotinine	0.0103	0.0020	ug/Sample	0.0100		103	68-155			
DEET	0.0115	0.0010	ug/Sample	0.0100		115	45-135			
Diazepam	0.0115	0.0010	ug/Sample	0.0100		115	58-127			
Fluoxetine	0.0106	0.0010	ug/Sample	0.0100		106	55-150			

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
01/21/2020 12:11

Quality Control Results

(Continued)

PPCPs - Pharmaceuticals by LC/MSMS-ESI+ (Continued)

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9L1595 - EPA 1694M-ESI+ (Continued)										
LCS (W9L1595-BS1)				**Prepared & Analyzed: 01/13/20**						
Galaxolide (HHCB)	0.0442	0.010	ug/Sample	0.0500		88	50-150			
Meprobamate	0.00964	0.0010	ug/Sample	0.0100		96	11-166			
Methadone	0.0114	0.0010	ug/Sample	0.0100		114	62-137			
Oxybenzone	0.00959	0.0010	ug/Sample	0.0100		96	50-150			
Phenytoin (Dilantin)	0.0104	0.0010	ug/Sample	0.0100		104	69-138			
Praziquantel	0.0112	0.0010	ug/Sample	0.0100		112	50-150			
Primidone	0.00803	0.0010	ug/Sample	0.0100		80	54-147			
Quinoline	0.00500	0.0010	ug/Sample	0.0100		50	50-150			
Sucralose	0.0260	0.0050	ug/Sample	0.0500		52	50-150			
Sulfamethoxazole	0.0111	0.0010	ug/Sample	0.0100		111	60-133			
TCEP	0.0133	0.0010	ug/Sample	0.0100		133	25-149			
TCPP	0.00823	0.0010	ug/Sample	0.0100		82	24-149			
TDCPP	0.00939	0.0010	ug/Sample	0.0100		94	20-158			
Trimethoprim	0.0108	0.0010	ug/Sample	0.0100		108	67-139			
LCS Dup (W9L1595-BSD1)				**Prepared & Analyzed: 01/13/20**						
Acetaminophen	0.224	0.020	ug/Sample	0.200		112	66-156	9	30	
Amoxicillin	0.113	0.010	ug/Sample	0.100		113	14-167	12	30	
Atenolol	0.0121	0.0010	ug/Sample	0.0100		121	56-164	17	30	
Atorvastatin	0.0109	0.0010	ug/Sample	0.0100		109	0.1-173	17	30	
Azithromycin	0.117	0.010	ug/Sample	0.100		117	52-166	10	30	
Caffeine	0.00930	0.0010	ug/Sample	0.0100		93	55-152	9	30	
Carbamazepine	0.0108	0.0010	ug/Sample	0.0100		108	60-135	8	30	
Ciprofloxacin	0.0517	0.0050	ug/Sample	0.0500		103	51-168	9	30	
Cotinine	0.0110	0.0020	ug/Sample	0.0100		110	68-155	7	30	
DEET	0.0123	0.0010	ug/Sample	0.0100		123	45-135	7	30	
Diazepam	0.0114	0.0010	ug/Sample	0.0100		114	58-127	0.9	30	
Fluoxetine	0.0101	0.0010	ug/Sample	0.0100		101	55-150	5	30	
Galaxolide (HHCB)	0.0527	0.010	ug/Sample	0.0500		105	50-150	18	30	
Meprobamate	0.0126	0.0010	ug/Sample	0.0100		126	11-166	27	30	
Methadone	0.0115	0.0010	ug/Sample	0.0100		115	62-137	0.9	30	
Oxybenzone	0.0107	0.0010	ug/Sample	0.0100		107	50-150	11	30	
Phenytoin (Dilantin)	0.0109	0.0010	ug/Sample	0.0100		109	69-138	5	30	
Praziquantel	0.0112	0.0010	ug/Sample	0.0100		112	50-150	0	30	
Primidone	0.0112	0.0010	ug/Sample	0.0100		112	54-147	33	30	Q-12
Quinoline	0.0107	0.0010	ug/Sample	0.0100		107	50-150	73	30	Q-12
Sucralose	0.0480	0.0050	ug/Sample	0.0500		96	50-150	59	30	Q-12
Sulfamethoxazole	0.0120	0.0010	ug/Sample	0.0100		120	60-133	8	30	
TCEP	0.0102	0.0010	ug/Sample	0.0100		102	25-149	26	30	
TCPP	0.0102	0.0010	ug/Sample	0.0100		102	24-149	21	30	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
01/21/2020 12:11

Quality Control Results

(Continued)

PPCPs - Pharmaceuticals by LC/MSMS-ESI+ (Continued)

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9L1595 - EPA 1694M-ESI+ (Continued)										
LCS Dup (W9L1595-BSD1)				**Prepared & Analyzed: 01/13/20**						
TDCPP	0.00885	0.0010	ug/Sample	0.0100		88	20-158	6	30	
Trimethoprim	0.0117	0.0010	ug/Sample	0.0100		117	67-139	8	30	

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Project Manager: Philip Pearce

Reported:
01/21/2020 12:11

Notes and Definitions

Item	Definition
BS-04	The recovery of this analyte in LCS or LCSD was outside control limit. Sample was accepted based on the remaining LCS, LCSD or LCS-LL.
E-01	The concentration indicated for this analyte is an estimated value above the calibration range.
Q-08	High bias in the QC sample does not affect sample result since analyte was not detected or below the reporting limit.
Q-12	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on the percent recoveries and/or other acceptable QC data.
R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
% Rec	Percent Recovery
Dil	Dilution
dry	Sample results reported on a dry weight basis
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
NR	Not Reportable
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

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Certificate of Analysis

FINAL REPORT

Work Orders:	9K21053	**Report Date:**	2/13/2020
		Received Date:	11/21/2019
Project:	EAA Water Quality Program	**Turnaround Time:**	Normal
		Phones:	(210) 877-2847
		Fax:	(210) 877-2848
Attn:	Philip Pearce	**P.O. #:**	
Client:	SWCA Environmental Consultants 6200 UTSA Boulevard, Suite 102 San Antonio, TX 78249	**Billing Code:**	

ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Philip Pearce,

Enclosed are the results of analyses for samples received 11/21/19 with the Chain-of-Custody document. The samples were received in good condition, at 20.6 °C. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:

Chris Samatmanakit
Project Manager

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
02/13/2020 11:11

Case Narrative

Report revised with corrected sample ID. -CSS 2/13/20

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
HSM470	Philip Pearce	9K21053-01	Water	10/31/19 10:38	
Extraction Blank	Philip Pearce	9K21053-02	Water	10/31/19 10:38	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
02/13/2020 11:11

Sample Results

Sample: HSM470
9K21053-01 (Water)

Sampled: 10/31/19 10:38 by Philip Pearce

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Hormones by LC/MSMS-APCI						
Method: EPA 1694M-APCI **Batch ID:** W9K0928 **Instr:** LCMS02 **Prepared:** 11/25/19 15:21 **Analyst:** kan						
17-a-Estradiol	ND	0.0012	ug/Sample	1.15	12/30/19	
17-a-Ethynylestradiol	ND	0.0012	ug/Sample	1.15	12/30/19	
17-b-Estradiol	ND	0.0012	ug/Sample	1.15	12/30/19	
Diethylstilbestrol	ND	0.0058	ug/Sample	1.15	12/30/19	
Epitestosterone	ND	0.0012	ug/Sample	1.15	12/30/19	
Estriol	ND	0.0058	ug/Sample	1.15	12/30/19	
Estrone	ND	0.0012	ug/Sample	1.15	12/30/19	
Progesterone	ND	0.0012	ug/Sample	1.15	12/30/19	
Testosterone	ND	0.0012	ug/Sample	1.15	12/30/19	
PPCPs - Pharmaceuticals by LC/MSMS-ESI-						
Method: EPA 1694M-ESI- **Batch ID:** W9K0929 **Instr:** LCMS02 **Prepared:** 11/25/19 15:23 **Analyst:** kan						
Bisphenol A	**0.0075**	0.0012	ug/Sample	1.15	12/03/19	
Diclofenac	ND	0.0012	ug/Sample	1.15	12/03/19	
Gemfibrozil	ND	0.0012	ug/Sample	1.15	12/03/19	
Ibuprofen	**0.0042**	0.0012	ug/Sample	1.15	12/03/19	
Iopromide	ND	0.0058	ug/Sample	1.15	12/03/19	
Naproxen	**0.0016**	0.0012	ug/Sample	1.15	12/03/19	
Salicylic Acid	ND	0.058	ug/Sample	1.15	12/03/19	
Triclosan	**0.093**	0.0023	ug/Sample	1.15	12/03/19	
PPCPs - Pharmaceuticals by LC/MSMS-ESI+						
Method: EPA 1694M-ESI+ **Batch ID:** W9K0930 **Instr:** LCMS02 **Prepared:** 11/25/19 15:23 **Analyst:** kan						
Acetaminophen	ND	0.023	ug/Sample	1.15	12/17/19	
Amoxicillin	ND	0.012	ug/Sample	1.15	12/17/19	
Atenolol	ND	0.0012	ug/Sample	1.15	12/17/19	
Atorvastatin	ND	0.0012	ug/Sample	1.15	12/17/19	
Azithromycin	ND	0.012	ug/Sample	1.15	12/17/19	
Caffeine	**0.016**	0.0012	ug/Sample	1.15	12/17/19	
Carbamazepine	ND	0.0012	ug/Sample	1.15	12/17/19	
Ciprofloxacin	ND	0.0058	ug/Sample	1.15	12/17/19	
Cotinine	ND	0.0023	ug/Sample	1.15	12/17/19	
DEET	**0.10**	0.0012	ug/Sample	1.15	12/17/19	
Diazepam	ND	0.0012	ug/Sample	1.15	12/17/19	
Fluoxetine	ND	0.0012	ug/Sample	1.15	12/17/19	
Galaxolide (HHCB)	**0.18**	0.012	ug/Sample	1.15	12/17/19	
Meprobamate	ND	0.0012	ug/Sample	1.15	12/17/19	
Methadone	ND	0.0012	ug/Sample	1.15	12/17/19	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
02/13/2020 11:11

Sample Results

(Continued)

Sample: HSM470
9K21053-01 (Water)

Sampled: 10/31/19 10:38 by Philip Pearce

(Continued)

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Pharmaceuticals by LC/MSMS-ESI+ (Continued)						
Method: EPA 1694M-ESI+ **Batch ID:** W9K0930 **Instr:** LCMS02 **Prepared:** 11/25/19 15:23 **Analyst:** kan						
Oxybenzone	**0.015**	0.0012	ug/Sample	1.15	12/17/19	
Phenytoin (Dilantin)	ND	0.0012	ug/Sample	1.15	12/17/19	
Praziquantel	ND	0.0012	ug/Sample	1.15	12/17/19	
Primidone	ND	0.0012	ug/Sample	1.15	12/17/19	
Quinoline	ND	0.0012	ug/Sample	1.15	12/17/19	
Sucralose	ND	0.017	ug/Sample	1.15	12/17/19	R-01
Sulfamethoxazole	ND	0.0012	ug/Sample	1.15	12/17/19	
TCEP	**0.0068**	0.0012	ug/Sample	1.15	12/17/19	
TCPP	**0.19**	0.0012	ug/Sample	1.15	12/17/19	E-01
TDCPP	**0.021**	0.0012	ug/Sample	1.15	12/17/19	
Trimethoprim	ND	0.0058	ug/Sample	1.15	12/17/19	R-01

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported: 02/13/2020 11:11

Sample Results

(Continued)

Sample: Extraction Blank
9K21053-02 (Water)

Sampled: 10/31/19 10:38 by Philip Pearce

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Hormones by LC/MSMS-APCI						
Method: EPA 1694M-APCI **Batch ID:** W9K0928 **Instr:** LCMS02 **Prepared:** 11/25/19 15:21 **Analyst:** kan						
17-a-Estradiol	ND	0.0011	ug/Sample	1.1	12/30/19	
17-a-Ethynylestradiol	ND	0.0011	ug/Sample	1.1	12/30/19	
17-b-Estradiol	ND	0.0011	ug/Sample	1.1	12/30/19	
Diethylstilbestrol	ND	0.0055	ug/Sample	1.1	12/30/19	
Epitestosterone	ND	0.0011	ug/Sample	1.1	12/30/19	
Estriol	ND	0.0055	ug/Sample	1.1	12/30/19	
Estrone	ND	0.0011	ug/Sample	1.1	12/30/19	
Progesterone	ND	0.0011	ug/Sample	1.1	12/30/19	
Testosterone	ND	0.0011	ug/Sample	1.1	12/30/19	
PPCPs - Pharmaceuticals by LC/MSMS-ESI-						
Method: EPA 1694M-ESI- **Batch ID:** W9K0929 **Instr:** LCMS02 **Prepared:** 11/25/19 15:23 **Analyst:** kan						
Bisphenol A	**0.0017**	0.0011	ug/Sample	1.1	12/03/19	
Diclofenac	ND	0.0011	ug/Sample	1.1	12/03/19	
Gemfibrozil	ND	0.0011	ug/Sample	1.1	12/03/19	
Ibuprofen	**0.0014**	0.0011	ug/Sample	1.1	12/03/19	
Iopromide	ND	0.0055	ug/Sample	1.1	12/03/19	
Naproxen	ND	0.0011	ug/Sample	1.1	12/03/19	
Salicylic Acid	ND	0.055	ug/Sample	1.1	12/03/19	
Triclosan	**0.070**	0.0022	ug/Sample	1.1	12/03/19	
PPCPs - Pharmaceuticals by LC/MSMS-ESI+						
Method: EPA 1694M-ESI+ **Batch ID:** W9K0930 **Instr:** LCMS02 **Prepared:** 11/25/19 15:23 **Analyst:** kan						
Acetaminophen	ND	0.022	ug/Sample	1.1	12/17/19	
Amoxicillin	ND	0.011	ug/Sample	1.1	12/17/19	
Atenolol	ND	0.0011	ug/Sample	1.1	12/17/19	
Atorvastatin	ND	0.0011	ug/Sample	1.1	12/17/19	
Azithromycin	ND	0.011	ug/Sample	1.1	12/17/19	
Caffeine	**0.0050**	0.0011	ug/Sample	1.1	12/17/19	
Carbamazepine	ND	0.0011	ug/Sample	1.1	12/17/19	
Ciprofloxacin	ND	0.0055	ug/Sample	1.1	12/17/19	
Cotinine	ND	0.0022	ug/Sample	1.1	12/17/19	
DEET	**0.093**	0.0011	ug/Sample	1.1	12/17/19	
Diazepam	ND	0.0011	ug/Sample	1.1	12/17/19	
Fluoxetine	ND	0.0011	ug/Sample	1.1	12/17/19	
Galaxolide (HHCB)	**0.11**	0.011	ug/Sample	1.1	12/17/19	
Meprobamate	ND	0.0011	ug/Sample	1.1	12/17/19	
Methadone	ND	0.0011	ug/Sample	1.1	12/17/19	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
02/13/2020 11:11

Sample Results

(Continued)

Sample: Extraction Blank
9K21053-02 (Water)

Sampled: 10/31/19 10:38 by Philip Pearce

(Continued)

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Pharmaceuticals by LC/MSMS-ESI+ (Continued)						
Method: EPA 1694M-ESI+ **Batch ID:** W9K0930 **Instr:** LCMS02 **Prepared:** 11/25/19 15:23 **Analyst:** kan						
Oxybenzone	**0.010**	0.0011	ug/Sample	1.1	12/17/19	
Phenytoin (Dilantin)	ND	0.0011	ug/Sample	1.1	12/17/19	
Praziquantel	ND	0.0011	ug/Sample	1.1	12/17/19	
Primidone	ND	0.0011	ug/Sample	1.1	12/17/19	
Quinoline	ND	0.0011	ug/Sample	1.1	12/17/19	
Sucralose	**0.0068**	0.0055	ug/Sample	1.1	12/17/19	
Sulfamethoxazole	ND	0.0011	ug/Sample	1.1	12/17/19	
TCEP	**0.0038**	0.0011	ug/Sample	1.1	12/17/19	
TCPP	**0.10**	0.0011	ug/Sample	1.1	12/17/19	
TDCPP	**0.0037**	0.0011	ug/Sample	1.1	12/17/19	
Trimethoprim	ND	0.0011	ug/Sample	1.1	12/17/19	

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Reported:
02/13/2020 11:11

Quality Control Results

PPCPs - Hormones by LC/MSMS-APCI

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9K0928 - EPA 1694M-APCI										
Blank (W9K0928-BLK1)				**Prepared: 11/25/19 Analyzed: 12/30/19**						
17-a-Estradiol	ND	0.0010	ug/Sample							
17-a-Ethynylestradiol	ND	0.0010	ug/Sample							
17-b-Estradiol	ND	0.0010	ug/Sample							
Diethylstilbestrol	ND	0.0050	ug/Sample							
Epitestosterone	ND	0.0010	ug/Sample							
Estriol	ND	0.0050	ug/Sample							
Estrone	ND	0.0010	ug/Sample							
Progesterone	ND	0.0010	ug/Sample							
Testosterone	ND	0.0010	ug/Sample							
LCS (W9K0928-BS1)				**Prepared: 11/25/19 Analyzed: 12/30/19**						
17-a-Estradiol	0.00959	0.0010	ug/Sample	0.0100		96	50-150			
17-a-Ethynylestradiol	0.00842	0.0010	ug/Sample	0.0100		84	68-159			
17-b-Estradiol	0.0102	0.0010	ug/Sample	0.0100		102	65-146			
Diethylstilbestrol	0.00536	0.0050	ug/Sample	0.0100		54	50-150			
Epitestosterone	0.00582	0.0010	ug/Sample	0.0100		58	50-150			
Estriol	0.0108	0.0050	ug/Sample	0.0100		108	50-150			
Estrone	0.00971	0.0010	ug/Sample	0.0100		97	59-141			
Progesterone	0.00730	0.0010	ug/Sample	0.0100		73	58-154			
Testosterone	0.00497	0.0010	ug/Sample	0.0100		50	60-172			BS-04
LCS Dup (W9K0928-BSD1)				**Prepared: 11/25/19 Analyzed: 12/30/19**						
17-a-Estradiol	0.00694	0.0010	ug/Sample	0.0100		69	50-150	32	30	Q-12
17-a-Ethynylestradiol	0.00973	0.0010	ug/Sample	0.0100		97	68-159	14	30	
17-b-Estradiol	0.00978	0.0010	ug/Sample	0.0100		98	65-146	4	30	
Diethylstilbestrol	0.00665	0.0050	ug/Sample	0.0100		66	50-150	21	30	
Epitestosterone	0.00767	0.0010	ug/Sample	0.0100		77	50-150	27	30	
Estriol	0.00307	0.0050	ug/Sample	0.0100		31	50-150	111	30	BS-04
Estrone	0.00799	0.0010	ug/Sample	0.0100		80	59-141	19	30	
Progesterone	0.00767	0.0010	ug/Sample	0.0100		77	58-154	5	30	
Testosterone	0.00605	0.0010	ug/Sample	0.0100		60	60-172	20	30	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
02/13/2020 11:11

Quality Control Results

(Continued)

PPCPs - Pharmaceuticals by LC/MSMS-ESI-

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9K0929 - EPA 1694M-ESI-										
Blank (W9K0929-BLK1)				**Prepared: 11/25/19 Analyzed: 12/02/19**						
Bisphenol A	ND	0.0010	ug/Sample							
Diclofenac	ND	0.0010	ug/Sample							
Gemfibrozil	ND	0.0010	ug/Sample							
Ibuprofen	ND	0.0010	ug/Sample							
Iopromide	ND	0.0050	ug/Sample							
Naproxen	ND	0.0010	ug/Sample							
Salicylic Acid	ND	0.050	ug/Sample							
Triclosan	ND	0.0020	ug/Sample							
LCS (W9K0929-BS1)				**Prepared: 11/25/19 Analyzed: 12/02/19**						
Bisphenol A	0.00968	0.0010	ug/Sample	0.0100		97	53-168			
Diclofenac	0.0108	0.0010	ug/Sample	0.0100		108	37-218			
Gemfibrozil	0.0106	0.0010	ug/Sample	0.0100		106	76-122			
Ibuprofen	0.00992	0.0010	ug/Sample	0.0100		99	67-139			
Iopromide	0.0560	0.0050	ug/Sample	0.0500		112	0.1-163			
Naproxen	0.0111	0.0010	ug/Sample	0.0100		111	64-138			
Salicylic Acid	0.105	0.050	ug/Sample	0.100		105	56-229			
Triclosan	0.0104	0.0020	ug/Sample	0.0100		104	76-139			
LCS Dup (W9K0929-BSD1)				**Prepared: 11/25/19 Analyzed: 12/02/19**						
Bisphenol A	0.0107	0.0010	ug/Sample	0.0100		107	53-168	10	30	
Diclofenac	0.0124	0.0010	ug/Sample	0.0100		124	37-218	14	30	
Gemfibrozil	0.0114	0.0010	ug/Sample	0.0100		114	76-122	7	30	
Ibuprofen	0.0113	0.0010	ug/Sample	0.0100		113	67-139	13	30	
Iopromide	0.0604	0.0050	ug/Sample	0.0500		121	0.1-163	8	30	
Naproxen	0.0106	0.0010	ug/Sample	0.0100		106	64-138	5	30	
Salicylic Acid	0.112	0.050	ug/Sample	0.100		112	56-229	6	30	
Triclosan	0.0111	0.0020	ug/Sample	0.0100		111	76-139	7	30	

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Project Manager: Philip Pearce

Reported:
02/13/2020 11:11

Quality Control Results

(Continued)

PPCPs - Pharmaceuticals by LC/MSMS-ESI+

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9K0930 - EPA 1694M-ESI+										
Blank (W9K0930-BLK1)				**Prepared: 11/25/19 Analyzed: 12/17/19**						
Acetaminophen	ND	0.020	ug/Sample							
Amoxicillin	ND	0.010	ug/Sample							
Atenolol	ND	0.0010	ug/Sample							
Atorvastatin	ND	0.0010	ug/Sample							
Azithromycin	ND	0.010	ug/Sample							
Caffeine	ND	0.0010	ug/Sample							
Carbamazepine	ND	0.0010	ug/Sample							
Ciprofloxacin	ND	0.0050	ug/Sample							
Cotinine	ND	0.0020	ug/Sample							
DEET	ND	0.0010	ug/Sample							
Diazepam	ND	0.0010	ug/Sample							
Fluoxetine	ND	0.0010	ug/Sample							
Galaxolide (HHCB)	ND	0.010	ug/Sample							
Meprobamate	ND	0.0010	ug/Sample							
Methadone	ND	0.0010	ug/Sample							
Oxybenzone	ND	0.0010	ug/Sample							
Phenytoin (Dilantin)	ND	0.0010	ug/Sample							
Praziquantel	ND	0.0010	ug/Sample							
Primidone	ND	0.0010	ug/Sample							
Quinoline	ND	0.0010	ug/Sample							
Sucralose	ND	0.0050	ug/Sample							
Sulfamethoxazole	ND	0.0010	ug/Sample							
TCEP	ND	0.0010	ug/Sample							
TCPP	ND	0.0010	ug/Sample							
TDCPP	ND	0.0010	ug/Sample							
Trimethoprim	ND	0.0010	ug/Sample							
LCS (W9K0930-BS1)				**Prepared: 11/25/19 Analyzed: 12/17/19**						
Acetaminophen	0.235	0.020	ug/Sample	0.200		118	66-156			
Amoxicillin	0.0917	0.010	ug/Sample	0.100		92	14-167			
Atenolol	0.00891	0.0010	ug/Sample	0.0100		89	56-164			
Atorvastatin	0.00863	0.0010	ug/Sample	0.0100		86	0.1-173			
Azithromycin	0.123	0.010	ug/Sample	0.100		123	52-166			
Caffeine	0.00945	0.0010	ug/Sample	0.0100		94	55-152			
Carbamazepine	0.00924	0.0010	ug/Sample	0.0100		92	60-135			
Ciprofloxacin	0.0713	0.0050	ug/Sample	0.0500		143	51-168			
Cotinine	0.00914	0.0020	ug/Sample	0.0100		91	68-155			
DEET	0.00941	0.0010	ug/Sample	0.0100		94	45-135			
Diazepam	0.00838	0.0010	ug/Sample	0.0100		84	58-127			
Fluoxetine	0.00567	0.0010	ug/Sample	0.0100		57	55-150			

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Project Manager: Philip Pearce

Reported:
02/13/2020 11:11

Quality Control Results

(Continued)

PPCPs - Pharmaceuticals by LC/MSMS-ESI+ (Continued)

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9K0930 - EPA 1694M-ESI+ (Continued)										
LCS (W9K0930-BS1)				**Prepared: 11/25/19 Analyzed: 12/17/19**						
Galaxolide (HHCB)	0.0490	0.010	ug/Sample	0.0500		98	50-150			
Meprobamate	0.00839	0.0010	ug/Sample	0.0100		84	11-166			
Methadone	0.00828	0.0010	ug/Sample	0.0100		83	62-137			
Oxybenzone	0.00778	0.0010	ug/Sample	0.0100		78	50-150			
Phenytoin (Dilantin)	0.00976	0.0010	ug/Sample	0.0100		98	69-138			
Praziquantel	0.0102	0.0010	ug/Sample	0.0100		102	50-150			
Primidone	0.00650	0.0010	ug/Sample	0.0100		65	54-147			
Quinoline	0.00321	0.0010	ug/Sample	0.0100		32	50-150			Q-ME
Sucralose	0.0531	0.0050	ug/Sample	0.0500		106	50-150			
Sulfamethoxazole	0.00934	0.0010	ug/Sample	0.0100		93	60-133			
TCEP	0.00379	0.0010	ug/Sample	0.0100		38	25-149			
TCPP	0.0100	0.0010	ug/Sample	0.0100		100	24-149			
Trimethoprim	0.00821	0.0010	ug/Sample	0.0100		82	67-139			
LCS Dup (W9K0930-BSD1)				**Prepared: 11/25/19 Analyzed: 12/17/19**						
Acetaminophen	0.256	0.020	ug/Sample	0.200		128	66-156	9	30	
Amoxicillin	0.0953	0.010	ug/Sample	0.100		95	14-167	4	30	
Atenolol	0.00939	0.0010	ug/Sample	0.0100		94	56-164	5	30	
Atorvastatin	0.00937	0.0010	ug/Sample	0.0100		94	0.1-173	8	30	
Azithromycin	0.140	0.010	ug/Sample	0.100		140	52-166	13	30	
Caffeine	0.0101	0.0010	ug/Sample	0.0100		101	55-152	7	30	
Carbamazepine	0.00965	0.0010	ug/Sample	0.0100		97	60-135	4	30	
Ciprofloxacin	0.0750	0.0050	ug/Sample	0.0500		150	51-168	5	30	
Cotinine	0.0108	0.0020	ug/Sample	0.0100		108	68-155	17	30	
DEET	0.0113	0.0010	ug/Sample	0.0100		113	45-135	18	30	
Diazepam	0.00865	0.0010	ug/Sample	0.0100		86	58-127	3	30	
Fluoxetine	0.00626	0.0010	ug/Sample	0.0100		63	55-150	10	30	
Galaxolide (HHCB)	0.0534	0.010	ug/Sample	0.0500		107	50-150	9	30	
Meprobamate	0.00876	0.0010	ug/Sample	0.0100		88	11-166	4	30	
Methadone	0.0101	0.0010	ug/Sample	0.0100		101	62-137	20	30	
Oxybenzone	0.00873	0.0010	ug/Sample	0.0100		87	50-150	12	30	
Phenytoin (Dilantin)	0.00969	0.0010	ug/Sample	0.0100		97	69-138	0.7	30	
Praziquantel	0.0122	0.0010	ug/Sample	0.0100		122	50-150	18	30	
Primidone	0.0100	0.0010	ug/Sample	0.0100		100	54-147	42	30	Q-12
Quinoline	0.00411	0.0010	ug/Sample	0.0100		41	50-150	25	30	Q-ME
Sucralose	0.0548	0.0050	ug/Sample	0.0500		110	50-150	3	30	
Sulfamethoxazole	0.00978	0.0010	ug/Sample	0.0100		98	60-133	5	30	
TCEP	0.00398	0.0010	ug/Sample	0.0100		40	25-149	5	30	
TCPP	0.0104	0.0010	ug/Sample	0.0100		104	24-149	4	30	
Trimethoprim	0.00941	0.0010	ug/Sample	0.0100		94	67-139	14	30	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
02/13/2020 11:11

Notes and Definitions

Item	Definition
BS-04	The recovery of this analyte in LCS or LCSD was outside control limit. Sample was accepted based on the remaining LCS, LCSD or LCS-LL.
E-01	The concentration indicated for this analyte is an estimated value above the calibration range.
Q-12	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on the percent recoveries and/or other acceptable QC data.
Q-ME	Acceptable QC with marginal exceedance
R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
% Rec	Percent Recovery
Dil	Dilution
dry	Sample results reported on a dry weight basis
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
NR	Not Reportable
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

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Certificate of Analysis

FINAL REPORT

Work Orders: 0A09022

Project: EAA Water Quality Program

Attn: Philip Pearce

Client: SWCA Environmental Consultants
6200 UTSA Boulevard, Suite 102
San Antonio, TX 78249

Report Date: 2/04/2020
Received Date: 1/9/2020
Turnaround Time: Normal
Phones: (210) 877-2847
Fax: (210) 877-2848
P.O. #:
Billing Code:

ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Philip Pearce,

Enclosed are the results of analyses for samples received 1/09/20 with the Chain-of-Custody document. The samples were received in good condition, at 21.3 °C. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:

Chris Samatmanakit
Project Manager

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
02/04/2020 15:19

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
HCS460	Philip Pearce	0A09022-01	Water	12/31/19 09:20	
HCM470	Philip Pearce	0A09022-02	Water	12/31/19 09:58	
Extraction Blank	Philip Pearce	0A09022-03	Water	12/31/19 00:00	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported: 02/04/2020 15:19

Sample Results

Sample: HCS460
0A09022-01 (Water)

Sampled: 12/31/19 9:20 by Philip Pearce

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Hormones by LC/MSMS-APCI						
Method: EPA 1694M-APCI **Batch ID:** W0A0527 **Instr:** LCMS02 **Prepared:** 01/13/20 10:55 **Analyst:** kan						
17-a-Estradiol	ND	0.0027	ug/Sample	2.72	01/30/20	
17-a-Ethynylestradiol	ND	0.0027	ug/Sample	2.72	01/30/20	
17-b-Estradiol	ND	0.0027	ug/Sample	2.72	01/30/20	
Diethylstilbestrol	ND	0.014	ug/Sample	2.72	01/30/20	
Epitestosterone	ND	0.0027	ug/Sample	2.72	01/30/20	
Estriol	ND	0.014	ug/Sample	2.72	01/30/20	
Estrone	ND	0.0027	ug/Sample	2.72	01/30/20	
Progesterone	ND	0.0027	ug/Sample	2.72	01/30/20	
Testosterone	ND	0.0027	ug/Sample	2.72	01/30/20	
PPCPs - Pharmaceuticals by LC/MSMS-ESI-						
Method: EPA 1694M-ESI- **Batch ID:** W0A0526 **Instr:** LCMS02 **Prepared:** 01/13/20 10:54 **Analyst:** kan						
Bisphenol A	**0.0090**	0.0027	ug/Sample	2.72	01/27/20	
Diclofenac	ND	0.0027	ug/Sample	2.72	01/27/20	
Gemfibrozil	ND	0.0027	ug/Sample	2.72	01/27/20	
Ibuprofen	ND	0.0027	ug/Sample	2.72	01/27/20	
Iopromide	ND	0.014	ug/Sample	2.72	01/27/20	
Naproxen	ND	0.0027	ug/Sample	2.72	01/27/20	
Salicylic Acid	ND	0.14	ug/Sample	2.72	01/27/20	
Triclosan	**0.045**	0.0054	ug/Sample	2.72	01/27/20	
PPCPs - Pharmaceuticals by LC/MSMS-ESI+						
Method: EPA 1694M-ESI+ **Batch ID:** W9L1595 **Instr:** LCMS02 **Prepared:** 01/13/20 11:06 **Analyst:** kan						
Acetaminophen	ND	0.054	ug/Sample	2.72	01/13/20	
Amoxicillin	ND	0.027	ug/Sample	2.72	01/13/20	
Atenolol	ND	0.0027	ug/Sample	2.72	01/13/20	
Atorvastatin	ND	0.0027	ug/Sample	2.72	01/13/20	
Azithromycin	ND	0.027	ug/Sample	2.72	01/13/20	
Caffeine	**0.0096**	0.0027	ug/Sample	2.72	01/13/20	
Carbamazepine	ND	0.0027	ug/Sample	2.72	01/13/20	
Ciprofloxacin	ND	0.014	ug/Sample	2.72	01/13/20	
Cotinine	ND	0.0054	ug/Sample	2.72	01/13/20	
DEET	**0.077**	0.0027	ug/Sample	2.72	01/13/20	
Diazepam	ND	0.0027	ug/Sample	2.72	01/13/20	
Fluoxetine	ND	0.0027	ug/Sample	2.72	01/13/20	
Galaxolide (HHCB)	**0.15**	0.027	ug/Sample	2.72	01/13/20	
Meprobamate	ND	0.0027	ug/Sample	2.72	01/13/20	
Methadone	ND	0.0027	ug/Sample	2.72	01/13/20	

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Project Manager: Philip Pearce

Reported:
02/04/2020 15:19

Sample Results

(Continued)

Sample: HCS460
0A09022-01 (Water)

Sampled: 12/31/19 9:20 by Philip Pearce

(Continued)

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Pharmaceuticals by LC/MSMS-ESI+ (Continued)						
Method: EPA 1694M-ESI+ **Batch ID:** W9L1595 **Instr:** LCMS02 **Prepared:** 01/13/20 11:06 **Analyst:** kan						
Oxybenzone	**0.0083**	0.0027	ug/Sample	2.72	01/13/20	
Phenytoin (Dilantin)	ND	0.0027	ug/Sample	2.72	01/13/20	
Praziquantel	ND	0.0027	ug/Sample	2.72	01/13/20	
Primidone	ND	0.0027	ug/Sample	2.72	01/13/20	
Quinoline	ND	0.0027	ug/Sample	2.72	01/13/20	
Sucralose	ND	0.014	ug/Sample	2.72	01/13/20	
Sulfamethoxazole	ND	0.0027	ug/Sample	2.72	01/13/20	
TCEP	**0.0070**	0.0027	ug/Sample	2.72	01/13/20	
TCPP	**0.18**	0.0027	ug/Sample	2.72	01/13/20	
TDCPP	**0.0055**	0.0027	ug/Sample	2.72	01/13/20	
Trimethoprim	ND	0.0027	ug/Sample	2.72	01/13/20	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported: 02/04/2020 15:19

Sample Results

(Continued)

Sample: HCM470
0A09022-02 (Water)

Sampled: 12/31/19 9:58 by Philip Pearce

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Hormones by LC/MSMS-APCI						
Method: EPA 1694M-APCI **Batch ID:** W0A0527 **Instr:** LCMS02 **Prepared:** 01/13/20 10:55 **Analyst:** kan						
17-a-Estradiol	ND	0.0025	ug/Sample	2.5	01/30/20	
17-a-Ethynylestradiol	ND	0.0025	ug/Sample	2.5	01/30/20	
17-b-Estradiol	ND	0.0025	ug/Sample	2.5	01/30/20	
Diethylstilbestrol	ND	0.012	ug/Sample	2.5	01/30/20	
Epitestosterone	ND	0.0025	ug/Sample	2.5	01/30/20	
Estriol	ND	0.012	ug/Sample	2.5	01/30/20	
Estrone	ND	0.0025	ug/Sample	2.5	01/30/20	
Progesterone	ND	0.0025	ug/Sample	2.5	01/30/20	
Testosterone	ND	0.0025	ug/Sample	2.5	01/30/20	
PPCPs - Pharmaceuticals by LC/MSMS-ESI-						
Method: EPA 1694M-ESI- **Batch ID:** W0A0526 **Instr:** LCMS02 **Prepared:** 01/13/20 10:54 **Analyst:** kan						
Bisphenol A	ND	0.0025	ug/Sample	2.5	01/27/20	
Diclofenac	ND	0.0025	ug/Sample	2.5	01/27/20	
Gemfibrozil	ND	0.0025	ug/Sample	2.5	01/27/20	
Ibuprofen	ND	0.0025	ug/Sample	2.5	01/27/20	
Iopromide	ND	0.012	ug/Sample	2.5	01/27/20	
Naproxen	ND	0.0025	ug/Sample	2.5	01/27/20	
Salicylic Acid	ND	0.12	ug/Sample	2.5	01/27/20	
Triclosan	**0.029**	0.0050	ug/Sample	2.5	01/27/20	
PPCPs - Pharmaceuticals by LC/MSMS-ESI+						
Method: EPA 1694M-ESI+ **Batch ID:** W9L1595 **Instr:** LCMS02 **Prepared:** 01/13/20 11:06 **Analyst:** kan						
Acetaminophen	ND	0.050	ug/Sample	2.5	01/13/20	
Amoxicillin	ND	0.025	ug/Sample	2.5	01/13/20	
Atenolol	ND	0.0025	ug/Sample	2.5	01/13/20	
Atorvastatin	ND	0.0025	ug/Sample	2.5	01/13/20	
Azithromycin	ND	0.025	ug/Sample	2.5	01/13/20	
Caffeine	**0.0041**	0.0025	ug/Sample	2.5	01/13/20	
Carbamazepine	ND	0.0025	ug/Sample	2.5	01/13/20	
Ciprofloxacin	ND	0.012	ug/Sample	2.5	01/13/20	
Cotinine	ND	0.0050	ug/Sample	2.5	01/13/20	
DEET	**0.084**	0.0025	ug/Sample	2.5	01/13/20	
Diazepam	ND	0.0025	ug/Sample	2.5	01/13/20	
Fluoxetine	ND	0.0025	ug/Sample	2.5	01/13/20	
Galaxolide (HHCB)	**0.12**	0.025	ug/Sample	2.5	01/13/20	
Meprobamate	ND	0.0025	ug/Sample	2.5	01/13/20	
Methadone	ND	0.0025	ug/Sample	2.5	01/13/20	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported:
02/04/2020 15:19

Sample Results

(Continued)

Sample: HCM470
0A09022-02 (Water)

Sampled: 12/31/19 9:58 by Philip Pearce

(Continued)

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Pharmaceuticals by LC/MSMS-ESI+ (Continued)						
Method: EPA 1694M-ESI+ **Batch ID:** W9L1595 **Instr:** LCMS02 **Prepared:** 01/13/20 11:06 **Analyst:** kan						
Oxybenzone	**0.0049**	0.0025	ug/Sample	2.5	01/13/20	
Phenytoin (Dilantin)	ND	0.0025	ug/Sample	2.5	01/13/20	
Praziquantel	ND	0.0025	ug/Sample	2.5	01/13/20	
Primidone	ND	0.0025	ug/Sample	2.5	01/13/20	
Quinoline	ND	0.0025	ug/Sample	2.5	01/13/20	
Sucralose	ND	0.012	ug/Sample	2.5	01/13/20	
Sulfamethoxazole	ND	0.0025	ug/Sample	2.5	01/13/20	
TCEP	**0.0068**	0.0025	ug/Sample	2.5	01/13/20	
TCPP	**0.12**	0.0025	ug/Sample	2.5	01/13/20	
TDCPP	**0.016**	0.0025	ug/Sample	2.5	01/13/20	
Trimethoprim	ND	0.0025	ug/Sample	2.5	01/13/20	

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Project Number: EAA Water Quality Program

Project Manager: Philip Pearce

Reported: 02/04/2020 15:19

Sample Results

(Continued)

Sample: Extraction Blank
0A09022-03 (Water)

Sampled: 12/31/19 0:00 by Philip Pearce

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Hormones by LC/MSMS-APCI						
Method: EPA 1694M-APCI **Batch ID:** W0A0527 **Instr:** LCMS02 **Prepared:** 01/13/20 10:55 **Analyst:** kan						
17-a-Estradiol	ND	0.0028	ug/Sample	2.79	01/30/20	
17-a-Ethynylestradiol	ND	0.0028	ug/Sample	2.79	01/30/20	
17-b-Estradiol	ND	0.0028	ug/Sample	2.79	01/30/20	
Diethylstilbestrol	ND	0.014	ug/Sample	2.79	01/30/20	
Epitestosterone	ND	0.0028	ug/Sample	2.79	01/30/20	
Estriol	ND	0.014	ug/Sample	2.79	01/30/20	
Estrone	ND	0.0028	ug/Sample	2.79	01/30/20	
Progesterone	ND	0.0028	ug/Sample	2.79	01/30/20	
Testosterone	ND	0.0028	ug/Sample	2.79	01/30/20	
PPCPs - Pharmaceuticals by LC/MSMS-ESI-						
Method: EPA 1694M-ESI- **Batch ID:** W0A0526 **Instr:** LCMS02 **Prepared:** 01/13/20 10:54 **Analyst:** kan						
Bisphenol A	ND	0.0028	ug/Sample	2.79	01/27/20	
Diclofenac	ND	0.0028	ug/Sample	2.79	01/27/20	
Gemfibrozil	ND	0.0028	ug/Sample	2.79	01/27/20	
Ibuprofen	ND	0.0028	ug/Sample	2.79	01/27/20	
Iopromide	ND	0.014	ug/Sample	2.79	01/27/20	
Naproxen	ND	0.0028	ug/Sample	2.79	01/27/20	
Salicylic Acid	ND	0.14	ug/Sample	2.79	01/27/20	
Triclosan	**0.0097**	0.0056	ug/Sample	2.79	01/27/20	
PPCPs - Pharmaceuticals by LC/MSMS-ESI+						
Method: EPA 1694M-ESI+ **Batch ID:** W9L1595 **Instr:** LCMS02 **Prepared:** 01/13/20 11:06 **Analyst:** kan						
Acetaminophen	ND	0.056	ug/Sample	2.79	01/13/20	
Amoxicillin	ND	0.028	ug/Sample	2.79	01/13/20	
Atenolol	ND	0.0028	ug/Sample	2.79	01/13/20	
Atorvastatin	ND	0.0028	ug/Sample	2.79	01/13/20	
Azithromycin	ND	0.028	ug/Sample	2.79	01/13/20	
Caffeine	ND	0.0028	ug/Sample	2.79	01/13/20	
Carbamazepine	ND	0.0028	ug/Sample	2.79	01/13/20	
Ciprofloxacin	ND	0.014	ug/Sample	2.79	01/13/20	
Cotinine	ND	0.0056	ug/Sample	2.79	01/13/20	
DEET	**0.051**	0.0028	ug/Sample	2.79	01/13/20	
Diazepam	ND	0.0028	ug/Sample	2.79	01/13/20	
Fluoxetine	ND	0.0028	ug/Sample	2.79	01/13/20	
Galaxolide (HHCB)	**0.13**	0.028	ug/Sample	2.79	01/13/20	
Meprobamate	ND	0.0028	ug/Sample	2.79	01/13/20	
Methadone	ND	0.0028	ug/Sample	2.79	01/13/20	

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Sample Results

(Continued)

Sample: Extraction Blank
0A09022-03 (Water)

Sampled: 12/31/19 0:00 by Philip Pearce

(Continued)

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
PPCPs - Pharmaceuticals by LC/MSMS-ESI+ (Continued)						
Method: EPA 1694M-ESI+ **Batch ID:** W9L1595 **Instr:** LCMS02 **Prepared:** 01/13/20 11:06 **Analyst:** kan						
Oxybenzone	**0.0028**	0.0028	ug/Sample	2.79	01/13/20	
Phenytoin (Dilantin)	ND	0.0028	ug/Sample	2.79	01/13/20	
Praziquantel	ND	0.0028	ug/Sample	2.79	01/13/20	
Primidone	ND	0.0028	ug/Sample	2.79	01/13/20	
Quinoline	ND	0.0028	ug/Sample	2.79	01/13/20	
Sucralose	ND	0.014	ug/Sample	2.79	01/13/20	
Sulfamethoxazole	ND	0.0028	ug/Sample	2.79	01/13/20	
TCEP	**0.0031**	0.0028	ug/Sample	2.79	01/13/20	
TCPP	**0.12**	0.0028	ug/Sample	2.79	01/13/20	
TDCPP	**0.0063**	0.0028	ug/Sample	2.79	01/13/20	
Trimethoprim	ND	0.0028	ug/Sample	2.79	01/13/20	

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Quality Control Results

PPCPs - Hormones by LC/MSMS-APCI

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W0A0527 - EPA 1694M-APCI										
Blank (W0A0527-BLK1)				**Prepared: 01/13/20 Analyzed: 01/30/20**						
17-a-Estradiol	ND	0.0010	ug/Sample							
17-a-Ethynylestradiol	ND	0.0010	ug/Sample							
17-b-Estradiol	ND	0.0010	ug/Sample							
Diethylstilbestrol	ND	0.0050	ug/Sample							
Epitestosterone	ND	0.0010	ug/Sample							
Estriol	ND	0.0050	ug/Sample							
Estrone	ND	0.0010	ug/Sample							
Progesterone	ND	0.0010	ug/Sample							
Testosterone	ND	0.0010	ug/Sample							
LCS (W0A0527-BS1)				**Prepared: 01/13/20 Analyzed: 01/30/20**						
17-a-Estradiol	0.0108	0.0010	ug/Sample	0.0100		108	50-150			
17-a-Ethynylestradiol	0.0108	0.0010	ug/Sample	0.0100		108	68-159			
17-b-Estradiol	0.0108	0.0010	ug/Sample	0.0100		108	65-146			
Diethylstilbestrol	0.0104	0.0050	ug/Sample	0.0100		104	50-150			
Epitestosterone	0.0105	0.0010	ug/Sample	0.0100		105	50-150			
Estriol	0.0129	0.0050	ug/Sample	0.0100		129	50-150			
Estrone	0.0117	0.0010	ug/Sample	0.0100		117	59-141			
Progesterone	0.0101	0.0010	ug/Sample	0.0100		101	58-154			
Testosterone	0.0104	0.0010	ug/Sample	0.0100		104	60-172			
LCS Dup (W0A0527-BSD1)				**Prepared: 01/13/20 Analyzed: 01/30/20**						
17-a-Estradiol	0.0116	0.0010	ug/Sample	0.0100		116	50-150	7	30	
17-a-Ethynylestradiol	0.0108	0.0010	ug/Sample	0.0100		108	68-159	0	30	
17-b-Estradiol	0.00997	0.0010	ug/Sample	0.0100		100	65-146	8	30	
Diethylstilbestrol	0.0113	0.0050	ug/Sample	0.0100		113	50-150	8	30	
Epitestosterone	0.0110	0.0010	ug/Sample	0.0100		110	50-150	5	30	
Estriol	0.0123	0.0050	ug/Sample	0.0100		123	50-150	5	30	
Estrone	0.0121	0.0010	ug/Sample	0.0100		121	59-141	3	30	
Progesterone	0.0115	0.0010	ug/Sample	0.0100		115	58-154	13	30	
Testosterone	0.0110	0.0010	ug/Sample	0.0100		110	60-172	6	30	

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Project Manager: Philip Pearce

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02/04/2020 15:19

Quality Control Results

(Continued)

PPCPs - Pharmaceuticals by LC/MSMS-ESI-

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W0A0526 - EPA 1694M-ESI-										
Blank (W0A0526-BLK1)				**Prepared: 01/13/20 Analyzed: 01/27/20**						
Bisphenol A	ND	0.0010	ug/Sample							
Diclofenac	ND	0.0010	ug/Sample							
Gemfibrozil	ND	0.0010	ug/Sample							
Ibuprofen	ND	0.0010	ug/Sample							
Iopromide	ND	0.0050	ug/Sample							
Naproxen	ND	0.0010	ug/Sample							
Salicylic Acid	ND	0.050	ug/Sample							
Triclosan	ND	0.0020	ug/Sample							
LCS (W0A0526-BS1)				**Prepared: 01/13/20 Analyzed: 01/27/20**						
Bisphenol A	0.00954	0.0010	ug/Sample	0.0100		95	53-168			
Diclofenac	0.00908	0.0010	ug/Sample	0.0100		91	37-218			
Gemfibrozil	0.0105	0.0010	ug/Sample	0.0100		105	76-122			
Ibuprofen	0.00907	0.0010	ug/Sample	0.0100		91	67-139			
Iopromide	0.0491	0.0050	ug/Sample	0.0500		98	0.1-163			
Naproxen	0.0112	0.0010	ug/Sample	0.0100		112	64-138			
Salicylic Acid	0.108	0.050	ug/Sample	0.100		108	56-229			
Triclosan	0.0107	0.0020	ug/Sample	0.0100		107	76-139			
LCS Dup (W0A0526-BSD1)				**Prepared: 01/13/20 Analyzed: 01/27/20**						
Bisphenol A	0.0109	0.0010	ug/Sample	0.0100		109	53-168	13	30	
Diclofenac	0.0113	0.0010	ug/Sample	0.0100		113	37-218	22	30	
Gemfibrozil	0.0114	0.0010	ug/Sample	0.0100		114	76-122	8	30	
Ibuprofen	0.00936	0.0010	ug/Sample	0.0100		94	67-139	3	30	
Iopromide	0.0577	0.0050	ug/Sample	0.0500		115	0.1-163	16	30	
Naproxen	0.0125	0.0010	ug/Sample	0.0100		125	64-138	11	30	
Salicylic Acid	0.114	0.050	ug/Sample	0.100		114	56-229	5	30	
Triclosan	0.0117	0.0020	ug/Sample	0.0100		117	76-139	9	30	

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Quality Control Results

(Continued)

PPCPs - Pharmaceuticals by LC/MSMS-ESI+

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9L1595 - EPA 1694M-ESI+										
Blank (W9L1595-BLK1)				**Prepared & Analyzed: 01/13/20**						
Acetaminophen	ND	0.020	ug/Sample							
Amoxicillin	ND	0.010	ug/Sample							
Atenolol	ND	0.0010	ug/Sample							
Atorvastatin	ND	0.0010	ug/Sample							
Azithromycin	ND	0.010	ug/Sample							
Caffeine	ND	0.0010	ug/Sample							
Carbamazepine	ND	0.0010	ug/Sample							
Ciprofloxacin	ND	0.0050	ug/Sample							
Cotinine	ND	0.0020	ug/Sample							
DEET	ND	0.0010	ug/Sample							
Diazepam	ND	0.0010	ug/Sample							
Fluoxetine	ND	0.0010	ug/Sample							
Galaxolide (HHCB)	ND	0.010	ug/Sample							
Meprobamate	ND	0.0010	ug/Sample							
Methadone	ND	0.0010	ug/Sample							
Oxybenzone	ND	0.0010	ug/Sample							
Phenytoin (Dilantin)	ND	0.0010	ug/Sample							
Praziquantel	ND	0.0010	ug/Sample							
Primidone	ND	0.0010	ug/Sample							
Quinoline	ND	0.0010	ug/Sample							
Sucralose	ND	0.0050	ug/Sample							
Sulfamethoxazole	ND	0.0010	ug/Sample							
TCEP	ND	0.0010	ug/Sample							
TCPP	ND	0.0010	ug/Sample							
TDCPP	ND	0.0010	ug/Sample							
Trimethoprim	ND	0.0010	ug/Sample							
LCS (W9L1595-BS1)				**Prepared & Analyzed: 01/13/20**						
Acetaminophen	0.205	0.020	ug/Sample	0.200		102	66-156			
Amoxicillin	0.100	0.010	ug/Sample	0.100		100	14-167			
Atenolol	0.0102	0.0010	ug/Sample	0.0100		102	56-164			
Atorvastatin	0.0129	0.0010	ug/Sample	0.0100		129	0.1-173			
Azithromycin	0.106	0.010	ug/Sample	0.100		106	52-166			
Caffeine	0.00848	0.0010	ug/Sample	0.0100		85	55-152			
Carbamazepine	0.00997	0.0010	ug/Sample	0.0100		100	60-135			
Ciprofloxacin	0.0474	0.0050	ug/Sample	0.0500		95	51-168			
Cotinine	0.0103	0.0020	ug/Sample	0.0100		103	68-155			
DEET	0.0115	0.0010	ug/Sample	0.0100		115	45-135			
Diazepam	0.0115	0.0010	ug/Sample	0.0100		115	58-127			
Fluoxetine	0.0106	0.0010	ug/Sample	0.0100		106	55-150			

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Quality Control Results

(Continued)

PPCPs - Pharmaceuticals by LC/MSMS-ESI+ (Continued)

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9L1595 - EPA 1694M-ESI+ (Continued)										
LCS (W9L1595-BS1)				**Prepared & Analyzed: 01/13/20**						
Galaxolide (HHCB)	0.0442	0.010	ug/Sample	0.0500		88	50-150			
Meprobamate	0.00964	0.0010	ug/Sample	0.0100		96	11-166			
Methadone	0.0114	0.0010	ug/Sample	0.0100		114	62-137			
Oxybenzone	0.00959	0.0010	ug/Sample	0.0100		96	50-150			
Phenytoin (Dilantin)	0.0104	0.0010	ug/Sample	0.0100		104	69-138			
Praziquantel	0.0112	0.0010	ug/Sample	0.0100		112	50-150			
Primidone	0.00803	0.0010	ug/Sample	0.0100		80	54-147			
Quinoline	0.00500	0.0010	ug/Sample	0.0100		50	50-150			
Sucralose	0.0260	0.0050	ug/Sample	0.0500		52	50-150			
Sulfamethoxazole	0.0111	0.0010	ug/Sample	0.0100		111	60-133			
TCEP	0.0133	0.0010	ug/Sample	0.0100		133	25-149			
TCPP	0.00823	0.0010	ug/Sample	0.0100		82	24-149			
TDCPP	0.00939	0.0010	ug/Sample	0.0100		94	20-158			
Trimethoprim	0.0108	0.0010	ug/Sample	0.0100		108	67-139			
LCS Dup (W9L1595-BSD1)				**Prepared & Analyzed: 01/13/20**						
Acetaminophen	0.224	0.020	ug/Sample	0.200		112	66-156	9	30	
Amoxicillin	0.113	0.010	ug/Sample	0.100		113	14-167	12	30	
Atenolol	0.0121	0.0010	ug/Sample	0.0100		121	56-164	17	30	
Atorvastatin	0.0109	0.0010	ug/Sample	0.0100		109	0.1-173	17	30	
Azithromycin	0.117	0.010	ug/Sample	0.100		117	52-166	10	30	
Caffeine	0.00930	0.0010	ug/Sample	0.0100		93	55-152	9	30	
Carbamazepine	0.0108	0.0010	ug/Sample	0.0100		108	60-135	8	30	
Ciprofloxacin	0.0517	0.0050	ug/Sample	0.0500		103	51-168	9	30	
Cotinine	0.0110	0.0020	ug/Sample	0.0100		110	68-155	7	30	
DEET	0.0123	0.0010	ug/Sample	0.0100		123	45-135	7	30	
Diazepam	0.0114	0.0010	ug/Sample	0.0100		114	58-127	0.9	30	
Fluoxetine	0.0101	0.0010	ug/Sample	0.0100		101	55-150	5	30	
Galaxolide (HHCB)	0.0527	0.010	ug/Sample	0.0500		105	50-150	18	30	
Meprobamate	0.0126	0.0010	ug/Sample	0.0100		126	11-166	27	30	
Methadone	0.0115	0.0010	ug/Sample	0.0100		115	62-137	0.9	30	
Oxybenzone	0.0107	0.0010	ug/Sample	0.0100		107	50-150	11	30	
Phenytoin (Dilantin)	0.0109	0.0010	ug/Sample	0.0100		109	69-138	5	30	
Praziquantel	0.0112	0.0010	ug/Sample	0.0100		112	50-150	0	30	
Primidone	0.0112	0.0010	ug/Sample	0.0100		112	54-147	33	30	Q-12
Quinoline	0.0107	0.0010	ug/Sample	0.0100		107	50-150	73	30	Q-12
Sucralose	0.0480	0.0050	ug/Sample	0.0500		96	50-150	59	30	Q-12
Sulfamethoxazole	0.0120	0.0010	ug/Sample	0.0100		120	60-133	8	30	
TCEP	0.0102	0.0010	ug/Sample	0.0100		102	25-149	26	30	
TCPP	0.0102	0.0010	ug/Sample	0.0100		102	24-149	21	30	

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Project Manager: Philip Pearce

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Quality Control Results

(Continued)

PPCPs - Pharmaceuticals by LC/MSMS-ESI+ (Continued)

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W9L1595 - EPA 1694M-ESI+ (Continued)										
LCS Dup (W9L1595-BSD1)				**Prepared & Analyzed: 01/13/20**						
TDCPP	0.00885	0.0010	ug/Sample	0.0100		88	20-158	6	30	
Trimethoprim	0.0117	0.0010	ug/Sample	0.0100		117	67-139	8	30	

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Notes and Definitions

Item	Definition
Q-12	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on the percent recoveries and/or other acceptable QC data.
% Rec	Percent Recovery
Dil	Dilution
dry	Sample results reported on a dry weight basis
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
NR	Not Reportable
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

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