MEMORANDUM

Date: February 5, 2020

To: The Honorable Chairman and Members
Pima County Board of Supervisors

From: C.H. Huckelberry
County Administrator

Re: **Per- and Polyfluoroalkyl Substances Received and Conveyed by the Pima County Sanitary Sewerage System**

Introduction

On January 29, 2020, I shared with you the *Environmental Toxic Substance Assessment: Per- and Polyfluoroalkyl Substances (PFAS) in Pima County Water* prepared by the Environment, Exposure Science, and Risk Assessment Center of The University of Arizona, College of Public Health under contract with the Pima County Health Department. Within that report, the authors state, *"PFAS are released to the environment during industrial production, firefighting foam application, wastewater treatment plant discharge, biosolids land application, and surface waste (i.e. landfills) leaching into groundwater. PFAS can be found in wastewater treatment plant effluent if PFAS chemicals are present in the influent."*

This memorandum outlines proactive measures the Regional Wastewater Reclamation Department (RWRD) is taking to better understand and address potential risks from PFAS in wastewater and biosolids. While there are thousands of existing PFAS compounds, the analytical methods for understanding and measuring these are still emerging and so this analysis will concentrate on the two most studied compounds to date: Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS).

Prohibited Wastes per Pima County Code

In an attempt to limit PFAS from entering the public sanitary sewerage system to the extent possible, RWRD has drafted a Pima County Code text amendment prohibiting the discharge of Aqueous Film Forming Foam (AFFF). AFFF is a firefighting foam used by commercial and military emergency fire-response teams to combat petroleum-based fires and variations of it are known to contain PFAS.

While there are a handful of commercial properties who currently utilize AFFF containing PFAS, there is currently no regulation prohibiting its discharge into the public sanitary sewerage system. To address this, Title 13 Public Services, Division III Industrial Waste, Chapter 13.36., Article III. Regulated Wastes, 13.36.600 Prohibited Wastes should be amended to include the following prohibition:

B. 7. Any aqueous film forming foam (AFFF), such as from firefighting activities, that contains any intentionally added per- and polyfluoroalkyl substances (PFAS) including but not limited to PFOA, PFOS, and GenX-like chemicals.

It is anticipated this Code text amendment will be provided for your consideration this March.

Sampling of Water Reclamation Facilities' Influent and Effluent

To provide Americans with a margin of protection from a lifetime of exposure to Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS) - the two most studied PFAS chemicals - the United States Environmental Protection Agency (EPA) established health advisory levels at 70 ng/L (parts per trillion). Because no such recommendations are currently in place for wastewater, groundwater and soils, RWRD has utilized this health advisory level to benchmark influent and effluent PFAS analyses.

RWRD conducted a limited amount of analyses on its influent and effluent in 2016 and 2018. There are, however, no EPA approved or promulgated analytical methods for PFAS in wastewater and solids and as such, the RWRD laboratory is not currently equipped with instruments to analyze for PFOA and PFAS. Analyses were therefore performed using a modified drinking water method by contract laboratories.

Table 1 below provides sample data for PFOA and PFOS from RWRD influent and effluent. As you can see, levels have been consistently below EPA's 70 ng/L drinking water health advisory level, averaging 6.3ng/L for PFOS and 10.1ng/L for PFOA.

Table 1. Water Reclamation Facility PFOS and PFOA Sample Data

Water Reclamation Facility	Location	Sample Date	PFOS ng/L	PFOA ng/L	Total ng/L
Agua Nueva	Influent	12/8/16	7.5	4.6	12.1
	Effluent	12/8/16	6.6	8	14.6
	Effluent	12/29/16	9.9	11	20.9
	Effluent	6/21/17	5.4	7.7	13.1
	Influent	8/29/18	19	3.9	22.9
	Effluent	8/29/18	5.1	6.6	11.7
Avra Valley	Effluent	12/29/16	1.6	9.2	10.8
	Influent	8/29/18	4.8	1.9	6.7
	Effluent	8/29/18	2.5	8.8	11.3
Corona de Tucson	Effluent	12/29/16	ND	18	18
	Influent	8/29/18	ND	ND	ND
	Effluent	8/29/18	ND	14	14

Green Valley	Effluent	12/29/16	2.8	26	28.8
	Influent	8/29/18	ND	4	4
	Effluent	8/29/18	4.5	28	32.5
Tres Rios	Effluent	12/29/16	8.6	9	17.6
	Influent	8/29/18	5.5	5.1	10.6
	Effluent	8/29/18	4.2	6.1	10.3

Due to consistently low levels of PFOA and PFAS present in the influent and effluent at various Water Reclamation Facilities (WRF), no further analyses have been performed.

Sampling of Surface Water and Groundwater Near the Santa Cruz River

In June 2017, the Arizona Department of Environmental Quality (ADEQ) contracted with Hargis + Associates to conduct water sampling and analysis for the presence of PFAS in surface water at various locations along the Santa Cruz River and in groundwater samples from various monitor and irrigation wells. Results were outlined in a technical memorandum published by ADEQ in August 2017 (Attachment 1).

In August 2018, hydrologists with RWRD reviewed Hargis + Associates' memorandum and provided an internal summary and interpretation memorandum (Attachment 2) of which the following was noted:

1. Surface Water
   PFOS and PFOA were detected in all eleven ADEQ surface water samples from the Santa Cruz River. PFOS and PFOA concentrations were less than 30 ng/L, with the exception of location SC-07, located near Avra Valley Road, approximately seven miles downstream of the Tres Rios WRF, where levels were detected at 47 ng/L – significantly below EPA's health advisory level.

2. Groundwater
   PFOS and PFOA were detected in all four ADEQ groundwater samples along the Santa Cruz River, at concentrations ranging from approximately 17 to 60 ng/L. The highest concentration was detected at well SC-07R, adjacent to the SC-07 sampling location, near Avra Valley Road.

   Figure 1 below demonstrates the surface water and groundwater data in relation to location downstream of Agua Nueva and Tres Rios WRFs. SC-01 through SC-11 correspond to monitor well locations and also river monitoring locations, proceeding from upstream to downstream near Trico Road, respectively. As you can see, there were no instances where PFOS or PFOA exceeded the EPA health advisory level of 70 ng/L.

Figure 1. PFOS and PFAS in Surface Water and Groundwater

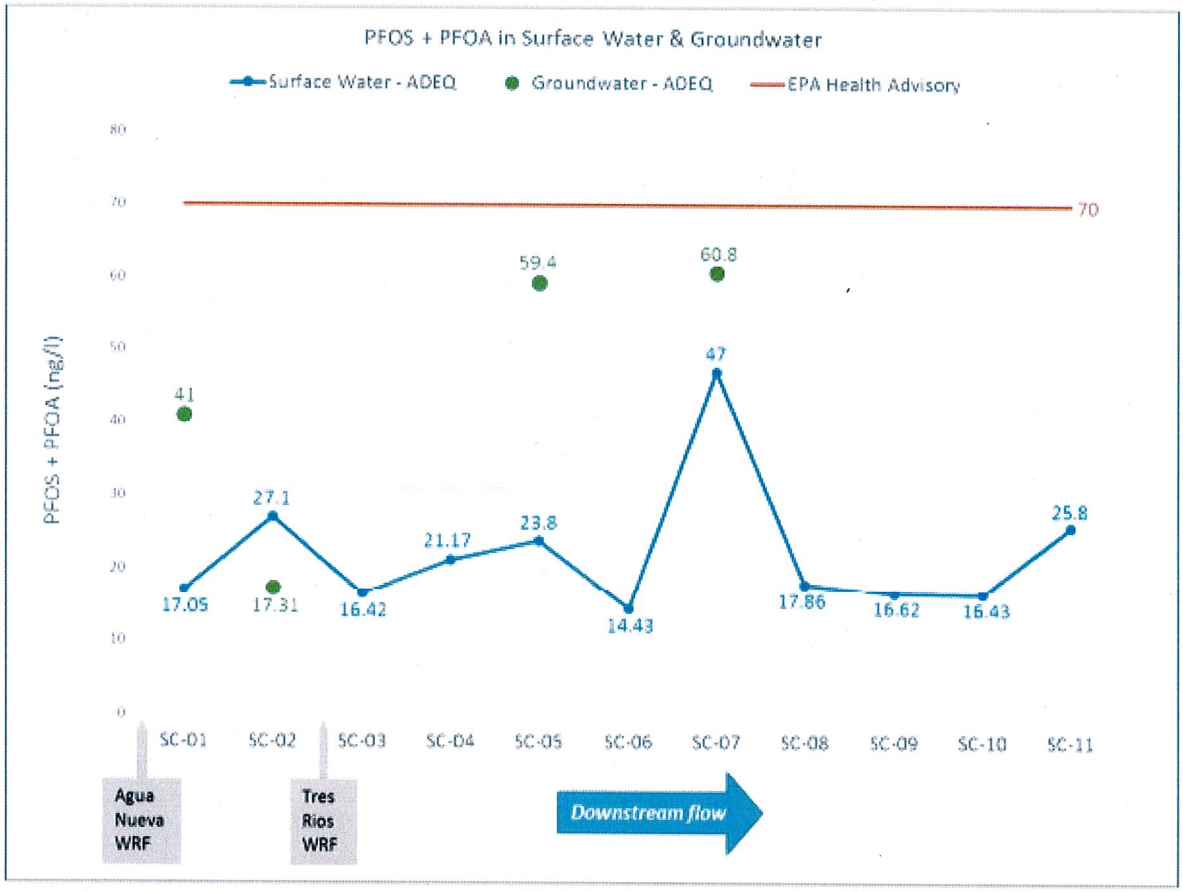

Figure 1: PFOS/PFOA Concentrations in Surface Water and Groundwater

3. Wells

In addition to these locations, Hargis + Associates sampled wells upstream and downstream of the Agua Nueva and Tres Rios WRFs. The highest concentrations of PFOS and PFOA (>100 ng/L) were in four Cortaro-Marana Irrigation District (CMID) irrigation wells north of Ina Road to south of Marana Road. There was one Tucson Water well south of Congress Street.

The four highest concentrations of PFOS and PFOA in CMID wells were located over 0.5 mile from the Santa Cruz River, while less contaminated wells were generally closer to the river.

Statements have appeared in the press and elsewhere that PFAS levels exceeding the EPA health advisory level of 70 ng/L in the Town of Marana and some City wells are the result of RWRD conveyance of tainted influent discharged to the Santa Cruz River. There exists no data or evidence to support or refute this claim prior to 2016, the year PFAS in effluent was first measured. However, while little is known to date about PFAS migration, the compounds are ubiquitous within the environment and may enter the aquifer through both effluent discharge as well as through surface water infiltrations and river outfalls. This is evidenced by some of the surface water measurements in the Hargis + Associates analysis finding higher Santa Cruz River PFOS/PFOA levels as well as different ratios of PFAS to PFOA than those measured in RWRD effluent, the maximum measurement of which was 22.9ng/L.

Additionally, the referenced 2018 RWRD summary and interpretation memorandum included the following potential explanations:

> *... it is possible that historical release(s) of AFFF at Davis Monthan Air Force Base (DM), Tucson International Airport (TIA) or Air National Guard (at TIA) [were] delivered as one or more high concentration slugs to the sewer system. Also, these sites may have washed AFFF into the storm drain system to seep into the aquifer, forming a plume of PFAS groundwater contamination which may have progressed down-gradient.*
>
> *However, it is also possible that a more recent source is located in the general vicinity of the Tres Rios WRF or further northwest. Potential source facilities in the immediate vicinity of the ADEQ study include the Marana Airport located on Avra Valley Road approximately 3 miles west of the Santa Cruz River, and the Northwest Fire District fire-fighting training facility located north of Ina Road on the west side of I-10. It is unknown whether fire-fighting foam was used at either location; however a promotional video from September 2012 highlighting the new Northwest Fire District facility appears to show foam in some of the footage.*
>
> *In 2016 Tucson Water shut down several wells in the vicinity of Ina Road near I-10, and northward (downgradient) adjacent to the Santa Cruz River, due to PFOS+PFOA exceeding the 70 ng/l EPA Health Advisory. Wells shut down in 2016, including the location of the Northwest Fire District facility are shown below in Figure 1. Wells recently sampled by ADEQ located near the Ina Road fire-fighting training facility with elevated PFOS+PFOA levels include the PDEQ Solid Waste Office Well (99 ng/l) and CMID IRRG#36C (215 ng/l). (See ADEQ Figure 5). It is possible that the use of old or new AFFF product by the Northwest Fire District facility starting in 2012 may have resulted in the elevated concentrations detected in some of these wells in 2016. Additionally, if AFFF releases have occurred at Tucson Fire's facility near Cushing*

Street, the Tucson Water wells (LM-007A and SS-019A), discussed above regarding up-gradient groundwater contamination, may have been affected.

Biosolids Management

RWRD has utilized agriculture land use for biosolids since 1983. Benefits of utilizing biosolids for farming have included:

1. Enhanced soil health;
2. Recycled nutrients;
3. Sequestered carbon (mitigating climate change);
4. Reduced fertilizer & pesticide use;
5. Strengthened farm economies (farmers have chosen to use biosolids because they work);
6. Restored vitality to degraded lands; and
7. Productive use of residuals that every community has to manage.

However, until the potential risks of PFAS exposure from land application of biosolids are better understood, the Department has implemented the following proactive measures:

1. *Landfill Disposal*
   As of December 31, 2019, biosolids disposal is no longer applied to agricultural land. It is disposed in landfills.

2. *PFAS in Biosolids Fact Sheet*
   RWRD is developing a *PFAS in Biosolids Fact Sheet* with completion planned for February 2020.

3. *2020 Residuals and Biosolids Conference*
   The Water Environment Federation's annual Residuals and Biosolids Conference provides an opportunity for wastewater professionals to deepen their technical knowledge of residuals and biosolids management. Topics relate to PFAS, land application, incineration, and master planning strategies for long-term biosolids disposal, all of which are concerns for wastewater utilities nationwide. RWRD staff will participate in this conference to collaborate with wastewater professionals across the country on these important topics. The conference will take place March 31 through April 3, 2020.

4. *Biosolids Sampling*
   On January 28, 2020, three biosolids samples were taken from the Tres Rios WRF to be analyzed for PFAS. Analyses will be performed by a contract laboratory using ASTM Method D7968 and results are expected in March, 2020.

5. *Water and Environmental Technology Center Project*
As you know, the National Science Foundation, Water and Environmental Technology (WET) Center is an industry-university cooperative research center co-located at our Water and Energy Sustainable Technology Center with a focus on water quality, emerging contaminants, and technology for water treatment. Municipal utility members include Pima County, Tucson Water, City of Peoria, City of Chandler, City of Phoenix, California Association of Sewer Agencies, and Los Angeles Sanitation District.

RWRD technical staff continually reviews available information and research pertaining to both biosolids and PFAS. Based on land application rates and research demonstrating the attenuation of PFAS in the first two feet of soil, it is unlikely that PFAS from biosolids origin would have an impact on groundwater. To further verify this assumption, the WET Center will kick off a project spearheaded by RWRD aimed to assess the potential risks to human and ecological health related to the land application of municipal biosolids containing PFAS. This project will provide data-driven analyses and recommendations from a prestigious group of industry, academia, and government members including ADEQ and Jacobs. The schedule is as follows:

Study Plan Completion: January 31, 2020
Land Parcel and Well Identification: February 28, 2020
Sample Collection (biosolids, soils, groundwater): March 31, 2020
Sample Analysis: June 30, 2020
Data Review and Report Generation: August 31, 2020
Final Report Submission: September 15, 2020

6. *Biosolids Master Plan Update*
Staff will be updating the *Biosolids Master Plan*. The current *Biosolids Master Plan* was created in 2013 to coincide with the Regional Optimization Master Plan Project and over the past seven years, numerous changes have occurred which necessitate a review of our biosolids management practices. Changes include a switch from predominantly thickened biosolids to cake biosolids, an adjustment from progressive cavity to hydraulic piston pumping, incorporation of a NuReSys struvite abatement process, and concern regarding emerging contaminants such as PFAS that may be present in biosolids.

The purpose of an updated *Biosolids Master Plan* is to create a long-term biosolids management strategy that addresses current and perceived future challenges for the benefit of our community and rate payers. We expect to award a contract in February and a final report in October of 2020.

Regional Cooperation

In addition to the efforts outlined above, RWRD participates in a regional working group focused on better understanding and mitigating the effects of PFAS to include Pima County Health Department, Department of Environmental Quality and Tucson Water. As more is learned about these compounds and their effect in the wastewater/water cycle, additional corrective measures and strategies will be instituted as needed.

Please contact my office if you have any questions or comments.

CHH/lab

Attachments

c: Jan Lesher, Chief Deputy County Administrator
Carmine DeBonis, Jr., Deputy County Administrator for Public Works
Francisco García, MD, MPH, Deputy County Administrator and Chief Medical Officer, Health and Community Services
Yves Khawam, PhD, Assistant County Administrator for Public Works
Jackson Jenkins, Director, Regional Wastewater Reclamation Department

ATTACHMENT 1

HARGIS + ASSOCIATES, INC.
HYDROGEOLOGY • ENGINEERING

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Technical Memorandum

Via: E-mail Project No: 1229.05

Date: August 21, 2017

To: Mr. Kyle Johnson
Arizona Department of Environmental Quality
1110 W. Washington Street
Phoenix, AZ 85007

From: Chris Perkovac, RG

Re: Results of Sampling Program for PFOA, PFOS, and Dioxane in Surface Water and Groundwater, Tucson Basin, Arizona

INTRODUCTION

In accordance with the Arizona Department of Environmental Quality (ADEQ) Task Order 148, Hargis + Associates, Inc. (H+A) conducted a water sampling and analysis program for the presence of perfluoroalkyl substances (PFASs) and 1,4-dioxane. Samples collected included both surface water samples and groundwater samples. Surface water samples were collected from various locations along the Santa Cruz River and groundwater samples from various monitor and irrigation wells (Figures 1 and 2).

The sampling program was initiated in response to the detection of PFASs, especially perfluorooctanoic acid (PFOA), and perfluorooctanesulfonic acid (PFOS) in Marana City municipal supply wells. Sample locations, selected by ADEQ, were generally upgradient of the Marana City wells. ADEQ contacted numerous agencies to obtain permission and coordinate sample collection. These agencies include Tucson Water, Pima County Wastewater Reclamation, Cortaro Marana Irrigation District, and ADEQ Waste Programs Division (for 7th Street & Arizona Avenue, and Miracle Mile WQARF sites). All sampling activities were coordinated with these agencies.

SURFACE WATER SAMPLING

A total of 11 surface water samples were collected along the Santa Cruz River starting just downstream of the Roger Road Water Reclamation Facility and up to the Marana Road crossing, a distance of approximately 18 miles. The targeted sample locations, identified as SC-01 to SC-12, were collocated with established Pima County Regional Flood Control District river sampling sites (Appendix A). Samples were collected from locations SC-01 to SC-11, however, the furthest downstream location, SC-12 was found to be dry. Field sampling notes are provided (Appendix B).

Surface water samples were obtained by submerging sample containers in the flowing stream to a depth of 0 to 6 inches below the water surface. The samples for the PFASs samples were first collected followed by 1,4-dioxane. Samples containers were filled either by hand or attached to the end of a pole. At some locations field personnel walked in the river to access areas of sufficient flow for sample collection. At these locations the field personnel collected samples from the upstream direction so that disturbed sediments would not be collected. PFASs samples were collected in two (2) 125-millileter plastic jars and 1,4-dioxane samples were collected in two (2) 1-liter amber glass bottles. Following collection, each sample was labeled, placed in an ice chest on wet ice, documented in a chain-of-custody (COC) and transported to the analytical laboratory.

Field parameters including: pH, temperature, electrical conductance, total dissolved solids, dissolved oxygen, and oxidation-reduction potential (ORP) were recorded (Attachment B). Field sample locations were measured with cell phone GPS with a general accuracy of ± 3 meters. Measured locations were uploaded to a GIS mapping program (ArcMap) and reviewed for accuracy.

GROUNDWATER SAMPLING

A total of 42 groundwater samples were collected from as far south as West Mission Lane to as far north as West Grier Road, a distance of approximately 24 miles. At all locations, samples were collected for PFASs and 1,4-dixoane, except for two locations at which no 1,4-dioxane samples were collected. Sample locations were generally located parallel with the Santa Cruz River. ADEQ obtained permission for the collection of samples from:

- Tucson Water (production and monitor wells);
- Cortaro Marana Irrigation District (CMID) (production wells);
- Pima County Wastewater (monitor wells); and
- ADEQ WQARF sites: Miracle Mile, 7th and Arizona, and Shannon Road/El Camino del Cerro (monitor wells)

The sample locations are summarized on Figure 2 and Tables 1 and 2. Of the 42 groundwater wells sampled, 28 were sampled manually and 10 were sampled by dedicated pump. Field sampling notes are provided (Appendix B).

Prior to manually sampling a well the depth to water level was measured and then the sample collection depth determined. If the water level was within the well screened interval the sample depth was 10 to 15 feet below groundwater level surface. If the water level was above the well screened interval the sample was collected from 10 to 15 feet below the top of the screen interval or near the mid-point of the screened interval. Samples were manually collected by using a new HydraSleeve™ sampler at each location. Specialized HydraSleeve™ sampler sleeves, free of PFASs, were used for sample collection.

Wells with dedicated pumps were purged between one to five casing volumes prior to obtaining samples from sample ports. Wells that were actively pumping were assumed to be sufficiently purged prior to sample collection. The CMID wells, with no sample ports and discharge rates of hundreds of gallons per minute, were pumped for a few minutes and then sampled at the discharge locations.

PFASs samples were collected in two (2) 125-millileter plastic jars and 1,4-dioxane samples were collected in two (2) 1-liter amber glass bottles. Following collection, each sample was labeled, placed in an ice chest on wet ice, documented in a chain-of-custody (COC) and transported to the analytical laboratory. Field parameters including: pH, temperature, electrical conductance, total dissolved solids, dissolved oxygen, and oxidation-reduction potential (ORP) were recorded (Appendix B). Field sample locations were measured with cell phone GPS with a general accuracy of ± 3 meters. Photographs of sample locations are provided.

LABORATORY ANALYSIS

Laboratory analysis was performed by SGS Accutest (SGS) in Orlando Florida. Samples were analyzed for PFASs by EPA Method 537 MOD and for 1,4-dioxane by SW846 8270D (sim). PFOA and PFOS were analyzed using EPA Method 537. 1,4-dioxane was analyzed using EPA Method 8270-SIM. Results of laboratory analyses are summarized in Tables 1 and 2. Detailed laboratory analytical reports are provided (Appendix C).

Surface Water: PFOA and PFOS were detected in all 11 surface water samples. The combined PFOA and PFOS concentrations ranged from 14.43 nanograms per liter (ng/L) to 47 ng/L (Figure 3). None of the detected concentrations were above the EPA health advisory level of 70 parts per trillion. The highest concentration was detected at SC-07 located near West Avra Valley Road.

1,4-Dioxane was detected in 10 of 11 surface water samples at a concentration of 0.22 micrograms per liter (ug/l) to 4.7 ug/l (Figure 4). The highest 1,4-dioxane concentration was detected at SC-11 the most downgradient sample location.

Ground Water: PFOA and or PFOS were detected in 30 of the 42 groundwater water samples. The combined PFOA and PFOS concentrations ranged from 4.71 ng/l to 215.5 ng/l (Figure 5). At seven locations the combined PFOA and PFOS concentrations were greater that the EPA health advisory level of 70 parts per trillion. These seven wells include four CMID irrigation wells (IRRG #7; IRRG #16L; IRRG #21K; and IRRG #36C), two Tucson Water wells (LM-007A

and SS-019S) and a Pima County Well (INA OFF-R). The highest concentration of 215 ng/l was detected at IRRG #36 located at West Pima Farms Road.

1,4-Dioxane was detected in eight of 40 groundwater samples collected at concentrations ranging from 0.20 ug/l to 1 ug/l (Figure 6). The highest 1,4-dioxane concentration of 1 ug/l was detected at Shannon Road/El Camino del Cerro monitor well SRC-W38S.

QUALITY ASSURANCE / QUALITY CONTROL

A total of 22 field blank samples and one equipment blank sample were collected and analyzed for PFASs. Field blank samples were collected at least once a day, with the exception of on June 30, 2017 when no sample was collected.

One equipment blank was obtained during the sampling program of the Hydrosleeve equipment. No PFASs were detected in the equipment blank.

PFASs were not detected in the first thirteen field blank samples collected. PFASs were detected in five of the last nine field blank samples collected. There were no changes in the water collection techniques over the course of the project. The only two changes/differences in the later part of the sampling program was the:

- well type / discharge rate, and the
- blank water source.

<u>Well Type / Discharge Rate:</u> PFASs were detected in four of the five field blanks collected adjacent to the large capacity CMID irrigation wells. Groundwater from these locations was pumped at hundreds of gallons per minute and discharged into troughs and or ditches. Discharged water was highly agitated and there may have been a potential of volatilization. An assessment of the potential for picking up PFASs in field blanks because of the discharge conditions is beyond the scope of the project.

Blank Source Water: The source of blank water changed near the later part of the sampling program. The field blanks initially came in plastic bags with a total of four 125 ml bottles. Two of the bottles contained blank water and two were empty. The blank sample was simply collected by pouring the water into the empty bottles. As the number of samples collected increased past the original anticipated number, the sets of plastic bags with field blank bottles ran out. The laboratory was contacted to provide blank water, however, the laboratory misunderstood the intended use of the blank water and may have provided blank water not tested for PFASs.

It is believed that the detection of PFASs in the field blank samples is likely the result of either volatilization from the discharge at the large capacity wells and or blank water contamination.

DISPOSAL

For groundwater samples obtained from low-capacity monitor wells that were equipped with operable pumps, all purge water was contained on-site with one exception. Purged water from monitor well WR-239A was treated on-site by Tucson Water using an activated charcoal tank and filter unit prior to being discharged to the city street.

For groundwater samples obtained from high-capacity municipal and irrigation production wells, pumped water was not contained on-site but was discharged to the municipal pipeline system or irrigation district canals.

All Investigation Derived Waste (IDW) materials used during sampling operations, including Hydrasleeve™ bailers, nitrile gloves, nylon cord were disposed of as municipal waste.

LIST OF ATTACHMENTS

Tables

Table 1 Summary of PFAS and 1,4-Dioxane Analysis in Surface and Ground Water
Table 2 Summary of Collection Locations and Analysis of PFOA, PFOS and 1,4-Dioxane in Surface and Ground Water

Figures

Figure 1 Surface Water Sample Locations
Figure 2 Ground Water Sample Locations
Figure 3 Total PFOA and PFOS in Surface Water
Figure 4 1,4-Dioxane in Surface Water
Figure 5 Total PFOA and PFOS in Ground Water
Figure 6 1,4-Dioxane in Ground Water

Appendices

Appendix A Lower Santa Cruz River Sampling Sites
Appendix B Field Notes
Appendix C Laboratory Reports

TABLES

HARGIS + ASSOCIATES, INC.

TABLE 1
SUMMARY OF PFAS AND 1,4-DIOXANE ANALYSIS IN SURFACE AND GROUND WATER

ORG	LOCATION	SAMPLE ID	LAB ID	SAMPLE DATE	MATRIX	PFOA & PFOS (ng/l)	Perfluorobutanoic acid	Perfluoropentanoic acid	Perfluorohexanoic acid	Perfluoroheptanoic acid	Perfluorooctanoic acid	Perfluorononanoic acid	Perfluorodecanoic acid	Perfluoroundecanoic acid	Perfluorododecanoic acid	Perfluorotridecanoic acid	Perfluorotetradecanoic acid	Perfluorobutanesulfonic acid	Perfluorohexanesulfonic acid	Perfluoroheptanesulfonic acid	Perfluorooctanesulfonic acid	Perfluorodecanesulfonic acid	PFOSA	MeFOSAA	EtFOSAA	6:2 Fluorotelomer sulfonate	8:2 Fluorotelomer sulfonate	1,4-Dioxane
PCWW	SC-01	RIVER SC01-2017-06-05	FA44668-5	6/5/2017	Surface Water	17.05	ND (0.0080)	0.0283	0.0176	ND (0.0080)	0.00964 J [a]	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [b]	ND (0.0080)	ND (0.0080)	0.0256	0.0100 J [a]	ND (0.0080)	0.00741 J [a]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	0.26 J [a]
PCWW	SC-02	RIVER SC02-2017-06-05	FA44668-7	6/5/2017	Surface Water	27.1	0.00838 J [a]	0.0354	0.0224	ND (0.0083)	0.0133 J [a]	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083) [b]	ND (0.0083)	ND (0.0083)	0.03	0.0134 J [a]	ND (0.0083)	0.0138 J [a]	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	0.28 J [a]
PCWW	SC-03	RIVER SC03-2017-06-05	FA44668-9	6/5/2017	Surface Water	16.42	ND (0.0080)	0.0251 [j]	0.0195 [i]	ND (0.0080)	0.00843 J [h]	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [b]	ND (0.0080)	ND (0.0080)	0.0695 [i]	0.00889 J [h]	ND (0.0080)	0.00799 J [h]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	0.22 J [a]
PCWW	SC-04	RIVER SC04-2017-06-09	FA44867-2	6/9/2017	Surface Water	21.17	ND (0.0083)	0.0314	0.0272	ND (0.0083)	0.0113 J [a]	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	0.0141 J [a]	ND (0.0083)	0.00987 J [a]	ND (0.0083)	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	0.44
PCWW	SC-05	RIVER SC05-2017-06-09	FA44867-1	6/9/2017	Surface Water	23.8	ND (0.0080)	0.0328	0.0283	ND (0.0080)	0.0121 J [g]	ND (0.0040) [f]	ND (0.0080) [f]	ND (0.0080) [f]	ND (0.0080) [f]	ND (0.0080) [f]	ND (0.0080) [f]	ND (0.0080)	0.0154 J [a]	ND (0.0080)	0.0117 J [g]	ND (0.0080)	ND (0.0080) [d]	ND (0.016) [f]	ND (0.016) [f]	ND (0.016)	ND (0.016)	0.43
PCWW	SC-06	RIVER SE06-2017-05-31	FA44539-1 & 3	5/31/2017	Surface Water	14.43	ND (0.0077)	0.0194	0.018	ND (0.0077)	0.00914 J [a]	ND (0.0038)	ND (0.0077)	ND (0.0077)	ND (0.0077) [b]	ND (0.0077) [b]	ND (0.0077) [b]	ND (0.0077)	0.00788 J [a]	ND (0.0077)	0.00529 J [a]	ND (0.0077) [b]	ND (0.0077) [b]	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	0.29
PCWW	SC-07	RIVER SC07-2017-06-05	FA44668-4	6/5/2017	Surface Water	47	NA	NA	0.053	ND (0.0080)	0.0271	0.00403 J [a]	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	0.0788	0.0251	NA	0.0199	NA	NA	ND (0.016)	ND (0.016)	NA	NA	2.9
PCWW	SC-08	RIVER SC08-2017-06-05	FA44668-3	6/5/2017	Surface Water	17.86	ND (0.0080)	0.0223 [j]	0.0186 [j]	ND (0.0080)	0.00900 J [i]	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [b]	ND (0.0080)	ND (0.0080)	0.0812 [j]	0.00902 J [i]	ND (0.0080)	0.00886 J [i]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	3
PCWW	SC-09	RIVER SC09-2017-06-05	FA44668-2	6/5/2017	Surface Water	16.62	ND (0.0080)	0.0233 [j]	0.0193 [j]	ND (0.0080)	0.00872 J [h]	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [b]	ND (0.0080)	ND (0.0080)	0.0625 [j]	0.00888 J [i]	ND (0.0080)	0.00790 J [i]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	0.53
PCWW	SC-10	RIVER SE10-2017-05-25	FA44331-1 &-3	5/25/2017	Surface Water	16.43	NA	NA	0.0171	ND (0.0080)	0.0106 J [a]	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080)	0.00813 J [a]	NA	0.00583 J [a]	NA	NA	ND (0.016)	ND (0.016)	NA	NA	ND (0.15)
PCWW	SC-11	RIVER SC11-2017-06-05	FA44668-1	6/5/2017	Surface Water	25.8	ND (0.0080)	0.0287	0.0258	ND (0.0080)	0.0132 J [a]	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [b]	ND (0.0080)	ND (0.0080)	0.0656	0.0102 J [a]	ND (0.0080)	0.0126 J [a]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	4.7
CMID	IRRG #436	WELLIRR436-2017-06-30	FA45522-1	6/30/2017	Ground Water	7.41	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080)	ND (0.0080)	ND (0.0080)	0.00741 JB [o]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	Not Analyzed
CMID	IRRG #16L	WELL16L-2017-06-26	FA45330-2	6/26/2017	Ground Water	139.3	ND (0.0080)	0.0142 J [a]	0.0165	ND (0.0080)	0.0223	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	0.0111 J [a]	0.0598	ND (0.0080)	0.117	ND (0.0080)	ND (0.0080)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	0.3
CMID	IRRG #1F	WELL1F-2017-06-26	FA45330-6	6/26/2017	Ground Water	44.91	0.0122 J [a]	0.0102 J [a]	0.00931 J [a]	ND (0.0083)	0.00801 J [a]	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.0083) [b]	0.0132 J [a]	0.0386	ND (0.0083)	0.0369	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	0.33
CMID	IRRG #21K	WELL21K-2017-06-26	FA45330-3	6/26/2017	Ground Water	104.6	0.0117 J [a]	0.0171	0.0155 J [a]	ND (0.0083)	0.0135 J [a]	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.0083) [b]	0.0124 J [a]	0.0472	ND (0.0083)	0.0911	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	0.27 J [a]
CMID	IRRG #26E	WELL26E-2017-06-26	FA45330-10	6/26/2017	Ground Water	54.14	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	0.00444 J [a]	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.0083)	0.0355	ND (0.0083)	0.0497	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	0.20 J [a]
CMID	IRRG #36C	WELL36C-2017-06-26	FA45330-8	6/26/2017	Ground Water	215.5	ND (0.0083)	ND (0.0083)	0.00931 J [a]	ND (0.0083)	0.0125 J [a]	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.0083)	0.0691	ND (0.0083)	0.203	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	0.16 J [a]
CMID	IRRG #7	WELL7-2017-06-26	FA45330-1	6/26/2017	Ground Water	146.36	ND (0.0080)	ND (0.0080)	0.0103 J [a]	ND (0.0080)	0.00736 J [a]	ND (0.0040)	ND (0.0080)	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080)	0.0326	ND (0.0080)	0.139	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.14)
PC	INA OFF-R	WELLINAOFFR-2017-06-14	FA44984-3	6/14/2017	Ground Water	98.91	0.00824 J [a]	ND (0.0080)	ND (0.0080)	ND (0.0080)	0.00821 J [a]	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	0.0317	ND (0.0080)	0.0907	ND (0.0080)	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.15)
PCWW	SC-01R	WELL SC01R-2017-06-01	FA44538-1 & 3	6/1/2017	Ground Water	41	ND (0.0080)	0.0509	0.0269	0.0105 J [a]	0.0245	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080) [b]	0.0155 J [a]	0.04	ND (0.0080)	0.0165	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	0.72
PCWW	SC-02R	WELL SC02R-2017-06-01	FA44538-4 & 6	6/1/2017	Ground Water	17.31	0.00969 J [a]	ND (0.0080)	ND (0.0080)	ND (0.0080)	0.0108 J [a]	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080)	0.0167	ND (0.0080)	0.00651 J [a]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	0.34
PCWW	SC-05R	WELLSC05R-2017-06-14	FA44984-2	6/14/2017	Ground Water	59.4	0.0131 J [a]	0.0137 J [a]	0.0105 J [a]	ND (0.0083)	0.0107 J [a]	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	0.0172	0.0195	ND (0.0083)	0.0487	ND (0.0083)	ND (0.0083) [c]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.15)
PCWW	SC-07R	WELLSC07R-2017-06-14	FA44984-1	6/14/2017	Ground Water	60.8	0.0182	0.0132 J [a]	0.00968 J [a]	ND (0.0080)	0.0138 J [a]	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	0.0151 J [a]	0.0231	ND (0.0080)	0.047	ND (0.0080)	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.14)
TW	A-024A	WELLA024A-2017-06-23	FA45275-1	6/23/2017	Ground Water	48.4	ND (0.0083) [b]	0.0134 J [a]	0.0174	0.00832 J [a]	0.0133 J [a]	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	0.0179	0.0258	ND (0.0083)	0.0351	ND (0.0083)	ND (0.0083)	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.14)
TW	A-030A	WELLA030A-2017-06-23	FA45275-2	6/23/2017	Ground Water	47.1	ND (0.0077) [b]	0.0135 J [a]	0.0164	0.00777 J [a]	0.0129 J [a]	ND (0.0038)	ND (0.0077)	ND (0.0077)	ND (0.0077)	ND (0.0077)	ND (0.0077)	0.0171	0.0254	ND (0.0077)	0.0342	ND (0.0077)	ND (0.0077)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.14)
TW	A-039A	WELLA039A-2017-06-22	FA45317-2	6/22/2017	Ground Water	10.5	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [e]	ND (0.0080) [e]	ND (0.0080) [e]	ND (0.0080)	0.0110 J [a]	ND (0.0080)	0.0105 J [a]	ND (0.0080) [e]	ND (0.0080) [e]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.15)
TW	B-032A	WELLE032A-2017-06-27	FA45435-5	6/27/2017	Ground Water	<8.0	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [l]	ND (0.0080) [l]	ND (0.0080) [l]	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0080) [l]	ND (0.0080) [l]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.15)
TW	B-036A	WELLB036A-2017-06-27	FA45435-2	6/27/2017	Ground Water	8.61	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [l]	ND (0.0080) [l]	ND (0.0080) [l]	ND (0.0080)	ND (0.0080)	ND (0.0080)	0.00861 JB [n]	ND (0.0080) [l]	ND (0.0080) [l]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.14)
TW	LM-007A	WELLM007A-2017-06-23	FA45275-4	6/23/2017	Ground Water	105.3	0.0143 J [a]	0.0358	0.0294	0.0119 J [a]	0.0218	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	0.0148 J [a]	0.0274	ND (0.0080)	0.0835	ND (0.0080)	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.15)
TW	SS-012A	WELLSS012A-2017-06-28	FA45434-1	6/28/2017	Ground Water	29.75	ND (0.0080)	0.00944 J [a]	0.0107 J [a]	ND (0.0080)	0.00815 J [a]	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080) [b]	0.0149 J [a]	0.0714	ND (0.0080)	0.0216 B [p]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.14)
TW	SS-013A	WELLSS013A-2017-06-27	FA45435-4	6/27/2017	Ground Water	<8.0	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [l]	ND (0.0080) [l]	ND (0.0080) [l]	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0080) [l]	ND (0.0080) [l]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.15)
TW	SS-019A	WELLSS019A-2017-06-27	FA45435-1	6/27/2017	Ground Water	73.8	ND (0.0080)	0.0329	0.0231	0.0186	0.0158 J [a]	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [k]	ND (0.0080) [k]	ND (0.0080) [k]	0.0119 J [a]	0.0771	ND (0.0080)	0.0580 B [m]	ND (0.0080) [k]	ND (0.0080) [l]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.15)
TW	WR-133B	WELLWR133B-2017-06-22	FA45317-1	6/22/2017	Ground Water	<8.0	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.14)
TW	WR1-61A	WELLWR161A-2017-06-28	FA45434-2	6/28/2017	Ground Water	40	0.0439	0.00999 J [a]	0.0175	ND (0.0083)	0.0151 J [a]	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.0083) [b]	0.141	0.0116 J [a]	ND (0.0083)	0.0249 B [p]	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	Not Analyzed

TABLE 1
SUMMARY OF PFAS AND 1,4-DIOXANE ANALYSIS IN SURFACE AND GROUND WATER

ORG	LOCATION	SAMPLE ID	LAB ID	SAMPLE DATE	MATRIX	PFOA & PFOS (ng/l)	Perfluorobutanoic acid	Perfluoropentanoic acid	Perfluorohexanoic acid	Perfluoroheptanoic acid	Perfluorooctanoic acid	Perfluorononanoic acid	Perfluorodecanoic acid	Perfluoroundecanoic acid	Perfluorododecanoic acid	Perfluorotridecanoic acid	Perfluorotetradecanoic acid	Perfluorobutanesulfonic acid	Perfluorohexanesulfonic acid	Perfluoroheptanesulfonic acid	Perfluorooctanesulfonic acid	Perfluorodecanesulfonic acid	PFOSA	MeFOSAA	EtFOSAA	6:2 Fluorotelomer sulfonate	8:2 Fluorotelomer sulfonate	1,4-Dioxane
TW	WR-239A	WELLWR239A-2017-06-28	FA45434-3	6/28/2017	Ground Water	<8.4	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.14)
TW	Z-011A	WELLZ011A-2017-06-22	FA45317-3	6/22/2017	Ground Water	<8.0	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.15)
WQARF	7AZR1	WELL 7AZR1-2017-06-07	FA44866-3	6/7/2017	Ground Water	<8.0	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	0.0163	ND (0.0080)	ND (0.0040)	ND (0.0080)	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.14)
WQARF	7AZR2	WELL 7AZR2-2017-06-07	FA44866-5	6/7/2017	Ground Water	<8.0	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	0.0112 J [a]	ND (0.0080)	ND (0.0040)	ND (0.0080)	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.14)
WQARF	7AZR3	WELL 7AZR3-2017-06-07	FA44866-1	6/7/2017	Ground Water	< 8.4	ND (0.0083) [e]	ND (0.0083) [e]	ND (0.0083) [e]	ND (0.0083) [e]	ND (0.0042) [e]	ND (0.0042) [e]	ND (0.0083) [e]	ND (0.0083) [e]	ND (0.0083) [e]	ND (0.0083) [e]	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0083) [f]	ND (0.0083) [c]	ND (0.017) [e]	ND (0.017) [e]	ND (0.017)	ND (0.017)	ND (0.15)
WQARF	7AZR4	WELL 7AZR4-2017-06-07	FA44866-2	6/7/2017	Ground Water	< 8.4	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0083)	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.15)
WQARF	CDC-W11	WELL CDCW11-2017-06-09	FA44867-3	6/9/2017	Ground Water	48.3	0.0435	0.0251	0.0207	ND (0.0083)	0.0361	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	0.0353	0.0592	ND (0.0083)	0.0122 J [a]	ND (0.0083)	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.14)
WQARF	CDC-W18	WELL CDCW18-2017-06-09	FA44867-4	6/9/2017	Ground Water	8.13	0.0201	0.0245	0.0341	ND (0.0080)	0.00813 J [a]	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	0.0354	0.0140 J [a]	ND (0.0080)	ND (0.0040)	ND (0.0080)	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.14)
WQARF	IRA-04	WELL IRA04-2017-06-09	FA44867-5	6/9/2017	Ground Water	21.3	0.0117 J [a]	0.0193	0.0127 J [a]	ND (0.0083)	0.0213	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	0.0235	0.0183	ND (0.0083)	ND (0.0042)	ND (0.0083)	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.14)
WQARF	IRA-39	WELL IRA39-2017-06-07	FA44866-8	6/7/2017	Ground Water	5.4	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	0.0104 J [a]	ND (0.0080)	0.00540 J [a]	ND (0.0080)	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.18)
WQARF	IRA-44	WELL IRA44-2017-06-07	FA44866-7	6/7/2017	Ground Water	28.38	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	0.00478 J [a]	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	0.0183	ND (0.0083)	0.0236	ND (0.0083)	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.14)
WQARF	IRA-45	WELL IRA45-2017-06-07	FA44866-6	6/7/2017	Ground Water	<8.0	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0080)	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.14)
WQARF	IRA-46	WELL IRA46-2017-06-07	FA44866-9	6/7/2017	Ground Water	<8.0	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0080)	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.14)
WQARF	SRC-W31M	WELL SRCW31M-2017-06-08	FA44908-1	6/8/2017	Ground Water	4.71	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	0.00471 J [a]	ND (0.0083)	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.14)
WQARF	SRC-W38M	WELL SRCW38M-2017-06-08	FA44908-5	6/8/2017	Ground Water	9.79	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	0.00552 J [a]	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	0.00934 J [a]	ND (0.0083)	0.00427 J [a]	ND (0.0083)	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.14)
WQARF	SRC-W38S	WELL SRCW38S-2017-06-08	FA44908-6	6/8/2017	Ground Water	12.29	0.00912 J [a]	ND (0.0083)	0.0102 J [a]	ND (0.0083)	0.00603 J [a]	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	0.0144 J [a]	ND (0.0083)	0.00626 J [a]	ND (0.0083)	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	1
WQARF	SRC-W40M	WELL SRCW40M-2017-06-08	FA44908-3	6/8/2017	Ground Water	12.01	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	0.00462 J [a]	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	0.0223	ND (0.0080)	0.00739 J [a]	ND (0.0080)	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.14)
WQARF	SRC-W40S	WELL SRCW40S-2017-06-08	FA44908-4	6/8/2017	Ground Water	8.84	0.0107 J [a]	ND (0.0080)	0.0135 J [a]	ND (0.0080)	0.00884 J [a]	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	0.0144 J [a]	ND (0.0080)	ND (0.0040)	ND (0.0080)	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.14)
WQARF	SRC-W49M	WELL SRCW49M-2017-06-08	FA44908-2	6/8/2017	Ground Water	< 8.4	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0083)	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.14)
n.a.	n.a.	FB-2017-05-25	FA44331-2	5/25/2017	Lab Water	<8.0	NA	NA	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080)	ND (0.0080)	NA	ND (0.0040)	NA	NA	ND (0.016)	ND (0.016)	NA	NA	Not Analyzed
n.a.	n.a.	FB-2017-05-31	FA44539-2	5/31/2017	Lab Water	< 7.6	ND (0.0077)	ND (0.0077)	ND (0.0077)	ND (0.0077)	ND (0.0038)	ND (0.0038)	ND (0.0077)	ND (0.0077)	ND (0.0077) [b]	ND (0.0077) [b]	ND (0.0077) [b]	ND (0.0077)	ND (0.0077)	ND (0.0077)	ND (0.0038)	ND (0.0077) [b]	ND (0.0077) [b]	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	Not Analyzed
n.a.	n.a.	FB-2017-06-01(SC01R)	FA44538-2	6/1/2017	Lab Water	<8.0	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	Not Analyzed
n.a.	n.a.	FB-2017-06-01(SC02R)	FA44538-5	6/1/2017	Lab Water	<8.0	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	Not Analyzed
n.a.	n.a.	FB-2017-06-05(SC01)	FA44668-6	6/5/2017	Lab Water	< 8.4	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083) [b]	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	Not Analyzed
n.a.	n.a.	FB-2017-06-05(SC02)	FA44668-8	6/5/2017	Lab Water	< 8.4	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083) [c]	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0083) [c]	ND (0.0083) [c]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017) [i]	Not Analyzed
n.a.	n.a.	FB-2017-06-05(SC03)	FA44668-10	6/5/2017	Lab Water	< 8.4	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083) [b]	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	Not Analyzed
n.a.	n.a.	FB-2017-06-07(7AZR1)	FA44866-4	6/7/2017	Lab Water	<8.0	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0080)	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	Not Analyzed
n.a.	n.a.	FB-2017-06-07(IRA39)	FA44866-10	6/7/2017	Lab Water	<8.0	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0080)	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	Not Analyzed
n.a.	n.a.	FB-2017-06-08(SRC-W38S)	FA44908-7	6/8/2017	Lab Water	<8.0	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0080)	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	Not Analyzed
n.a.	n.a.	FB-2017-06-09(CDCW18)	FA44867-6	6/9/2017	Lab Water	<8.0	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0080)	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	Not Analyzed
n.a.	n.a.	EB-2017-06-09	FA44867-7	6/9/2017	Lab Water	<8.0	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0080)	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	Not Analyzed
n.a.	n.a.	FB-2017-06-09(IRA04)	FA44867-8	6/9/2017	Lab Water	<8.0	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0080)	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	Not Analyzed
n.a.	n.a.	FB-2017-06-14(INA-OFFR)	FA44984-4	6/14/2017	Lab Water	<8.0	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0080)	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	Not Analyzed
n.a.	n.a.	FB-2017-06-22(Z-011A)	FA45317-4	6/22/2017	Lab Water	39.5	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080)	0.00900 J [a]	ND (0.0080)	0.0395	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.016)	ND (0.016)	0.0255 J [a]	ND (0.016)	Not Analyzed
n.a.	n.a.	FB-2017-06-23(A-030A)	FA45275-3	6/23/2017	Lab Water	<8.0	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0080)	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	Not Analyzed

TABLE 1
SUMMARY OF PFAS AND 1,4-DIOXANE ANALYSIS IN SURFACE AND GROUND WATER

ORG	LOCATION	SAMPLE ID	LAB ID	SAMPLE DATE	MATRIX	PFOA & PFOS (ng/l)	Perfluorobutanoic acid	Perfluoropentanoic acid	Perfluorohexanoic acid	Perfluoroheptanoic acid	Perfluorooctanoic acid	Perfluorononanoic acid	Perfluorodecanoic acid	Perfluoroundecanoic acid	Perfluorododecanoic acid	Perfluorotridecanoic acid	Perfluorotetradecanoic acid	Perfluorobutanesulfonic acid	Perfluorohexanesulfonic acid	Perfluoroheptanesulfonic acid	Perfluorooctanesulfonic acid	Perfluorodecanesulfonic acid	PFOSA	MeFOSAA	EtFOSAA	6:2 Fluorotelomer sulfonate	8:2 Fluorotelomer sulfonate	1,4-Dioxane
n.a.	n.a.	FB-2017-06-26(16L)	FA45330-4	6/26/2017	Lab Water	< 8.4	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	Not Analyzed
n.a.	n.a.	FB-2017-06-26(21K)	FA45330-5	6/26/2017	Lab Water	11.4	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.0083)	ND (0.0083)	ND (0.0083)	0.0114 J [a]	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	Not Analyzed
n.a.	n.a.	FB-2017-06-26(1F)	FA45330-7	6/26/2017	Lab Water	5.41	ND (0.0080)	0.0112 J [a]	0.0307	0.0108 J [a]	0.00541 J [a]	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	Not Analyzed
n.a.	n.a.	FB-2017-06-26(36C)	FA45330-9	6/26/2017	Lab Water	123.3	ND (0.0080)	ND (0.0080)	0.0104 J [a]	ND (0.0080)	0.0173	ND (0.0040)	ND (0.0080)	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.0080)	0.0574	ND (0.0080)	0.106	ND (0.0080) [b]	ND (0.0080) [b]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	Not Analyzed
n.a.	n.a.	FB-2017-06-26(26E)	FA45330-11	6/26/2017	Lab Water	4.22	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.0083)	ND (0.0083)	ND (0.0083)	0.00422 J [a]	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	Not Analyzed
n.a.	n.a.	FB-2017-06-27(B-036A)	FA45435-3	6/27/2017	Lab Water	<8.0	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0040)	ND (0.0080)	ND (0.0080)	ND (0.0080) [l]	ND (0.0080) [l]	ND (0.0080) [l]	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0040)	ND (0.0080) [l]	ND (0.0080) [l]	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	Not Analyzed
n.a.	n.a.	FB-2017-06-28(WR-239A)	FA45434-4	6/28/2017	Lab Water	<8.4	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0042)	ND (0.0083)	ND (0.0083)	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0042)	ND (0.0083) [b]	ND (0.0083) [b]	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	Not Analyzed

ABBREVIATIONS:

< = Less Than
CMID = Cortaro-Marana Irrigation District
J = Indicates an estimated value
n.a. = Not Applicable
N/A = Not Available
ND = Not Detected
ng/l = Nanograms per liter
PC = Pima County
PCWW = Pima County Waste Water
PFOA = Perfluorooctanoic acid
PFOS = Perfluorooctanesulfonic acid
TW = Tucson Water
ug/l = Micrograms per liter
WQARF = Water Quality Assurance Revolving Fund Site
Detection of Chemical

FOOTNOTES:

a = AZ:E4
b = Associated BS recovery outside control limits. AZ:L2
c = Associated BS and MS\MSD recovery outside control limits. AZ:L2
d = Associated BS and MS\MSD recovery outside control limits. AZ:L2,M7
e = Associated MS/MSD recovery outside control limits.
f = Associated MS/MSD recovery outside control limits. AZ:M2
g = Associated MS/MSD recovery outside control limits. AZ:M2,E4
h = Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4
i = Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4,N1
j = Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:N1
k = Associated BS and MS\MSD recovery outside control limits.
l = Associated BS recovery outside control limits.
m = AZ:B1
n = AZ:B1,E4
o = AZ:E4,B1
p = AZ:B1

HARGIS + ASSOCIATES, INC.

TABLE 2
SUMMARY OF COLLECTION LOCATIONS AND ANALYSIS OF PFOA, PFOS AND 1,4-DIOXANE IN SURFACE AND GROUND WATER

ORG	LOCATION	SAMPLE ID	LAB ID	SAMPLE DATE	MATRIX	PFOA & PFOS (ng/l)	PFOA (ug/l)	PFOS (ug/l)	1,4-DIOXANE (ug/l)	ADEQ #	ADWR#	EASTING	NORTHING	LONGITUDE	LATITUDE	MEASUREMENT METHOD	DTW	COLLECTION METHOD	SCREEN	SAMPLE DEPTH	COMMENT
PCWW	SC-01	RIVER SC01-2017-06-05	FA44668-5	6/5/2017	Surface Water	17.05	0.00964 J [a]	0.00741 J [a]	0.26 J [a]	n.a.	n.a.	971549.538	471507.538	111.037861	32.293201	GPS	n.a.	Surface Water Grab	n.a.	Surface	
PCWW	SC-02	RIVER SC02-2017-06-05	FA44668-7	6/5/2017	Surface Water	27.1	0.0133 J [a]	0.0138 J [a]	0.28 J [a]	n.a.	n.a.	968186.291	476019.941	111.048626	32.305679	GPS	n.a.	Surface Water Grab	n.a.	Surface	
PCWW	SC-03	RIVER SC03-2017-06-05	FA44668-9	6/5/2017	Surface Water	16.42	0.00843 J [h]	0.00799 J [h]	0.22 J [a]	n.a.	n.a.	957928.726	487654.631	111.081530	32.337882	GPS	n.a.	Surface Water Grab	n.a.	Surface	
PCWW	SC-04	RIVER SC04-2017-06-09	FA44867-2	6/9/2017	Surface Water	21.17	0.0113 J [a]	0.00987 J [a]	0.44	n.a.	n.a.	949306.732	496674.233	111.109224	32.362855	GPS	n.a.	Surface Water Grab	n.a.	Surface	
PCWW	SC-05	RIVER SC05-2017-06-09	FA44867-1	6/9/2017	Surface Water	23.8	0.0121 J [g]	0.0117 J [g]	0.43	n.a.	n.a.	948048.205	500198.564	111.113214	32.372568	GPS	n.a.	Surface Water Grab	n.a.	Surface	
PCWW	SC-06	RIVER SE06-2017-05-31	FA44539-1 & 3	5/31/2017	Surface Water	14.43	0.00914 J [a]	0.00529 J [a]	0.29	n.a.	n.a.	946202.932	505188.403	111.11907	32.386321	GPS	n.a.	Surface Water Grab	n.a.	Surface	
PCWW	SC-07	RIVER SC07-2017-06-05	FA44668-4	6/5/2017	Surface Water	47	0.0271	0.0199	2.9	n.a.	n.a.	937824.153	511079.455	111.146074	32.402682	GPS	n.a.	Surface Water Grab	n.a.	Surface	
PCWW	SC-08	RIVER SC08-2017-06-05	FA44668-3	6/5/2017	Surface Water	17.86	0.00900 J [i]	0.00886 J [i]	3	n.a.	n.a.	928678.957	515296.592	111.175609	32.414451	GPS	n.a.	Surface Water Grab	n.a.	Surface	
PCWW	SC-09	RIVER SC09-2017-06-05	FA44668-2	6/5/2017	Surface Water	16.62	0.00872 J [h]	0.00790 J [i]	0.53	n.a.	n.a.	915290.799	518396.422	111.218926	32.423219	GPS	n.a.	Surface Water Grab	n.a.	Surface	
PCWW	SC-10	RIVER SE10-2017-05-25	FA44331-1 &-3	5/25/2017	Surface Water	16.43	0.0106 J [a]	0.00583 J [a]	ND (0.15)	n.a.	n.a.	911084.561	522499.622	111.232472	32.434572	GPS	n.a.	Surface Water Grab	n.a.	Surface	
PCWW	SC-11	RIVER SC11-2017-06-05	FA44668-1	6/5/2017	Surface Water	25.8	0.0132 J [a]	0.0126 J [a]	4.7	n.a.	n.a.	896616.647	529290.926	111.279233	32.453485	GPS	n.a.	Surface Water Grab	n.a.	Surface	
CMID	IRRG #436	WELL IRR436-2017-06-30	FA45522-1	6/30/2017	Ground Water	7.41	ND (0.0040)	0.00741 JB [o]	Not Analyzed	46190	N/A	932297.387	518364.873	111.163814	32.422815	Google	No Access	Grab at discharge pipeline	N/A	n.a.	Unable to directly access well location. Collected sample from discharge pipe into irrigation trench
CMID	IRRG #16L	WELL 16L-2017-06-26	FA45330-2	6/26/2017	Ground Water	139.3	0.0223	0.117	0.3	35213	55-604833	942426.967	504571.451	111.1313162	32.38470204	GPS	153	Grab at discharge pipeline	91-231	n.a.	Static DTW provided by CMID. Total depth assumed to be bottom of screen
CMID	IRRG #1F	WELL 1F-2017-06-26	FA45330-6	6/26/2017	Ground Water	44.91	0.00801 J [a]	0.0369	0.33	35914	55-604856	960947.792	485547.576	111.0718095	32.3320255	GPS	127	Grab at discharge pipeline	90-269	n.a.	Static DTW provided by CMID. Total depth assumed to be bottom of screen
CMID	IRRG #21K	WELL 21K-2017-06-26	FA45330-3	6/26/2017	Ground Water	104.6	0.0135 J [a]	0.0911	0.27 J [a]	N/A	N/A	944983.614	499592.475	111.1231542	32.37096496	GPS	NA	Grab at discharge pipeline		n.a.	
CMID	IRRG #26E	WELL 26E-2017-06-26	FA45330-10	6/26/2017	Ground Water	54.14	0.00444 J [a]	0.0497	0.20 J [a]	35260	55-604822	954271.738	496671.466	111.0931452	32.36274342	GPS	146	Grab at discharge pipeline		n.a.	Static DTW provided by CMID. Total depth assumed to be bottom of screen
CMID	IRRG #36C	WELL 36C-2017-06-26	FA45330-8	6/26/2017	Ground Water	215.5	0.0125 J [a]	0.203	0.16 J [a]	35290	55-604843	959946.573	492785.646	111.0748666	32.3519416	GPS	141	Grab at discharge pipeline	100-286	n.a.	Static DTW provided by CMID. Total depth assumed to be bottom of screen
CMID	IRRG #7	WELL 7-2017-06-26	FA45330-1	6/26/2017	Ground Water	146.36	0.00736 J [a]	0.139	ND (0.14)	34585	55-604806	905283.215	529306.982	111.2511374	32.45338378	GPS	198	Grab at discharge pipeline	351-864	n.a.	Static DTW provided by CMID. Total depth assumed to be bottom of screen
PC	INA OFF-R	WELL INAOFFR-2017-06-14	FA44984-3	6/14/2017	Ground Water	98.91	0.00821 J [a]	0.0907	ND (0.15)	N/A	55-224231	959547.993	487440.271	111.076293	32.337258	GPS	120.32	Grab at faucet	180-260	n.a.	Well pumped to supply landscape pipe.
PCWW	SC-01R	WELL SC01R-2017-06-01	FA44538-1 & 3	6/1/2017	Ground Water	41	0.0245	0.0165	0.72	N/A	55-207211	972704.438	470224.717	111.034158	32.289649	Google	150.05	Purged 1 Casing	150-250	n.a.	
PCWW	SC-02R	WELL SC02R-2017-06-01	FA44538-4 & 6	6/1/2017	Ground Water	17.31	0.0108 J [a]	0.00651 J [a]	0.34	N/A	55-906898	967873.815	477138.719	111.049608	32.308761	GPS	130.65	Purged 3 Casing	130-230	n.a.	
PCWW	SC-05R	WELL SC05R-2017-06-14	FA44984-2	6/14/2017	Ground Water	59.4	0.0107 J [a]	0.0487	ND (0.15)	N/A	N/A	948275.960	499308.910	111.112498	32.370118	GPS	143.20	Purged 3 Casing	N/A	n.a.	
PCWW	SC-07R	WELL SC07R-2017-06-14	FA44984-1	6/14/2017	Ground Water	60.8	0.0138 J [a]	0.047	ND (0.14)	N/A	N/A	938249.323	511100.350	111.144696	32.402731	GPS	150.35	Purged 3 Casing	N/A	n.a.	
TW	A-024A	WELL A024A-2017-06-23	FA45275-1	6/23/2017	Ground Water	48.4	0.0133 J [a]	0.0351	ND (0.14)	36187	55-620298	980997.852	456513.929	111.0076982	32.25177359	GPS	146.35	Hydrasleeve ®	168-468	180	
TW	A-030A	WELL A030A-2017-06-23	FA45275-2	6/23/2017	Ground Water	47.1	0.0129 J [a]	0.0342	ND (0.14)	37426	55-620304	987058.409	449909.332	110.9882806	32.23347789	GPS	148.7	Hydrasleeve ®	0-160	152	
TW	A-039A	WELL A039A-2017-06-22	FA45317-2	6/22/2017	Ground Water	10.5	ND (0.0040)	0.0105 J [a]	ND (0.15)	36175	55-620311	977453.636	461094.493	111.0190378	32.26444559	GPS	159.94	Hydrasleeve ®	140-223	180	
TW	B-032A	WELL E032A-2017-06-27	FA45435-5	6/27/2017	Ground Water	<8.0	ND (0.0040)	ND (0.0040)	ND (0.15)	37461	55-620196	991619.009	431068.346	110.974067	32.181583	GPS	150.96	Hydrasleeve ®	237-547	250	
TW	B-036A	WELL B036A-2017-06-27	FA45435-2	6/27/2017	Ground Water	8.61	ND (0.0040)	0.00861 JB [n]	ND (0.14)	N/A	55-620200	983893.642	430516.571	110.99905	32.18025	GPS	120	Hydrasleeve ®	174-418	190	
TW	LM-007A	WELL M007A-2017-06-23	FA45275-4	6/23/2017	Ground Water	105.3	0.0218	0.0835	ND (0.15)	63377	55-700356	988348.704	442739.879	110.9843092	32.21374145	GPS	116.71	Hydrasleeve ®	60-125	120	
TW	SS-012A	WELL SS012A-2017-06-28	FA45434-1	6/28/2017	Ground Water	29.75	0.00815 J [a]	0.0216 B [p]	ND (0.14)	37500	55-619919	986862.376	426545.800	110.989566	32.169266	GPS	128.77	Hydrasleeve ®	35-207	140	
TW	SS-013A	WELL SS013A-2017-06-27	FA45435-4	6/27/2017	Ground Water	<8.0	ND (0.0040)	ND (0.0040)	ND (0.15)	37476	55-619920	988153.114	432335.914	110.985233	32.18515	GPS	112.98	Hydrasleeve ®	34-202	125	
TW	SS-019A	WELL SS019A-2017-06-27	FA45435-1	6/27/2017	Ground Water	73.8	0.0158 J [a]	0.0580 B [m]	ND (0.15)	37447	55-619926	988763.560	438772.049	110.9830794	32.20282568	GPS	96.05	Hydrasleeve ®	N/A	110	
TW	WR-133B	WELL WR133B-2017-06-22	FA45317-1	6/22/2017	Ground Water	<8.0	ND (0.0040)	ND (0.0040)	ND (0.14)	N/A	55-597826	982466.857	452168.736	111.0030664	32.23979624	GPS	150.38	Purged 3 Casing	140-200	n.a.	
TW	WR1-161A	WELL WR161A-2017-06-28	FA45434-2	6/28/2017	Ground Water	40	0.0151 J [a]	0.0249 B [p]	Not Analyzed	62132	55-525338	988527.030	425499.277	110.984216	32.16635	GPS	146.54	Hydrasleeve ®	147.385	160	
TW	WR-239A	WELL WR239A-2017-06-28	FA45434-3	6/28/2017	Ground Water	<8.4	ND (0.0042)	ND (0.0042)	ND (0.14)	62123	55-543835	990915.005	425483.672	110.9765	32.16625	GPS	159.41	Purged 3 Casing	150-400	n.a.	
TW	Z-011A	WELLZ011A-2017-06-22	FA45317-3	6/22/2017	Ground Water	<8.0	ND (0.0040)	ND (0.0040)	ND (0.15)	35921	55-619847	954459.644	487371.567	111.0927684	32.33717782	GPS	149.59	Hydrasleeve ®	120-200	160	
WQARF	7AZR-1	WELL 7AZR1-2017-06-07	FA44866-3	6/7/2017	Ground Water	<8.0	ND (0.0040)	ND (0.0040)	ND (0.14)	62767	55-591722	993841.492	447313.505	110.9664201	32.22618009	WQARF Project File	167.31	Hydrasleeve ®	133-195	190	
WQARF	7AZR-2	WELL 7AZR2-2017-06-07	FA44866-5	6/7/2017	Ground Water	<8.0	ND (0.0040)	ND (0.0040)	ND (0.14)	68661	55-214640	993600.195	447651.326	110.9671906	32.22711447	WQARF Project File	170.45	Hydrasleeve ®	165-205	190	
WQARF	7AZR-3	WELL 7AZR3-2017-06-07	FA44866-1	6/7/2017	Ground Water	< 8.4	ND (0.0042) [e]	ND (0.0042)	ND (0.15)	78303	55-914797	992647.088	448234.225	110.9702559	32.22873971	WQARF Project File	167.58	Hydrasleeve ®	160-25	180	
WQARF	7AZR-4	WELL 7AZR4-2017-06-07	FA44866-2	6/7/2017	Ground Water	< 8.4	ND (0.0042)	ND (0.0042)	ND (0.15)	79704	55-223840	993595.970	448455.805	110.9671813	32.22932572	WQARF Project File	183.04	Hydrasleeve ®	160-200	190	
WQARF	CDC-W11	WELL CDCW11-2017-06-09	FA44867-3	6/9/2017	Ground Water	48.3	0.0361	0.0122 J [a]	ND (0.14)	58315	55-521331	972326.095	471834.016	111.0353394	32.29408083	Email Spreadsheet	143.93	Hydrasleeve ®	105-168	155	
WQARF	CDC-W18	WELL CDCW18-2017-06-09	FA44867-4	6/9/2017	Ground Water	8.13	0.00813 J [a]	ND (0.0040)	ND (0.14)	58316	55-542139	972602.098	472165.042	111.0344375	32.29498444	Email Spreadsheet	143.92	Hydrasleeve ®	85-165	155	
WQARF	IRA-04	WELL IRA04-2017-06-09	FA44867-5	6/9/2017	Ground Water	21.3	0.0213	ND (0.0042)	ND (0.14)	57685	55-529843	982320.896	463505.111	111.0032265	32.27095845	Email Spreadsheet	164.65	Hydrasleeve ®	130-220	190	
WQARF	IRA-39	WELL IRA39-2017-06-07	FA44866-8	6/7/2017	Ground Water	5.4	ND (0.0040)	0.00540 J [a]	ND (0.18)	N/A	55-915344	980961.273	468319.169	111.007493	32.28422192	GPS	177.66	Hydrasleeve ®	185-235	~205	
WQARF	IRA-44	WELL IRA44-2017-06-07	FA44866-7	6/7/2017	Ground Water	28.38	0.00478 J [a]	0.0236	ND (0.14)	N/A	55-919873	978247.606	469302.349	111.0162466	32.28698717	Email Spreadsheet	145.67	Hydrasleeve ®	161.5-211.5	185	
WQARF	IRA-45	WELL IRA45-2017-06-07	FA44866-6	6/7/2017	Ground Water	<8.0	ND (0.0040)	ND (0.0040)	ND (0.14)	N/A	55-919874	978910.524	474600.048	111.0139573	32.30153289	Email Spreadsheet	159.16	Hydrasleeve ®	161-211	185	
WQARF	IRA-46	WELL IRA46-2017-06-07	FA44866-9	6/7/2017	Ground Water	<8.0	ND (0.0040)	ND (0.0040)	ND (0.14)	N/A	55-919875	982559.487	471052.570	111.0022465	32.29169748	Email Spreadsheet	167.73	Hydrasleeve ®	176-226	200	
WQARF	SRC-W31M	WELL SRCW31M-2017-06-08	FA44908-1	6/8/2017	Ground Water	4.71	ND (0.0042)	0.00471 J [a]	ND (0.14)	60288	55-596343	974268.315	479403.773	111.0288517	32.31484278	Email Spreadsheet	166.68	Hydrasleeve ®	205-235	220	
WQARF	SRC-W38M	WELL SRCW38M-2017-06-08	FA44908-5	6/8/2017	Ground Water	9.79	0.00552 J [a]	0.00427 J [a]	ND (0.14)	68098	55-901884	972600.466	475847.244	111.0343447	32.30510528	Email Spreadsheet	150.61	Hydrasleeve ®	205-235	220	
WQARF	SRC-W38S	WELL SRCW38S-2017-06-08	FA44908-6	6/8/2017	Ground Water	12.29	0.00603 J [a]	0.00626 J [a]	1	68098	55-901884	972600.466	475847.244	111.0343447	32.30510528	Email Spreadsheet	150.68	Hydrasleeve ®	130-180	165	
WQARF	SRC-W40M	WELL SRCW40M-2017-06-08	FA44908-3	6/8/2017	Ground Water	12.01	0.00462 J [a]	0.00739 J [a]	ND (0.14)	68122	55-904657	973101.407	475645.607	111.0327289	32.30453972	Email Spreadsheet	151.55	Hydrasleeve ®	205-235	215	
WQARF	SRC-W40S	WELL SRCW40S-2017-06-08	FA44908-4	6/8/2017	Ground Water	8.84	0.00884 J [a]	ND (0.0040)	ND (0.14)	68122	55-904657	973101.407	475645.607	111.0327289	32.30453972	Email Spreadsheet	151.34	Hydrasleeve ®	130-180	165	
WQARF	SRC-W49M	WELL SRCW49M-2017-06-08	FA44908-2	6/8/2017	Ground Water	< 8.4	ND (0.0042)	ND (0.0042)	ND (0.14)	72063	55-908352	976165.576	477871.055	111.0227522	32.31058667	Email Spreadsheet	150.93	Hydrasleeve ®	205-225	215	
n.a.	n.a.	FB-2017-05-25	FA44331-2	5/25/2017	Lab Water	<8.0	ND (0.0040)	ND (0.0040)	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at SC-10
n.a.	n.a.	FB-2017-05-31	FA44539-2	5/31/2017	Lab Water	< 7.6	ND (0.0038)	ND (0.0038)	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at SC-06
n.a.	n.a.	FB-2017-06-01(SC01R)	FA44538-2	6/1/2017	Lab Water	<8.0	ND (0.0040)	ND (0.0040)	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at SC01R
n.a.	n.a.	FB-2017-06-01(SC02R)	FA44538-5	6/1/2017	Lab Water	<8.0	ND (0.0040)	ND (0.0040)	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at SC02R
n.a.	n.a.	FB-2017-06-05(SC01)	FA44668-6	6/5/2017	Lab Water	< 8.4	ND (0.0042)	ND (0.0042)	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at SC01
n.a.	n.a.	FB-2017-06-05(SC02)	FA44668-8	6/5/2017	Lab Water	< 8.4	ND (0.0042)	ND (0.0042)	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at SC02
n.a.	n.a.	FB-2017-06-05(SC03)	FA44668-10	6/5/2017	Lab Water	< 8.4	ND (0.0042)	ND (0.0042)	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at SC03
n.a.	n.a.	FB-2017-06-07(7AZR1)	FA44866-4	6/7/2017	Lab Water	<8.0	ND (0.0040)	ND (0.0040)	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at 7AZR1
n.a.	n.a.	FB-2017-06-07(IRA39)	FA44866-10	6/7/2017	Lab Water	<8.0	ND (0.0040)	ND (0.0040)	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at IRA39
n.a.	n.a.	FB-2017-06-08(SRC-W38S)	FA44908-7	6/8/2017	Lab Water	<8.0	ND (0.0040)	ND (0.0040)	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at SRC-W38S
n.a.	n.a.	FB-2017-06-09(CDCW18)	FA44867-6	6/9/2017	Lab Water	<8.0	ND (0.0040)	ND (0.0040)	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at CDC-W18
n.a.	n.a.	EB-2017-06-09	FA44867-7	6/9/2017	Lab Water	<8.0	ND (0.0040)	ND (0.0040)	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at IRA-04

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SUMMARY OF COLLECTION LOCATIONS AND ANALYSIS OF PFOA, PFOS AND 1,4-DIOXANE IN SURFACE AND GROUND WATER

ORG	LOCATION	SAMPLE ID	LAB ID	SAMPLE DATE	MATRIX	PFOA & PFOS (ng/l)	PFOA (ug/l)	PFOS (ug/l)	1,4-DIOXANE (ug/l)	ADEQ #	ADWR#	EASTING	NORTHING	LONGITUDE	LATITUDE	MEASUREMENT METHOD	DTW	COLLECTION METHOD	SCREEN	SAMPLE DEPTH	COMMENT
n.a.	n.a.	FB-2017-06-09(IRA04)	FA44867-8	6/9/2017	Lab Water	<8.0	ND (0.0040)	ND (0.0040)	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at IRA-04
n.a.	n.a.	FB-2017-06-14(INA-OFFR)	FA44984-4	6/14/2017	Lab Water	<8.0	ND (0.0040)	ND (0.0040)	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at INA OFF-R
n.a.	n.a.	FB-2017-06-22(Z-011A)	FA45317-4	6/22/2017	Lab Water	39.5	ND (0.0040)	0.0395	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at Z-011A
n.a.	n.a.	FB-2017-06-23(A-030A)	FA45275-3	6/23/2017	Lab Water	<8.0	ND (0.0040)	ND (0.0040)	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at A-030A
n.a.	n.a.	FB-2017-06-26(16L)	FA45330-4	6/26/2017	Lab Water	< 8.4	ND (0.0042)	ND (0.0042)	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at IRRG #16L
n.a.	n.a.	FB-2017-06-26(21K)	FA45330-5	6/26/2017	Lab Water	11.4	ND (0.0042)	0.0114 J [a]	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at IRRG #21K
n.a.	n.a.	FB-2017-06-26(1F)	FA45330-7	6/26/2017	Lab Water	5.41	0.00541 J [a]	ND (0.0040)	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at IRRG #1F
n.a.	n.a.	FB-2017-06-26(36C)	FA45330-9	6/26/2017	Lab Water	123.3	0.0173	0.106	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at IRRG #36C
n.a.	n.a.	FB-2017-06-26(26E)	FA45330-11	6/26/2017	Lab Water	4.22	ND (0.0042)	0.00422 J [a]	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at IRRG #26E
n.a.	n.a.	FB-2017-06-27(B-036A)	FA45435-3	6/27/2017	Lab Water	<8.0	ND (0.0040)	ND (0.0040)	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at B-036A
n.a.	n.a.	FB-2017-06-28(WR-239A)	FA45434-4	6/28/2017	Lab Water	<8.4	ND (0.0042)	ND (0.0042)	Not Analyzed	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Transfer b/t Bottles	n.a.	n.a.	Collected at WR-239A

ABBREVIATIONS:

< = Less Than
CMID = Cortaro-Marana Irrigation District
J = Indicates an estimated value
n.a. = Not Applicable
N/A = Not Available
ND = Not Detected
ng/l = Nanograms per liter
PC = Pima County
PCWW = Pima County Waste Water
PFOA = Perfluorooctanoic acid
PFOS = Perfluorooctanesulfonic acid
TW = Tucson Water
ug/l = Micrograms per liter
WQARF = Water Quality Assurance Revolving Fund Site
Detection of Chemical

FOOTNOTES:

a = AZ:E4
b = Associated BS recovery outside control limits. AZ:L2
c = Associated BS and MS\MSD recovery outside control limits. AZ:L2
d = Associated BS and MS\MSD recovery outside control limits. AZ:L2,M7
e = Associated MS/MSD recovery outside control limits.
f = Associated MS/MSD recovery outside control limits. AZ:M2
g = Associated MS/MSD recovery outside control limits. AZ:M2,E4
h = Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4
i = Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4,N1
j = Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:N1
k = Associated BS and MS\MSD recovery outside control limits.
l = Associated BS recovery outside control limits.
m = AZ:B1
n = AZ:B1,E4
o = AZ:E4,B1
p = AZ:B1

FIGURES

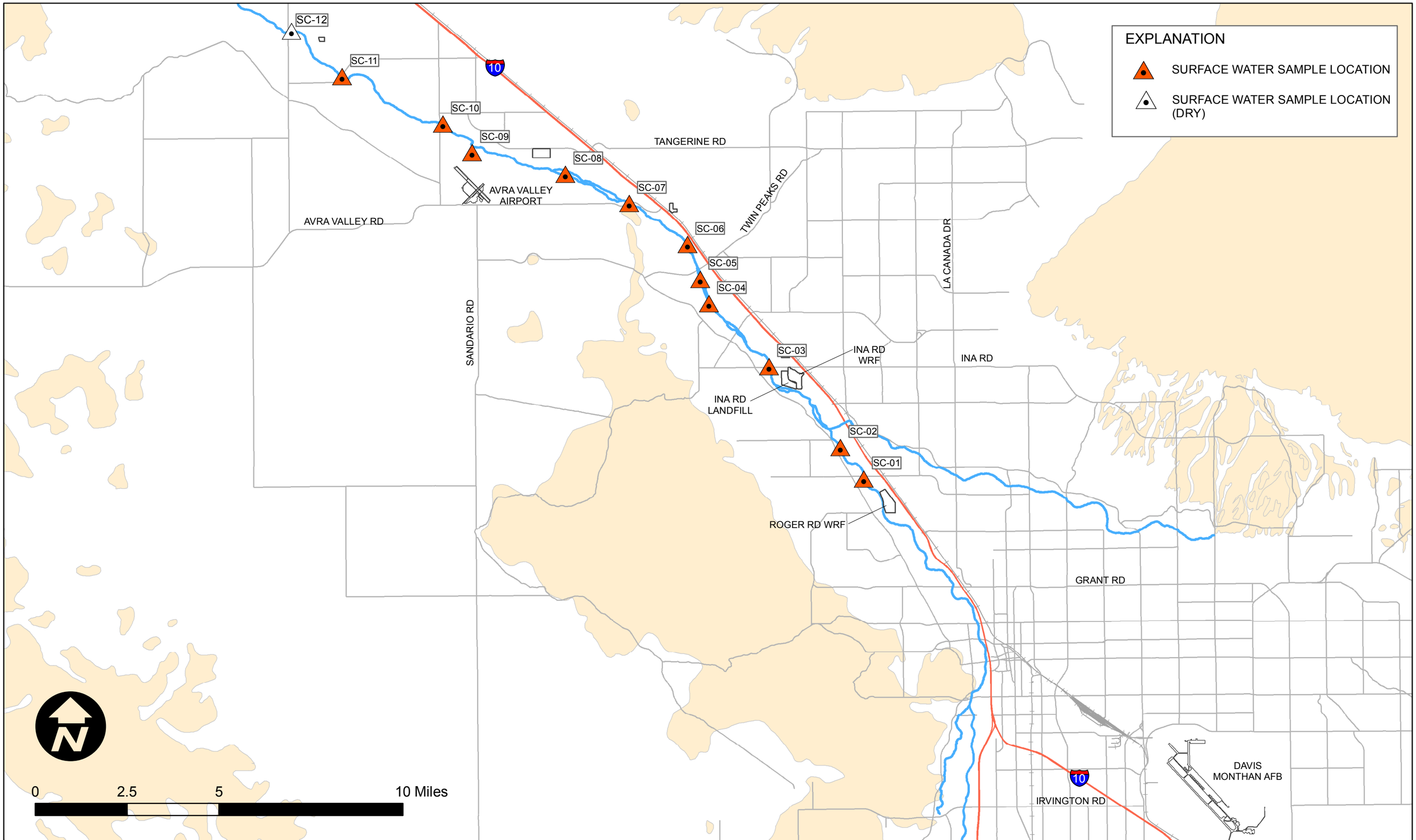

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FIGURE 1 SURFACE WATER SAMPLE LOCATIONS

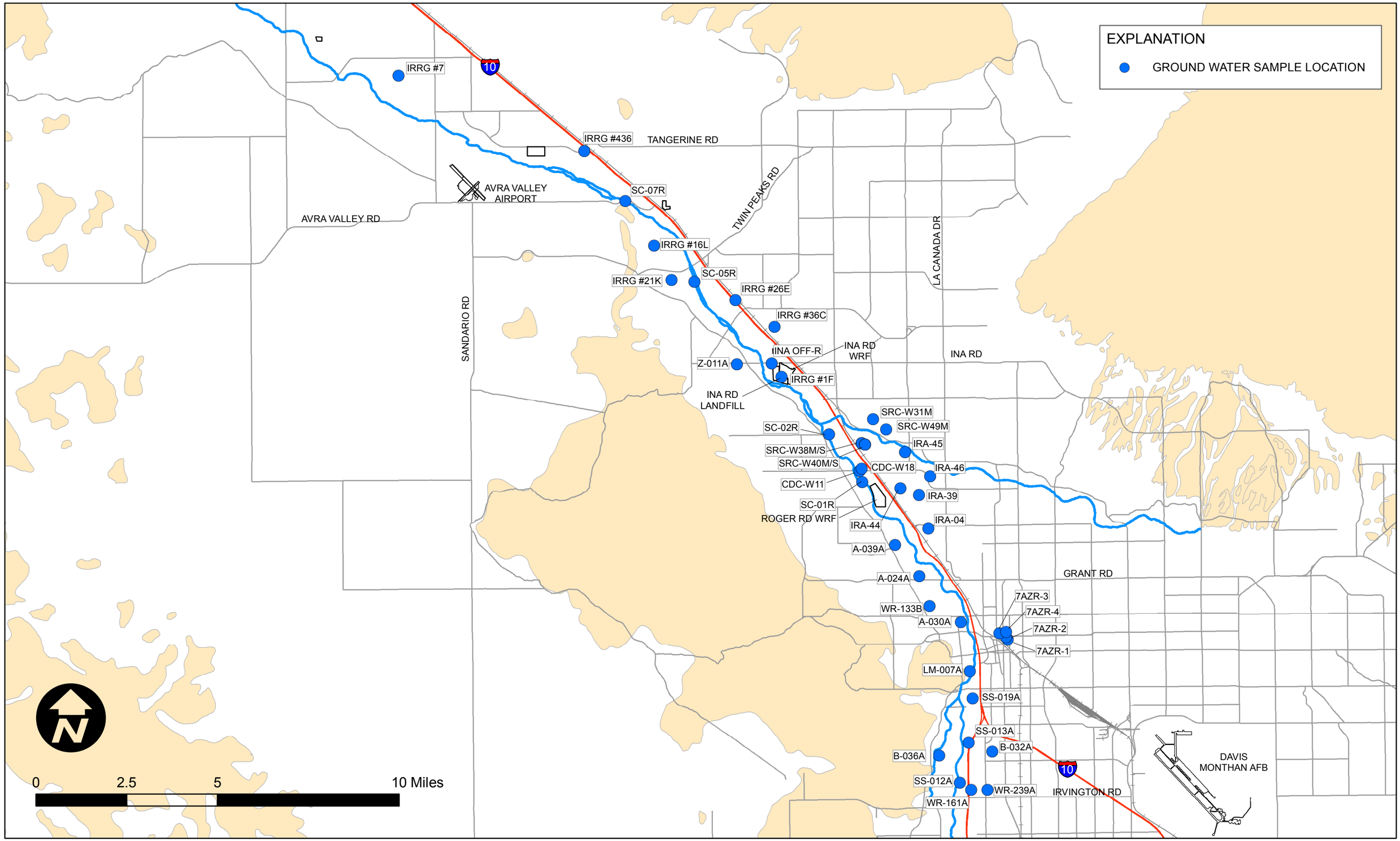

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FIGURE 2 GROUND WATER SAMPLE LOCATIONS

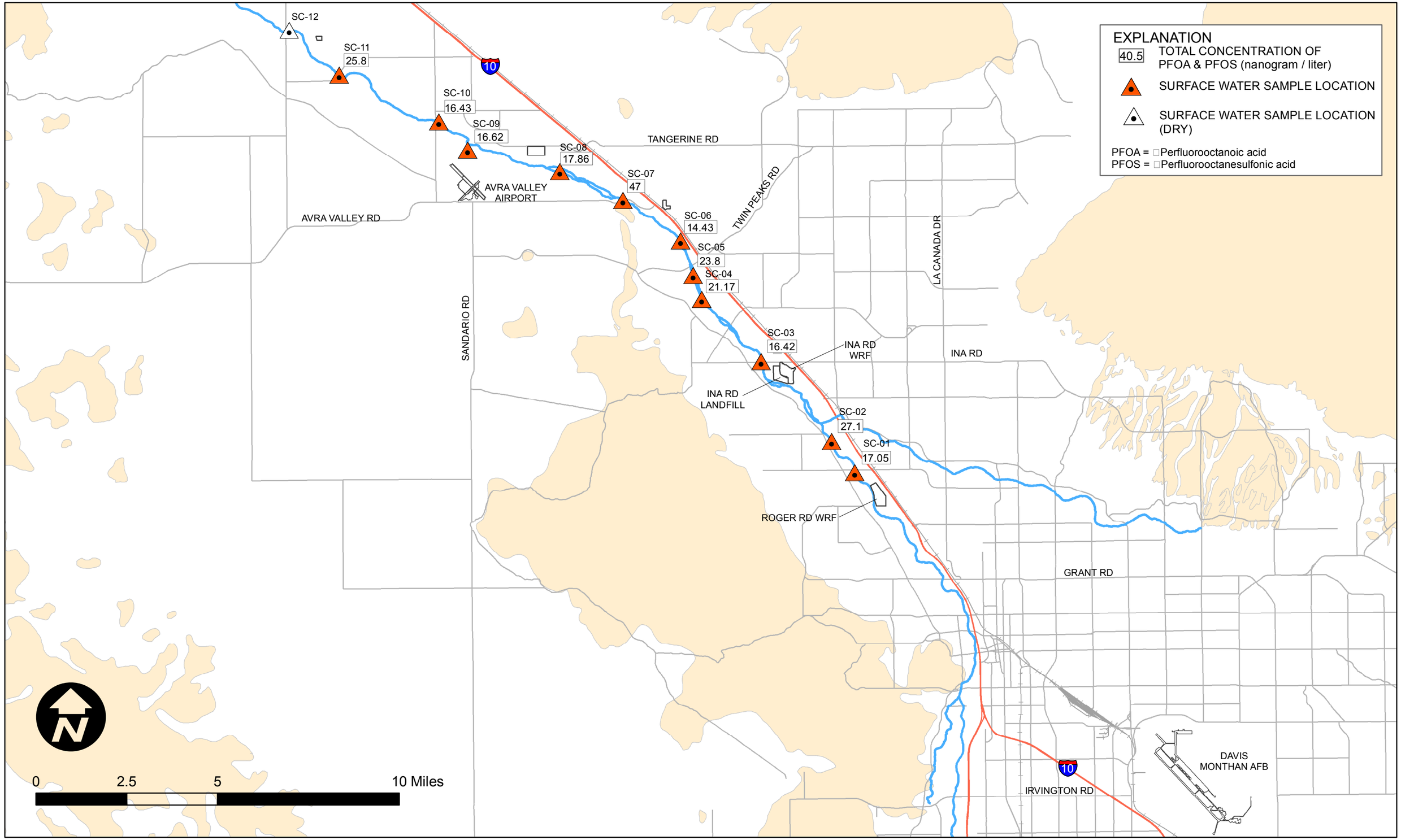

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FIGURE 3 TOTAL PFOA AND PFOS IN SURFACE WATER

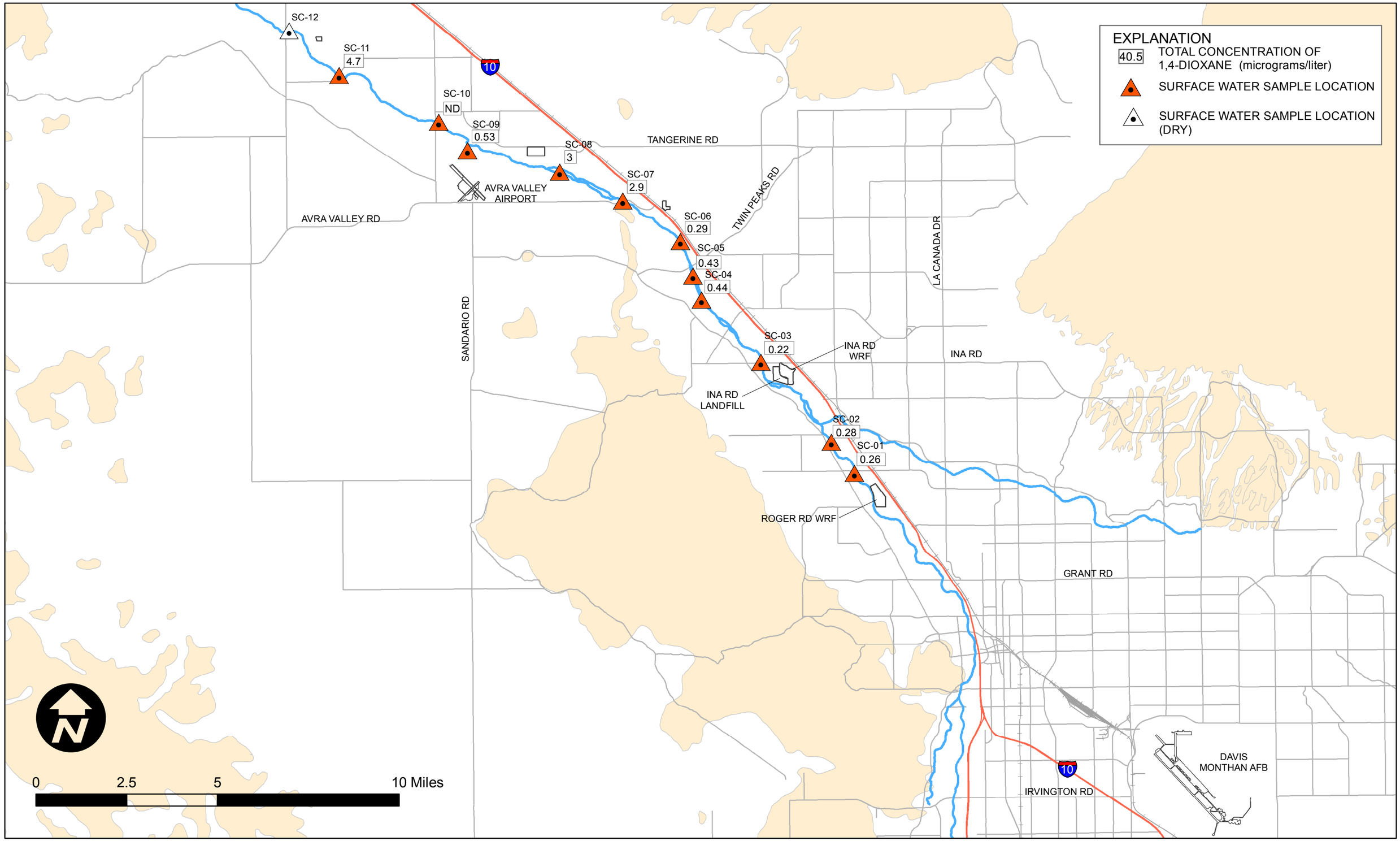

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FIGURE 4 1,4-DIOXANE IN SURFACE WATER

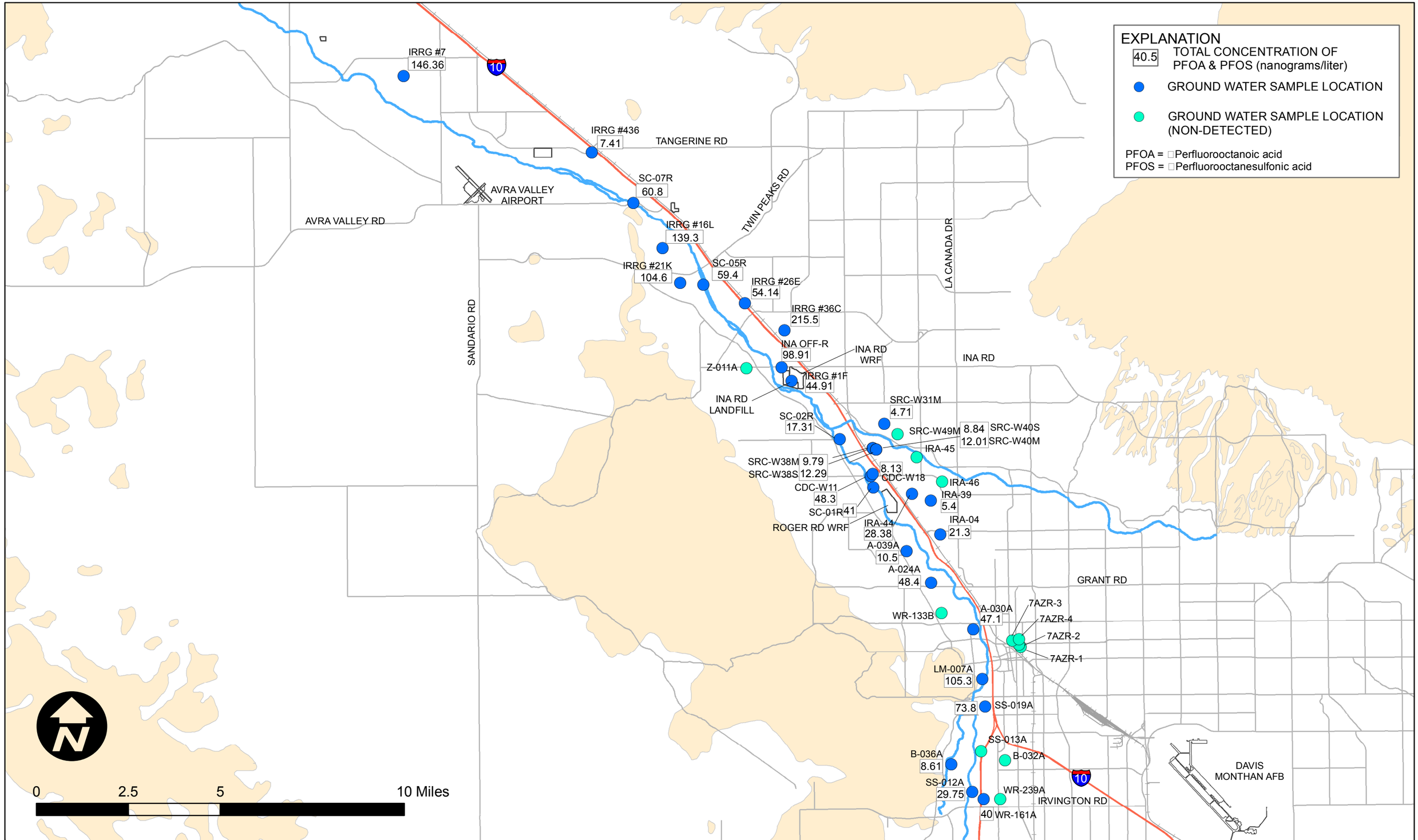

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FIGURE 5 TOTAL PFOA AND PFOS IN GROUND WATER

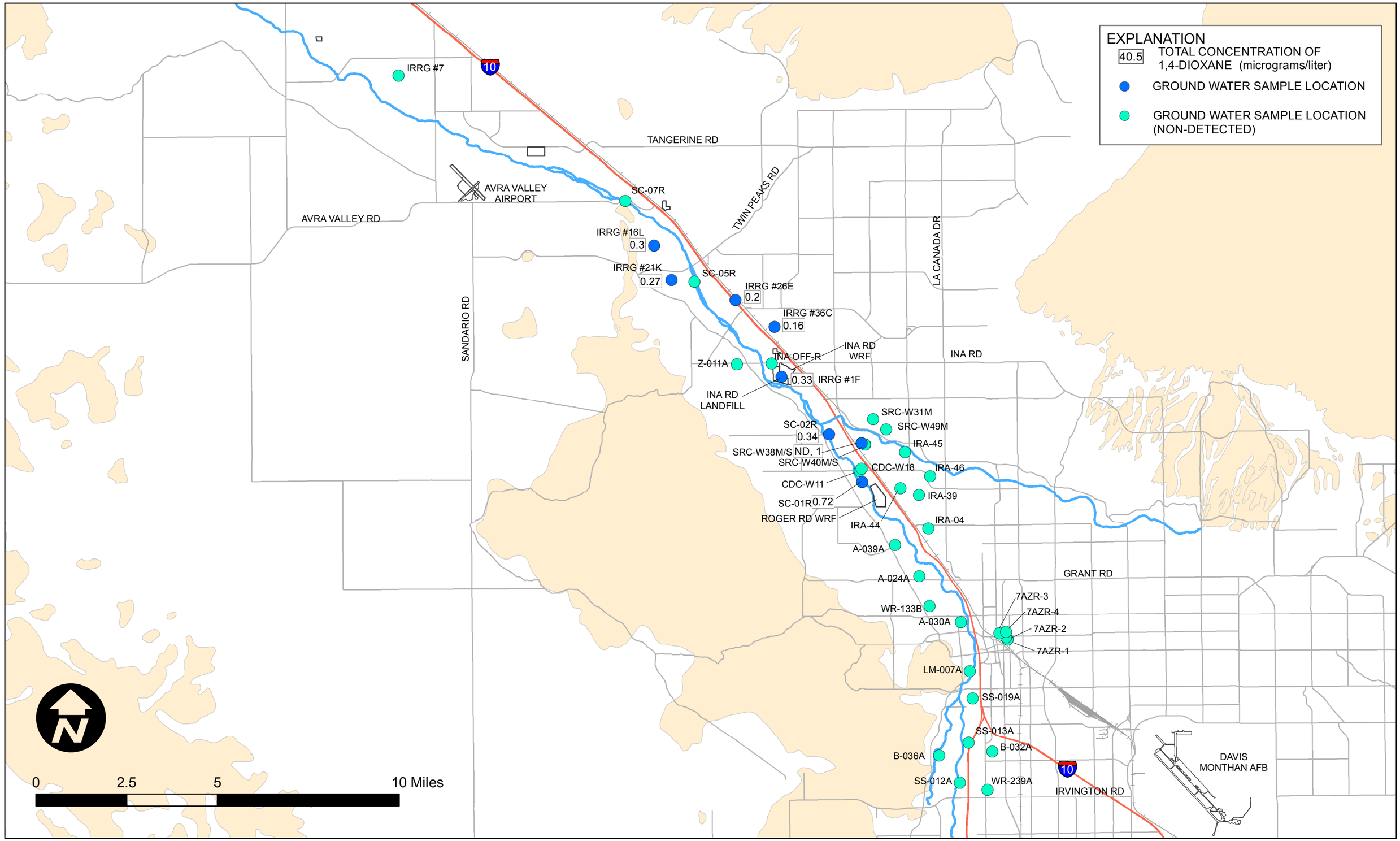

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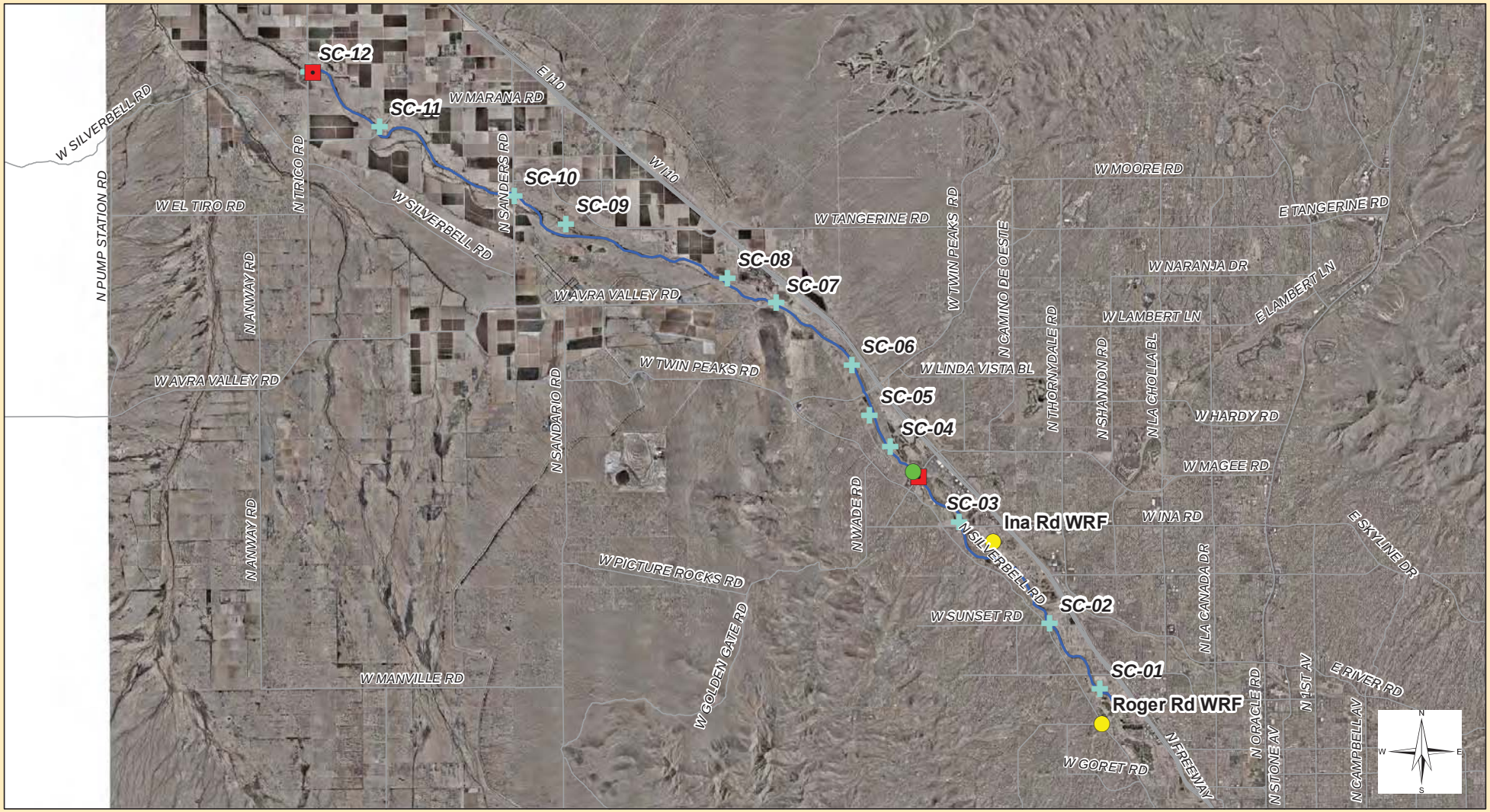
FIGURE 6 1,4-DIOXANE IN GROUND WATER

APPENDIX A



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Tucson, Arizona 85701-1207
(520) 243-1800, FAX: (520)243-1821
http://www.rfcd.pima.gov

Map 2
Lower Santa Cruz River Sampling Sites

- ADEQ Sampling Sites
- USGS Stream Gauge
- RWRD Sampling Sites
- Study Reach (Lower Santa Cruz River)

1 inch = 10,000 feet

0 2,550 5,100 10,200 15,300 20,400 Feet

Date:

The information depicted on this display is the result of digital analyses performed on a variety of databases provided and maintained by several governmental agencies. The accuracy of the information presented is limited to the collective accuracy of these databases on the date of the analysis. The Pima County Regional Flood Control District makes no claims regarding the accuracy of the information depicted herein.

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APPENDIX B

HARGIS + ASSOCIATES, INC.

SURFACE WATER SAMPLING FIELD DATA FORM
LOCATION: **RIVER SC01** DATE: 06/05/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.037861

LATITUDE: 32.293201

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SC-01	1228	33.60	8.36	1359	8.74	---	TDS= 760.50 ORP= 131.80	DLG

SAMPLE IDENTIFICATION: **RIVERSC01-2017-06-05** TIME: **1228**

SAMPLE COLLECTION INFORMATION: **Site sample location was approximately 1000 feet from where vehicles had to be parked.**

Check Analyses Requested: LC537LIST; B8270SIM14DIOX____; Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = FB 2017-06-05_____)

HARGIS + ASSOCIATES, INC.

SURFACE WATER SAMPLING FIELD DATA FORM
LOCATION: **RIVER SC02** DATE: 06/05/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.048626

LATITUDE: 32.305679

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SC-02	1305	34.30	8.53	1423	6.16	---	TDS= 786.50 ORP= 129.70	DLG

SAMPLE IDENTIFICATION: **RIVERSC02-2017-06-05** TIME: **1305**

SAMPLE COLLECTION INFORMATION: **Site sample location was under the W. Sunset Road bridge.**

Check Analyses Requested: LC537LIST; B8270SIM14DIOX____; Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = **FB-2017-06-05 (SC02)**)

HARGIS + ASSOCIATES, INC.

SURFACE WATER SAMPLING FIELD DATA FORM
LOCATION: **RIVER SC03** DATE: 06/05/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.081530

LATITUDE: 32.337882

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SC-03	1400	30.90	8.14	1268	6.09	---	TDS= 741.00 ORP= 122.70	DLG

SAMPLE IDENTIFICATION: **RIVERSC03-2017-06-05** TIME: **1400**

SAMPLE COLLECTION INFORMATION: **Site sample location was north of the Ina Road bridge. Construction activities on the bridge were being conducted.**

Check Analyses Requested: LC537LIST; B8270SIM14DIOX____; Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = **FB-2017-06-05 (SC03)**)

HARGIS + ASSOCIATES, INC.

SURFACE WATER SAMPLING FIELD DATA FORM
LOCATION: **RIVER SC04** DATE: 06/09/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.109224

LATITUDE: 32.362855

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SC-04	0729	27.0	8.10	1240	4.97	---	TDS= 773.50 ORP= 145	DLG

SAMPLE IDENTIFICATION: **RIVERSC04-2017-06-09** TIME: **0729**

SAMPLE COLLECTION INFORMATION:

Check Analyses Requested: LC537LIST; B8270SIM14DIOX____; Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = _____)

HARGIS + ASSOCIATES, INC.

SURFACE WATER SAMPLING FIELD DATA FORM
LOCATION: **RIVER SC05** DATE: 06/09/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.113214

LATITUDE: 32.372568

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SC-05	0700	26.6	8.00	1232	4.85	---	TDS= 760 ORP= 160.9	DLG

SAMPLE IDENTIFICATION: **RIVERSC05-2017-06-09** TIME: **0700**

SAMPLE COLLECTION INFORMATION: **Site sample location was**

Check Analyses Requested: LC537LIST; B8270SIM14DIOX____; Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = _____)

HARGIS + ASSOCIATES, INC.

SURFACE WATER SAMPLING FIELD DATA FORM
LOCATION: **RIVER SC06** DATE: **5/31/17**

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: **-111.11907**

LATITUDE: **32.38632067** ELEV: **607 Meter**

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C/°F	pH	EC (umhos/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SE06	8:45	28.3	7.70	---	6.24		Turb. 7.29	CAP/DLG

SAMPLE IDENTIFICATION: **RIVER SC06-2017-05-31** TIME: **5/31/17 8:45**

SAMPLE COLLECTION INFORMATION: Sample collected along river bank. Traveled with Pima County sample crew. PFOA collected with sample pole. Dioxane by hand. Field blank collected after PFOA sample next to sample location.

Check Analyses Requested: LC537LIST X; B8270SIM14DIOX X; Other_____.

QA/QC Samples: Duplicate (ID = none) Field Blank (ID = FB-2017-05-31)

HARGIS + ASSOCIATES, INC.

SURFACE WATER SAMPLING FIELD DATA FORM
LOCATION: **RIVER SC07** DATE: 06/05/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.146074

LATITUDE: 32.402682

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SC-07	1015	28.10	8.53	1236	7.35	---	TDS= 760.50 ORP= 166.80	DLG

SAMPLE IDENTIFICATION: **RIVERSC07-2017-06-05** TIME: **1015**

SAMPLE COLLECTION INFORMATION: **Site sample location was located under Avra Valley Road bridge.**

Check Analyses Requested: LC537LIST; B8270SIM14DIOX____; Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = _____)

HARGIS + ASSOCIATES, INC.

SURFACE WATER SAMPLING FIELD DATA FORM
LOCATION: **RIVER SC08** DATE: 06/05/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.175609

LATITUDE: 32.414451

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SC-08	0910	26.40	8.42	1203	7.14	---	TDS= 760.50 ORP= 179.80	DLG

SAMPLE IDENTIFICATION: **RIVERSC08-2017-06-05** TIME: **0910**

SAMPLE COLLECTION INFORMATION: **Site sample location was located approximately 1000 feet from location that vehicles had to be parked. At end of access road make right onto trail running parallel to river.**

Check Analyses Requested: LC537LIST; B8270SIM14DIOX____; Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = _____)

HARGIS + ASSOCIATES, INC.

SURFACE WATER SAMPLING FIELD DATA FORM
LOCATION: **RIVER SC09** DATE: 06/05/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.218926

LATITUDE: 32.423219

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SC-09	0800	24.40	8.40	1148	5.69	---	TDS= 754.00 ORP= 203.40	DLG

SAMPLE IDENTIFICATION: **RIVERSC09-2017-06-05** TIME: **0800**

SAMPLE COLLECTION INFORMATION: **Site sample location was located approximately ¼ mile from location that vehicles had to be parked.**

Check Analyses Requested: LC537LIST; B8270SIM14DIOX____; Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = _____)

HARGIS + ASSOCIATES, INC.

SURFACE WATER SAMPLING FIELD DATA FORM
LOCATION: **RIVER SC10** DATE: 05/25/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.232472

LATITUDE: 32.434572

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SC-10	0830	26.2	7.93	---	7.58	1.10 ft/sec	TDS= ??? ORP= ???	DLG

SAMPLE IDENTIFICATION: **RIVERSE10-2017-05-25** TIME: **0830**

SAMPLE COLLECTION INFORMATION: **Samples obtained with Pima County Wastewater Reclamation crew who obtained field parameters. Samples obtained at 6" to 12" depth.**

Check Analyses Requested: LC537LIST; B8270SIM14DIOX____; Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = FB-2017-05-25)

HARGIS + ASSOCIATES, INC.

SURFACE WATER SAMPLING FIELD DATA FORM
LOCATION: **RIVER SC11** DATE: 06/05/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.279233

LATITUDE: 32.453485

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SC-11	0650	23.00	8.19	1055	6.73	---	TDS= 728.00 ORP= 232.80	DLG

SAMPLE IDENTIFICATION: **RIVERSC11-2017-06-05** TIME: **0650**

SAMPLE COLLECTION INFORMATION: _____

_____

_____

Check Analyses Requested: LC537LIST; B8270SIM14DIOX____; Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = _____)

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: 7AZR-1 DATE: 06/07/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: Not Measured

LATITUDE:

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
7AZR-1	8:00	27.2	7.89	615	2.76	---	TDS= 383.5 ORP= 221	DLG

SAMPLE IDENTIFICATION: WELL 7AZR1-2017-06-07 TIME: 8:00 AM

SAMPLE COLLECTION INFORMATION: Sampled at 190'; SWL=167.31'

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank: FB-2017-06-07 (7AZR1)

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: 7AZR-2 DATE: 06/07/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: Not Measured

LATITUDE:

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
7AZR-2	9:00	29.1	7.91	614	3.21	---	TDS= 370.5 ORP= 220.7	DLG

SAMPLE IDENTIFICATION: WELL 7AZR2-2017-06-07 TIME: 9:00 AM

SAMPLE COLLECTION INFORMATION: Sample taken at 190'; SWL=170.45'

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank: None

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: 7AZR-3 DATE: 06/07/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: Not Measured

LATITUDE:

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
7AZR-3	6:20	27.3	6.79	730	3.51	---	TDS= 455 ORP= 222.4	DLG

SAMPLE IDENTIFICATION: WELL 7AZR3-2017-06-07 TIME: 6:20 AM

SAMPLE COLLECTION INFORMATION: Sample taken at 180'; SWL=167.58'

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank: None

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: 7AZR-4 DATE: 06/07/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: Not Measured

LATITUDE:

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
7AZR-4	7:10	26.4	7.75	537	4.89	---	TDS= 338 ORP= 217.7	DLG

SAMPLE IDENTIFICATION: WELL 7AZR4-2017-06-07 TIME: 7:10 AM

SAMPLE COLLECTION INFORMATION: Sample taken at 190'; SWL=183.04'

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank: None

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: A-024A DATE: 06/23/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.0076982

LATITUDE: 32.25177359

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
A-024A	6:55	24.8	7.27	812	1.09	---	TDS= 526.5 ORP= -66.5	DLG

SAMPLE IDENTIFICATION: WELLA024A-2017-06-23 TIME: 6:55 AM

SAMPLE COLLECTION INFORMATION: Sampled at 180'; SWL=146.35 below top of casing; Screen=168-468'

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank:

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: A-030A DATE: 06/23/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -110.9882806

LATITUDE: 32.23347789

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
A-030A	7:55	29.5	8.49	358.7	2.08	---	TDS= 215.8 ORP= -27.6	DLG

SAMPLE IDENTIFICATION: WELLA030A-2017-06-23 TIME: 7:55 AM

SAMPLE COLLECTION INFORMATION: Sampled at 152'; SWL=148.70'; Screen=0-160'

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank: FB-2017-06-23 (A-030A)

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: A-039A DATE: 06/22/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.01903782

LATITUDE: 32.26444559

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
A-039A	11:24	30.4	7.89	1451	1.098	---	TDS= 851.5 ORP= -119.3	DLG

SAMPLE IDENTIFICATION: WELLA039A-2017-06-22 TIME: 11:24 AM

SAMPLE COLLECTION INFORMATION: Sampled at 180'; SWL=159.94'; Screen=140-223'

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank:

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: B-032A DATE: 06/27/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -110.974067

LATITUDE: 32.181583

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
E-032A	11:00	31.9	8.96	564	1.84	---	TDS= 325 ORP= 76.7	DLG

SAMPLE IDENTIFICATION: WELLE032A-2017-06-27 TIME: 11:00 AM

SAMPLE COLLECTION INFORMATION: Sampled at 250'; SWL=150.96'; Screen 237-547'

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank:

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: B-036A DATE: 06/27/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -110.99905

LATITUDE: 32.18025

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
B-036A	8:25	28.9	7.97	1051	1.50	---	TDS= 637 ORP= -145	DLG

SAMPLE IDENTIFICATION: WELLB036A-2017-06-27 TIME: 8:25 AM

SAMPLE COLLECTION INFORMATION: Sampled at 190'; SWL=120.00' below top of casing; Screen=174-418'

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank: FB-2017-06-27 (B-036A)

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: CDC-W11 DATE: 06/09/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: Not Measured

LATITUDE:

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
CDC-W11	8:30	23.3	7.79	1672	1.40	---	TDS= 1124.5 ORP= -145.3	DLG

SAMPLE IDENTIFICATION: WELL CDCW11-2017-06-09 TIME: 8:30 AM

SAMPLE COLLECTION INFORMATION: Sampled at 155'; SWL=143.93'; Screen = 105-168

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank:_____

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: CDC-W18 DATE: 06/09/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: Not Measured

LATITUDE:

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
CDC-W18	9:15	23.9	7.13	1979	2.66	---	TDS= 1313 ORP= 103.7	DLG

SAMPLE IDENTIFICATION: WELL CDCW18-2017-06-09 TIME: 9:15 AM

SAMPLE COLLECTION INFORMATION: Sampled at 155'; SWL=143.92'; Screen = 85-165

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank: FB-2017-06-09 (CDCW18)

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: CMID 1-F DATE: 06/26/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.0718095

LATITUDE: 32.33.20255

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
CMID 1-F	9:45	24.0	7.53	1203	1.99	800	TDS= 793 ORP= 101.4	DLG

SAMPLE IDENTIFICATION: WELL 1F-2017-06-26 TIME: 9:45 AM

SAMPLE COLLECTION INFORMATION: **Well purged**

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = FB-2017-06-26(1F))

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: CMID 16-L DATE: 06/26/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.13131619

LATITUDE: 32.38470204

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
CMID 16-L	8:45	24.4	7.24	1036	3.04	---	TDS= 682.5 ORP= 154.3	DLG

SAMPLE IDENTIFICATION: WELL16L-2017-06-26 TIME: 8:45 AM

SAMPLE COLLECTION INFORMATION: **Well purged**

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = FB-2017-06-26(16L))

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: CMID 21-K DATE: 06/26/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.1231542

LATITUDE: 32.37096496

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
CMID 21-K	9:10	23.6	7.47	1026	2.39	---	TDS= 682.5 ORP= 99.8	DLG

SAMPLE IDENTIFICATION: WELL21K-2017-06-26 TIME: 9:10 AM

SAMPLE COLLECTION INFORMATION:

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = FB-2017-06-26(21K))

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: CMID 26-E DATE: 06/26/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.0931452

LATITUDE: 32.36274342

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
CMID 26-E	10:25	26.5	7.76	622	3.16	---	TDS= 396.5 ORP= -7.0	DLG

SAMPLE IDENTIFICATION: WELL26E-2017-06-26 TIME: 10:25 AM

SAMPLE COLLECTION INFORMATION:

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = FB-2017-06-26(26E))

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: CMID 36-C DATE: 06/26/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.0748666

LATITUDE: 32.3519416

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
CMID 36-C	10:05	24.9	7.73	954	5.06	---	TDS= 617.5 ORP= -59.9	DLG

SAMPLE IDENTIFICATION: WELL36C-2017-06-26 TIME: 10:05 AM

SAMPLE COLLECTION INFORMATION:

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = FB-2017-06-26(36C))

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: INA-OFF-R DATE: 06/14/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.076293

LATITUDE: 32.337258

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
INA-OFF-R	11:55	29.1	7.13	1352	0.62	---	TDS= 819 ORP= 164.2	DLG

SAMPLE IDENTIFICATION: WELLINAOFFR-2017-06-14 TIME: 11:55 AM

SAMPLE COLLECTION INFORMATION: Meter reading 225,155 gallons; sample location on office building outside of gate

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank: FB-2017-06-14 (INA-OFFR)

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: IRA-04 DATE: 06/09/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: Not Measured

LATITUDE:

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
IRA-04	13:55	28.2	8.70	2018	3.98	---	TDS= 1235 ORP= 171.9	DLG

SAMPLE IDENTIFICATION: WELL IRA04-2017-06-09 TIME: 13:55 AM

SAMPLE COLLECTION INFORMATION: Sampled at 190'; SWL=164.65' below meas. pt.

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank: FB-2017-06-09 (IRA-04)

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: IRA-39 DATE: 06/07/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.00749301

LATITUDE: 32.28422192

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
IRA-39	12:00	32.1	7.56	1558	3.17	---	TDS= 884 ORP= 191.2	DLG

SAMPLE IDENTIFICATION: WELL IRA39-2017-06-07 TIME: 12:00 PM

SAMPLE COLLECTION INFORMATION: Sampled at ~205'. Screen: 185-235'

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank: FB-2017-06-07 (IRA39)

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: IRA-44 DATE: 06/07/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: Not Measured

LATITUDE:

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
IRA-44	11:00	27.9	7.59	1295	4.82	---	TDS= 793 ORP= 241.8	DLG

SAMPLE IDENTIFICATION: WELL IRA44-2017-06-07 TIME: 11:00 AM

SAMPLE COLLECTION INFORMATION: Sampled at 185'; SWL=145.67'

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank:

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: IRA-45 DATE: 06/07/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: Not Measured

LATITUDE:

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
IRA-45	10:20	25.1	7.59	600	4.41	---	TDS= 390 ORP= 237.4	DLG

SAMPLE IDENTIFICATION: WELL IRA45-2017-06-07 TIME: 10:20 AM

SAMPLE COLLECTION INFORMATION: Sampled at 185'; SWL=159.16'

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank:

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: IRA-46 DATE: 06/07/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: Not Measured

LATITUDE:

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
IRA-46	12:45	30.1	7.58	791	5.25	---	TDS= 468 ORP= 212.8	DLG

SAMPLE IDENTIFICATION: WELL IRA46-2017-06-07 TIME: 12:45 AM

SAMPLE COLLECTION INFORMATION: Sampled at 200'; SWL-167.73'

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank:

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: IRR-436 DATE: 06/30/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: Not Measured

LATITUDE: ____

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
IRR-436	13:30	---	---	---	---	---	TDS= --- ORP= ---	DLG

SAMPLE IDENTIFICATION: WELL IRR436-2017-06-30 TIME: 13:30 PM

SAMPLE COLLECTION INFORMATION: Sampled from irrigation ditch at discharge point.

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank:

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: CMID IRRG #7 DATE: 06/26/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.066438

LATITUDE: 32.328514

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
IRRG #7	8:25	23.8	7.66	918	5.72	---	TDS= 611.5 ORP= 76.7	DLG

SAMPLE IDENTIFICATION: WELL7-2017-06-26 TIME: 8:25 AM

SAMPLE COLLECTION INFORMATION: Sample site located south of overflow basin

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank_____

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: LM-007A DATE: 06/23/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -110.98430924

LATITUDE: 32.21374145

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
M-007A	09:00	30.1	7.88	751	1.72	---	TDS= 429 ORP= 100.9	DLG

SAMPLE IDENTIFICATION: WELLM007A-2017-06-23 TIME: 09:00 AM

SAMPLE COLLECTION INFORMATION: Sampled at 120'; SWL=116.71'; Screen 60-125'

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank:

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: SC-01R DATE: 06/1/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.034158

LATITUDE: 32.289649

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SC-01R	08:20	24.4	7.13	1337	5.28	160	TDS= --- ORP= ---	DLG

SAMPLE IDENTIFICATION: WELL SC01R-2017-06-01 TIME: 08:20 / 8:30 AM

SAMPLE COLLECTION INFORMATION: Purged ~160 gallons. Pima purged well. Static 150.05ft

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank:

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: SC-02R DATE: 06/1/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.049608

LATITUDE: 32.308761

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SC-02R	10:15	24.9	7.06	1246	---	380	TDS= --- ORP= ---	DLG

SAMPLE IDENTIFICATION: WELL SC02R-2017-06-01 TIME: 10:15 / 10:25 AM

SAMPLE COLLECTION INFORMATION: Purged 380 gallons. Pima purged well. Static 130.65ft

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank:

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: SC-05R DATE: 06/14/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.112498

LATITUDE: 32.370118

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SC-05R	09:25	25.5	6.92	1017	---	---	TDS= 616 ORP= ---	DLG

SAMPLE IDENTIFICATION: WELLSC05R-2017-06-14 TIME: 09:25 AM

SAMPLE COLLECTION INFORMATION: Purged ~220 gallons. Pima purged well. DTW 143.20

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank:

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: SC-07R DATE: 06/14/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.144696

LATITUDE: 32.402731

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SC-07R	08:45	25.4	7.48	1159	---	---	TDS= 702 ORP= ---	DLG

SAMPLE IDENTIFICATION: WELLSC07R-2017-06-14 TIME: 08:45 AM

SAMPLE COLLECTION INFORMATION: Purged ~200 gallons. Pima purged well. DTW 150.35

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank:

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: SRC-W31M DATE: 06/08/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.144696

LATITUDE: 32.402731

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SRC-W31M	06:55	23.4	6.62	817	5.26	---	TDS= 546 ORP= 208.4	DLG

SAMPLE IDENTIFICATION: WELL SRCW31M-2017-06-08 TIME: 06:55 AM

SAMPLE COLLECTION INFORMATION: Sample taken at 220'; SWL=166.68; Screen=205-235

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank:

HARGIS + ASSOCIATES, INC.

GROUNDWATER WATER SAMPLING FIELD DATA FORM
LOCATION: Well SRC-W38M DATE: 06/08/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: Not Measured

LATITUDE:

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SRC-W38M	1010	25.4	7.54	1035	3.07	---	TDS= 663.0 ORP= 197.5	DLG
							WL= 150.61 fbmp	

SAMPLE IDENTIFICATION: **WELLSRCW38M-2017-06-08** TIME: 1010

SAMPLE COLLECTION INFORMATION: Well located along northern wall of Harvey Trucking lot # 610 and marked with two yellow bollards in front of well. Sample taken at 220 ftmp. Well has harness and was not removed. Not known if PDB or hydrosleeve attached. Water appears turbid.

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID =_____)

HARGIS + ASSOCIATES, INC.

GROUNDWATER WATER SAMPLING FIELD DATA FORM
LOCATION: Well SRC-W38S DATE: 06/08/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: Not Measured

LATITUDE:

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SRC-W38S	1040	25.6	7.21	1588	1.56	---	TDS= 1020.50 ORP= 211.1	DLG
							WL= 150.68 fbmp	
	1045						Blank sample taken	

SAMPLE IDENTIFICATION: **WELLSRCW38S-2017-06-08** TIME: 1045

SAMPLE COLLECTION INFORMATION: Well located along northern wall of Harvey Trucking lot # 610 and marked with two yellow bollards in front of well. Sample taken at 165 ftmp.

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = FB-2017-06-08 (SRC-W38S)

HARGIS + ASSOCIATES, INC.

GROUNDWATER WATER SAMPLING FIELD DATA FORM

LOCATION: Well SRC-W40M DATE: 06/08/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: Not Measured

LATITUDE:

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SRC-W40M	0825	24.9	7.36	1373	3.48	---	TDS= 890.5 ORP= 253.5	DLG
							WL= 151.55 fbmp	

SAMPLE IDENTIFICATION: **WELLSRCW40M-2017-06-08** TIME: 0825

SAMPLE COLLECTION INFORMATION: Water appears turbid and has a sulfur smell.

Sample taken at 215 ftmp.

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = _____)

HARGIS + ASSOCIATES, INC.

GROUNDWATER WATER SAMPLING FIELD DATA FORM

LOCATION: Well SRC-W40S DATE: 06/08/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: Not Measured

LATITUDE:

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SRC-W40S	0855	26.6	7.47	1610	3.06	---	TDS= 1014 ORP= 227.3	DLG
							WL= 151.34 fbmp	

SAMPLE IDENTIFICATION: **WELLSRCW40S-2017-06-08** TIME: 08:55 AM

SAMPLE COLLECTION INFORMATION: Harness was located inside well. Not known if PDB or hydrosleeve on harness. Sample taken at 165 fbmp.

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = _____)

HARGIS + ASSOCIATES, INC.

GROUNDWATER WATER SAMPLING FIELD DATA FORM
LOCATION: Well SRC-W49M DATE: 06/08/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: Not Measured

LATITUDE:

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SRC-W49M	0735	22.3	7.46	470.5	4.86	---	TDS= 322.4 ORP= 222.6	DLG
							WL= 150.93 fbmp	

SAMPLE IDENTIFICATION: **WELL SRCW49M-2017-06-08** TIME: 07:35

SAMPLE COLLECTION INFORMATION: QED pump with tubing in well. Removed pump. Sample taken at 215 fbmp.

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = _____)

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: SS-12A DATE: 06/28/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -110.989566

LATITUDE: 32.169266

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SS-12A	07:00	30.3	7.90	715	3.05	---	TDS= 422.5 ORP= 195.8	DLG

SAMPLE IDENTIFICATION: WELLSS012A-2017-06-28 TIME: 07:00 AM

SAMPLE COLLECTION INFORMATION: Sampled at 140'; SWL=128.77' below top of casing; Screen=35-207'

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank:

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: SS-13A DATE: 06/27/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -110.985233

LATITUDE: 32.185150

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SS-13A	09:15	30.4	9.06	496.3	2.66	---	TDS= 292.5 ORP= 22.7	DLG

SAMPLE IDENTIFICATION: WELLSS013A-2017-06-27 TIME: 09:15 AM

SAMPLE COLLECTION INFORMATION: Sampled at 125'; SWL=112.98' below top of casing; Screen=34-202'

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank:

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: SS-19A DATE: 06/27/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -110.98307941

LATITUDE: 32.20282568

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
SS-19A	07:30	27.1	9.78	592	2.51	---	TDS= 370.5 ORP= 138.8	DLG

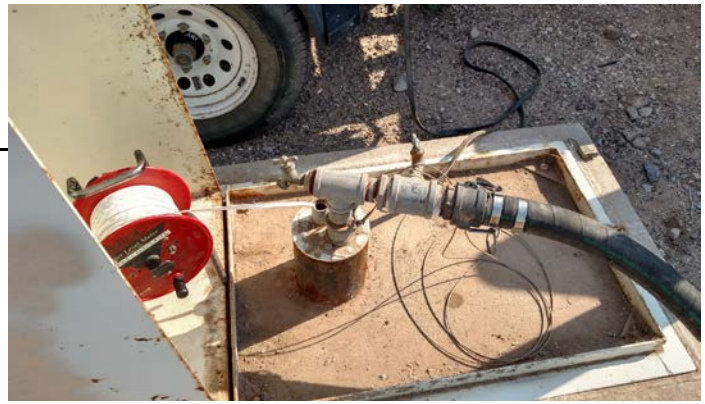
SAMPLE IDENTIFICATION: WELLSS019A-2017-06-27 TIME: 07:30 AM

SAMPLE COLLECTION INFORMATION: Sampled at 110'; SWL=96.05'; Screen=Undetermined

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank:

HARGIS + ASSOCIATES, INC.



GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: WR-133B DATE: 06/22/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.0030664

LATITUDE: 32. 23979624

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
WR-133B	9:00	24.9	7.46	1345	1.56	---	TDS= 877.5 ORP= -93.8	DLG

SAMPLE IDENTIFICATION: WELL WR133B-2017-06-22 TIME: 9:00 AM

SAMPLE COLLECTION INFORMATION: **Well purged three volumes (238.16 gallons)**

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = _____)

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: WR-161A DATE: 06/28/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -110.984216

LATITUDE: 32.166350

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
WR-161A	8:25					---	TDS= ORP=	DLG

SAMPLE IDENTIFICATION: WELL WR161A-2017-06-28 TIME: 8:25 AM

SAMPLE COLLECTION INFORMATION: Sampled at 160'; SWL=146.54' below top of casing; Screen=147-385'

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank (ID = _____)

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: WR-239A DATE: 06/28/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -110.97650

LATITUDE: 32.166250

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
WR-239A	9:53	27.4	8.16	589	3.23	---	TDS= 364 ORP= 146.9	DLG

SAMPLE IDENTIFICATION: WELLWR239A-2017-06-28 TIME: 9:53 AM

SAMPLE COLLECTION INFORMATION: **Well purged three volumes (810+ gallons)**

SWL=159.41' below top of ¾' coupling; Screen=150-400'

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank ID = FB-2017-06-28 (WR-239A)

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING FIELD DATA FORM
LOCATION: Z-011A DATE: 06/22/2017

PROJECT NAME: **MARANA PROJECT** PROJECT NUMBER: **1229.3**

LONGITUDE: -111.09276838

LATITUDE: 32.33717782

LOCATION IDENTIFIER	SAMPLE COLLECTION TIME	TEMP. °C	pH	EC (µS/cm)	DO (mg/l)	EST. Q (gpm)	COMMENTS	SAMPLER INITIALS
Z-011A	12:20					---	TDS= ORP=	DLG

SAMPLE IDENTIFICATION: WELLZ011A-2017-06-22 TIME: 12:20 PM

SAMPLE COLLECTION INFORMATION: Sampled at 160'; SWL=149.59'; Screen=120-200'

Check Analyses Requested: **LC537LIST; B8270SIM14DIOX;** Other_____.

QA/QC Samples: Duplicate (ID = _____) Field Blank ID = FB-2017-06-22 (Z-011A)

APPENDIX C

SGS ACCUTEST IS PART OF SGS, THE WORLD'S LEADING INSPECTION, VERIFICATION, TESTING AND CERTIFICATION COMPANY.

e-Hardcopy 2.0
Automated Report

Technical Report for

Hargis + Associates, Inc.

Marana Project; Marana, AZ

1229.3

SGS Accutest Job Number: FA44331

Sampling Date: 05/25/17

Report to:

Hargis + Associates, Inc
7400 N Oracle Rd Suite 202
Tucson, AZ 85704
CPERKOVAC@HARGIS.COM

ATTN: Chris Perkovac

Total number of pages in report: 21

NELAP ACCREDITED TNI LABORATORY

Norm Farmer
Technical Director

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Elvin Kumar 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(L-A-B L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AK, AR, GA, IA, KY, MA, NV, OK, OR, UT, WA

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SGS Accutest

Sample Summary

Hargis + Associates, Inc.

Job No: FA44331

Marana Project; Marana, AZ
Project No: 1229.3

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA44331-1	05/25/17	08:00	CP	05/26/17	AQ	Surface Water	RIVER SE10-2017-05-25
FA44331-2	05/25/17	08:15	CP	05/26/17	AQ	Field Blank Water	FB-2017-05-25
FA44331-3	05/25/17	08:05	CP	05/26/17	AQ	Surface Water	RIVER SE10-2017-05-25

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hargis + Associates, Inc. **Job No:** FA44331

Site: Marana Project; Marana, AZ **Report Date** 6/19/2017 6:47:04 PM

2 Samples and 1 Field Blank were collected on 05/25/2017 and were received at SGS Accutest Southeast (SASE) on 05/26/2017 properly preserved, at 0.8 Deg. C and intact. These Samples received an SASE job number of FA44331. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65354

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA44321-10MS, FA44321-10MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for Perfluorododecanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid are outside control limits.

Matrix Spike / Matrix Spike Duplicate Recovery(s) for Perfluorooctanesulfonic acid are outside control limits. Outside control limits due to high level in sample relative to spike amount. AZ:M3

FA44331-1 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44331-1 for Perfluorohexanesulfonic acid: AZ:E4

FA44331-1 for Perfluorooctanesulfonic acid: AZ:E4

FA44331-1 for Perfluorooctanoic acid: AZ:E4

FA44331-1 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44331-1 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44331-2 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44331-2 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44331-2 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2

Extractables by GCMS By Method SW846 8270D BY SIM

Matrix: AQ **Batch ID:** OP65218

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA44331-3MS, FA44331-3MSD were used as the QC samples indicated.

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used

Narrative prepared by:

_____ Date: June 19, 2017

Lovelie Metzgar, QA Officer (signature on file)

Summary of Hits

Job Number: FA44331
Account: Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ
Collected: 05/25/17

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA44331-1	**RIVER SE10-2017-05-25**					
Perfluorohexanoic acid		0.0171	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid [a]		0.0106 J	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [a]		0.00813 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [a]		0.00583 J	0.016	0.0040	ug/l	EPA 537 MOD
FA44331-2	**FB-2017-05-25**					
No hits reported in this sample.						
FA44331-3	**RIVER SE10-2017-05-25**					
No hits reported in this sample.						

(a) AZ:E4

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	RIVER SE10-2017-05-25		
Lab Sample ID:	FA44331-1	**Date Sampled:**	05/25/17
Matrix:	AQ - Surface Water	**Date Received:**	05/26/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q35319.D	1	06/17/17 01:42	NAF	06/08/17 09:00	OP65354	SQ914
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

Perfluorinated Alkyl Acids

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
307-24-4	Perfluorohexanoic acid	0.0171	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid [a]	0.0106	0.016	0.0040	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [b]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid [a]	0.00813	0.016	0.0080	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid [a]	0.00583	0.016	0.0040	ug/l	J
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	64%		61-134%
	13C2-PFDA	98%		62-128%
	d5-EtFOSAA	64%		57-135%

(a) AZ:E4
(b) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-05-25		
Lab Sample ID:	FA44331-2	**Date Sampled:**	05/25/17
Matrix:	AQ - Field Blank Water	**Date Received:**	05/26/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q35320.D	1	06/17/17 02:01	NAF	06/08/17 09:00	OP65354	SQ914
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

Perfluorinated Alkyl Acids

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [a]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [a]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [a]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	75%		61-134%
	13C2-PFDA	83%		62-128%
	d5-EtFOSAA	64%		57-135%

(a) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SE10-2017-05-25		
Lab Sample ID:	FA44331-3	**Date Sampled:**	05/25/17
Matrix:	AQ - Surface Water	**Date Received:**	05/26/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U061826.D	1	06/01/17 23:05	FS	05/30/17 08:40	OP65218	SU2698
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	67%		42-108%
321-60-8	2-Fluorobiphenyl	70%		40-106%
1718-51-0	Terphenyl-d14	76%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: FA44331
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
L2	The associated blank spike recovery was below laboratory acceptance limits.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated blank spike recovery was acceptable.

SGS ACCUTEST

SGS Accutest Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.accutest.com

FA44331

SGS ACCUTEST JOB # : PAGE 1 OF 1

SGS Accutest Quote # | SKIFF #

Client / Reporting Information

Company Name: HARGIS + ASSOCIATES
Address: 7400 N. ORACLE RD. S.202
City: TUSCON State: AZ Zip: 85704
Project Contact: CHRIS PERKOVAC Email: CPERKOVAC@HARGIS.COM
Phone #: 619 241-3575
Sampler(s) Name(s) (Printed)
Sampler 1: Sampler 2:

Project Information

Project Name: MARANA PROJECT
Street
City MARANA State AZ
Project # 1229.3
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air

SGS Accutest Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	MeOH+ZnAc	DI WATER	MEOH	LC537 List/EPA537	8270SIM 14 Dioxane	LAB USE ONLY
1	RIVER SE10-2017-05-25	5/25/17	8:00	CAP	SW	4		X								X	X	
2	FB-2017-05-25	"	815	CAP	WW	2		X								X		
3	RIVER SE10-2017-05-25	"	805	CAP	SW	2		X									X	

Turnaround Time (Business days)

10 Day (Business) — Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [x] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [x] EDD'S ARIZONA 2 "ADEQ FORMATTED"

Comments / Remarks

EPA 537 — GROUND WATER.

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	H+A	5/25/17 12:00 pm	2	3	5/25/17 1400	4 Fedex
5	FX		6	7		8

05/26/17 930

Lab Use Only : Cooler Temperature (s) Celsius: 0.8

5.2 5

FA44331: Chain of Custody
Page 1 of 2

SGS Accutest Sample Receipt Summary

Job Number: FA44331 **Client:** HARGIS & ASSOC. **Project:** MARANA PROJECT

Date / Time Received: 5/26/2017 9:30:00 AM **Delivery Method:** FEDD EX **Airbill #'s:** 7866 9167 4210

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (0.4);

Cooler Temps (Corrected) °C: Cooler 1: (0.8);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☑	☐
2. Trip Blank listed on COC	☐		☑	☐
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/18/17

Technician: SHAYLAP Date: 5/26/2017 9:30:00 AM Reviewer: PDS Date: 5/26/2017

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA44331
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65218-MB	U061800.D	1	06/01/17	FS	05/30/17	OP65218	SU2698

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44331-3

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	66%	42-108%
321-60-8	2-Fluorobiphenyl	65%	40-106%
1718-51-0	Terphenyl-d14	86%	39-121%

Method Blank Summary

Job Number: FA44331
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65354-MB	Q35247.D	1	06/16/17	NAF	06/08/17	OP65354	SQ913

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44331-1, FA44331-2

CAS No.	Compound	Result	RL	MDL	Units	Q
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	78%	61-134%
	13C2-PFDA	90%	62-128%
	d5-EtFOSAA	64%	57-135%

Method Blank Summary

Job Number: FA44331
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65354-MB	Q35311.D	1	06/16/17	NAF	06/08/17	OP65354	SQ914

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44331-1, FA44331-2

CAS No.	Compound	Result	RL	MDL	Units	Q
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	81%	61-134%
	13C2-PFDA	88%	62-128%

Blank Spike Summary

Job Number: FA44331
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65218-BS	U061801.D	1	06/01/17	FS	05/30/17	OP65218	SU2698

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44331-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	10	3.0	30	15-69

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	61%	42-108%
321-60-8	2-Fluorobiphenyl	72%	40-106%
1718-51-0	Terphenyl-d14	93%	39-121%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA44331
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65354-BS	Q35246.D	1	06/16/17	NAF	06/08/17	OP65354	SQ913

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44331-1, FA44331-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
307-24-4	Perfluorohexanoic acid	0.154	0.136	88	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.148	96	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.166	108	74-137
375-95-1	Perfluorononanoic acid	0.154	0.169	110	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.180	117	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.113	73	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.0813	53* [a]	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.0750	49* [a]	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.0746	48* [a]	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.156	101	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.177	115	74-142
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.145	94	70-134
2355-31-9	MeFOSAA	0.154	0.117	76	57-128
2991-50-6	EtFOSAA	0.154	0.0997	65	55-135

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	75%	61-134%
	13C2-PFDA	97%	62-128%
	d5-EtFOSAA	64%	57-135%

(a) Outside control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA44331
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65218-MS	U061827.D	1	06/01/17	FS	05/30/17	OP65218	SU2698
OP65218-MSD	U061828.D	1	06/01/17	FS	05/30/17	OP65218	SU2698
FA44331-3	U061826.D	1	06/01/17	FS	05/30/17	OP65218	SU2698

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44331-3

CAS No.	Compound	FA44331-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	ND		19.6	6.8	35	19.6	6.5	33	5	15-69/31

CAS No.	Surrogate Recoveries	MS	MSD	FA44331-3	Limits
4165-60-0	Nitrobenzene-d5	55%	61%	67%	42-108%
321-60-8	2-Fluorobiphenyl	65%	74%	70%	40-106%
1718-51-0	Terphenyl-d14	76%	88%	76%	39-121%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA44331
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65354-MS	Q35254.D	1	06/16/17	NAF	06/08/17	OP65354	SQ913
OP65354-MSD	Q35255.D	1	06/16/17	NAF	06/08/17	OP65354	SQ913
FA44321-10	Q35253.D	1	06/16/17	NAF	06/08/17	OP65354	SQ913

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44331-1, FA44331-2

CAS No.	Compound	FA44321-10 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
307-24-4	Perfluorohexanoic acid	0.114		0.16	0.235	76	0.16	0.234	75	0	63-146/30
375-85-9	Perfluoroheptanoic acid	0.0709		0.16	0.211	88	0.16	0.210	87	0	71-138/30
335-67-1	Perfluorooctanoic acid	0.279		0.16	0.421	89	0.16	0.423	90	0	74-137/30
375-95-1	Perfluorononanoic acid	0.0210		0.16	0.177	98	0.16	0.189	105	7	76-140/30
335-76-2	Perfluorodecanoic acid	ND		0.16	0.153	96	0.16	0.167	104	9	65-148/30
2058-94-8	Perfluoroundecanoic acid	ND		0.16	0.114	71	0.16	0.109	68	4	57-138/30
307-55-1	Perfluorododecanoic acid	ND		0.16	0.114	71	0.16	0.0993	62	14	58-118/30
72629-94-8	Perfluorotridecanoic acid	ND		0.16	0.114	71	0.16	0.104	65	9	52-120/30
376-06-7	Perfluorotetradecanoic acid	ND		0.16	0.110	69	0.16	0.107	67	3	49-122/30
375-73-5	Perfluorobutanesulfonic acid	0.0293		0.16	0.186	98	0.16	0.181	95	3	73-148/30
355-46-4	Perfluorohexanesulfonic acid	0.334		0.16	0.498	103	0.16	0.477	89	4	74-142/30
1763-23-1	Perfluorooctanesulfonic acid	0.350		0.16	0.438	55* [a]	0.16	0.443	58* [a]	1	70-134/30
2355-31-9	MeFOSAA	ND		0.16	0.0949	59	0.16	0.108	68	13	57-128/30
2991-50-6	EtFOSAA	ND		0.16	0.0872	55	0.16	0.0946	59	8	55-135/30

CAS No.	Surrogate Recoveries	MS	MSD	FA44321-10	Limits
	13C2-PFHxA	67%	70%	70%	61-134%
	13C2-PFDA	77%	86%	81%	62-128%

(a) Outside control limits due to high level in sample relative to spike amount. AZ:M3

* = Outside of Control Limits.

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e-Hardcopy 2.0
Automated Report

Technical Report for

Hargis + Associates, Inc.

Marana Project; Marana, AZ

1229.30

SGS Accutest Job Number: FA44538

Sampling Date: 06/01/17

Report to:

Hargis + Associates, Inc
7400 N Oracle Rd Suite 202
Tucson, AZ 85704
CPERKOVAC@HARGIS.COM

ATTN: Chris Perkovac

Total number of pages in report: **30**

Norm Farmer
Technical Director

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Elvin Kumar 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(L-A-B L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AK, AR, GA, IA, KY, MA, NV, OK, OR, UT, WA

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SGS Accutest

Sample Summary

Hargis + Associates, Inc.

Job No: FA44538

Marana Project; Marana, AZ
Project No: 1229.30

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA44538-1	06/01/17	08:20	DLG	06/02/17	AQ	Ground Water	WELL SC01R-2017-06-01
FA44538-2	06/01/17	08:25	DLG	06/02/17	AQ	Field Blank Water	FB-2017-06-01 (SC01R)
FA44538-3	06/01/17	08:30	DLG	06/02/17	AQ	Ground Water	WELL SC01R-2017-06-01
FA44538-4	06/01/17	10:15	DLG	06/02/17	AQ	Ground Water	WELL SC02R-2017-06-01
FA44538-5	06/01/17	10:20	DLG	06/02/17	AQ	Field Blank Water	FB-2017-06-01(SC02R)
FA44538-6	06/01/17	10:25	DLG	06/02/17	AQ	Ground Water	WELL SC02R-2017-06-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hargis + Associates, Inc. **Job No:** FA44538

Site: Marana Project; Marana, AZ **Report Date** 6/19/2017 6:47:58 PM

4 Samples and 2 Field Blanks were collected on 06/01/2017 and were received at SGS Accutest Southeast (SASE) on 06/02/2017 properly preserved, at 3.6 Deg. C and intact. These Samples received an SASE job number of FA44538. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65427

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA44573-19MS, FA44573-19MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for Perfluorodecanesulfonic acid, Perfluorododecanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, PFOSA are outside control limits.

Matrix Spike Recovery(s) for Perfluorooctanesulfonic acid are outside control limits. Probable cause is due to matrix interference. AZ:M2

Matrix Spike Duplicate Recovery(s) for EtFOSAA, MeFOSAA, Perfluorooctanesulfonic acid, 8:2 Fluorotelomer sulfonate, Perfluoroheptanesulfonic acid, Perfluorononanoic acid are outside control limits. Probable cause is due to matrix interference. AZ:M2

Matrix Spike / Matrix Spike Duplicate Recovery(s) for PFOSA are outside control limits. Probable cause is due to matrix interference. AZ:M7

RPD(s) for MSD for 8:2 Fluorotelomer sulfonate, Perfluoroheptanesulfonic acid, Perfluorononanoic acid, PFOSA are outside control limits for sample OP65427-MSD. Probable cause is due to sample non-homogeneity. AZ:R2

Sample(s) OP65427-MB has surrogates outside control limits.

FA44538-1 for Perfluorobutanesulfonic acid: AZ:E4

FA44538-1 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA44538-1 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44538-1 for Perfluoroheptanoic acid: AZ:E4

FA44538-1 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44538-1 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44538-1 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA44538-2 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA44538-2 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44538-2 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44538-2 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44538-2 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA44538-4 for Perfluorobutanoic acid: AZ:E4

FA44538-4 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA44538-4 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44538-4 for Perfluorooctanesulfonic acid: AZ:E4

FA44538-4 for Perfluorooctanoic acid: AZ:E4

FA44538-4 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44538-4 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44538-4 for PFOSA: Associated BS recovery outside control limits. AZ:L2

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65427

FA44538-5 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA44538-5 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44538-5 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44538-5 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44538-5 for PFOSA: Associated BS recovery outside control limits. AZ:L2

Extractables by GCMS By Method SW846 8270D BY SIM

Matrix: AQ **Batch ID:** OP65317

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA44466-7MS, FA44466-7MSD were used as the QC samples indicated.

Matrix Spike / Matrix Spike Duplicate Recovery(s) for 1,4-Dioxane are outside control limits. Outside control limits due to high level in sample relative to spike amount. AZ:M3

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used

Narrative prepared by:

_____ Date: June 19, 2017

Lovelie Metzgar, QA Officer (signature on file)

Summary of Hits

Job Number: FA44538
Account: Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ
Collected: 06/01/17

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA44538-1	**WELL SC01R-2017-06-01**					
Perfluoropentanoic acid		0.0509	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanoic acid		0.0269	0.016	0.0080	ug/l	EPA 537 MOD
Perfluoroheptanoic acid [a]		0.0105 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid		0.0245	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid [a]		0.0155 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid		0.0400	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.0165	0.016	0.0040	ug/l	EPA 537 MOD
FA44538-2	**FB-2017-06-01 (SC01R)**					
No hits reported in this sample.						
FA44538-3	**WELL SC01R-2017-06-01**					
1,4-Dioxane		0.72	0.29	0.14	ug/l	SW846 8270D BY SIM
FA44538-4	**WELL SC02R-2017-06-01**					
Perfluorobutanoic acid [a]		0.00969 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid [a]		0.0108 J	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid		0.0167	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [a]		0.00651 J	0.016	0.0040	ug/l	EPA 537 MOD
FA44538-5	**FB-2017-06-01(SC02R)**					
No hits reported in this sample.						
FA44538-6	**WELL SC02R-2017-06-01**					
1,4-Dioxane		0.34	0.29	0.14	ug/l	SW846 8270D BY SIM

(a) AZ:E4

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	WELL SC01R-2017-06-01		
Lab Sample ID:	FA44538-1	**Date Sampled:**	06/01/17
Matrix:	AQ - Ground Water	**Date Received:**	06/02/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q35290.D	1	06/16/17 16:52	NAF	06/13/17 08:00	OP65427	SQ914
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0509	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	0.0269	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid [a]	0.0105	0.016	0.0080	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0245	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [b]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid [a]	0.0155	0.016	0.0080	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0400	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0165	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid [b]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SC01R-2017-06-01		
Lab Sample ID:	FA44538-1	**Date Sampled:**	06/01/17
Matrix:	AQ - Ground Water	**Date Received:**	06/02/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	81%		61-134%
	13C2-PFDA	68%		62-128%
	d5-EtFOSAA	64%		57-135%

(a) AZ:E4
(b) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-01 (SC01R)		
Lab Sample ID:	FA44538-2	**Date Sampled:**	06/01/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/02/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q35291.D	1	06/16/17 17:10	NAF	06/13/17 08:00	OP65427	SQ914
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [a]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [a]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [a]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid [a]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [a]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-01 (SC01R)		
Lab Sample ID:	FA44538-2	**Date Sampled:**	06/01/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/02/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	87%		61-134%
	13C2-PFDA	79%		62-128%
	d5-EtFOSAA	60%		57-135%

(a) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SC01R-2017-06-01		
Lab Sample ID:	FA44538-3	**Date Sampled:**	06/01/17
Matrix:	AQ - Ground Water	**Date Received:**	06/02/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U061887.D	1	06/07/17 20:46	FS	06/06/17 08:15	OP65317	SU2701
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	0.72	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	75%		42-108%
321-60-8	2-Fluorobiphenyl	75%		40-106%
1718-51-0	Terphenyl-d14	56%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SC02R-2017-06-01		
Lab Sample ID:	FA44538-4	**Date Sampled:**	06/01/17
Matrix:	AQ - Ground Water	**Date Received:**	06/02/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q35292.D	1	06/16/17 17:29	NAF	06/13/17 08:00	OP65427	SQ914
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [a]	0.00969	0.016	0.0080	ug/l	J
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid [a]	0.0108	0.016	0.0040	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [b]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0167	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [a]	0.00651	0.016	0.0040	ug/l	J
335-77-3	Perfluorodecanesulfonic acid [b]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SC02R-2017-06-01		
Lab Sample ID:	FA44538-4	**Date Sampled:**	06/01/17
Matrix:	AQ - Ground Water	**Date Received:**	06/02/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	81%		61-134%
	13C2-PFDA	78%		62-128%
	d5-EtFOSAA	68%		57-135%

(a) AZ:E4
(b) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-01(SC02R)		
Lab Sample ID:	FA44538-5	**Date Sampled:**	06/01/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/02/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q35293.D	1	06/16/17 17:49	NAF	06/13/17 08:00	OP65427	SQ914
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [a]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [a]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [a]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid [a]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [a]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-01(SC02R)		
Lab Sample ID:	FA44538-5	**Date Sampled:**	06/01/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/02/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	84%		61-134%
	13C2-PFDA	69%		62-128%
	d5-EtFOSAA	61%		57-135%

(a) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SC02R-2017-06-01		
Lab Sample ID:	FA44538-6	**Date Sampled:**	06/01/17
Matrix:	AQ - Ground Water	**Date Received:**	06/02/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U061888.D	1	06/07/17 21:09	FS	06/06/17 08:15	OP65317	SU2701
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	0.34	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	58%		42-108%
321-60-8	2-Fluorobiphenyl	56%		40-106%
1718-51-0	Terphenyl-d14	45%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: FA44538
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
L2	The associated blank spike recovery was below laboratory acceptance limits.
M2	Matrix spike recovery was low; the associated blank spike recovery was acceptable.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated blank spike recovery was acceptable.
M7	Matrix spike recovery was low. Data reported per ADEQ policy 0154.000. Matrix Interference was confirmed.
R2	RPD/RSD exceeded the laboratory acceptance limit. See Case Narrative.

SGS ACCUTEST

SGS Accutest Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.accutest.com

SGS ACCUTEST JOB # : FA44538 PAGE 1 OF 1

SGS Accutest Quote # | SKIFF #

Client / Reporting Information

Company Name: Hargist Associates, Inc.
Address: 7400 N. Oracle Rd #202
City: Tucson State: AZ Zip: 85704
Project Contact: Chris Perkovec Email: cperkovec@hargist.com
Phone #: 619-241-3575
Sampler(s) Name(s) (Printed)
Sampler 1: Damian Good Sampler 2:

Project Information

Project Name: Marana Project
Street
City Marana State AZ
Project # 1229.30
Fax #
Client Purchase Order #

Analytical Information

SGS Accutest Sample #	Field ID / Point of Collection	Collection Date	Collection Time	Sampled By	Matrix	Total # of Bottles	Other	None	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MeOH	LC537 LIST / EPA 537	8270SIM 14Dio X
1	WELL SC01R-2017-06-01	6/1/17	0820	DLG	GW	2		X								X	
2	FB-2017-06-01 (SC01R)		0825	DLG	WW	2		X								X	
3	WELL SC01R-2017-06-01		0830	DLG	GW	2		X									X
4	WELL SC02R-2017-06-01		1015	DLG	GW	2		X								X	
5	FB-2017-06-01 (SC02R)		1020	DLG	WW	2		X								X	
6	WELL SC02R-2017-06-01		1025	DLG	GW	2		X									X

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air

LAB USE ONLY

Turnaround Time (Business days)

- 10 Day (Business) — Approved By: / Date:
- 7 Day
- 5 Day
- 3 Day *RUSH*
- 2 Day *RUSH*
- 1 Day *RUSH*
- Other

Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [x] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [x] EDD'S ARIZONA 2 "ADEQ FORMAT"

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	Damian Good HA	06/01/17 1945	2	3	6/1/17 1730	Fedex
5	FX		6 06/02/17 930	7		8

Lab Use Only : Cooler Temperature (s) Celsius: 3.6

SGS Accutest Sample Receipt Summary

Job Number: FA44538 **Client:** HARGIS & ASSOC. **Project:** MARANA PROJECT

Date / Time Received: 6/2/2017 9:30:00 AM **Delivery Method:** FED EX **Airbill #'s:** 7867 6405 6096

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.2);

Cooler Temps (Corrected) °C: Cooler 1: (3.6);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☑	☐
2. Trip Blank listed on COC	☐		☑	☐
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 6/2/2017 9:30:00 AM Reviewer: TL Date: 6/2/2017

FA44538: Chain of Custody
Page 2 of 2

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA44538
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65317-MB	U061869.D	1	06/07/17	FS	06/06/17	OP65317	SU2701

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44538-3, FA44538-6

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	63%	42-108%
321-60-8	2-Fluorobiphenyl	61%	40-106%
1718-51-0	Terphenyl-d14	64%	39-121%

Method Blank Summary

Job Number: FA44538
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65427-MB	2Q2183.D	1	06/14/17	NAF	06/13/17	OP65427	S2Q59

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44538-1, FA44538-2, FA44538-4, FA44538-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	99%	61-134%
	13C2-PFDA	88%	62-128%
	d5-EtFOSAA	54%*	57-135%

Method Blank Summary

Job Number: FA44538
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65427-MB	Q35228.D	1	06/15/17	NAF	06/13/17	OP65427	SQ913

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44538-1, FA44538-2, FA44538-4, FA44538-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	91%	61-134%
	13C2-PFDA	84%	62-128%
	d5-EtFOSAA	55%*	57-135%

Blank Spike Summary

Job Number: FA44538
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65317-BS	U061870.D	1	06/07/17	FS	06/06/17	OP65317	SU2701

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44538-3, FA44538-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	10	2.2	22	15-69

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	61%	42-108%
321-60-8	2-Fluorobiphenyl	69%	40-106%
1718-51-0	Terphenyl-d14	73%	39-121%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA44538
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65427-BS	2Q2182.D	1	06/14/17	NAF	06/13/17	OP65427	S2Q59

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44538-1, FA44538-2, FA44538-4, FA44538-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.0460	30	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.140	91	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.150	97	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.148	96	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.146	95	74-137
375-95-1	Perfluorononanoic acid	0.154	0.143	93	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.131	85	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.0928	60	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.0762	50* [a]	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.0765	50* [a]	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.0730	47* [a]	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.142	92	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.155	101	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.154	0.176	114	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.120	78	70-134
335-77-3	Perfluorodecanesulfonic acid	0.154	0.0829	54* [a]	56-127
754-91-6	PFOSA	0.154	0.0295	19* [a]	40-142
2355-31-9	MeFOSAA	0.154	0.131	85	57-128
2991-50-6	EtFOSAA	0.154	0.120	78	55-135
27619-97-2	6:2 Fluorotelomer sulfonate	0.154	0.173	112	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.154	0.165	107	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	104%	61-134%
	13C2-PFDA	91%	62-128%
	d5-EtFOSAA	73%	57-135%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA44538
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65427-BS	Q35227.D	1	06/15/17	NAF	06/13/17	OP65427	SQ913

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44538-1, FA44538-2, FA44538-4, FA44538-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.0399	26	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.139	90	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.129	84	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.133	86	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.139	90	74-137
375-95-1	Perfluorononanoic acid	0.154	0.137	89	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.137	89	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.0998	65	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.0786	51* [a]	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.0728	47* [a]	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.0743	48* [a]	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.135	88	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.148	96	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.154	0.173	112	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.126	82	70-134
335-77-3	Perfluorodecanesulfonic acid	0.154	0.0841	55* [a]	56-127
754-91-6	PFOSA	0.154	0.0254	17* [a]	40-142
2355-31-9	MeFOSAA	0.154	0.132	86	57-128
2991-50-6	EtFOSAA	0.154	0.113	73	55-135
27619-97-2	6:2 Fluorotelomer sulfonate	0.154	0.174	113	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.154	0.162	105	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	89%	61-134%
	13C2-PFDA	96%	62-128%
	d5-EtFOSAA	68%	57-135%

(a) Outside control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA44538
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65317-MS	W101214.D	10	06/12/17	FS	06/06/17	OP65317	SW4423
OP65317-MSD	W101215.D	10	06/12/17	FS	06/06/17	OP65317	SW4423
FA44466-7	W101213.D	10	06/12/17	FS	06/06/17	OP65317	SW4423

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44538-3, FA44538-6

CAS No.	Compound	FA44466-7 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	101		19.2	189	458* [a]	19.2	206	546* [a]	9	15-69/31

CAS No.	Surrogate Recoveries	MS	MSD	FA44466-7	Limits
4165-60-0	Nitrobenzene-d5	80%	83%	52%	42-108%
321-60-8	2-Fluorobiphenyl	93%	85%	66%	40-106%
1718-51-0	Terphenyl-d14	102%	88%	74%	39-121%

(a) Outside control limits due to high level in sample relative to spike amount. AZ:M3

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA44538
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65427-MS	Q35233.D	1	06/15/17	NAF	06/13/17	OP65427	SQ913
OP65427-MSD	Q35234.D	1	06/15/17	NAF	06/13/17	OP65427	SQ913
FA44573-19	Q35232.D	1	06/15/17	NAF	06/13/17	OP65427	SQ913

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44538-1, FA44538-2, FA44538-4, FA44538-5

CAS No.	Compound	FA44573-19 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0143	J	0.154	0.0600	30	0.154	0.0704	36	16	20-120/30
2706-90-3	Perfluoropentanoic acid	0.0663		0.154	0.218	99	0.154	0.234	109	7	40-131/30
307-24-4	Perfluorohexanoic acid	0.0458		0.154	0.170	81	0.154	0.166	78	2	63-146/30
375-85-9	Perfluoroheptanoic acid	0.0298		0.154	0.165	88	0.154	0.161	85	2	71-138/30
335-67-1	Perfluorooctanoic acid	0.0385		0.154	0.190	98	0.154	0.154	75	21	74-137/30
375-95-1	Perfluorononanoic acid	0.00507	J	0.154	0.166	105	0.154	0.104	64* [a]	46* [b]	76-140/30
335-76-2	Perfluorodecanoic acid	0.016	U	0.154	0.139	90	0.154	0.116	75	18	65-148/30
2058-94-8	Perfluoroundecanoic acid	0.016	U	0.154	0.0967	63	0.154	0.100	65	3	57-138/30
307-55-1	Perfluorododecanoic acid	0.016	U	0.154	0.0913	59	0.154	0.0998	65	9	58-118/30
72629-94-8	Perfluorotridecanoic acid	0.016	U	0.154	0.0843	55	0.154	0.101	66	18	52-120/30
376-06-7	Perfluorotetradecanoic acid	0.016	U	0.154	0.0950	62	0.154	0.107	70	12	49-122/30
375-73-5	Perfluorobutanesulfonic acid	0.0134	J	0.154	0.146	86	0.154	0.155	92	6	73-148/30
355-46-4	Perfluorohexanesulfonic acid	0.121		0.154	0.271	97	0.154	0.239	77	13	74-142/30
375-92-8	Perfluoroheptanesulfonic acid	0.016	U	0.154	0.150	97	0.154	0.0889	58* [a]	51* [b]	74-123/30
1763-23-1	Perfluorooctanesulfonic acid	0.150		0.154	0.250	65* [a]	0.154	0.201	33* [a]	22	70-134/30
335-77-3	Perfluorodecanesulfonic acid	0.016	U	0.154	0.0992	64	0.154	0.107	70	8	56-127/30
754-91-6	PFOSA	0.016	U	0.154	0.0372	24* [c]	0.154	0.00853	6* [c]	125* [b]	40-142/30
2355-31-9	MeFOSAA	0.040	U	0.154	0.0978	64	0.154	0.0783	51* [a]	22	57-128/30
2991-50-6	EtFOSAA	0.040	U	0.154	0.0911	59	0.154	0.0756	49* [a]	19	55-135/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.040	U	0.154	0.161	105	0.154	0.131	85	21	70-153/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.040	U	0.154	0.130	84	0.154	0.0770	50* [a]	51* [b]	61-154/30

CAS No.	Surrogate Recoveries	MS	MSD	FA44573-19	Limits
	13C2-PFHxA	79%	76%	78%	61-134%
	13C2-PFDA	98%	71%	94%	62-128%
	d5-EtFOSAA	69%	64%		57-135%

(a) Outside control limits. AZ:M2
(b) Outside control limits. AZ:R2
(c) Outside control limits. AZ:M7

* = Outside of Control Limits.

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Automated Report

Technical Report for

Hargis + Associates, Inc.

Marana Project; Marana, AZ

1229.30

SGS Accutest Job Number: FA44539

Sampling Date: 05/31/17

Report to:

Hargis + Associates, Inc
7400 N Oracle Rd Suite 202
Tucson, AZ 85704
CPERKOVAC@HARGIS.COM

ATTN: Chris Perkovac

Total number of pages in report: 25

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Elvin Kumar 407-425-6700

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SGS Accutest

Sample Summary

Hargis + Associates, Inc.

Job No: FA44539

Marana Project; Marana, AZ
Project No: 1229.30

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA44539-1	05/31/17	08:45	CPDG	06/02/17	AQ	Surface Water	RIVER SE06-2017-05-31
FA44539-2	05/31/17	08:50	CPDG	06/02/17	AQ	Field Blank Water	FB-2017-05-31
FA44539-3	05/31/17	08:55	CPDG	06/02/17	AQ	Surface Water	RIVER SE06-2017-05-31

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hargis + Associates, Inc. **Job No:** FA44539

Site: Marana Project; Marana, AZ **Report Date** 6/20/2017 7:06:45 PM

2 Samples and 1 Field Blank were collected on 05/31/2017 and were received at SGS Accutest Southeast (SASE) on 06/02/2017 properly preserved, at 3.6 Deg. C and intact. These Samples received an SASE job number of FA44539. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65427

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA44573-19MS, FA44573-19MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for Perfluorodecanesulfonic acid, Perfluorododecanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, PFOSA are outside control limits.

Matrix Spike Recovery(s) for Perfluorooctanesulfonic acid are outside control limits. Probable cause is due to matrix interference. For method performance in a clean matrix, refer to Blank Spike. AZ:M2

Matrix Spike Duplicate Recovery(s) for EtFOSAA, MeFOSAA, Perfluorooctanesulfonic acid, 8:2 Fluorotelomer sulfonate, Perfluoroheptanesulfonic acid, Perfluorononanoic acid are outside control limits. Probable cause is due to matrix interference. For method performance in a clean matrix, refer to Blank Spike. AZ:M2

Matrix Spike / Matrix Spike Duplicate Recovery(s) for PFOSA are outside control limits. Probable cause is due to matrix interference. For method performance in a clean matrix, refer to Blank Spike. AZ:M7

RPD(s) for MSD for 8:2 Fluorotelomer sulfonate, Perfluoroheptanesulfonic acid, Perfluorononanoic acid, PFOSA are outside control limits for sample OP65427-MSD. Probable cause is due to sample non-homogeneity. AZ:R2

Sample(s) OP65427-MB has surrogates outside control limits.

FA44539-1 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA44539-1 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44539-1 for Perfluorohexanesulfonic acid: AZ:E4

FA44539-1 for Perfluorooctanesulfonic acid: AZ:E4

FA44539-1 for Perfluorooctanoic acid: AZ:E4

FA44539-1 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44539-1 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44539-1 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA44539-2 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA44539-2 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44539-2 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44539-2 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44539-2 for PFOSA: Associated BS recovery outside control limits. AZ:L2

Extractables by GCMS By Method SW846 8270D BY SIM

Matrix: AQ **Batch ID:** OP65317

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA44466-7MS, FA44466-7MSD were used as the QC samples indicated.

Matrix Spike / Matrix Spike Duplicate Recovery(s) for 1,4-Dioxane are outside control limits. Outside control limits due to high level in sample relative to spike amount. AZ:M3

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used

Narrative prepared by:

_____ Date: June 20, 2017

Lovelie Metzgar, QA Officer (signature on file)

Summary of Hits

Job Number: FA44539
Account: Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ
Collected: 05/31/17

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA44539-1	**RIVER SE06-2017-05-31**					
Perfluoropentanoic acid		0.0194	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorohexanoic acid		0.0180	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorooctanoic acid [a]		0.00914 J	0.015	0.0038	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [a]		0.00788 J	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [a]		0.00529 J	0.015	0.0038	ug/l	EPA 537 MOD
FA44539-2	**FB-2017-05-31**					
No hits reported in this sample.						
FA44539-3	**RIVER SE06-2017-05-31**					
1,4-Dioxane		0.29	0.29	0.14	ug/l	SW846 8270D BY SIM

(a) AZ:E4

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	RIVER SE06-2017-05-31		
Lab Sample ID:	FA44539-1	**Date Sampled:**	05/31/17
Matrix:	AQ - Surface Water	**Date Received:**	06/02/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q35370.D	1	06/19/17 18:30	NAF	06/13/17 08:00	OP65427	SQ915
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0194	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	0.0180	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid [a]	0.00914	0.015	0.0038	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid [b]	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	ND	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid [a]	0.00788	0.015	0.0077	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [a]	0.00529	0.015	0.0038	ug/l	J
335-77-3	Perfluorodecanesulfonic acid [b]	ND	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	ND	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SE06-2017-05-31		
Lab Sample ID:	FA44539-1	**Date Sampled:**	05/31/17
Matrix:	AQ - Surface Water	**Date Received:**	06/02/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	78%		61-134%
	13C2-PFDA	88%		62-128%
	d5-EtFOSAA	67%		57-135%

(a) AZ:E4
(b) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-05-31		
Lab Sample ID:	FA44539-2	**Date Sampled:**	05/31/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/02/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q35295.D	1	06/16/17 18:25	NAF	06/13/17 08:00	OP65427	SQ914
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid [a]	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid [a]	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid [a]	ND	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid [a]	ND	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [a]	ND	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-05-31		
Lab Sample ID:	FA44539-2	**Date Sampled:**	05/31/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/02/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	82%		61-134%
	13C2-PFDA	76%		62-128%
	d5-EtFOSAA	66%		57-135%

(a) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SE06-2017-05-31		
Lab Sample ID:	FA44539-3	**Date Sampled:**	05/31/17
Matrix:	AQ - Surface Water	**Date Received:**	06/02/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U061889.D	1	06/07/17 21:33	FS	06/06/17 08:15	OP65317	SU2701
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	0.29	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	61%		42-108%
321-60-8	2-Fluorobiphenyl	62%		40-106%
1718-51-0	Terphenyl-d14	56%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: FA44539
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
L2	The associated blank spike recovery was below laboratory acceptance limits.
M2	Matrix spike recovery was low; the associated blank spike recovery was acceptable.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated blank spike recovery was acceptable.
M7	Matrix spike recovery was low. Data reported per ADEQ policy 0154.000. Matrix Interference was confirmed.
R2	RPD/RSD exceeded the laboratory acceptance limit. See Case Narrative.

SGS ACCUTEST

SGS Accutest Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.accutest.com

FA44539

SGS ACCUTEST JOB # : PAGE 1 OF 1

SGS Accutest Quote # | SKIFF #

Client / Reporting Information

Company Name: Hargis + Associates, Inc.
Address: 7400 N. ORACLE RD #202
City: TUCSON State: AZ Zip: 85704
Project Contact: CHRIS PERKOVAC Email: CPERKOVAC@hargis.com
Phone #: 619-241-3575
Sampler(s) Name(s) (Printed)
Sampler 1: CHRIS PERKOVAC Sampler 2: Damian Gosch

Project Information

Project Name: MARANA PROJECT
Street
City: MARANA State: AZ
Project #: 1229.30
Fax #
Client Purchase Order #

Analytical Information

LC537 List/EPA 537
8270SIM 14D10X

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Accutest Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LC537 List/EPA 537	8270SIM 14D10X	LAB USE ONLY
1	River SE06-2017-05-31	5/31/17	0845	CAP DLY	SW	2		X								X		
2	FB-2017-05-31		0850		WW	2		X								X		
3	River SE06-2017-05-31		0855		SW	2		X									X	

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [x] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [x] EDD'S

ARIZONA 2 "ADEQ" FORMAT

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1 H+A	06/01/17 1445	2	3	6/1/17 1734	4 Fedex
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5 FX		6 06/02/17 930	7		8

Lab Use Only : Cooler Temperature (s) Celsius: 3.6

5.2 5

FA44539: Chain of Custody
Page 1 of 2

SGS Accutest Sample Receipt Summary

Job Number: FA44539 **Client:** HARGIS & ASSOC. **Project:** MARANA PROJECT

Date / Time Received: 6/2/2017 9:30:00 AM **Delivery Method:** FED EX **Airbill #'s:** 7867 6405 6096

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.2);

Cooler Temps (Corrected) °C: Cooler 1: (3.6);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☑	☐
2. Trip Blank listed on COC	☐		☑	☐
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 6/2/2017 9:30:00 AM Reviewer: TL Date: 6/2/2017

FA44539: Chain of Custody
Page 2 of 2

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA44539
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65317-MB	U061869.D	1	06/07/17	FS	06/06/17	OP65317	SU2701

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44539-3

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	63%	42-108%
321-60-8	2-Fluorobiphenyl	61%	40-106%
1718-51-0	Terphenyl-d14	64%	39-121%

Method Blank Summary

Job Number: FA44539
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65427-MB	2Q2183.D	1	06/14/17	NAF	06/13/17	OP65427	S2Q59

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44539-1, FA44539-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	99%	61-134%
	13C2-PFDA	88%	62-128%
	d5-EtFOSAA	54%*	57-135%

Method Blank Summary

Job Number: FA44539
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65427-MB	Q35228.D	1	06/15/17	NAF	06/13/17	OP65427	SQ913

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44539-1, FA44539-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	91%	61-134%
	13C2-PFDA	84%	62-128%
	d5-EtFOSAA	55%*	57-135%

Blank Spike Summary

Job Number: FA44539
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65317-BS	U061870.D	1	06/07/17	FS	06/06/17	OP65317	SU2701

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44539-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	10	2.2	22	15-69

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	61%	42-108%
321-60-8	2-Fluorobiphenyl	69%	40-106%
1718-51-0	Terphenyl-d14	73%	39-121%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA44539
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65427-BS	2Q2182.D	1	06/14/17	NAF	06/13/17	OP65427	S2Q59

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44539-1, FA44539-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.0460	30	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.140	91	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.150	97	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.148	96	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.146	95	74-137
375-95-1	Perfluorononanoic acid	0.154	0.143	93	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.131	85	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.0928	60	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.0762	50* [a]	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.0765	50* [a]	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.0730	47* [a]	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.142	92	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.155	101	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.154	0.176	114	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.120	78	70-134
335-77-3	Perfluorodecanesulfonic acid	0.154	0.0829	54* [a]	56-127
754-91-6	PFOSA	0.154	0.0295	19* [a]	40-142
2355-31-9	MeFOSAA	0.154	0.131	85	57-128
2991-50-6	EtFOSAA	0.154	0.120	78	55-135
27619-97-2	6:2 Fluorotelomer sulfonate	0.154	0.173	112	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.154	0.165	107	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	104%	61-134%
	13C2-PFDA	91%	62-128%
	d5-EtFOSAA	73%	57-135%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA44539
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65427-BS	Q35227.D	1	06/15/17	NAF	06/13/17	OP65427	SQ913

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44539-1, FA44539-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.0399	26	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.139	90	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.129	84	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.133	86	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.139	90	74-137
375-95-1	Perfluorononanoic acid	0.154	0.137	89	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.137	89	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.0998	65	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.0786	51* [a]	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.0728	47* [a]	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.0743	48* [a]	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.135	88	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.148	96	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.154	0.173	112	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.126	82	70-134
335-77-3	Perfluorodecanesulfonic acid	0.154	0.0841	55* [a]	56-127
754-91-6	PFOSA	0.154	0.0254	17* [a]	40-142
2355-31-9	MeFOSAA	0.154	0.132	86	57-128
2991-50-6	EtFOSAA	0.154	0.113	73	55-135
27619-97-2	6:2 Fluorotelomer sulfonate	0.154	0.174	113	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.154	0.162	105	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	89%	61-134%
	13C2-PFDA	96%	62-128%
	d5-EtFOSAA	68%	57-135%

(a) Outside control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA44539
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65317-MS	W101214.D	10	06/12/17	FS	06/06/17	OP65317	SW4423
OP65317-MSD	W101215.D	10	06/12/17	FS	06/06/17	OP65317	SW4423
FA44466-7	W101213.D	10	06/12/17	FS	06/06/17	OP65317	SW4423

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44539-3

CAS No.	Compound	FA44466-7 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	101		19.2	189	458* [a]	19.2	206	546* [a]	9	15-69/31

CAS No.	Surrogate Recoveries	MS	MSD	FA44466-7	Limits
4165-60-0	Nitrobenzene-d5	80%	83%	52%	42-108%
321-60-8	2-Fluorobiphenyl	93%	85%	66%	40-106%
1718-51-0	Terphenyl-d14	102%	88%	74%	39-121%

(a) Outside control limits due to high level in sample relative to spike amount. AZ:M3

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA44539
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65427-MS	Q35233.D	1	06/15/17	NAF	06/13/17	OP65427	SQ913
OP65427-MSD	Q35234.D	1	06/15/17	NAF	06/13/17	OP65427	SQ913
FA44573-19	Q35232.D	1	06/15/17	NAF	06/13/17	OP65427	SQ913

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44539-1, FA44539-2

CAS No.	Compound	FA44573-19 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0143	J	0.154	0.0600	30	0.154	0.0704	36	16	20-120/30
2706-90-3	Perfluoropentanoic acid	0.0663		0.154	0.218	99	0.154	0.234	109	7	40-131/30
307-24-4	Perfluorohexanoic acid	0.0458		0.154	0.170	81	0.154	0.166	78	2	63-146/30
375-85-9	Perfluoroheptanoic acid	0.0298		0.154	0.165	88	0.154	0.161	85	2	71-138/30
335-67-1	Perfluorooctanoic acid	0.0385		0.154	0.190	98	0.154	0.154	75	21	74-137/30
375-95-1	Perfluorononanoic acid	0.00507	J	0.154	0.166	105	0.154	0.104	64* [a]	46* [b]	76-140/30
335-76-2	Perfluorodecanoic acid	0.016	U	0.154	0.139	90	0.154	0.116	75	18	65-148/30
2058-94-8	Perfluoroundecanoic acid	0.016	U	0.154	0.0967	63	0.154	0.100	65	3	57-138/30
307-55-1	Perfluorododecanoic acid	0.016	U	0.154	0.0913	59	0.154	0.0998	65	9	58-118/30
72629-94-8	Perfluorotridecanoic acid	0.016	U	0.154	0.0843	55	0.154	0.101	66	18	52-120/30
376-06-7	Perfluorotetradecanoic acid	0.016	U	0.154	0.0950	62	0.154	0.107	70	12	49-122/30
375-73-5	Perfluorobutanesulfonic acid	0.0134	J	0.154	0.146	86	0.154	0.155	92	6	73-148/30
355-46-4	Perfluorohexanesulfonic acid	0.121		0.154	0.271	97	0.154	0.239	77	13	74-142/30
375-92-8	Perfluoroheptanesulfonic acid	0.016	U	0.154	0.150	97	0.154	0.0889	58* [a]	51* [b]	74-123/30
1763-23-1	Perfluorooctanesulfonic acid	0.150		0.154	0.250	65* [a]	0.154	0.201	33* [a]	22	70-134/30
335-77-3	Perfluorodecanesulfonic acid	0.016	U	0.154	0.0992	64	0.154	0.107	70	8	56-127/30
754-91-6	PFOSA	0.016	U	0.154	0.0372	24* [c]	0.154	0.00853	6* [c]	125* [b]	40-142/30
2355-31-9	MeFOSAA	0.040	U	0.154	0.0978	64	0.154	0.0783	51* [a]	22	57-128/30
2991-50-6	EtFOSAA	0.040	U	0.154	0.0911	59	0.154	0.0756	49* [a]	19	55-135/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.040	U	0.154	0.161	105	0.154	0.131	85	21	70-153/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.040	U	0.154	0.130	84	0.154	0.0770	50* [a]	51* [b]	61-154/30

CAS No.	Surrogate Recoveries	MS	MSD	FA44573-19	Limits
	13C2-PFHxA	79%	76%	78%	61-134%
	13C2-PFDA	98%	71%	94%	62-128%
	d5-EtFOSAA	69%	64%		57-135%

(a) Outside control limits. AZ:M2
(b) Outside control limits. AZ:R2
(c) Outside control limits. AZ:M7

* = Outside of Control Limits.

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Automated Report

Technical Report for

Hargis + Associates, Inc.

Marana Project; Marana, AZ

1229.3

SGS Accutest Job Number: FA44668

Sampling Date: 06/05/17

Report to:

Hargis + Associates, Inc
7400 N Oracle Rd Suite 202
Tucson, AZ 85704
CPERKOVAC@HARGIS.COM

ATTN: Chris Perkovac

Total number of pages in report: 55

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

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SGS Accutest

Sample Summary

Hargis + Associates, Inc.

Job No: FA44668

Marana Project; Marana, AZ
Project No: 1229.3

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA44668-1	06/05/17	06:50	DL	06/07/17	AQ	Surface Water	RIVER SC11-2017-06-05
FA44668-2	06/05/17	08:00	DL	06/07/17	AQ	Surface Water	RIVER SC09-2017-06-05
FA44668-3	06/05/17	09:10	DL	06/07/17	AQ	Surface Water	RIVER SC08-2017-06-05
FA44668-4	06/05/17	10:15	DL	06/07/17	AQ	Surface Water	RIVER SC07-2017-06-05
FA44668-5	06/05/17	12:28	DL	06/07/17	AQ	Surface Water	RIVER SC01-2017-06-05
FA44668-6	06/05/17	12:33	DL	06/07/17	AQ	Field Blank Water	FB-2017-06-05 (SC01)
FA44668-7	06/05/17	13:05	DL	06/07/17	AQ	Surface Water	RIVER SC02-2017-06-05
FA44668-8	06/05/17	13:10	DL	06/07/17	AQ	Field Blank Water	FB-2017-06-05 (SC02)
FA44668-9	06/05/17	14:00	DL	06/07/17	AQ	Surface Water	RIVER SC03-2017-06-05
FA44668-10	06/05/17	14:05	DL	06/07/17	AQ	Field Blank Water	FB-2017-06-05 (SC03)

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Hargis + Associates, Inc.	**Job**	FA44668
Site:	Marana Project; Marana, AZ	**Report**	7/12/2017 10:55:29

7 Samples and 3 Field Blanks were collected on 06/05/2017 and were received at SGS Accutest Southeast (SASE) on 06/07/2017 properly preserved, at 0.8 Deg. C and intact. These Samples received an SASE job number of FA44668. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65536

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA44661-5MS, FA44661-5MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for Perfluorododecanoic acid are outside control limits. Sample result reported from run with acceptable Blank Spike.

Matrix Spike Recovery(s) for Perfluorooctanesulfonic acid are outside control limits. Probable cause is due to matrix interference. For method performance in a clean matrix, refer to Blank Spike. AZ:M2

Matrix Spike Duplicate Recovery(s) for Perfluorooctanesulfonic acid, Perfluorododecanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic acid are outside control limits. Probable cause is due to matrix interference. For method performance in a clean matrix, refer to Blank Spike. AZ:M2

RPD(s) for MSD for Perfluorododecanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic acid are outside control limits for sample OP65536-MSD. Probable cause is due to sample non-homogeneity. AZ:R9

Sample(s) OP65536-MB has surrogates outside control limits.

OP65536-MB for 13C2-PFDA: Outside control limits.

OP65536-MB for d5-EtFOSAA: Outside control limits.

FA44668-4 for Perfluorononanoic acid: AZ:E4

Matrix: AQ **Batch ID:** OP65537

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA44668-8MS, FA44668-8MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for Perfluorodecanesulfonic acid, Perfluorododecanoic acid, PFOSA are outside control limits.

Matrix Spike Recovery(s) for EtFOSAA, MeFOSAA, Perfluorotridecanoic acid, Perfluoroundecanoic acid are outside control limits. Probable cause is due to matrix interference. AZ:M2

Matrix Spike Duplicate Recovery(s) for Perfluorotetradecanoic acid, Perfluorotridecanoic acid are outside control limits. Probable cause is due to matrix interference. AZ:M2

Matrix Spike / Matrix Spike Duplicate Recovery(s) for Perfluorodecanesulfonic acid, Perfluorododecanoic acid, PFOSA are outside control limits. Probable cause is due to matrix interference.

RPD(s) for MSD for 8:2 Fluorotelomer sulfonate are outside control limits for sample OP65537-MSD. Probable cause is due to sample non-homogeneity. AZ:R5

Sample(s) FA44668-2, FA44668-3, FA44668-9 have surrogates outside control limits.

FA44668-2 for 13C2-PFDA: Outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis beyond hold time. AZ:S6

FA44668-2 for d5-NEtFOSAA: Outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis beyond hold time. AZ:S6

FA44668-3 for d5-NEtFOSAA: Outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis beyond hold time. AZ:S6

FA44668-9 for 13C2-PFDA: Outside control limits. AZ:S7

FA44668-9 for d5-NEtFOSAA: Outside control limits. AZ:S7

FA44668-1 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA44668-1 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44668-1 for Perfluorohexanesulfonic acid: AZ:E4

FA44668-1 for Perfluorooctanesulfonic acid: AZ:E4

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65537

FA44668-1 for Perfluorooctanoic acid: AZ:E4

FA44668-1 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA44668-2 for Perfluorobutanesulfonic acid: Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:N1

FA44668-2 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA44668-2 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44668-2 for Perfluorohexanesulfonic acid: Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4,N1

FA44668-2 for Perfluorohexanoic acid: Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:N1

FA44668-2 for Perfluorooctanesulfonic acid: Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4,N1

FA44668-2 for Perfluoropentanoic acid: Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:N1

FA44668-2 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA44668-3 for Perfluorobutanesulfonic acid: Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:N1

FA44668-3 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA44668-3 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44668-3 for Perfluorohexanesulfonic acid: Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4,N1

FA44668-3 for Perfluorohexanoic acid: Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:N1

FA44668-3 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA44668-3 for Perfluorooctanesulfonic acid: Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4,N1

FA44668-3 for Perfluorooctanoic acid: Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4,N1

FA44668-3 for Perfluoropentanoic acid: Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:N1

FA44668-5 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA44668-5 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44668-5 for Perfluorohexanesulfonic acid: AZ:E4

FA44668-5 for Perfluorooctanesulfonic acid: AZ:E4

FA44668-5 for Perfluorooctanoic acid: AZ:E4

FA44668-5 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA44668-6 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA44668-6 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44668-6 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA44668-7 for Perfluorobutanoic acid: AZ:E4

FA44668-7 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA44668-7 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44668-7 for Perfluorohexanesulfonic acid: AZ:E4

FA44668-7 for Perfluorooctanesulfonic acid: AZ:E4

FA44668-7 for Perfluorooctanoic acid: AZ:E4

FA44668-7 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA44668-8 for 8:2 Fluorotelomer sulfonate: Associated MS/MSD recovery outside control limits.

FA44668-8 for Perfluorodecanesulfonic acid: Associated BS and MS\MSD recovery outside control limits. AZ:L2

FA44668-8 for Perfluorododecanoic acid: Associated BS and MS\MSD recovery outside control limits. AZ:L2

FA44668-8 for PFOSA: Associated BS and MS\MSD recovery outside control limits. AZ:L2

FA44668-9 for Perfluorobutanesulfonic acid: Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4,N1

FA44668-9 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA44668-9 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65537

FA44668-9 for Perfluorohexanesulfonic acid: Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4

FA44668-9 for Perfluorohexanoic acid: Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4,N1

FA44668-9 for Perfluorooctanesulfonic acid: Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4

FA44668-9 for Perfluorooctanoic acid: Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4

FA44668-9 for Perfluoropentanoic acid: Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:N1

FA44668-9 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA44668-10 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA44668-10 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA44668-10 for PFOSA: Associated BS recovery outside control limits. AZ:L2

Matrix: AQ **Batch ID:** OP65758

FA44668-2: Confirmation run for surrogate recoveries.

FA44668-3: Confirmation run for surrogate recoveries.

FA44668-9: Confirmation run for surrogate recoveries.

Extractables by GCMS By Method SW846 8270D BY SIM

Matrix: AQ **Batch ID:** OP65411

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA44605-1MSD, FA44605-1MS, FA44605-1MSD were used as the QC samples indicated.

Matrix Spike / Matrix Spike Duplicate Recovery(s) for 1,4-Dioxane are outside control limits. Outside control limits due to high level in sample relative to spike amount. AZ:M3

Sample(s) OP65411-MS, OP65411-MSD have surrogates outside control limits. Probable cause is due to matrix interference.

OP65411-MS for 2-Fluorobiphenyl: Outside control limits due to dilution. AZ:S8

OP65411-MS for Nitrobenzene-d5: Outside control limits due to dilution. AZ:S8

OP65411-MS for Terphenyl-d14: Outside control limits due to dilution. AZ:S8

OP65411-MSD for 2-Fluorobiphenyl: Outside control limits due to dilution. AZ:S8

OP65411-MSD for Nitrobenzene-d5: Outside control limits due to dilution. AZ:S8

OP65411-MSD for Terphenyl-d14: Outside control limits due to dilution. AZ:S8

Matrix: AQ **Batch ID:** OP65413

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA44668-5MS, FA44668-5MSD were used as the QC samples indicated.

FA44668-5 for 1,4-Dioxane: AZ:E4

FA44668-9 for 1,4-Dioxane: AZ:E4

FA44668-7 for 1,4-Dioxane: AZ:E4

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used

Narrative prepared by:

_____ Date: July 12, 2017

Lovelie Metzgar, QA Officer (signature on file)

Summary of Hits

Job Number: FA44668
Account: Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ
Collected: 06/05/17

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA44668-1	**RIVER SC11-2017-06-05**					
Perfluoropentanoic acid		0.0287	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanoic acid		0.0258	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid [a]		0.0132 J	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid		0.0656	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [a]		0.0102 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [a]		0.0126 J	0.016	0.0040	ug/l	EPA 537 MOD
1,4-Dioxane		4.7	0.29	0.15	ug/l	SW846 8270D BY SIM
FA44668-2	**RIVER SC09-2017-06-05**					
Perfluoropentanoic acid [b]		0.0233	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanoic acid [b]		0.0193	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid [c]		0.00872 J	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid [b]		0.0625	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [d]		0.00888 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [d]		0.00790 J	0.016	0.0040	ug/l	EPA 537 MOD
1,4-Dioxane		0.53	0.29	0.14	ug/l	SW846 8270D BY SIM
FA44668-3	**RIVER SC08-2017-06-05**					
Perfluoropentanoic acid [b]		0.0223	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanoic acid [b]		0.0186	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid [e]		0.00900 J	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid [b]		0.0812	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [e]		0.00902 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [e]		0.00886 J	0.016	0.0040	ug/l	EPA 537 MOD
1,4-Dioxane		3.0	0.29	0.14	ug/l	SW846 8270D BY SIM
FA44668-4	**RIVER SC07-2017-06-05**					
Perfluorohexanoic acid		0.0530	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid		0.0271	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorononanoic acid [a]		0.00403 J	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid		0.0788	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid		0.0251	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.0199	0.016	0.0040	ug/l	EPA 537 MOD
1,4-Dioxane		2.9	0.30	0.15	ug/l	SW846 8270D BY SIM
FA44668-5	**RIVER SC01-2017-06-05**					
Perfluoropentanoic acid		0.0283	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanoic acid		0.0176	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid [a]		0.00964 J	0.016	0.0040	ug/l	EPA 537 MOD

Summary of Hits

Job Number: FA44668
Account: Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ
Collected: 06/05/17

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Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Perfluorobutanesulfonic acid		0.0256	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [a]		0.0100 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [a]		0.00741 J	0.016	0.0040	ug/l	EPA 537 MOD
1,4-Dioxane [a]		0.26 J	0.30	0.15	ug/l	SW846 8270D BY SIM

FA44668-6 FB-2017-06-05 (SC01)

No hits reported in this sample.

FA44668-7 RIVER SC02-2017-06-05

Perfluorobutanoic acid [a]	0.00838 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluoropentanoic acid	0.0354	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorohexanoic acid	0.0224	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanoic acid [a]	0.0133 J	0.017	0.0042	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid	0.0300	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [a]	0.0134 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [a]	0.0138 J	0.017	0.0042	ug/l	EPA 537 MOD
1,4-Dioxane [a]	0.28 J	0.29	0.14	ug/l	SW846 8270D BY SIM

FA44668-8 FB-2017-06-05 (SC02)

No hits reported in this sample.

FA44668-9 RIVER SC03-2017-06-05

Perfluoropentanoic acid [f]	0.0251	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanoic acid [d]	0.0195	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid [c]	0.00843 J	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid [e]	0.0695	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [c]	0.00889 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [c]	0.00799 J	0.016	0.0040	ug/l	EPA 537 MOD
1,4-Dioxane [a]	0.22 J	0.29	0.14	ug/l	SW846 8270D BY SIM

FA44668-10 FB-2017-06-05 (SC03)

No hits reported in this sample.

(a) AZ:E4
(b) Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:N1
(c) Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4
(d) Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4,N1
(e) Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4,N1
(f) Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:N1

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	RIVER SC11-2017-06-05		
Lab Sample ID:	FA44668-1	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q2909.D	1	06/28/17 21:43	NAF	06/19/17 09:00	OP65537	S2Q71
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0287	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	0.0258	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid [a]	0.0132	0.016	0.0040	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [b]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0656	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid [a]	0.0102	0.016	0.0080	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [a]	0.0126	0.016	0.0040	ug/l	J
335-77-3	Perfluorodecanesulfonic acid [b]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC11-2017-06-05		
Lab Sample ID:	FA44668-1	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	74%		61-134%
	13C2-PFDA	94%		62-128%
	d5-EtFOSAA	71%		57-135%

(a) AZ:E4
(b) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC11-2017-06-05		
Lab Sample ID:	FA44668-1	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101436.D	1	06/21/17 19:21	NJ	06/12/17 12:30	OP65411	SW4431
Run #2							

	Initial Volume	Final Volume
Run #1	1020 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	4.7	0.29	0.15	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	67%		42-108%
321-60-8	2-Fluorobiphenyl	61%		40-106%
1718-51-0	Terphenyl-d14	59%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC09-2017-06-05		
Lab Sample ID:	FA44668-2	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q2910.D	1	06/28/17 22:03	NAF	06/19/17 09:00	OP65537	S2Q71
Run #2 [a]	2Q3309.D	1	07/11/17 05:00	NAF	06/30/17 08:00	OP65758	S2Q77

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0233	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid [b]	0.0193	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid [c]	0.00872	0.016	0.0040	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [d]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid [b]	0.0625	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid [e]	0.00888	0.016	0.0080	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [e]	0.00790	0.016	0.0040	ug/l	J
335-77-3	Perfluorodecanesulfonic acid [d]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC09-2017-06-05		
Lab Sample ID:	FA44668-2	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	62%	69%	61-134%
	13C2-PFDA	56% [f]	49%	62-128%
	d5-EtFOSAA	39% [f]	37%	57-135%

(a) Confirmation run for surrogate recoveries.
(b) Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:N1
(c) Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4,N1
(f) Outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis beyond hold time. AZ:S6

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC09-2017-06-05		
Lab Sample ID:	FA44668-2	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U062080.D	1	06/15/17 22:16	FS	06/12/17 12:30	OP65411	SU2708
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	0.53	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	80%		42-108%
321-60-8	2-Fluorobiphenyl	86%		40-106%
1718-51-0	Terphenyl-d14	72%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC08-2017-06-05		
Lab Sample ID:	FA44668-3	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q2911.D	1	06/28/17 22:23	NAF	06/19/17 09:00	OP65537	S2Q71
Run #2 [a]	2Q3310.D	1	07/11/17 05:20	NAF	06/30/17 08:00	OP65758	S2Q77

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0223	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid [b]	0.0186	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid [c]	0.00900	0.016	0.0040	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [d]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid [b]	0.0812	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid [c]	0.00902	0.016	0.0080	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [c]	0.00886	0.016	0.0040	ug/l	J
335-77-3	Perfluorodecanesulfonic acid [d]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC08-2017-06-05		
Lab Sample ID:	FA44668-3	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	63%	49%	61-134%
	13C2-PFDA	64%	37%	62-128%
	d5-EtFOSAA	43% [e]	30%	57-135%

(a) Confirmation run for surrogate recoveries.
(b) Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:N1
(c) Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4,N1
(d) Associated BS recovery outside control limits. AZ:L2
(e) Outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis beyond hold time. AZ:S6

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC08-2017-06-05		
Lab Sample ID:	FA44668-3	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U062081.D	1	06/15/17 22:39	FS	06/12/17 12:30	OP65411	SU2708
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	3.0	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	70%		42-108%
321-60-8	2-Fluorobiphenyl	73%		40-106%
1718-51-0	Terphenyl-d14	64%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC07-2017-06-05		
Lab Sample ID:	FA44668-4	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q2594.D	1	06/23/17 15:22	NAF	06/19/17 09:00	OP65536	S2Q67
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

Perfluorinated Alkyl Acids

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
307-24-4	Perfluorohexanoic acid	0.0530	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	0.0271	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid [a]	0.00403	0.016	0.0040	ug/l	J
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0788	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0251	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0199	0.016	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	74%		61-134%
	13C2-PFDA	92%		62-128%
	d5-EtFOSAA	81%		57-135%

(a) AZ:E4

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC07-2017-06-05		
Lab Sample ID:	FA44668-4	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U062082.D	1	06/15/17 23:02	FS	06/12/17 12:30	OP65411	SU2708
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	2.9	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	63%		42-108%
321-60-8	2-Fluorobiphenyl	68%		40-106%
1718-51-0	Terphenyl-d14	63%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC01-2017-06-05		
Lab Sample ID:	FA44668-5	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q2912.D	1	06/28/17 22:43	NAF	06/19/17 09:00	OP65537	S2Q71
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0283	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	0.0176	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid [a]	0.00964	0.016	0.0040	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [b]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0256	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid [a]	0.0100	0.016	0.0080	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [a]	0.00741	0.016	0.0040	ug/l	J
335-77-3	Perfluorodecanesulfonic acid [b]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
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E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC01-2017-06-05		
Lab Sample ID:	FA44668-5	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	73%		61-134%
	13C2-PFDA	80%		62-128%
	d5-EtFOSAA	58%		57-135%

(a) AZ:E4
(b) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
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E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC01-2017-06-05		
Lab Sample ID:	FA44668-5	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U062008.D	1	06/13/17 16:04	FS	06/12/17 14:10	OP65413	SU2706
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane [a]	0.26	0.30	0.15	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	94%		42-108%
321-60-8	2-Fluorobiphenyl	98%		40-106%
1718-51-0	Terphenyl-d14	97%		39-121%

(a) AZ:E4

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
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E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-05 (SC01)		
Lab Sample ID:	FA44668-6	**Date Sampled:**	06/05/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/07/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q2916.D	1	06/29/17 00:02	NAF	06/19/17 09:00	OP65537	S2Q71
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid [a]	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.017	0.0042	ug/l	
335-77-3	Perfluorodecanesulfonic acid [a]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [a]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
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E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-05 (SC01)		
Lab Sample ID:	FA44668-6	**Date Sampled:**	06/05/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/07/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	82%		61-134%
	13C2-PFDA	86%		62-128%
	d5-EtFOSAA	70%		57-135%

(a) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC02-2017-06-05		
Lab Sample ID:	FA44668-7	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q2913.D	1	06/28/17 23:03	NAF	06/19/17 09:00	OP65537	S2Q71
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [a]	0.00838	0.017	0.0083	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0354	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	0.0224	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid [a]	0.0133	0.017	0.0042	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid [b]	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0300	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid [a]	0.0134	0.017	0.0083	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [a]	0.0138	0.017	0.0042	ug/l	J
335-77-3	Perfluorodecanesulfonic acid [b]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
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Report of Analysis

Client Sample ID:	RIVER SC02-2017-06-05		
Lab Sample ID:	FA44668-7	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	75%		61-134%
	13C2-PFDA	87%		62-128%
	d5-EtFOSAA	67%		57-135%

(a) AZ:E4
(b) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
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E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC02-2017-06-05		
Lab Sample ID:	FA44668-7	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U062083.D	1	06/15/17 23:25	FS	06/12/17 14:10	OP65413	SU2708
Run #2							

	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane [a]	0.28	0.29	0.14	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	87%		42-108%
321-60-8	2-Fluorobiphenyl	91%		40-106%
1718-51-0	Terphenyl-d14	74%		39-121%

(a) AZ:E4

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
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Report of Analysis

Client Sample ID:	FB-2017-06-05 (SC02)		
Lab Sample ID:	FA44668-8	**Date Sampled:**	06/05/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/07/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q2918.D	1	06/29/17 00:42	NAF	06/19/17 09:00	OP65537	S2Q71
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid [a]	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.017	0.0042	ug/l	
335-77-3	Perfluorodecanesulfonic acid [a]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [a]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate [b]	ND	0.042	0.017	ug/l	

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E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-05 (SC02)		
Lab Sample ID:	FA44668-8	**Date Sampled:**	06/05/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/07/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	84%		61-134%
	13C2-PFDA	93%		62-128%
	d5-EtFOSAA	75%		57-135%

(a) Associated BS and MS\MSD recovery outside control limits. AZ:L2
(b) Associated MS/MSD recovery outside control limits.

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RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC03-2017-06-05		
Lab Sample ID:	FA44668-9	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q2921.D	1	06/29/17 01:41	NAF	06/19/17 09:00	OP65537	S2Q71
Run #2 [a]	2Q3313.D	1	07/11/17 06:23	NAF	06/30/17 08:00	OP65758	S2Q77

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0251	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid [c]	0.0195	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid [d]	0.00843	0.016	0.0040	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [e]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid [f]	0.0695	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid [d]	0.00889	0.016	0.0080	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [d]	0.00799	0.016	0.0040	ug/l	J
335-77-3	Perfluorodecanesulfonic acid [e]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [e]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC03-2017-06-05		
Lab Sample ID:	FA44668-9	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	64%	88%	61-134%
	13C2-PFDA	52% [g]	74%	62-128%
	d5-EtFOSAA	31% [g]	71%	57-135%

(a) Confirmation run for surrogate recoveries.
(b) Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:N1
(c) Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4,N1
(d) Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4
(e) Associated BS recovery outside control limits. AZ:L2
(f) Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4,N1
(g) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC03-2017-06-05		
Lab Sample ID:	FA44668-9	**Date Sampled:**	06/05/17
Matrix:	AQ - Surface Water	**Date Received:**	06/07/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U062012.D	1	06/13/17 17:37	FS	06/12/17 14:10	OP65413	SU2706
Run #2							

	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane [a]	0.22	0.29	0.14	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	84%		42-108%
321-60-8	2-Fluorobiphenyl	88%		40-106%
1718-51-0	Terphenyl-d14	88%		39-121%

(a) AZ:E4

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-05 (SC03)		
Lab Sample ID:	FA44668-10	**Date Sampled:**	06/05/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/07/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q2917.D	1	06/29/17 00:22	NAF	06/19/17 09:00	OP65537	S2Q71
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid [a]	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.017	0.0042	ug/l	
335-77-3	Perfluorodecanesulfonic acid [a]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [a]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-05 (SC03)		
Lab Sample ID:	FA44668-10	**Date Sampled:**	06/05/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/07/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	74%		61-134%
	13C2-PFDA	88%		62-128%
	d5-EtFOSAA	71%		57-135%

(a) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: FA44668
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
L2	The associated blank spike recovery was below laboratory acceptance limits.
M2	Matrix spike recovery was low; the associated blank spike recovery was acceptable.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated blank spike recovery was acceptable.
N1	See case narrative.
R5	MS/MSD RPD exceeded the laboratory acceptance limit. Recovery met acceptance criteria.
R9	Sample RPD exceeded the laboratory acceptance limit.
S6	Surrogate recovery was below laboratory and method acceptance limits. Reextraction and/or reanalysis confirms low recovery caused by matrix effect.
S7	Surrogate recovery was below laboratory and method acceptance limits. Unable to confirm matrix effect.
S8	The analysis of the sample required a dilution such that the surrogate recovery calculation does not provide useful information. The associated blank spike recovery was acceptable.

FA44668

SGS ACCUTEST

SGS Accutest Southeast
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.accutest.com

SGS ACCUTEST JOB # : PAGE 1 OF 1

SGS Accutest Quote # | SKIFF #

Client / Reporting Information

Company Name: Margis + Associates, Inc
Address: 7400 N. ORACLE RD. #202
City: Tucson State: AZ Zip: 85704
Project Contact: Chris Perkovac Email: cperkovac@margis.com
Phone #:
Sampler(s) Name(s) (Printed)
Sampler 1: Sampler 2:

Project Information

Project Name: Marana Project
Street
City Marana State AZ
Project # 1229.03
Fax #
Client Purchase Order #

Analytical Information

SGS Accutest Sample #	Field ID / Point of Collection	Collection DATE	Collection TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZNAC	DI WATER	MEOH	LC537 List / EPA 537	8270 SIM 14 DIOX.	LAB USE ONLY
1	River SC11-2017-06-05	6/5/17	0650	DLG	SW	4		X								X	X	
2	River SC09-2017-06-05		0800	DLG	SW	4		X								X	X	
3	River SC08-2017-06-05		0910	DLG	SW	4		X								X	X	
4	River SC07-2017-06-05		1015	DLG	SW	4	X									X	X	
5	River SC01-2017-06-05		1228	DLG	SW	4		X								X	X	
6	FB-2017-06-05 (SC01)		1233	DLG	WW	2		X								X		
7	River SC02-2017-06-05		1305	DLG	SW	4		X								X	X	
8	FB-2017-06-05 (SC02)		1310	DLG	WW	2		X								X		
9	River SC03-2017-06-05		1400	DLG	SW	4		X								X	X	
10	FB-2017-06-05 (SC03)		1405	DLG	WW	2		X								X		
	~~FB-2017-06-05~~ DLG																	

Matrix Codes
DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [x] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [x] EDD'S Arizona 2 "ADEQ FORMAT"

Comments / Remarks

River SC07-2017-06-05 has Trizma for preservative.

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1 D. Cowan	6/6/17 1344	2 [signature]	3 [signature]	6/6/17 1700	Fedex
Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5 FX		6 MSE 06/07/17 0915	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 0.8, 2.2, 1.0

http://www.sgs.com/en/terms-and-conditions
Effective Date 04/24/2017

SGS COC Florida new art 5 2 17 rev 042417 SI

5.2 5

FA44668: Chain of Custody
Page 1 of 2

SGS Accutest Sample Receipt Summary

Job Number: FA44668 **Client:** HARGIS + ASSOCIATES **Project:** MARANA PROJECT

Date / Time Received: 6/7/2017 9:15:00 AM **Delivery Method:** FedEx **Airbill #'s:** 786813902151

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 3

Cooler Temps (Raw Measured) °C: Cooler 1: (0.4); Cooler 2: (1.8); Cooler 3: (0.6);

Cooler Temps (Corrected) °C: Cooler 1: (0.8); Cooler 2: (2.2); Cooler 3: (1.0);

Cooler Information	Y	N
1. Custody Seals Present	☑	☐
2. Custody Seals Intact	☑	☐
3. Temp criteria achieved	☑	☐
4. Cooler temp verification	IR Gun	
5. Cooler media	Ice (Bag)	

Trip Blank Information	Y	N	N/A
1. Trip Blank present / cooler	☐	☑	☐
2. Trip Blank listed on COC	☐	☑	☐
	W	**S**	**N/A**
3. Type Of TB Received	☐	☐	☑

Sample Information	Y	N	N/A
1. Sample labels present on bottles	☑	☐	
2. Samples preserved properly	☑	☐	
3. Sufficient volume/containers recvd for analysis:	☑	☐	
4. Condition of sample	Intact		
5. Sample recvd within HT	☑	☐	
6. Dates/Times/IDs on COC match Sample Label	☑	☐	
7. VOCs have headspace	☑	☐	☐
8. Bottles received for unspecified tests	☐	☑	
9. Compositing instructions clear	☐	☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐	☐	☑
11. % Solids Jar received?	☐	☐	☑
12. Residual Chlorine Present?	☐	☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 _____ pH 10-12 _____ Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments FA44668-4 2 x 250ml HDPE w/TRIZMA

SM001
Rev. Date 05/24/17

Technician: PHILIPD Date: 6/7/2017 9:15:00 AM Reviewer: P.H Date: 6/7/2017

FA44668: Chain of Custody
Page 2 of 2

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA44668
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65411-MB	U062060.D	1	06/15/17	FS	06/12/17	OP65411	SU2708

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44668-1, FA44668-2, FA44668-3, FA44668-4

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	77%	42-108%
321-60-8	2-Fluorobiphenyl	77%	40-106%
1718-51-0	Terphenyl-d14	85%	39-121%

Method Blank Summary

Job Number: FA44668
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65413-MB	U061990.D	1	06/13/17	FS	06/12/17	OP65413	SU2706

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44668-5, FA44668-7, FA44668-9

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	93%	42-108%
321-60-8	2-Fluorobiphenyl	92%	40-106%
1718-51-0	Terphenyl-d14	76%	39-121%

Method Blank Summary

Job Number: FA44668
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65536-MB	2Q2554.D	1	06/23/17	NAF	06/19/17	OP65536	S2Q66

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44668-4

CAS No.	Compound	Result	RL	MDL	Units	Q
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	87%	61-134%
	13C2-PFDA	68%	62-128%

Method Blank Summary

Job Number: FA44668
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65536-MB	2Q2590.D	1	06/23/17	NAF	06/19/17	OP65536	S2Q67

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44668-4

CAS No.	Compound	Result	RL	MDL	Units	Q
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	79%	61-134%
	13C2-PFDA	61%* [a]	62-128%
	d5-EtFOSAA	10%* [a]	57-135%

(a) Outside control limits.

Method Blank Summary

Job Number: FA44668
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65537-MB	2Q2908.D	1	06/28/17	NAF	06/19/17	OP65537	S2Q71

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44668-1, FA44668-2, FA44668-3, FA44668-5, FA44668-6, FA44668-7, FA44668-8, FA44668-9, FA44668-10

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	89%	61-134%
	13C2-PFDA	102%	62-128%
	d5-EtFOSAA	69%	57-135%

Blank Spike Summary

Job Number: FA44668
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65411-BS	U062059.D	1	06/15/17	FS	06/12/17	OP65411	SU2708

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44668-1, FA44668-2, FA44668-3, FA44668-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	10	3.3	33	15-69

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	67%	42-108%
321-60-8	2-Fluorobiphenyl	76%	40-106%
1718-51-0	Terphenyl-d14	73%	39-121%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA44668
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65413-BS	U061991.D	1	06/13/17	FS	06/12/17	OP65413	SU2706

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44668-5, FA44668-7, FA44668-9

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	10	3.1	31	15-69

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	81%	42-108%
321-60-8	2-Fluorobiphenyl	97%	40-106%
1718-51-0	Terphenyl-d14	61%	39-121%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA44668
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65536-BS	2Q2553.D	1	06/23/17	NAF	06/19/17	OP65536	S2Q66

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44668-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
307-24-4	Perfluorohexanoic acid	0.154	0.180	117	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.166	108	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.162	105	74-137
375-95-1	Perfluorononanoic acid	0.154	0.168	109	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.176	114	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.103	67	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.0838	54*	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.0854	56	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.0948	62	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.161	105	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.166	108	74-142
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.147	96	70-134
2355-31-9	MeFOSAA	0.154	0.127	83	57-128
2991-50-6	EtFOSAA	0.154	0.112	73	55-135

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	91%	61-134%
	13C2-PFDA	102%	62-128%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA44668
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65536-BS	2Q2589.D	1	06/23/17	NAF	06/19/17	OP65536	S2Q67

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44668-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
307-24-4	Perfluorohexanoic acid	0.154	0.167	109	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.178	116	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.172	112	74-137
375-95-1	Perfluorononanoic acid	0.154	0.171	111	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.148	96	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.109	71	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.0889	58	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.0872	57	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.0935	61	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.169	110	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.179	116	74-142
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.138	90	70-134
2355-31-9	MeFOSAA	0.154	0.125	81	57-128
2991-50-6	EtFOSAA	0.154	0.126	82	55-135

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	83%	61-134%
	13C2-PFDA	91%	62-128%
	d5-EtFOSAA	69%	57-135%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA44668
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65537-BS	2Q2907.D	1	06/28/17	NAF	06/19/17	OP65537	S2Q71

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44668-1, FA44668-2, FA44668-3, FA44668-5, FA44668-6, FA44668-7, FA44668-8, FA44668-9, FA44668-10

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.155	101	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.155	101	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.153	99	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.152	99	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.157	102	74-137
375-95-1	Perfluorononanoic acid	0.154	0.152	99	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.139	90	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.102	66	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.0858	56*	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.0856	56	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.0909	59	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.158	103	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.171	111	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.154	0.156	101	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.134	87	70-134
335-77-3	Perfluorodecanesulfonic acid	0.154	0.0851	55*	56-127
754-91-6	PFOSA	0.154	0.00847	6*	40-142
2355-31-9	MeFOSAA	0.154	0.109	71	57-128
2991-50-6	EtFOSAA	0.154	0.106	69	55-135
27619-97-2	6:2 Fluorotelomer sulfonate	0.154	0.165	107	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.154	0.167	109	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	85%	61-134%
	13C2-PFDA	102%	62-128%
	d5-EtFOSAA	73%	57-135%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA44668
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65537-BS	2Q2952.D	1	06/29/17	NAF	06/19/17	OP65537	S2Q72

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44668-1, FA44668-2, FA44668-3, FA44668-5, FA44668-6, FA44668-7, FA44668-8, FA44668-9, FA44668-10

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.161	105	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.155	101	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.161	105	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.156	101	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.162	105	74-137
375-95-1	Perfluorononanoic acid	0.154	0.156	101	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.148	96	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.101	66	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.0855	56*	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.0867	56	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.0909	59	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.152	99	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.165	107	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.154	0.152	99	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.133	86	70-134
335-77-3	Perfluorodecanesulfonic acid	0.154	0.0812	53*	56-127
754-91-6	PFOSA	0.154	0.00995	6*	40-142
2355-31-9	MeFOSAA	0.154	0.112	73	57-128
2991-50-6	EtFOSAA	0.154	0.103	67	55-135
27619-97-2	6:2 Fluorotelomer sulfonate	0.154	0.165	107	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.154	0.155	101	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	90%	61-134%
	13C2-PFDA	104%	62-128%
	d5-EtFOSAA	72%	57-135%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA44668
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65411-MS	U062096.D	100	06/16/17	FS	06/12/17	OP65411	SU2709
OP65411-MSD	U062097.D	100	06/16/17	FS	06/12/17	OP65411	SU2709
FA44605-1	U062095.D	100	06/16/17	FS	06/12/17	OP65411	SU2709

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44668-1, FA44668-2, FA44668-3, FA44668-4

CAS No.	Compound	FA44605-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	1400		20	2680	6400* [a]	20	3180	8900* [a]	17	15-69/31

CAS No.	Surrogate Recoveries	MS	MSD	FA44605-1	Limits
4165-60-0	Nitrobenzene-d5	0%* [c]	0%* [c]	0%* [b]	42-108%
321-60-8	2-Fluorobiphenyl	0%* [c]	0%* [c]	0%* [b]	40-106%
1718-51-0	Terphenyl-d14	0%* [c]	0%* [c]	0%* [b]	39-121%

(a) Outside control limits due to high level in sample relative to spike amount. AZ:M3
(b) Outside control limits due to dilution.
(c) Outside control limits due to dilution. AZ:S8

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA44668
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65413-MS	U062084.D	1	06/15/17	FS	06/12/17	OP65413	SU2708
OP65413-MSD	U062085.D	1	06/16/17	FS	06/12/17	OP65413	SU2708
FA44668-5	U062008.D	1	06/13/17	FS	06/12/17	OP65413	SU2706

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44668-5, FA44668-7, FA44668-9

CAS No.	Compound	FA44668-5 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	0.26	J	20	9.6	47	20	9.9	48	3	15-69/31

CAS No.	Surrogate Recoveries	MS	MSD	FA44668-5	Limits
4165-60-0	Nitrobenzene-d5	80%	82%	94%	42-108%
321-60-8	2-Fluorobiphenyl	94%	95%	98%	40-106%
1718-51-0	Terphenyl-d14	62%	71%	97%	39-121%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA44668
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65536-MS	2Q2568.D	1	06/23/17	NAF	06/19/17	OP65536	S2Q66
OP65536-MSD	2Q2569.D	1	06/23/17	NAF	06/19/17	OP65536	S2Q66
FA44661-5	2Q2567.D	1	06/23/17	NAF	06/19/17	OP65536	S2Q66

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44668-4

CAS No.	Compound	FA44661-5 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
307-24-4	Perfluorohexanoic acid	0.0403		0.16	0.199	99	0.16	0.187	92	6	63-146/30
375-85-9	Perfluoroheptanoic acid	0.016	U	0.16	0.156	98	0.16	0.139	87	12	71-138/30
335-67-1	Perfluorooctanoic acid	0.016	U	0.16	0.152	95	0.16	0.144	90	5	74-137/30
375-95-1	Perfluorononanoic acid	0.016	U	0.16	0.135	84	0.16	0.136	85	1	76-140/30
335-76-2	Perfluorodecanoic acid	0.016	U	0.16	0.108	68	0.16	0.106	66	2	65-148/30
2058-94-8	Perfluoroundecanoic acid	0.016	U	0.16	0.0965	60	0.16	0.0669	42* [a]	36* [b]	57-138/30
307-55-1	Perfluorododecanoic acid	0.016	U	0.16	0.106	66	0.16	0.0645	40* [a]	49* [b]	58-118/30
72629-94-8	Perfluorotridecanoic acid	0.016	U	0.16	0.101	63	0.16	0.0705	44* [a]	36* [b]	52-120/30
376-06-7	Perfluorotetradecanoic acid	0.016	U	0.16	0.0925	58	0.16	0.0792	50	15	49-122/30
375-73-5	Perfluorobutanesulfonic acid	0.016	U	0.16	0.162	101	0.16	0.148	93	9	73-148/30
355-46-4	Perfluorohexanesulfonic acid	0.016	U	0.16	0.154	96	0.16	0.149	93	3	74-142/30
1763-23-1	Perfluorooctanesulfonic acid	0.016	U	0.16	0.0904	57* [a]	0.16	0.0903	56* [a]	0	70-134/30
2355-31-9	MeFOSAA	0.040	U	0.16	0.114	71	0.16	0.123	77	8	57-128/30
2991-50-6	EtFOSAA	0.040	U	0.16	0.110	69	0.16	0.112	70	2	55-135/30

CAS No.	Surrogate Recoveries	MS	MSD	FA44661-5	Limits
	13C2-PFHxA	84%	82%	79%	61-134%
	13C2-PFDA	81%	88%	74%	62-128%

(a) AZ:M2
(b) AZ:R9

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA44668
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65537-MS	2Q2919.D	1	06/29/17	NAF	06/19/17	OP65537	S2Q71
OP65537-MSD	2Q2920.D	1	06/29/17	NAF	06/19/17	OP65537	S2Q71
FA44668-8	2Q2918.D	1	06/29/17	NAF	06/19/17	OP65537	S2Q71

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44668-1, FA44668-2, FA44668-3, FA44668-5, FA44668-6, FA44668-7, FA44668-8, FA44668-9, FA44668-10

CAS No.	Compound	FA44668-8 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	ND		0.333	0.344	103	0.333	0.378	113	9	20-120/30
2706-90-3	Perfluoropentanoic acid	ND		0.333	0.345	103	0.333	0.387	116	11	40-131/30
307-24-4	Perfluorohexanoic acid	ND		0.333	0.347	104	0.333	0.379	114	9	63-146/30
375-85-9	Perfluoroheptanoic acid	ND		0.333	0.349	105	0.333	0.374	112	7	71-138/30
335-67-1	Perfluorooctanoic acid	ND		0.333	0.356	107	0.333	0.387	116	8	74-137/30
375-95-1	Perfluorononanoic acid	ND		0.333	0.335	100	0.333	0.380	114	13	76-140/30
335-76-2	Perfluorodecanoic acid	ND		0.333	0.277	83	0.333	0.348	104	23	65-148/30
2058-94-8	Perfluoroundecanoic acid	ND		0.333	0.173	52* [a]	0.333	0.201	60	15	57-138/30
307-55-1	Perfluorododecanoic acid	ND		0.333	0.157	47*	0.333	0.148	44*	6	58-118/30
72629-94-8	Perfluorotridecanoic acid	ND		0.333	0.166	50* [a]	0.333	0.143	43* [a]	15	52-120/30
376-06-7	Perfluorotetradecanoic acid	ND		0.333	0.182	55	0.333	0.157	47* [a]	15	49-122/30
375-73-5	Perfluorobutanesulfonic acid	ND		0.333	0.352	106	0.333	0.394	118	11	73-148/30
355-46-4	Perfluorohexanesulfonic acid	ND		0.333	0.377	113	0.333	0.424	127	12	74-142/30
375-92-8	Perfluoroheptanesulfonic acid	ND		0.333	0.345	103	0.333	0.383	115	10	74-123/30
1763-23-1	Perfluorooctanesulfonic acid	ND		0.333	0.270	81	0.333	0.323	97	18	70-134/30
335-77-3	Perfluorodecanesulfonic acid	ND		0.333	0.151	45*	0.333	0.148	44*	2	56-127/30
754-91-6	PFOSA	ND		0.333	ND	0*	0.333	ND	0*	nc	40-142/30
2355-31-9	MeFOSAA	ND		0.333	0.175	52* [a]	0.333	0.228	68	26	57-128/30
2991-50-6	EtFOSAA	ND		0.333	0.172	52* [a]	0.333	0.200	60	15	55-135/30
27619-97-2	6:2 Fluorotelomer sulfonate	ND		0.333	0.358	107	0.333	0.395	118	10	70-153/30
39108-34-4	8:2 Fluorotelomer sulfonate	ND		0.333	0.267	80	0.333	0.383	115	36* [b]	61-154/30

CAS No.	Surrogate Recoveries	MS	MSD	FA44668-8	Limits
	13C2-PFHxA	85%	93%	84%	61-134%
	13C2-PFDA	89%	106%	93%	62-128%
	d5-EtFOSAA	57%	65%	75%	57-135%

(a) AZ:M2
(b) AZ:R5

* = Outside of Control Limits.

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Automated Report

Technical Report for

Hargis + Associates, Inc.

Marana Project; Marana, AZ

1229.3

SGS Accutest Job Number: FA44866

Sampling Date: 06/07/17

Report to:

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ATTN: Chris Perkovac

Total number of pages in report: **48**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

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SGS Accutest

Sample Summary

Hargis + Associates, Inc.

Job No: FA44866

Marana Project; Marana, AZ
Project No: 1229.3

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA44866-1	06/07/17	06:20	DG	06/13/17	AQ	Ground Water	WELL 7AZR3-2017-06-07
FA44866-2	06/07/17	07:10	DG	06/13/17	AQ	Ground Water	WELL 7AZR4-2017-06-07
FA44866-3	06/07/17	08:00	DG	06/13/17	AQ	Ground Water	WELL 7AZR1-2017-06-07
FA44866-4	06/07/17	08:05	DG	06/13/17	AQ	Field Blank Water	FB-2017-06-07 (7AZR1)
FA44866-5	06/07/17	09:00	DG	06/13/17	AQ	Ground Water	WELL 7AZR2-2017-06-07
FA44866-6	06/07/17	10:20	DG	06/13/17	AQ	Ground Water	WELL IRA45-2017-06-07
FA44866-7	06/07/17	11:00	DG	06/13/17	AQ	Ground Water	WELL IRA44-2017-06-07
FA44866-8	06/07/17	12:00	DG	06/13/17	AQ	Ground Water	WELL IRA39-2017-06-07
FA44866-9	06/07/17	12:45	DG	06/13/17	AQ	Ground Water	WELL IRA46-2017-06-07
FA44866-10	06/07/17	12:05	DG	06/13/17	AQ	Field Blank Water	FB-2017-06-07 (IRA39)

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hargis + Associates, Inc. **Job No:** FA44866

Site: Marana Project; Marana, AZ **Report Date** 7/19/2017 8:38:32 PM

8 Sample(s), 0 Trip Blank(s) and 2 Field Blank(s) were collected on 06/07/2017 and were received at SGS Accutest Southeast (SASE) on 06/13/2017 properly preserved, at 1.9 Deg. C and intact. These Samples received an SASE job number of FA44866. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65590

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA44866-1MS, FA44866-1MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for PFOSA are outside control limits.

Matrix Spike Recovery(s) for PFOSA are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for Perfluorodecanesulfonic acid, PFOSA, EtFOSAA, MeFOSAA, Perfluorodecanoic acid, Perfluorododecanoic acid, Perfluoroheptanoic acid, Perfluorohexanoic acid, Perfluorononanoic acid, Perfluorooctanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic acid are outside control limits. Probable cause is due to matrix interference.

RPD(s) for MSD for EtFOSAA, MeFOSAA, Perfluorobutanoic acid, Perfluorodecanoic acid, Perfluorododecanoic acid, Perfluoroheptanoic acid, Perfluorohexanoic acid, Perfluorononanoic acid, Perfluorooctanoic acid, Perfluoropentanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic acid are outside control limits for sample OP65590-MSD. Probable cause is due to sample non-homogeneity.
Sample(s) FA44866-1, FA44866-2, OP65590-MSD, FA44866-1, FA44866-3, FA44866-5, FA44866-7, FA44866-8, FA44866-9 have surrogates outside control limits.

OP65590-BS for PFOSA: AZ:L2

OP65590-MS for PFOSA: AZ:M7

OP65590-MSD for MeFOSAA: AZ:R2

OP65590-MSD for EtFOSAA: AZ:R2

OP65590-MSD for Perfluoroundecanoic acid: AZ:R2

OP65590-MSD for Perfluorododecanoic acid: AZ:R2

OP65590-MSD for Perfluoroheptanoic acid: AZ:R2

OP65590-MSD for Perfluorohexanoic acid: AZ:R2

OP65590-MSD for Perfluorooctanoic acid: AZ:R2

OP65590-MSD for Perfluorodecanoic acid: AZ:R2

OP65590-MSD for Perfluorobutanoic acid: AZ:R2

OP65590-MSD for Perfluorotridecanoic acid: AZ:R2

OP65590-MSD for Perfluorononanoic acid: AZ:R2

OP65590-MSD for 13C2-PFHxA: Outside control limits. AZ:S7

OP65590-MSD for 13C2-PFDA: Outside control limits. AZ:S7

OP65590-MSD for d5-EtFOSAA: Outside control limits. AZ:S7

OP65590-MSD for Perfluoropentanoic acid: AZ:R2

FA44866-1 for Perfluorononanoic acid: Associated MS/MSD recovery or RPD outside control limits. AZ:M2

FA44866-1 for Perfluorodecanoic acid: Associated MS/MSD recovery or RPD outside control limits. AZ:M2

FA44866-1 for PFOSA: Associated BS and MS/MSD recovery outside control limits. AZ:L2

FA44866-1 for EtFOSAA: Associated MS/MSD recovery or RPD outside control limits. AZ:M2

FA44866-1 for MeFOSAA: Associated MS/MSD recovery or RPD outside control limits. AZ:M2

FA44866-1 for Perfluorobutanoic acid: Associated MS/MSD recovery or RPD outside control limits. AZ:M2

FA44866-1 for Perfluoroundecanoic acid: Associated MS/MSD recovery or RPD outside control limits. AZ:M2

FA44866-1 for Perfluorododecanoic acid: Associated MS/MSD recovery or RPD outside control limits. AZ:M2

FA44866-1 for Perfluoroheptanoic acid: Associated MS/MSD recovery or RPD outside control limits. AZ:M2

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65590

FA44866-1 for Perfluorohexanoic acid: Associated MS/MSD recovery or RPD outside control limits. AZ:M2

FA44866-1 for Perfluorooctanoic acid: Associated MS/MSD recovery or RPD outside control limits. AZ:M2

FA44866-1 for Perfluorotridecanoic acid: Associated MS/MSD recovery or RPD outside control limits. AZ:M2

FA44866-1 for Perfluorodecanesulfonic acid: Associated MS/MSD recovery outside control limits. AZ:M2

FA44866-1 for 13C2-PFHxA: Outside control limits due to matrix interference. Confirmed by reanalysis. Insufficient sample for re-extraction. AZ:S6

FA44866-1 for d5-NEtFOSAA: Outside control limits due to matrix interference. Confirmed by reanalysis. Insufficient sample for re-extraction. AZ:S6

FA44866-1 for Perfluoropentanoic acid: Associated MS/MSD recovery or RPD outside control limits. AZ:M2

FA44866-1 for 13C2-PFDA: Outside control limits due to matrix interference. Confirmed by reanalysis. Insufficient sample for re-extraction. AZ:S6

FA44866-2 for PFOSA: Associated BS recovery outside control limits. AZ:L2
FA44866-2: Confirmed ND by re-extraction and reanalysis.
FA44866-2 for 13C2-PFHxA: Outside control limits. AZ:S7

FA44866-2 for 13C2-PFDA: Outside control limits. AZ:S7

FA44866-2 for d5-NEtFOSAA: Outside control limits. AZ:S7

FA44866-3 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA44866-3 for d5-NEtFOSAA: Outside control limits. AZ:S7

FA44866-3 for 13C2-PFDA: Outside control limits. AZ:S7

FA44866-3 for 13C2-PFHxA: Outside control limits. AZ:S7

FA44866-3: Confirmed by re-extraction and reanalysis.

FA44866-4 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA44866-5 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA44866-5 for Perfluorohexanesulfonic acid: AZ:E4

FA44866-5 for 13C2-PFDA: Outside control limits. AZ:S7

FA44866-5 for 13C2-PFHxA: Outside control limits. AZ:S7

FA44866-5 for d5-NEtFOSAA: Outside control limits. AZ:S7

FA44866-5: Confirmed by re-extraction and reanalysis.

FA44866-6 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA44866-7 for 13C2-PFHxA: Outside control limits. AZ:S7

FA44866-7 for Perfluorooctanoic acid: AZ:E4

FA44866-7 for 13C2-PFDA: Outside control limits. AZ:S7

FA44866-7 for d5-NEtFOSAA: Outside control limits. AZ:S7

FA44866-7 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA44866-7: Confirmed by re-extraction and reanalysis.

FA44866-8: Confirmed by re-extraction and reanalysis.

FA44866-8 for d5-NEtFOSAA: Outside control limits. AZ:S7

FA44866-8 for 13C2-PFHxA: Outside control limits. AZ:S7

FA44866-8 for 13C2-PFDA: Outside control limits. AZ:S7

FA44866-8 for Perfluorooctanesulfonic acid: AZ:E4

FA44866-8 for Perfluorohexanesulfonic acid: AZ:E4

FA44866-8 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA44866-9 for 13C2-PFDA: Outside control limits. AZ:S7

FA44866-9: Confirmed ND by re-extraction and reanalysis.

FA44866-9 for d5-NEtFOSAA: Outside control limits. AZ:S7

FA44866-9 for 13C2-PFHxA: Outside control limits. AZ:S7

FA44866-9 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA44866-10 for PFOSA: Associated BS recovery outside control limits. AZ:L2

Matrix: AQ **Batch ID:** OP65988

FA44866-2: Confirmation run.
FA44866-3: Confirmation run.
FA44866-5: Confirmation run.
FA44866-7: Confirmation run.

FA44866-8: Confirmation run.

FA44866-9: Confirmation run.

Extractables by GCMS By Method SW846 8270D BY SIM

Matrix: AQ **Batch ID:** OP65450

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA44704-1MS, FA44704-1MSD were used as the QC samples indicated.

OP65450-MB for Nitrobenzene-d5: Surrogate recoveries corrected for actual spike amount.

OP65450-MB for 2-Fluorobiphenyl: Surrogate recoveries corrected for actual spike amount.

OP65450-MB for Terphenyl-d14: Surrogate recoveries corrected for actual spike amount.

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Kim Benham, Client Services (signature on file)

Summary of Hits

Job Number: FA44866
Account: Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ
Collected: 06/07/17

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Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA44866-1	**WELL 7AZR3-2017-06-07**					
No hits reported in this sample.						
FA44866-2	**WELL 7AZR4-2017-06-07**					
No hits reported in this sample.						
FA44866-3	**WELL 7AZR1-2017-06-07**					
Perfluorohexanesulfonic acid [a]		0.0163	0.016	0.0080	ug/l	EPA 537 MOD
FA44866-4	**FB-2017-06-07 (7AZR1)**					
No hits reported in this sample.						
FA44866-5	**WELL 7AZR2-2017-06-07**					
Perfluorohexanesulfonic acid [b]		0.0112 J	0.016	0.0080	ug/l	EPA 537 MOD
FA44866-6	**WELL IRA45-2017-06-07**					
No hits reported in this sample.						
FA44866-7	**WELL IRA44-2017-06-07**					
Perfluorooctanoic acid [b]		0.00478 J	0.017	0.0042	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [a]		0.0183	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [a]		0.0236	0.017	0.0042	ug/l	EPA 537 MOD
FA44866-8	**WELL IRA39-2017-06-07**					
Perfluorohexanesulfonic acid [b]		0.0104 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [b]		0.00540 J	0.016	0.0040	ug/l	EPA 537 MOD
FA44866-9	**WELL IRA46-2017-06-07**					
No hits reported in this sample.						
FA44866-10	**FB-2017-06-07 (IRA39)**					
No hits reported in this sample.						

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmed by re-extraction and reanalysis. AZ:E4

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	WELL 7AZR3-2017-06-07		
Lab Sample ID:	FA44866-1	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q3390.D	1	07/12/17 20:04	NAF	06/21/17 08:30	OP65590	S2Q79
Run #2 [a]	2Q3538.D	1	07/15/17 03:16	NAF	06/21/17 08:30	OP65590	S2Q81

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [b]	ND	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	ND	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid [b]	ND	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid [b]	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid [b]	ND	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid [b]	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid [b]	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid [b]	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid [b]	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.017	0.0042	ug/l	
335-77-3	Perfluorodecanesulfonic acid [c]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA [b]	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA [b]	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL 7AZR3-2017-06-07		
Lab Sample ID:	FA44866-1	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	48% [f]	44% [e]	61-134%
	13C2-PFDA	24% [g]	25% [e]	62-128%
	d5-EtFOSAA	19% [g]	20% [e]	57-135%

(a) Confirmation run for surrogate recoveries.
(b) Associated MS/MSD recovery or RPD outside control limits. AZ:M2
(c) Associated MS/MSD recovery outside control limits. AZ:M2
(d) Associated BS and MS/MSD recovery outside control limits. AZ:L2
(e) Outside control limits. AZ:S6
(f) Outside control limits due to matrix interference. Confirmed by reanalysis. Insufficient sample for re-extraction. AZ:S6
(g) Outside control limits due to matrix interference. Confirmed by reanalysis. Insufficient sample for re-extraction. AZ:S6

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL 7AZR3-2017-06-07		
Lab Sample ID:	FA44866-1	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101558.D	1	06/24/17 16:53	NJ	06/14/17 08:15	OP65450	SW4434
Run #2							

	Initial Volume	Final Volume
Run #1	1020 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.15	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	77%		42-108%
321-60-8	2-Fluorobiphenyl	71%		40-106%
1718-51-0	Terphenyl-d14	53%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL 7AZR4-2017-06-07		
Lab Sample ID:	FA44866-2	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3393.D	1	07/12/17 21:07	NAF	06/21/17 08:30	OP65590	S2Q79
Run #2 [b]	Q36881.D	1	07/18/17 04:12	NAF	07/15/17 08:30	OP65988	SQ936

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.017	0.0042	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL 7AZR4-2017-06-07		
Lab Sample ID:	FA44866-2	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	46% [d]	106%	61-134%
	13C2-PFDA	25% [e]	112%	62-128%
	d5-EtFOSAA	16% [e]	83%	57-135%

(a) Confirmed ND by re-extraction and reanalysis.
(b) Confirmation run.
(c) Associated BS recovery outside control limits. AZ:L2
(d) Outside control limits. AZ:S7
(e) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL 7AZR4-2017-06-07		
Lab Sample ID:	FA44866-2	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101559.D	1	06/24/17 17:16	NJ	06/14/17 08:15	OP65450	SW4434
Run #2							

	Initial Volume	Final Volume
Run #1	1020 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.15	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	89%		42-108%
321-60-8	2-Fluorobiphenyl	66%		40-106%
1718-51-0	Terphenyl-d14	46%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL 7AZR1-2017-06-07		
Lab Sample ID:	FA44866-3	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3394.D	1	07/12/17 21:28	NAF	06/21/17 08:30	OP65590	S2Q79
Run #2 [b]	Q36882.D	1	07/18/17 04:32	NAF	07/15/17 08:30	OP65988	SQ936

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0163	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL 7AZR1-2017-06-07		
Lab Sample ID:	FA44866-3	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	42% [d]	104%	61-134%
	13C2-PFDA	38% [d]	111%	62-128%
	d5-EtFOSAA	25% [d]	79%	57-135%

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmation run.
(c) Associated BS recovery outside control limits. AZ:L2
(d) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL 7AZR1-2017-06-07		
Lab Sample ID:	FA44866-3	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101560.D	1	06/24/17 17:39	NJ	06/14/17 08:15	OP65450	SW4434
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	86%		42-108%
321-60-8	2-Fluorobiphenyl	72%		40-106%
1718-51-0	Terphenyl-d14	48%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-07 (7AZR1)		
Lab Sample ID:	FA44866-4	**Date Sampled:**	06/07/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q3398.D	1	07/12/17 22:51	NAF	06/21/17 08:30	OP65590	S2Q79
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [a]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-07 (7AZR1)		
Lab Sample ID:	FA44866-4	**Date Sampled:**	06/07/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	94%		61-134%
	13C2-PFDA	78%		62-128%
	d5-EtFOSAA	76%		57-135%

(a) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL 7AZR2-2017-06-07		
Lab Sample ID:	FA44866-5	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3395.D	1	07/12/17 21:49	NAF	06/21/17 08:30	OP65590	S2Q79
Run #2 [b]	Q36883.D	1	07/18/17 04:52	NAF	07/15/17 08:30	OP65988	SQ936

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid [c]	0.0112	0.016	0.0080	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL 7AZR2-2017-06-07		
Lab Sample ID:	FA44866-5	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	29% [e]	109%	61-134%
	13C2-PFDA	13% [e]	108%	62-128%
	d5-EtFOSAA	13% [e]	86%	57-135%

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL 7AZR2-2017-06-07		
Lab Sample ID:	FA44866-5	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101561.D	1	06/24/17 18:02	NJ	06/14/17 08:15	OP65450	SW4434
Run #2							

	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	79%		42-108%
321-60-8	2-Fluorobiphenyl	80%		40-106%
1718-51-0	Terphenyl-d14	67%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL IRA45-2017-06-07		
Lab Sample ID:	FA44866-6	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q3400.D	1	07/12/17 23:33	NAF	06/21/17 08:30	OP65590	S2Q79
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [a]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL IRA45-2017-06-07		
Lab Sample ID:	FA44866-6	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	68%		61-134%
	13C2-PFDA	77%		62-128%
	d5-EtFOSAA	68%		57-135%

(a) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL IRA45-2017-06-07		
Lab Sample ID:	FA44866-6	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101562.D	1	06/24/17 18:25	NJ	06/14/17 08:15	OP65450	SW4434
Run #2							

	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	82%		42-108%
321-60-8	2-Fluorobiphenyl	68%		40-106%
1718-51-0	Terphenyl-d14	49%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL IRA44-2017-06-07		
Lab Sample ID:	FA44866-7	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3401.D	1	07/12/17 23:53	NAF	06/21/17 08:30	OP65590	S2Q79
Run #2 [b]	Q36884.D	1	07/18/17 05:11	NAF	07/15/17 08:30	OP65988	SQ936

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid [c]	0.00478	0.017	0.0042	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0183	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0236	0.017	0.0042	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL IRA44-2017-06-07		
Lab Sample ID:	FA44866-7	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	53% [e]	102%	61-134%
	13C2-PFDA	17% [e]	104%	62-128%
	d5-EtFOSAA	14% [e]	76%	57-135%

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL IRA44-2017-06-07		
Lab Sample ID:	FA44866-7	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101563.D	1	06/24/17 18:49	NJ	06/14/17 08:15	OP65450	SW4434
Run #2							

	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	77%		42-108%
321-60-8	2-Fluorobiphenyl	66%		40-106%
1718-51-0	Terphenyl-d14	54%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL IRA39-2017-06-07		
Lab Sample ID:	FA44866-8	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3402.D	1	07/13/17 00:14	NAF	06/21/17 08:30	OP65590	S2Q79
Run #2 [b]	Q36885.D	1	07/18/17 05:31	NAF	07/15/17 08:30	OP65988	SQ936

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid [c]	0.0104	0.016	0.0080	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [c]	0.00540	0.016	0.0040	ug/l	J
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL IRA39-2017-06-07		
Lab Sample ID:	FA44866-8	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	43% [e]	98%	61-134%
	13C2-PFDA	17% [e]	87%	62-128%
	d5-EtFOSAA	13% [e]	70%	57-135%

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL IRA39-2017-06-07		
Lab Sample ID:	FA44866-8	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101564.D	1	06/24/17 19:12	NJ	06/14/17 08:15	OP65450	SW4434
Run #2							

	Initial Volume	Final Volume
Run #1	850 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.35	0.18	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	74%		42-108%
321-60-8	2-Fluorobiphenyl	66%		40-106%
1718-51-0	Terphenyl-d14	43%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL IRA46-2017-06-07		
Lab Sample ID:	FA44866-9	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3403.D	1	07/13/17 00:35	NAF	06/21/17 08:30	OP65590	S2Q79
Run #2 [b]	Q36886.D	1	07/18/17 05:51	NAF	07/15/17 08:30	OP65988	SQ936

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL IRA46-2017-06-07		
Lab Sample ID:	FA44866-9	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	30% [d]	104%	61-134%
	13C2-PFDA	15% [d]	103%	62-128%
	d5-EtFOSAA	9% [d]	76%	57-135%

(a) Confirmed ND by re-extraction and reanalysis.
(b) Confirmation run.
(c) Associated BS recovery outside control limits. AZ:L2
(d) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL IRA46-2017-06-07		
Lab Sample ID:	FA44866-9	**Date Sampled:**	06/07/17
Matrix:	AQ - Ground Water	**Date Received:**	06/13/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101565.D	1	06/24/17 19:35	NJ	06/14/17 08:15	OP65450	SW4434
Run #2							

	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	84%		42-108%
321-60-8	2-Fluorobiphenyl	78%		40-106%
1718-51-0	Terphenyl-d14	66%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-07 (IRA39)		
Lab Sample ID:	FA44866-10	**Date Sampled:**	06/07/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q3399.D	1	07/12/17 23:12	NAF	06/21/17 08:30	OP65590	S2Q79
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [a]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-07 (IRA39)		
Lab Sample ID:	FA44866-10	**Date Sampled:**	06/07/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	93%		61-134%
	13C2-PFDA	79%		62-128%
	d5-EtFOSAA	73%		57-135%

(a) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: FA44866
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
L2	The associated blank spike recovery was below laboratory acceptance limits.
M2	Matrix spike recovery was low; the associated blank spike recovery was acceptable.
M7	Matrix spike recovery was low. Data reported per ADEQ policy 0154.000. Matrix Interference was confirmed.
R2	RPD/RSD exceeded the laboratory acceptance limit. See Case Narrative.
S6	Surrogate recovery was below laboratory and method acceptance limits. Reextraction and/or reanalysis confirms low recovery caused by matrix effect.
S7	Surrogate recovery was below laboratory and method acceptance limits. Unable to confirm matrix effect.

FA44866

SGS ACCUTEST

SGS Accutest Southeast
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.accutest.com

SGS ACCUTEST JOB # : PAGE 1 OF 1

SGS Accutest Quote #	SKIFF #

Client / Reporting Information

Company Name: Hargis + Associates, Inc.
Address: 7400 N. ORACLE RD. #202
City: TUCSON State: AZ Zip: 85704
Project Contact: Chris Perkovic Email: cperkovic@hargis
Phone #: 881-7300
Sampler(s) Name(s) (Printed)
Sampler 1: DLG Sampler 2:

Project Information

Project Name: Marana Project
Street
City: TUCSON State: AZ
Project #: 1229
Fax #:
Client Purchase Order #

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid

SGS Accutest Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LC537 LIST /EPA 537	8270 SIM 1410X	LAB USE ONLY
1	Well7AZR3-2017-06-07	6/7/17	0620	DLG	GW	4		X								X	X	
2	Well7AZR4-2017-06-07		0710		GW	4		X								X	X	
3	Well7AZR1-2017-06-07		0800		GW	4		X								X	X	
4	FB-2017-06-07 (7AZR1)		0805		WW	2		X						X		X		
5	Well7AZR2-2017-06-07		0900		GW	4		X								X	X	
6	WellFRA45-2017-06-07		1020		GW	4		X								X	X	
7	WellFRA44-2017-06-07		1100		GW	4		X								X	X	
8	WellFRA39-2017-06-07		1200		GW	4		X								X	X	
9	WellFRA46-2017-06-07		1245		GW	4		X								X	X	
10	FB-2017-06-07 (FRA39)		1205		WW	2		X						X		X		

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1 DLG	6/12/17 1510	2	3	6/12/17 1530	4 Fedex
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5 Fx		6 06/13/17 930	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 2.4 1.9

http://www.sgs.com/en/terms-and-conditions

Effective Date 04/24/2017

SGS COC Florida new art 5 2 17 rev 042417 SI

5.2 5

FA44866: Chain of Custody
Page 1 of 2

SGS Accutest Sample Receipt Summary

Job Number: FA44866 **Client:** HARGIS & ASSOC. **Project:** 1229

Date / Time Received: 6/13/2017 9:30:00 AM **Delivery Method:** FED EX **Airbill #'s:** 7793 8319 9304

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 2

Cooler Temps (Raw Measured) °C: Cooler 1: (2.0); Cooler 2: (1.5);

Cooler Temps (Corrected) °C: Cooler 1: (2.4); Cooler 2: (1.9);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☑	☐
2. Trip Blank listed on COC	☐		☑	☐
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 6/13/2017 9:30:00 AM Reviewer: JC Date: 6/13/2017

FA44866: Chain of Custody
Page 2 of 2

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA44866
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65450-MB	W101473.D	1	06/22/17	NJ	06/14/17	OP65450	SW4432

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44866-1, FA44866-2, FA44866-3, FA44866-5, FA44866-6, FA44866-7, FA44866-8, FA44866-9

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	67% [a]	42-108%
321-60-8	2-Fluorobiphenyl	66% [a]	40-106%
1718-51-0	Terphenyl-d14	58% [a]	39-121%

(a) Surrogate recoveries corrected for actual spike amount.

Method Blank Summary

Job Number: FA44866
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65590-MB	2Q3389.D	1	07/12/17	NAF	06/21/17	OP65590	S2Q79

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44866-1, FA44866-2, FA44866-3, FA44866-4, FA44866-5, FA44866-6, FA44866-7, FA44866-8, FA44866-9, FA44866-10

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	97%	61-134%
	13C2-PFDA	87%	62-128%
	d5-EtFOSAA	75%	57-135%

Blank Spike Summary

Job Number: FA44866
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65450-BS	W101472.D	1	06/22/17	NJ	06/14/17	OP65450	SW4432

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44866-1, FA44866-2, FA44866-3, FA44866-5, FA44866-6, FA44866-7, FA44866-8, FA44866-9

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	10	2.1	21	15-69

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	65%	42-108%
321-60-8	2-Fluorobiphenyl	70%	40-106%
1718-51-0	Terphenyl-d14	57%	39-121%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA44866
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65590-BS	2Q3388.D	1	07/12/17	NAF	06/21/17	OP65590	S2Q79

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44866-1, FA44866-2, FA44866-3, FA44866-4, FA44866-5, FA44866-6, FA44866-7, FA44866-8, FA44866-9, FA44866-10

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.156	101	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.166	108	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.164	107	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.165	107	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.163	106	74-137
375-95-1	Perfluorononanoic acid	0.154	0.167	109	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.147	96	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.112	73	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.0964	63	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.0951	62	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.102	66	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.164	107	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.174	113	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.154	0.159	103	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.142	92	70-134
335-77-3	Perfluorodecanesulfonic acid	0.154	0.0974	63	56-127
754-91-6	PFOSA	0.154	ND	0* [a]	40-142
2355-31-9	MeFOSAA	0.154	0.115	75	57-128
2991-50-6	EtFOSAA	0.154	0.106	69	55-135
27619-97-2	6:2 Fluorotelomer sulfonate	0.154	0.160	104	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.154	0.142	92	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	96%	61-134%
	13C2-PFDA	88%	62-128%
	d5-EtFOSAA	73%	57-135%

(a) AZ:L2

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA44866
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65450-MS	W101475.D	1	06/22/17	NJ	06/14/17	OP65450	SW4432
OP65450-MSD	W101476.D	1	06/22/17	NJ	06/14/17	OP65450	SW4432
FA44704-1	W101474.D	1	06/22/17	NJ	06/14/17	OP65450	SW4432

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44866-1, FA44866-2, FA44866-3, FA44866-5, FA44866-6, FA44866-7, FA44866-8, FA44866-9

CAS No.	Compound	FA44704-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	0.30	U	23.8	6.5	27	23.8	7.0	29	7	15-69/31

CAS No.	Surrogate Recoveries	MS	MSD	FA44704-1	Limits
4165-60-0	Nitrobenzene-d5	66%	74%	69% [a]	42-108%
321-60-8	2-Fluorobiphenyl	66%	76%	62% [a]	40-106%
1718-51-0	Terphenyl-d14	68%	65%	59% [a]	39-121%

(a) Surrogate recoveries corrected for actual spike amount.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA44866
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65590-MS	2Q3391.D	1	07/12/17	NAF	06/21/17	OP65590	S2Q79
OP65590-MSD	2Q3392.D	1	07/12/17	NAF	06/21/17	OP65590	S2Q79
FA44866-1	2Q3390.D	1	07/12/17	NAF	06/21/17	OP65590	S2Q79
FA44866-1 [a]	2Q3538.D	1	07/15/17	NAF	06/21/17	OP65590	S2Q81

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44866-1, FA44866-2, FA44866-3, FA44866-4, FA44866-5, FA44866-6, FA44866-7, FA44866-8, FA44866-9, FA44866-10

CAS No.	Compound	FA44866-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	ND		0.333	0.309	93	0.333	0.160	48	64* [b]	20-120/30
2706-90-3	Perfluoropentanoic acid	ND		0.333	0.340	102	0.333	0.176	53	64* [b]	40-131/30
307-24-4	Perfluorohexanoic acid	ND		0.333	0.326	98	0.333	0.169	51* [c]	63* [b]	63-146/30
375-85-9	Perfluoroheptanoic acid	ND		0.333	0.325	97	0.333	0.167	50* [c]	64* [b]	71-138/30
335-67-1	Perfluorooctanoic acid	ND		0.333	0.339	102	0.333	0.134	40* [c]	87* [b]	74-137/30
375-95-1	Perfluorononanoic acid	ND		0.333	0.350	105	0.333	0.110	33* [c]	104* [b]	76-140/30
335-76-2	Perfluorodecanoic acid	ND		0.333	0.298	89	0.333	0.107	32* [c]	94* [b]	65-148/30
2058-94-8	Perfluoroundecanoic acid	ND		0.333	0.250	75	0.333	0.120	36* [c]	70* [b]	57-138/30
307-55-1	Perfluorododecanoic acid	ND		0.333	0.214	64	0.333	0.130	39* [c]	49* [b]	58-118/30
72629-94-8	Perfluorotridecanoic acid	ND		0.333	0.208	62	0.333	0.148	44* [c]	34* [b]	52-120/30
376-06-7	Perfluorotetradecanoic acid	ND		0.333	0.215	64	0.333	0.171	51	23	49-122/30
375-73-5	Perfluorobutanesulfonic acid	ND		0.333	0.331	99	0.333	0.322	97	3	73-148/30
355-46-4	Perfluorohexanesulfonic acid	ND		0.333	0.352	106	0.333	0.350	105	1	74-142/30
375-92-8	Perfluoroheptanesulfonic acid	ND		0.333	0.330	99	0.333	0.314	94	5	74-123/30
1763-23-1	Perfluorooctanesulfonic acid	ND		0.333	0.292	88	0.333	0.259	78	12	70-134/30
335-77-3	Perfluorodecanesulfonic acid	ND		0.333	0.215	64	0.333	0.185	55* [c]	15	56-127/30
754-91-6	PFOSA	ND		0.333	ND	0* [d]	0.333	ND	0* [d]	nc	40-142/30
2355-31-9	MeFOSAA	ND		0.333	0.219	66	0.333	0.0810	24* [c]	92* [b]	57-128/30
2991-50-6	EtFOSAA	ND		0.333	0.204	61	0.333	0.0694	21* [c]	98* [b]	55-135/30
27619-97-2	6:2 Fluorotelomer sulfonate	ND		0.333	0.340	102	0.333	0.342	103	1	70-153/30
39108-34-4	8:2 Fluorotelomer sulfonate	ND		0.333	0.268	80	0.333	0.254	76	5	61-154/30

CAS No.	Surrogate Recoveries	MS	MSD	FA44866-1	FA44866-1	Limits
	13C2-PFHxA	91%	51%* [g]	48%* [f]	44%* [e]	61-134%
	13C2-PFDA	86%	33%* [i]	24%* [h]	25%* [e]	62-128%
	d5-EtFOSAA	70%	24%* [i]	19%* [h]	20%* [e]	57-135%

(a) Confirmation run for surrogate recoveries.
(b) AZ:R2
(c) AZ:M2
(d) AZ:M7
(e) Outside control limits. AZ:S6
(f) Outside control limits due to matrix interference. Confirmed by reanalysis. Insufficient sample for re-extraction. AZ:S6

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA44866
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65590-MS	2Q3391.D	1	07/12/17	NAF	06/21/17	OP65590	S2Q79
OP65590-MSD	2Q3392.D	1	07/12/17	NAF	06/21/17	OP65590	S2Q79
FA44866-1	2Q3390.D	1	07/12/17	NAF	06/21/17	OP65590	S2Q79
FA44866-1 [a]	2Q3538.D	1	07/15/17	NAF	06/21/17	OP65590	S2Q81

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44866-1, FA44866-2, FA44866-3, FA44866-4, FA44866-5, FA44866-6, FA44866-7, FA44866-8, FA44866-9, FA44866-10

(g) Outside control limits. AZ:S7
(h) Outside control limits due to matrix interference. Confirmed by reanalysis. Insufficient sample for re-extraction. AZ:S6
(i) Outside control limits. AZ:S7

* = Outside of Control Limits.

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Automated Report

Technical Report for

Hargis + Associates, Inc.

Marana Project; Marana, AZ

1229.3

SGS Accutest Job Number: FA44867

Sampling Date: 06/09/17

Report to:

Hargis + Associates, Inc
7400 N Oracle Rd Suite 202
Tucson, AZ 85704
CPERKOVAC@HARGIS.COM

ATTN: Chris Perkovac

Total number of pages in report: **41**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Elvin Kumar 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(L-A-B L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AK, AR, GA, IA, KY, MA, NV, OK, OR, UT, WA

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Sample Summary

Hargis + Associates, Inc.

Job No: FA44867

Marana Project; Marana, AZ
Project No: 1229.3

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA44867-1	06/09/17	07:00	DGMH	06/13/17	AQ	Surface Water	RIVER SC05-2017-06-09
FA44867-2	06/09/17	07:29	DGMH	06/13/17	AQ	Surface Water	RIVER SC04-2017-06-09
FA44867-3	06/09/17	08:30	DGMH	06/13/17	AQ	Surface Water	WELL CDCW11-2017-06-09
FA44867-4	06/09/17	09:15	DGMH	06/13/17	AQ	Surface Water	WELL CDCW18-2017-06-09
FA44867-5	06/09/17	13:55	DGMH	06/13/17	AQ	Surface Water	WELL IRA04-2017-06-09
FA44867-6	06/09/17	09:20	DGMH	06/13/17	AQ	Field Blank Water	FB-2017-06-09 (CDCW18)
FA44867-7	06/09/17	13:30	DGMH	06/13/17	AQ	Equipment Blank	EB-2017-06-09
FA44867-8	06/09/17	14:00	DGMH	06/13/17	AQ	Field Blank Water	FB-2017-06-09 (IRA04)

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hargis + Associates, Inc. **Job No:** FA44867

Site: Marana Project; Marana, AZ **Report Date** 7/19/2017 9:32:46 PM

6 Sample(s) and 2 Field Blank(s) were collected on 06/09/2017 and were received at SGS Accutest Southeast (SASE) on 06/13/2017 properly preserved, at 2 Deg. C and intact. These Samples received an SASE job number of FA44867. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65616

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA44867-1MS, FA44867-1MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for PFOSA are outside control limits.

Matrix Spike Recovery(s) for EtFOSAA, MeFOSAA, Perfluorodecanesulfonic acid, Perfluorodecanoic acid, Perfluorododecanoic acid, Perfluorononanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic acid, PFOSA are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for EtFOSAA, MeFOSAA, Perfluorodecanoic acid, Perfluorododecanoic acid, Perfluorononanoic acid, Perfluorooctanesulfonic acid, Perfluorooctanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic acid, PFOSA are outside control limits. Probable cause is due to matrix interference.

Sample(s) FA44867-1, OP65616-MS, OP65616-MSD, FA44867-2, FA44867-3, FA44867-4, FA44867-5, FA44867-8 have surrogates outside control limits.

OP65616-BS for PFOSA: AZ:L2

OP65616-MS for Perfluorododecanoic acid: AZ:M2

OP65616-MS for MeFOSAA: AZ:M2

OP65616-MS for Perfluorodecanesulfonic acid: AZ:M2

OP65616-MS for Perfluorodecanoic acid: AZ:M2

OP65616-MS for Perfluorotetradecanoic acid: AZ:M2

OP65616-MS for Perfluorononanoic acid: AZ:M2

OP65616-MS for EtFOSAA: AZ:M2

OP65616-MS for Perfluorotridecanoic acid: AZ:M2

OP65616-MS for Perfluoroundecanoic acid: AZ:M2

OP65616-MS for PFOSA: AZ:M7

OP65616-MS for 13C2-PFDA: Outside control limits. AZ:S6

OP65616-MS for d5-EtFOSAA: Outside control limits. AZ:S6

OP65616-MSD for 13C2-PFDA: Outside control limits. AZ:S6

OP65616-MSD for d5-EtFOSAA: Outside control limits. AZ:S6

FA44867-1 for 13C2-PFDA: Outside control limits due to matrix interference. Confirmed by MS/MSD. AZ:S6

FA44867-1 for d5-NEtFOSAA: Outside control limits due to matrix interference. Confirmed by MS/MSD. AZ:S6

FA44867-1 for Perfluorohexanesulfonic acid: AZ:E4

FA44867-1 for PFOSA: Associated BS and MS\MSD recovery outside control limits. AZ:L2,M7

FA44867-1 for Perfluoroundecanoic acid: Associated MS/MSD recovery outside control limits. AZ:M2

FA44867-1 for Perfluorooctanoic acid: Associated MS/MSD recovery outside control limits. AZ:M2,E4

FA44867-1 for Perfluorooctanesulfonic acid: Associated MS/MSD recovery outside control limits. AZ:M2,E4

FA44867-1 for EtFOSAA: Associated MS/MSD recovery outside control limits. AZ:M2

FA44867-1 for MeFOSAA: Associated MS/MSD recovery outside control limits. AZ:M2

FA44867-1 for Perfluorododecanoic acid: Associated MS/MSD recovery outside control limits. AZ:M2

FA44867-1 for Perfluorononanoic acid: Associated MS/MSD recovery outside control limits. AZ:M2

FA44867-1 for Perfluorotetradecanoic acid: Associated MS/MSD recovery outside control limits. AZ:M2

FA44867-1 for Perfluorotridecanoic acid: Associated MS/MSD recovery outside control limits. AZ:M2

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65616

FA44867-1 for Perfluorodecanoic acid: Associated MS/MSD recovery outside control limits. AZ:M2
FA44867-2: Confirmed by re-extraction and reanalysis.
FA44867-2 for d5-NEtFOSAA: Outside control limits. AZ:S7
FA44867-2 for 13C2-PFDA: Outside control limits. AZ:S7
FA44867-2 for Perfluorooctanoic acid: AZ:E4
FA44867-2 for Perfluorooctanesulfonic acid: AZ:E4
FA44867-2 for Perfluorohexanesulfonic acid: AZ:E4
FA44867-2 for PFOSA: Associated BS recovery outside control limits. AZ:L2
FA44867-3 for PFOSA: Associated BS recovery outside control limits. AZ:L2
FA44867-3 for Perfluorooctanesulfonic acid: AZ:E4
FA44867-3: Confirmed by re-extraction and reanalysis.
FA44867-3 for d5-NEtFOSAA: Outside control limits. AZ:S7
FA44867-3 for 13C2-PFDA: Outside control limits. AZ:S7
FA44867-4: Confirmed by re-extraction and reanalysis.
FA44867-4 for Perfluorooctanoic acid: AZ:E4
FA44867-4 for PFOSA: Associated BS recovery outside control limits. AZ:L2
FA44867-4 for Perfluorohexanesulfonic acid: AZ:E4
FA44867-4 for 13C2-PFDA: Outside control limits. AZ:S7
FA44867-4 for d5-NEtFOSAA: Outside control limits. AZ:S7
FA44867-5 for Perfluorobutanoic acid: AZ:E4
FA44867-5 for d5-NEtFOSAA: Outside control limits. AZ:S7
FA44867-5 for 13C2-PFDA: Outside control limits. AZ:S7
FA44867-5 for Perfluorohexanoic acid: AZ:E4
FA44867-5: Confirmed by re-extraction and reanalysis.
FA44867-5 for PFOSA: Associated BS recovery outside control limits. AZ:L2
FA44867-6 for PFOSA: Associated BS recovery outside control limits. AZ:L2
FA44867-7 for PFOSA: Associated BS recovery outside control limits. AZ:L2
FA44867-8: Confirmed ND by re-extraction and reanalysis.
FA44867-8 for PFOSA: Associated BS recovery outside control limits. AZ:L2
FA44867-8 for d5-NEtFOSAA: Outside control limits. AZ:S7

Matrix: AQ **Batch ID:** OP65988

FA44867-2: Confirmation run.
FA44867-3: Confirmation run.
FA44867-4: Confirmation run.
FA44867-5: Confirmation run.
FA44867-8: Confirmation run.

Extractables by GCMS By Method SW846 8270D BY SIM

Matrix: AQ **Batch ID:** OP65507

All samples were extracted within the recommended method holding time.
All samples were analyzed within the recommended method holding time.
All method blanks for this batch meet method specific criteria.
Sample(s) FA44867-2MS, FA44867-2MSD were used as the QC samples indicated.
OP65507-MB for Terphenyl-d14: Surrogate recoveries corrected for actual spike amount.
OP65507-MB for Nitrobenzene-d5: Surrogate recoveries corrected for actual spike amount.
OP65507-MB for 2-Fluorobiphenyl: Surrogate recoveries corrected for actual spike amount.

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Kim Benham, Client Services (signature on file)

SGS ACCUTEST
FA44867

Summary of Hits

Job Number: FA44867
Account: Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ
Collected: 06/09/17

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA44867-1	**RIVER SC05-2017-06-09**					
Perfluoropentanoic acid		0.0328	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanoic acid		0.0283	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid [a]		0.0121 J	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [b]		0.0154 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [c]		0.0117 J	0.016	0.0040	ug/l	EPA 537 MOD
1,4-Dioxane		0.43	0.29	0.14	ug/l	SW846 8270D BY SIM
FA44867-2	**RIVER SC04-2017-06-09**					
Perfluoropentanoic acid [d]		0.0314	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorohexanoic acid [d]		0.0272	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanoic acid [e]		0.0113 J	0.017	0.0042	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [e]		0.0141 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [e]		0.00987 J	0.017	0.0042	ug/l	EPA 537 MOD
1,4-Dioxane		0.44	0.29	0.14	ug/l	SW846 8270D BY SIM
FA44867-3	**WELL CDCW11-2017-06-09**					
Perfluorobutanoic acid [d]		0.0435	0.017	0.0083	ug/l	EPA 537 MOD
Perfluoropentanoic acid [d]		0.0251	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorohexanoic acid [d]		0.0207	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanoic acid [d]		0.0361	0.017	0.0042	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid [d]		0.0353	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [d]		0.0592	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [e]		0.0122 J	0.017	0.0042	ug/l	EPA 537 MOD
FA44867-4	**WELL CDCW18-2017-06-09**					
Perfluorobutanoic acid [d]		0.0201	0.016	0.0080	ug/l	EPA 537 MOD
Perfluoropentanoic acid [d]		0.0245	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanoic acid [d]		0.0341	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid [e]		0.00813 J	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid [d]		0.0354	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [e]		0.0140 J	0.016	0.0080	ug/l	EPA 537 MOD
FA44867-5	**WELL IRA04-2017-06-09**					
Perfluorobutanoic acid [e]		0.0117 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluoropentanoic acid [d]		0.0193	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorohexanoic acid [e]		0.0127 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanoic acid [d]		0.0213	0.017	0.0042	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid [d]		0.0235	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [d]		0.0183	0.017	0.0083	ug/l	EPA 537 MOD

Summary of Hits

Job Number: FA44867
Account: Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ
Collected: 06/09/17

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

FA44867-6 FB-2017-06-09 (CDCW18)

No hits reported in this sample.

FA44867-7 EB-2017-06-09

No hits reported in this sample.

FA44867-8 FB-2017-06-09 (IRA04)

No hits reported in this sample.

(a) Associated MS/MSD recovery outside control limits. AZ:M2,E4
(b) AZ:E4
(c) Associated MS/MSD recovery outside control limits. AZ:M2,E4
(d) Confirmed by re-extraction and reanalysis.
(e) Confirmed by re-extraction and reanalysis. AZ:E4

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	RIVER SC05-2017-06-09		
Lab Sample ID:	FA44867-1	**Date Sampled:**	06/09/17
Matrix:	AQ - Surface Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q3408.D	1	07/13/17 02:19	NAF	06/22/17 08:00	OP65616	S2Q79
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0328	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	0.0283	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid [a]	0.0121	0.016	0.0040	ug/l	J
375-95-1	Perfluorononanoic acid [b]	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid [b]	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid [b]	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [b]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid [c]	0.0154	0.016	0.0080	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [d]	0.0117	0.016	0.0040	ug/l	J
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [e]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA [b]	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA [b]	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC05-2017-06-09		
Lab Sample ID:	FA44867-1	**Date Sampled:**	06/09/17
Matrix:	AQ - Surface Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	82%		61-134%
	13C2-PFDA	57% f		62-128%
	d5-EtFOSAA	28% f		57-135%

(a) Associated MS/MSD recovery outside control limits. AZ:M2,E4
(b) Associated MS/MSD recovery outside control limits. AZ:M2
(c) AZ:E4
(d) Associated MS/MSD recovery outside control limits. AZ:M2,E4
(e) Associated BS and MS\MSD recovery outside control limits. AZ:L2,M7
(f) Outside control limits due to matrix interference. Confirmed by MS/MSD. AZ:S6

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC05-2017-06-09		
Lab Sample ID:	FA44867-1	**Date Sampled:**	06/09/17
Matrix:	AQ - Surface Water	**Date Received:**	06/13/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101620.D	1	06/25/17 20:04	NJ	06/16/17 08:20	OP65507	SW4435
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	0.43	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	78%		42-108%
321-60-8	2-Fluorobiphenyl	82%		40-106%
1718-51-0	Terphenyl-d14	58%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC04-2017-06-09		
Lab Sample ID:	FA44867-2	**Date Sampled:**	06/09/17
Matrix:	AQ - Surface Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3411.D	1	07/13/17 03:22	NAF	06/22/17 08:00	OP65616	S2Q79
Run #2 [b]	Q36887.D	1	07/18/17 06:10	NAF	07/15/17 08:30	OP65988	SQ936

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0314	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	0.0272	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid [c]	0.0113	0.017	0.0042	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid [c]	0.0141	0.017	0.0083	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [c]	0.00987	0.017	0.0042	ug/l	J
335-77-3	Perfluorodecanesulfonic acid	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC04-2017-06-09		
Lab Sample ID:	FA44867-2	**Date Sampled:**	06/09/17
Matrix:	AQ - Surface Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	90%	96%	61-134%
	13C2-PFDA	50% [e]	107%	62-128%
	d5-EtFOSAA	21% [e]	72%	57-135%

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RIVER SC04-2017-06-09		
Lab Sample ID:	FA44867-2	**Date Sampled:**	06/09/17
Matrix:	AQ - Surface Water	**Date Received:**	06/13/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101621.D	1	06/25/17 20:27	NJ	06/16/17 08:20	OP65507	SW4435
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	0.44	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	84%		42-108%
321-60-8	2-Fluorobiphenyl	89%		40-106%
1718-51-0	Terphenyl-d14	65%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL CDCW11-2017-06-09		
Lab Sample ID:	FA44867-3	**Date Sampled:**	06/09/17
Matrix:	AQ - Surface Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3412.D	1	07/13/17 03:43	NAF	06/22/17 08:00	OP65616	S2Q79
Run #2 [b]	Q36888.D	1	07/18/17 06:30	NAF	07/15/17 08:30	OP65988	SQ936

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0435	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0251	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	0.0207	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	0.0361	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0353	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0592	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [c]	0.0122	0.017	0.0042	ug/l	J
335-77-3	Perfluorodecanesulfonic acid	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL CDCW11-2017-06-09		
Lab Sample ID:	FA44867-3	**Date Sampled:**	06/09/17
Matrix:	AQ - Surface Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	67%	96%	61-134%
	13C2-PFDA	35% [e]	98%	62-128%
	d5-EtFOSAA	21% [e]	67%	57-135%

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL CDCW11-2017-06-09		
Lab Sample ID:	FA44867-3	**Date Sampled:**	06/09/17
Matrix:	AQ - Surface Water	**Date Received:**	06/13/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101624.D	1	06/25/17 21:35	NJ	06/16/17 08:20	OP65507	SW4435
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	83%		42-108%
321-60-8	2-Fluorobiphenyl	85%		40-106%
1718-51-0	Terphenyl-d14	68%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL CDCW18-2017-06-09		
Lab Sample ID:	FA44867-4	**Date Sampled:**	06/09/17
Matrix:	AQ - Surface Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3413.D	1	07/13/17 04:03	NAF	06/22/17 08:00	OP65616	S2Q79
Run #2 [b]	Q36891.D	1	07/18/17 07:29	NAF	07/15/17 08:30	OP65988	SQ936

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0201	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0245	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	0.0341	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid [c]	0.00813	0.016	0.0040	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0354	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid [c]	0.0140	0.016	0.0080	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL CDCW18-2017-06-09		
Lab Sample ID:	FA44867-4	**Date Sampled:**	06/09/17
Matrix:	AQ - Surface Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	72%	94%	61-134%
	13C2-PFDA	32% [e]	115%	62-128%
	d5-EtFOSAA	15% [e]	78%	57-135%

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL CDCW18-2017-06-09		
Lab Sample ID:	FA44867-4	**Date Sampled:**	06/09/17
Matrix:	AQ - Surface Water	**Date Received:**	06/13/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101625.D	1	06/25/17 21:58	NJ	06/16/17 08:20	OP65507	SW4435
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	83%		42-108%
321-60-8	2-Fluorobiphenyl	87%		40-106%
1718-51-0	Terphenyl-d14	66%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL IRA04-2017-06-09		
Lab Sample ID:	FA44867-5	**Date Sampled:**	06/09/17
Matrix:	AQ - Surface Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3414.D	1	07/13/17 04:24	NAF	06/22/17 08:00	OP65616	S2Q79
Run #2 [b]	Q36892.D	1	07/18/17 07:49	NAF	07/15/17 08:30	OP65988	SQ936

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [c]	0.0117	0.017	0.0083	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0193	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid [c]	0.0127	0.017	0.0083	ug/l	J
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	0.0213	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0235	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0183	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.017	0.0042	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL IRA04-2017-06-09		
Lab Sample ID:	FA44867-5	**Date Sampled:**	06/09/17
Matrix:	AQ - Surface Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	78%	99%	61-134%
	13C2-PFDA	31% [e]	104%	62-128%
	d5-EtFOSAA	17% [e]	71%	57-135%

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL IRA04-2017-06-09		
Lab Sample ID:	FA44867-5	**Date Sampled:**	06/09/17
Matrix:	AQ - Surface Water	**Date Received:**	06/13/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101626.D	1	06/25/17 22:21	NJ	06/16/17 08:20	OP65507	SW4435
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	82%		42-108%
321-60-8	2-Fluorobiphenyl	83%		40-106%
1718-51-0	Terphenyl-d14	68%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-09 (CDCW18)		
Lab Sample ID:	FA44867-6	**Date Sampled:**	06/09/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q3417.D	1	07/13/17 05:27	NAF	06/22/17 08:00	OP65616	S2Q79
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [a]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-09 (CDCW18)		
Lab Sample ID:	FA44867-6	**Date Sampled:**	06/09/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	100%		61-134%
	13C2-PFDA	82%		62-128%
	d5-EtFOSAA	66%		57-135%

(a) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB-2017-06-09		
Lab Sample ID:	FA44867-7	**Date Sampled:**	06/09/17
Matrix:	AQ - Equipment Blank	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q3418.D	1	07/13/17 05:47	NAF	06/22/17 08:00	OP65616	S2Q79
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [a]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB-2017-06-09		
Lab Sample ID:	FA44867-7	**Date Sampled:**	06/09/17
Matrix:	AQ - Equipment Blank	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	84%		61-134%
	13C2-PFDA	79%		62-128%
	d5-EtFOSAA	59%		57-135%

(a) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-09 (IRA04)		
Lab Sample ID:	FA44867-8	**Date Sampled:**	06/09/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3419.D	1	07/13/17 06:08	NAF	06/22/17 08:00	OP65616	S2Q79
Run #2 [b]	Q36893.D	1	07/18/17 08:09	NAF	07/15/17 08:30	OP65988	SQ936

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-09 (IRA04)		
Lab Sample ID:	FA44867-8	**Date Sampled:**	06/09/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/13/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	80%	94%	61-134%
	13C2-PFDA	64%	91%	62-128%
	d5-EtFOSAA	51% [d]	70%	57-135%

(a) Confirmed ND by re-extraction and reanalysis.
(b) Confirmation run.
(c) Associated BS recovery outside control limits. AZ:L2
(d) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: FA44867
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
L2	The associated blank spike recovery was below laboratory acceptance limits.
M2	Matrix spike recovery was low; the associated blank spike recovery was acceptable.
M7	Matrix spike recovery was low. Data reported per ADEQ policy 0154.000. Matrix Interference was confirmed.
S6	Surrogate recovery was below laboratory and method acceptance limits. Reextraction and/or reanalysis confirms low recovery caused by matrix effect.
S7	Surrogate recovery was below laboratory and method acceptance limits. Unable to confirm matrix effect.

SGS ACCUTEST

SGS Accutest Southeast Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.accutest.com

FA44867

SGS ACCUTEST JOB # : PAGE 1 OF 1

SGS Accutest Quote # | SKIFF #

Client / Reporting Information

Company Name: Hargis + Associates, Inc.
Address: 7400 N. Oracle Rd. #202
City: Tucson State: AZ Zip: 85704
Project Contact: Chris Perkovac Email: cperkovac@hargis.com
Phone #: 520-881-7300
Sampler(s) Name(s) (Printed)
Sampler 1: DLG Sampler 2: MEH

Project Information

Project Name: Marana Project
Street
City: Tucson State: AZ
Project #: 1229
Fax #
Client Purchase Order #

Analytical Information

LC537 LIST / EPA 537
8270SIM 14 DIOX

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid

SGS Accutest Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZNA	DI WATER	MEOH	LC537 LIST / EPA 537	8270SIM 14 DIOX	LAB USE ONLY
1	River SC05-2017-06-09	6/9/17	0700	DLG	SW	4		X								X	X	
2	River SC04-2017-06-09		0729		SW	4		X								X	X	
3	Well CDCW11-2017-06-09		0830		GW	4		X								X	X	
4	Well CDCW18-2017-06-09		0915		GW	4		X								X	X	
5	Well IRA04-2017-06-09		1355		GW	4		X								X	X	
6	FB-2017-06-09 (CDCW18)		0920		WW	2		X						X		X		
7	EB-2017-06-09		1330		WW	2		X						X		X		
8	FB-2017-06-09 (IRA04)		1400		WW	2		X						X		X		

Turnaround Time (Business days)

10 Day (Business) — Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1 DLG AeA	6/12/17 1510	2 [signature]	3 [signature]	6/12/17 1730	4 Fedex
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5 FX		6 [signature] 06/13/17 930	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 2.0 2.9

http://www.sgs.com/en/terms-and-conditions

SGS COC Florida new art 5 2 17 rev 042417 SI

Effective Date 04/24/2017

5.2 5

FA44867: Chain of Custody
Page 1 of 2

SGS Accutest Sample Receipt Summary

Job Number: FA44867 **Client:** HARGIS & ASSOC. **Project:** 1229

Date / Time Received: 6/13/2017 9:30:00 AM **Delivery Method:** FED EX **Airbill #'s:** 7793 8319 9304

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 2

Cooler Temps (Raw Measured) °C: Cooler 1: (1.6); Cooler 2: (2.5);

Cooler Temps (Corrected) °C: Cooler 1: (2.0); Cooler 2: (2.9);

Cooler Information	Y	N
1. Custody Seals Present	☑	☐
2. Custody Seals Intact	☑	☐
3. Temp criteria achieved	☑	☐
4. Cooler temp verification	IR Gun	
5. Cooler media	Ice (Bag)	

Trip Blank Information	Y	N	N/A
1. Trip Blank present / cooler	☐	☑	☐
2. Trip Blank listed on COC	☐	☑	☐
	W	**S**	**N/A**
3. Type Of TB Received	☐	☐	☑

Sample Information	Y	N	N/A
1. Sample labels present on bottles	☑	☐	
2. Samples preserved properly	☑	☐	
3. Sufficient volume/containers recvd for analysis:	☑	☐	
4. Condition of sample	Intact		
5. Sample recvd within HT	☑	☐	
6. Dates/Times/IDs on COC match Sample Label	☑	☐	
7. VOCs have headspace	☐	☐	☑
8. Bottles received for unspecified tests	☐	☑	
9. Compositing instructions clear	☐	☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐	☐	☑
11. % Solids Jar received?	☐	☐	☑
12. Residual Chlorine Present?	☐	☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 6/13/2017 9:30:00 AM Reviewer: JC Date: 6/13/2017

FA44867: Chain of Custody
Page 2 of 2

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA44867
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65507-MB	W101606.D	1	06/25/17	NJ	06/16/17	OP65507	SW4435

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44867-1, FA44867-2, FA44867-3, FA44867-4, FA44867-5

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	66% [a]	42-108%
321-60-8	2-Fluorobiphenyl	72% [a]	40-106%
1718-51-0	Terphenyl-d14	70% [a]	39-121%

(a) Surrogate recoveries corrected for actual spike amount.

Method Blank Summary

Job Number: FA44867
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65616-MB	2Q3407.D	1	07/13/17	NAF	06/22/17	OP65616	S2Q79

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44867-1, FA44867-2, FA44867-3, FA44867-4, FA44867-5, FA44867-6, FA44867-7, FA44867-8

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	91%	61-134%
	13C2-PFDA	96%	62-128%
	d5-EtFOSAA	64%	57-135%

Blank Spike Summary

Job Number: FA44867
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65507-BS	W101605.D	1	06/25/17	NJ	06/16/17	OP65507	SW4435

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44867-1, FA44867-2, FA44867-3, FA44867-4, FA44867-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	10	3.2	32	15-69

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	81%	42-108%
321-60-8	2-Fluorobiphenyl	89%	40-106%
1718-51-0	Terphenyl-d14	77%	39-121%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA44867
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65616-BS	2Q3406.D	1	07/13/17	NAF	06/22/17	OP65616	S2Q79

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44867-1, FA44867-2, FA44867-3, FA44867-4, FA44867-5, FA44867-6, FA44867-7, FA44867-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.160	104	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.170	110	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.163	106	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.168	109	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.162	105	74-137
375-95-1	Perfluorononanoic acid	0.154	0.159	103	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.136	88	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.127	83	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.115	75	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.107	70	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.107	70	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.165	107	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.175	114	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.154	0.145	94	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.139	90	70-134
335-77-3	Perfluorodecanesulfonic acid	0.154	0.110	71	56-127
754-91-6	PFOSA	0.154	0.00796	5* [a]	40-142
2355-31-9	MeFOSAA	0.154	0.101	66	57-128
2991-50-6	EtFOSAA	0.154	0.0942	61	55-135
27619-97-2	6:2 Fluorotelomer sulfonate	0.154	0.152	99	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.154	0.128	83	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	95%	61-134%
	13C2-PFDA	84%	62-128%
	d5-EtFOSAA	60%	57-135%

(a) AZ:L2

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA44867
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65507-MS	W101622.D	1	06/25/17	NJ	06/16/17	OP65507	SW4435
OP65507-MSD	W101623.D	1	06/25/17	NJ	06/16/17	OP65507	SW4435
FA44867-2	W101621.D	1	06/25/17	NJ	06/16/17	OP65507	SW4435

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44867-1, FA44867-2, FA44867-3, FA44867-4, FA44867-5

CAS No.	Compound	FA44867-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	0.44		19.2	6.8	33	19.2	6.9	34	1	15-69/31

CAS No.	Surrogate Recoveries	MS	MSD	FA44867-2	Limits
4165-60-0	Nitrobenzene-d5	73%	75%	84%	42-108%
321-60-8	2-Fluorobiphenyl	90%	101%	89%	40-106%
1718-51-0	Terphenyl-d14	66%	69%	65%	39-121%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA44867
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65616-MS	2Q3409.D	1	07/13/17	NAF	06/22/17	OP65616	S2Q79
OP65616-MSD	2Q3410.D	1	07/13/17	NAF	06/22/17	OP65616	S2Q79
FA44867-1	2Q3408.D	1	07/13/17	NAF	06/22/17	OP65616	S2Q79

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44867-1, FA44867-2, FA44867-3, FA44867-4, FA44867-5, FA44867-6, FA44867-7, FA44867-8

CAS No.	Compound	FA44867-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	ND		0.333	0.298	89	0.333	0.253	76	16	20-120/30
2706-90-3	Perfluoropentanoic acid	0.0328		0.333	0.362	99	0.333	0.310	83	15	40-131/30
307-24-4	Perfluorohexanoic acid	0.0283		0.333	0.321	88	0.333	0.273	73	16	63-146/30
375-85-9	Perfluoroheptanoic acid	ND		0.333	0.309	93	0.333	0.252	76	20	71-138/30
335-67-1	Perfluorooctanoic acid	0.0121	J	0.333	0.282	81	0.333	0.239	68* [a]	17	74-137/30
375-95-1	Perfluorononanoic acid	ND		0.333	0.209	63* [a]	0.333	0.173	52* [a]	19	76-140/30
335-76-2	Perfluorodecanoic acid	ND		0.333	0.120	36* [a]	0.333	0.102	31* [a]	16	65-148/30
2058-94-8	Perfluoroundecanoic acid	ND		0.333	0.0945	28* [a]	0.333	0.102	31* [a]	8	57-138/30
307-55-1	Perfluorododecanoic acid	ND		0.333	0.103	31* [a]	0.333	0.113	34* [a]	9	58-118/30
72629-94-8	Perfluorotridecanoic acid	ND		0.333	0.119	36* [a]	0.333	0.118	35* [a]	1	52-120/30
376-06-7	Perfluorotetradecanoic acid	ND		0.333	0.126	38* [a]	0.333	0.131	39* [a]	4	49-122/30
375-73-5	Perfluorobutanesulfonic acid	ND		0.333	0.384	115	0.333	0.334	100	14	73-148/30
355-46-4	Perfluorohexanesulfonic acid	0.0154	J	0.333	0.363	104	0.333	0.307	87	17	74-142/30
375-92-8	Perfluoroheptanesulfonic acid	ND		0.333	0.327	98	0.333	0.328	98	0	74-123/30
1763-23-1	Perfluorooctanesulfonic acid	0.0117	J	0.333	0.249	71	0.333	0.234	67* [a]	6	70-134/30
335-77-3	Perfluorodecanesulfonic acid	ND		0.333	0.163	49* [a]	0.333	0.196	59	18	56-127/30
754-91-6	PFOSA	ND		0.333	ND	0* [b]	0.333	ND	0* [b]	nc	40-142/30
2355-31-9	MeFOSAA	ND		0.333	0.0855	26* [a]	0.333	0.0808	24* [a]	6	57-128/30
2991-50-6	EtFOSAA	ND		0.333	0.0804	24* [a]	0.333	0.0790	24* [a]	2	55-135/30
27619-97-2	6:2 Fluorotelomer sulfonate	ND		0.333	0.353	106	0.333	0.351	105	1	70-153/30
39108-34-4	8:2 Fluorotelomer sulfonate	ND		0.333	0.230	69	0.333	0.256	77	11	61-154/30

CAS No.	Surrogate Recoveries	MS	MSD	FA44867-1	Limits
	13C2-PFHxA	72%	81%	82%	61-134%
	13C2-PFDA	33%* [d]	34%* [d]	57%* [c]	62-128%
	d5-EtFOSAA	20%* [d]	23%* [d]	28%* [c]	57-135%

(a) AZ:M2
(b) AZ:M7
(c) Outside control limits due to matrix interference. Confirmed by MS/MSD. AZ:S6
(d) Outside control limits. AZ:S6

* = Outside of Control Limits.

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Automated Report

Technical Report for

Hargis + Associates, Inc.

Marana Project; Marana, AZ

1229.3

SGS Accutest Job Number: FA44908

Sampling Date: 06/08/17

Report to:

Hargis + Associates, Inc
7400 N Oracle Rd Suite 202
Tucson, AZ 85704
CPERKOVAC@HARGIS.COM

ATTN: Chris Perkovac

Total number of pages in report: **39**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Elvin Kumar 407-425-6700

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SGS Accutest

Sample Summary

Hargis + Associates, Inc.

Job No: FA44908

Marana Project; Marana, AZ
Project No: 1229.3

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA44908-1	06/08/17	06:55	DLG	06/14/17	AQ	Ground Water	WELL SRCW31M-2017-06-08
FA44908-2	06/08/17	07:35	DLG	06/14/17	AQ	Ground Water	WELL SRCW49M-2017-06-08
FA44908-3	06/08/17	08:25	DLG	06/14/17	AQ	Ground Water	WELL SRCW40M-2017-06-08
FA44908-4	06/08/17	08:55	DLG	06/14/17	AQ	Ground Water	WELL SRCW40S-2017-06-08
FA44908-5	06/08/17	10:10	DLG	06/14/17	AQ	Ground Water	WELL SRCW38M-2017-06-08
FA44908-6	06/08/17	10:40	DLG	06/14/17	AQ	Ground Water	WELL SRCW38S-2017-06-08
FA44908-7	06/08/17	10:45	DLG	06/14/17	AQ	Field Blank Water	FB-2017-06-08 (SRC-W38S)

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hargis + Associates, Inc. **Job No:** FA44908

Site: Marana Project; Marana, AZ **Report Date:** 7/19/2017 9:33:36 PM

6 Sample(s) and 1 Field Blank(s) were collected on 06/08/2017 and were received at SGS Accutest Southeast (SASE) on 06/14/2017 properly preserved, at 2.4 Deg. C and intact. These Samples received an SASE job number of FA44908. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65616

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA44867-1MS, FA44867-1MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for PFOSA are outside control limits.

Matrix Spike Recovery(s) for EtFOSAA, MeFOSAA, Perfluorodecanesulfonic acid, Perfluorodecanoic acid, Perfluorododecanoic acid, Perfluorononanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic acid, PFOSA are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for EtFOSAA, MeFOSAA, Perfluorodecanoic acid, Perfluorododecanoic acid, Perfluorononanoic acid, Perfluorooctanesulfonic acid, Perfluorooctanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic acid, PFOSA are outside control limits. Probable cause is due to matrix interference.

Sample(s) OP65616-MS, OP65616-MSD, FA44908-6, FA44908-1, FA44908-2, FA44908-3, FA44908-4, FA44908-5, FA44908-7 have surrogates outside control limits.

OP65616-BS for PFOSA: AZ:L2

OP65616-MS for Perfluorotetradecanoic acid: AZ:M2

OP65616-MS for d5-EtFOSAA: Outside control limits. AZ:S6

OP65616-MS for Perfluoroundecanoic acid: AZ:M2

OP65616-MS for PFOSA: AZ:M7

OP65616-MS for Perfluorododecanoic acid: AZ:M2

OP65616-MS for Perfluorodecanoic acid: AZ:M2

OP65616-MS for 13C2-PFDA: Outside control limits. AZ:S6

OP65616-MS for Perfluorononanoic acid: AZ:M2

OP65616-MS for Perfluorotridecanoic acid: AZ:M2

OP65616-MS for Perfluorodecanesulfonic acid: AZ:M2

OP65616-MS for MeFOSAA: AZ:M2

OP65616-MS for EtFOSAA: AZ:M2

OP65616-MSD for 13C2-PFDA: Outside control limits. AZ:S6

OP65616-MSD for d5-EtFOSAA: Outside control limits. AZ:S6

FA44908-1: Confirmed by re-extraction and reanalysis.

FA44908-1 for d5-NEtFOSAA: Outside control limits. AZ:S7

FA44908-1 for 13C2-PFDA: Outside control limits. AZ:S7

FA44908-1 for Perfluorooctanesulfonic acid: AZ:E4

FA44908-1 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA44908-2 for 13C2-PFDA: Outside control limits. AZ:S7

FA44908-2 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA44908-2 for d5-NEtFOSAA: Outside control limits. AZ:S7

FA44908-2: Confirmed by re-extraction and reanalysis.

FA44908-3: Confirmed by re-extraction and reanalysis.

FA44908-3 for d5-NEtFOSAA: Outside control limits. AZ:S7

FA44908-3 for 13C2-PFHxA: Outside control limits. AZ:S7

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65616

FA44908-3 for 13C2-PFDA: Outside control limits. AZ:S7
FA44908-3 for Perfluorooctanoic acid: AZ:E4
FA44908-3 for Perfluorooctanesulfonic acid: AZ:E4
FA44908-3 for PFOSA: Associated BS recovery outside control limits. AZ:L2
FA44908-4 for 13C2-PFDA: Outside control limits. AZ:S7
FA44908-4 for Perfluorohexanoic acid: AZ:E4
FA44908-4 for d5-NEtFOSAA: Outside control limits. AZ:S7
FA44908-4 for PFOSA: Associated BS recovery outside control limits. AZ:L2
FA44908-4 for Perfluorobutanoic acid: AZ:E4
FA44908-4: Confirmed by re-extraction and reanalysis.
FA44908-4 for Perfluorooctanoic acid: AZ:E4
FA44908-4 for Perfluorohexanesulfonic acid: AZ:E4
FA44908-5 for PFOSA: Associated BS recovery outside control limits. AZ:L2
FA44908-5: Confirmed by re-extraction and reanalysis.
FA44908-5 for d5-NEtFOSAA: Outside control limits. AZ:S7
FA44908-5 for 13C2-PFDA: Outside control limits. AZ:S7
FA44908-5 for Perfluorohexanesulfonic acid: AZ:E4
FA44908-5 for Perfluorooctanesulfonic acid: AZ:E4
FA44908-5 for Perfluorooctanoic acid: AZ:E4
FA44908-6 for PFOSA: Associated BS recovery outside control limits. AZ:L2
FA44908-6 for Perfluorooctanesulfonic acid: AZ:E4
FA44908-6 for 13C2-PFDA: Outside control limits. AZ:S7
FA44908-6 for d5-NEtFOSAA: Outside control limits. AZ:S7
FA44908-6 for Perfluorooctanoic acid: AZ:E4
FA44908-6 for Perfluorohexanoic acid: AZ:E4
FA44908-6 for Perfluorobutanoic acid: AZ:E4
FA44908-6 for Perfluorohexanesulfonic acid: AZ:E4
FA44908-6: Confirmed by re-extraction and reanalysis.
FA44908-7: Confirmed ND by re-extraction and reanalysis.
FA44908-7 for d5-NEtFOSAA: Outside control limits. AZ:S7
FA44908-7 for PFOSA: Associated BS recovery outside control limits. AZ:L2

Matrix: AQ **Batch ID:** OP65988

FA44908-1: Confirmation run.
FA44908-2: Confirmation run.
FA44908-3: Confirmation run.
FA44908-4: Confirmation run.
FA44908-5: Confirmation run.
FA44908-6: Confirmation run.
FA44908-7: Confirmation run.

Extractables by GCMS By Method SW846 8270D BY SIM

Matrix: AQ **Batch ID:** OP65496

All samples were extracted within the recommended method holding time.
All samples were analyzed within the recommended method holding time.
All method blanks for this batch meet method specific criteria.
Sample(s) FA44796-11MS, FA44796-11MSD were used as the QC samples indicated.

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Kim Benham, Client Services (signature on file)

Summary of Hits

Job Number: FA44908
Account: Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ
Collected: 06/08/17

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA44908-1	**WELL SRCW31M-2017-06-08**					
Perfluorooctanesulfonic acid [a]		0.00471 J	0.017	0.0042	ug/l	EPA 537 MOD
FA44908-2	**WELL SRCW49M-2017-06-08**					
No hits reported in this sample.						
FA44908-3	**WELL SRCW40M-2017-06-08**					
Perfluorooctanoic acid [a]		0.00462 J	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [b]		0.0223	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [a]		0.00739 J	0.016	0.0040	ug/l	EPA 537 MOD
FA44908-4	**WELL SRCW40S-2017-06-08**					
Perfluorobutanoic acid [a]		0.0107 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanoic acid [a]		0.0135 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid [a]		0.00884 J	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [a]		0.0144 J	0.016	0.0080	ug/l	EPA 537 MOD
FA44908-5	**WELL SRCW38M-2017-06-08**					
Perfluorooctanoic acid [a]		0.00552 J	0.017	0.0042	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [a]		0.00934 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [a]		0.00427 J	0.017	0.0042	ug/l	EPA 537 MOD
FA44908-6	**WELL SRCW38S-2017-06-08**					
Perfluorobutanoic acid [a]		0.00912 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorohexanoic acid [a]		0.0102 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanoic acid [a]		0.00603 J	0.017	0.0042	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [a]		0.0144 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [a]		0.00626 J	0.017	0.0042	ug/l	EPA 537 MOD
1,4-Dioxane		1.0	0.29	0.14	ug/l	SW846 8270D BY SIM
FA44908-7	**FB-2017-06-08 (SRC-W38S)**					
No hits reported in this sample.						

(a) Confirmed by re-extraction and reanalysis. AZ:E4
(b) Confirmed by re-extraction and reanalysis.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	WELL SRCW31M-2017-06-08		
Lab Sample ID:	FA44908-1	**Date Sampled:**	06/08/17
Matrix:	AQ - Ground Water	**Date Received:**	06/14/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3421.D	1	07/13/17 06:50	NAF	06/22/17 08:00	OP65616	S2Q79
Run #2 [b]	Q36894.D	1	07/18/17 08:28	NAF	07/15/17 08:30	OP65988	SQ936

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [c]	0.00471	0.017	0.0042	ug/l	J
335-77-3	Perfluorodecanesulfonic acid	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SRCW31M-2017-06-08		
Lab Sample ID:	FA44908-1	**Date Sampled:**	06/08/17
Matrix:	AQ - Ground Water	**Date Received:**	06/14/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	81%	103%	61-134%
	13C2-PFDA	30% [e]	88%	62-128%
	d5-EtFOSAA	18% [e]	68%	57-135%

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
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E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SRCW31M-2017-06-08		
Lab Sample ID:	FA44908-1	**Date Sampled:**	06/08/17
Matrix:	AQ - Ground Water	**Date Received:**	06/14/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101494.D	1	06/22/17 22:49	NJ	06/15/17 15:30	OP65496	SW4432
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	79%		42-108%
321-60-8	2-Fluorobiphenyl	73%		40-106%
1718-51-0	Terphenyl-d14	45%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SRCW49M-2017-06-08		
Lab Sample ID:	FA44908-2	**Date Sampled:**	06/08/17
Matrix:	AQ - Ground Water	**Date Received:**	06/14/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3422.D	1	07/13/17 07:11	NAF	06/22/17 08:00	OP65616	S2Q79
Run #2 [b]	Q36895.D	1	07/18/17 08:48	NAF	07/15/17 08:30	OP65988	SQ936

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.017	0.0042	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
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E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SRCW49M-2017-06-08		
Lab Sample ID:	FA44908-2	**Date Sampled:**	06/08/17
Matrix:	AQ - Ground Water	**Date Received:**	06/14/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	76%	99%	61-134%
	13C2-PFDA	44% [d]	99%	62-128%
	d5-EtFOSAA	27% [d]	72%	57-135%

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmation run.
(c) Associated BS recovery outside control limits. AZ:L2
(d) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SRCW49M-2017-06-08		
Lab Sample ID:	FA44908-2	**Date Sampled:**	06/08/17
Matrix:	AQ - Ground Water	**Date Received:**	06/14/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101495.D	1	06/22/17 23:12	NJ	06/15/17 15:30	OP65496	SW4432
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	78%		42-108%
321-60-8	2-Fluorobiphenyl	73%		40-106%
1718-51-0	Terphenyl-d14	54%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
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E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SRCW40M-2017-06-08		
Lab Sample ID:	FA44908-3	**Date Sampled:**	06/08/17
Matrix:	AQ - Ground Water	**Date Received:**	06/14/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3423.D	1	07/13/17 07:32	NAF	06/22/17 08:00	OP65616	S2Q79
Run #2 [b]	Q36896.D	1	07/18/17 09:08	NAF	07/15/17 08:30	OP65988	SQ936

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid [c]	0.00462	0.016	0.0040	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0223	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [c]	0.00739	0.016	0.0040	ug/l	J
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
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E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SRCW40M-2017-06-08		
Lab Sample ID:	FA44908-3	**Date Sampled:**	06/08/17
Matrix:	AQ - Ground Water	**Date Received:**	06/14/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	59% [e]	104%	61-134%
	13C2-PFDA	23% [e]	92%	62-128%
	d5-EtFOSAA	13% [e]	81%	57-135%

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SRCW40M-2017-06-08		
Lab Sample ID:	FA44908-3	**Date Sampled:**	06/08/17
Matrix:	AQ - Ground Water	**Date Received:**	06/14/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101496.D	1	06/22/17 23:35	NJ	06/15/17 15:30	OP65496	SW4432
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	76%		42-108%
321-60-8	2-Fluorobiphenyl	71%		40-106%
1718-51-0	Terphenyl-d14	54%		39-121%

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Report of Analysis

Client Sample ID:	WELL SRCW40S-2017-06-08		
Lab Sample ID:	FA44908-4	**Date Sampled:**	06/08/17
Matrix:	AQ - Ground Water	**Date Received:**	06/14/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3424.D	1	07/13/17 07:52	NAF	06/22/17 08:00	OP65616	S2Q79
Run #2 [b]	Q36897.D	1	07/18/17 09:27	NAF	07/15/17 08:30	OP65988	SQ936

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [c]	0.0107	0.016	0.0080	ug/l	J
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid [c]	0.0135	0.016	0.0080	ug/l	J
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid [c]	0.00884	0.016	0.0040	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid [c]	0.0144	0.016	0.0080	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
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Report of Analysis

Client Sample ID:	WELL SRCW40S-2017-06-08		
Lab Sample ID:	FA44908-4	**Date Sampled:**	06/08/17
Matrix:	AQ - Ground Water	**Date Received:**	06/14/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	65%	96%	61-134%
	13C2-PFDA	21% [e]	88%	62-128%
	d5-EtFOSAA	13% [e]	79%	57-135%

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SRCW40S-2017-06-08		
Lab Sample ID:	FA44908-4	**Date Sampled:**	06/08/17
Matrix:	AQ - Ground Water	**Date Received:**	06/14/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101497.D	1	06/22/17 23:59	NJ	06/15/17 15:30	OP65496	SW4432
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	80%		42-108%
321-60-8	2-Fluorobiphenyl	84%		40-106%
1718-51-0	Terphenyl-d14	61%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SRCW38M-2017-06-08		
Lab Sample ID:	FA44908-5	**Date Sampled:**	06/08/17
Matrix:	AQ - Ground Water	**Date Received:**	06/14/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3425.D	1	07/13/17 08:13	NAF	06/22/17 08:00	OP65616	S2Q79
Run #2 [b]	Q36898.D	1	07/18/17 09:47	NAF	07/15/17 08:30	OP65988	SQ936

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid [c]	0.00552	0.017	0.0042	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid [c]	0.00934	0.017	0.0083	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [c]	0.00427	0.017	0.0042	ug/l	J
335-77-3	Perfluorodecanesulfonic acid	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SRCW38M-2017-06-08		
Lab Sample ID:	FA44908-5	**Date Sampled:**	06/08/17
Matrix:	AQ - Ground Water	**Date Received:**	06/14/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	83%	101%	61-134%
	13C2-PFDA	51% [e]	88%	62-128%
	d5-EtFOSAA	23% [e]	80%	57-135%

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SRCW38M-2017-06-08		
Lab Sample ID:	FA44908-5	**Date Sampled:**	06/08/17
Matrix:	AQ - Ground Water	**Date Received:**	06/14/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101498.D	1	06/23/17 00:22	NJ	06/15/17 15:30	OP65496	SW4432
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	87%		42-108%
321-60-8	2-Fluorobiphenyl	80%		40-106%
1718-51-0	Terphenyl-d14	63%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SRCW38S-2017-06-08		
Lab Sample ID:	FA44908-6	**Date Sampled:**	06/08/17
Matrix:	AQ - Ground Water	**Date Received:**	06/14/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3426.D	1	07/13/17 08:34	NAF	06/22/17 08:00	OP65616	S2Q79
Run #2 [b]	Q36899.D	1	07/18/17 10:07	NAF	07/15/17 08:30	OP65988	SQ936

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [c]	0.00912	0.017	0.0083	ug/l	J
2706-90-3	Perfluoropentanoic acid	ND	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid [c]	0.0102	0.017	0.0083	ug/l	J
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid [c]	0.00603	0.017	0.0042	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid [c]	0.0144	0.017	0.0083	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [c]	0.00626	0.017	0.0042	ug/l	J
335-77-3	Perfluorodecanesulfonic acid	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SRCW38S-2017-06-08		
Lab Sample ID:	FA44908-6	**Date Sampled:**	06/08/17
Matrix:	AQ - Ground Water	**Date Received:**	06/14/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	79%	100%	61-134%
	13C2-PFDA	15% [e]	89%	62-128%
	d5-EtFOSAA	11% [f]	74%	57-135%

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) Outside control limits. AZ:S7
(f) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL SRCW38S-2017-06-08		
Lab Sample ID:	FA44908-6	**Date Sampled:**	06/08/17
Matrix:	AQ - Ground Water	**Date Received:**	06/14/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101557.D	1	06/24/17 16:30	NJ	06/15/17 15:30	OP65496	SW4434
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	1.0	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	87%		42-108%
321-60-8	2-Fluorobiphenyl	81%		40-106%
1718-51-0	Terphenyl-d14	63%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-08 (SRC-W38S)		
Lab Sample ID:	FA44908-7	**Date Sampled:**	06/08/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/14/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3420.D	1	07/13/17 06:29	NAF	06/22/17 08:00	OP65616	S2Q79
Run #2 [b]	Q36900.D	1	07/18/17 10:27	NAF	07/15/17 08:30	OP65988	SQ936

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-08 (SRC-W38S)		
Lab Sample ID:	FA44908-7	**Date Sampled:**	06/08/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/14/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	85%	99%	61-134%
	13C2-PFDA	74%	80%	62-128%
	d5-EtFOSAA	54% [d]	70%	57-135%

(a) Confirmed ND by re-extraction and reanalysis.
(b) Confirmation run.
(c) Associated BS recovery outside control limits. AZ:L2
(d) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: FA44908
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
L2	The associated blank spike recovery was below laboratory acceptance limits.
M2	Matrix spike recovery was low; the associated blank spike recovery was acceptable.
M7	Matrix spike recovery was low. Data reported per ADEQ policy 0154.000. Matrix Interference was confirmed.
S6	Surrogate recovery was below laboratory and method acceptance limits. Reextraction and/or reanalysis confirms low recovery caused by matrix effect.
S7	Surrogate recovery was below laboratory and method acceptance limits. Unable to confirm matrix effect.

FA44908

SGS ACCUTEST

SGS Accutest Southeast
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.accutest.com

SGS ACCUTEST JOB # : PAGE 1 OF 1

SGS Accutest Quote # | SKIFF #

Client / Reporting Information

Company Name: Hargis + Associates, Inc.
Address: 7400 N. ORACLE RD. #202
City: TUCSON State: AZ Zip: 85704
Project Contact: Chris PERKOVAC Email: cperkovac@hargis
Phone #: 619-241-3575
Sampler(s) Name(s) (Printed)
Sampler 1: DLG Sampler 2:

Project Information

Project Name: Marana Project
Street
City: Marana State: AZ
Project #: 1229
Fax #
Client Purchase Order #

Analytical Information

SGS Accutest Sample #	Field ID / Point of Collection	Date	Time	Sampled By:	Matrix	Total # of Bottles	Other	None	HCl	NaOH	HNO3	H2SO4	NaOH-ZNA	DI WATER	MeOH	LC537 LIST / EPA 537	8270 SIM 1,4 DIOX									LAB USE ONLY
1	WellSRCW31M-2017-06-08	6/8/17	0655	DLG	GW	4		X								X	X									
2	WellSRCW49M-2017-06-08		0735		GW	4		X								X	X									
3	WellSRCW40M-2017-06-08		0825		GW	4		X								X	X									
4	WellSRCW40S-2017-06-08		0855		GW	4		X								X	X									
5	WellSRCW38M-2017-06-08		1010		GW	4		X								X	X									
6	WellSRCW38S-2017-06-08		1040		GW	4		X								X	X									
7	FB-2017-06-08 (SRC-W38S)		1045		WW	2		X						X		X										

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid

Turnaround Time (Business days)

10 Day (Business) — Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1 H+A	6/13/17 1938	2	3	6/13/17 1600	4 Fedex
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5 Fx		6 06/14/17 930	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 2.4/2.8

http://www.sgs.com/en/terms-and-conditions

Effective Date 04/24/2017

SGS COC Florida new art 5 2 17 rev 042417 SI

5.2 5

FA44908: Chain of Custody
Page 1 of 2

SGS Accutest Sample Receipt Summary

Job Number: FA44908 **Client:** HARGIS & ASSOC. **Project:** 1229

Date / Time Received: 6/14/2017 9:30:00 AM **Delivery Method:** FED EX **Airbill #'s:** 7868 6792 1021

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 2

Cooler Temps (Raw Measured) °C: Cooler 1: (2.0); Cooler 2: (2.4);

Cooler Temps (Corrected) °C: Cooler 1: (2.4); Cooler 2: (2.8);

Cooler Information	Y	N
1. Custody Seals Present	☑	☐
2. Custody Seals Intact	☑	☐
3. Temp criteria achieved	☑	☐
4. Cooler temp verification	IR Gun	
5. Cooler media	Ice (Bag)	

Trip Blank Information	Y	N	N/A
1. Trip Blank present / cooler	☐	☑	☐
2. Trip Blank listed on COC	☐	☑	☐
	W	**S**	**N/A**
3. Type Of TB Received	☐	☐	☑

Sample Information	Y	N	N/A
1. Sample labels present on bottles	☑	☐	
2. Samples preserved properly	☑	☐	
3. Sufficient volume/containers recvd for analysis:	☑	☐	
4. Condition of sample	Intact		
5. Sample recvd within HT	☑	☐	
6. Dates/Times/IDs on COC match Sample Label	☑	☐	
7. VOCs have headspace	☐	☐	☑
8. Bottles received for unspecified tests	☐	☑	
9. Compositing instructions clear	☐	☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐	☐	☑
11. % Solids Jar received?	☐	☐	☑
12. Residual Chlorine Present?	☐	☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 6/14/2017 9:30:00 AM Reviewer: P.H Date: 6/14/2017

FA44908: Chain of Custody
Page 2 of 2

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA44908
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65496-MB	W101486.D	1	06/22/17	NJ	06/15/17	OP65496	SW4432

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44908-1, FA44908-2, FA44908-3, FA44908-4, FA44908-5, FA44908-6

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	79%	42-108%
321-60-8	2-Fluorobiphenyl	68%	40-106%
1718-51-0	Terphenyl-d14	64%	39-121%

Method Blank Summary

Job Number: FA44908
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65616-MB	2Q3407.D	1	07/13/17	NAF	06/22/17	OP65616	S2Q79

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44908-1, FA44908-2, FA44908-3, FA44908-4, FA44908-5, FA44908-6, FA44908-7

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	91%	61-134%
	13C2-PFDA	96%	62-128%
	d5-EtFOSAA	64%	57-135%

Blank Spike Summary

Job Number: FA44908
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65496-BS	W101485.D	1	06/22/17	NJ	06/15/17	OP65496	SW4432

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44908-1, FA44908-2, FA44908-3, FA44908-4, FA44908-5, FA44908-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	10	1.9	19	15-69

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	70%	42-108%
321-60-8	2-Fluorobiphenyl	72%	40-106%
1718-51-0	Terphenyl-d14	71%	39-121%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA44908
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65616-BS	2Q3406.D	1	07/13/17	NAF	06/22/17	OP65616	S2Q79

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44908-1, FA44908-2, FA44908-3, FA44908-4, FA44908-5, FA44908-6, FA44908-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.160	104	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.170	110	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.163	106	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.168	109	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.162	105	74-137
375-95-1	Perfluorononanoic acid	0.154	0.159	103	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.136	88	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.127	83	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.115	75	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.107	70	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.107	70	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.165	107	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.175	114	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.154	0.145	94	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.139	90	70-134
335-77-3	Perfluorodecanesulfonic acid	0.154	0.110	71	56-127
754-91-6	PFOSA	0.154	0.00796	5* [a]	40-142
2355-31-9	MeFOSAA	0.154	0.101	66	57-128
2991-50-6	EtFOSAA	0.154	0.0942	61	55-135
27619-97-2	6:2 Fluorotelomer sulfonate	0.154	0.152	99	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.154	0.128	83	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	95%	61-134%
	13C2-PFDA	84%	62-128%
	d5-EtFOSAA	60%	57-135%

(a) AZ:L2

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA44908
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65496-MS	W101491.D	1	06/22/17	NJ	06/15/17	OP65496	SW4432
OP65496-MSD	W101492.D	1	06/22/17	NJ	06/15/17	OP65496	SW4432
FA44796-11	W101490.D	1	06/22/17	NJ	06/15/17	OP65496	SW4432

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44908-1, FA44908-2, FA44908-3, FA44908-4, FA44908-5, FA44908-6

CAS No.	Compound	FA44796-11 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	0.50		20	6.0	28	20	6.0	28	0	15-69/31

CAS No.	Surrogate Recoveries	MS	MSD	FA44796-11	Limits
4165-60-0	Nitrobenzene-d5	67%	67%	90%	42-108%
321-60-8	2-Fluorobiphenyl	73%	75%	75%	40-106%
1718-51-0	Terphenyl-d14	52%	55%	51%	39-121%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA44908
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65616-MS	2Q3409.D	1	07/13/17	NAF	06/22/17	OP65616	S2Q79
OP65616-MSD	2Q3410.D	1	07/13/17	NAF	06/22/17	OP65616	S2Q79
FA44867-1	2Q3408.D	1	07/13/17	NAF	06/22/17	OP65616	S2Q79

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44908-1, FA44908-2, FA44908-3, FA44908-4, FA44908-5, FA44908-6, FA44908-7

CAS No.	Compound	FA44867-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	ND		0.333	0.298	89	0.333	0.253	76	16	20-120/30
2706-90-3	Perfluoropentanoic acid	0.0328		0.333	0.362	99	0.333	0.310	83	15	40-131/30
307-24-4	Perfluorohexanoic acid	0.0283		0.333	0.321	88	0.333	0.273	73	16	63-146/30
375-85-9	Perfluoroheptanoic acid	ND		0.333	0.309	93	0.333	0.252	76	20	71-138/30
335-67-1	Perfluorooctanoic acid	0.0121	J	0.333	0.282	81	0.333	0.239	68* [a]	17	74-137/30
375-95-1	Perfluorononanoic acid	ND		0.333	0.209	63* [a]	0.333	0.173	52* [a]	19	76-140/30
335-76-2	Perfluorodecanoic acid	ND		0.333	0.120	36* [a]	0.333	0.102	31* [a]	16	65-148/30
2058-94-8	Perfluoroundecanoic acid	ND		0.333	0.0945	28* [a]	0.333	0.102	31* [a]	8	57-138/30
307-55-1	Perfluorododecanoic acid	ND		0.333	0.103	31* [a]	0.333	0.113	34* [a]	9	58-118/30
72629-94-8	Perfluorotridecanoic acid	ND		0.333	0.119	36* [a]	0.333	0.118	35* [a]	1	52-120/30
376-06-7	Perfluorotetradecanoic acid	ND		0.333	0.126	38* [a]	0.333	0.131	39* [a]	4	49-122/30
375-73-5	Perfluorobutanesulfonic acid	ND		0.333	0.384	115	0.333	0.334	100	14	73-148/30
355-46-4	Perfluorohexanesulfonic acid	0.0154	J	0.333	0.363	104	0.333	0.307	87	17	74-142/30
375-92-8	Perfluoroheptanesulfonic acid	ND		0.333	0.327	98	0.333	0.328	98	0	74-123/30
1763-23-1	Perfluorooctanesulfonic acid	0.0117	J	0.333	0.249	71	0.333	0.234	67* [a]	6	70-134/30
335-77-3	Perfluorodecanesulfonic acid	ND		0.333	0.163	49* [a]	0.333	0.196	59	18	56-127/30
754-91-6	PFOSA	ND		0.333	ND	0* [b]	0.333	ND	0* [b]	nc	40-142/30
2355-31-9	MeFOSAA	ND		0.333	0.0855	26* [a]	0.333	0.0808	24* [a]	6	57-128/30
2991-50-6	EtFOSAA	ND		0.333	0.0804	24* [a]	0.333	0.0790	24* [a]	2	55-135/30
27619-97-2	6:2 Fluorotelomer sulfonate	ND		0.333	0.353	106	0.333	0.351	105	1	70-153/30
39108-34-4	8:2 Fluorotelomer sulfonate	ND		0.333	0.230	69	0.333	0.256	77	11	61-154/30

CAS No.	Surrogate Recoveries	MS	MSD	FA44867-1	Limits
	13C2-PFHxA	72%	81%	82%	61-134%
	13C2-PFDA	33%* [d]	34%* [d]	57%* [c]	62-128%
	d5-EtFOSAA	20%* [d]	23%* [d]	28%* [c]	57-135%

(a) AZ:M2
(b) AZ:M7
(c) Outside control limits due to matrix interference. Confirmed by MS/MSD. AZ:S6
(d) Outside control limits. AZ:S6

* = Outside of Control Limits.

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Automated Report

Technical Report for

Hargis + Associates, Inc.

Marana Project; Marana, AZ

1229.3

SGS Accutest Job Number: FA44984

Sampling Date: 06/14/17

Report to:

Hargis + Associates, Inc
7400 N Oracle Rd Suite 202
Tucson, AZ 85704
CPERKOVAC@HARGIS.COM

ATTN: Chris Perkovac

Total number of pages in report: **29**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Elvin Kumar 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(L-A-B L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AK, AR, GA, IA, KY, MA, NV, OK, OR, UT, WA

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SGS Accutest

Sample Summary

Hargis + Associates, Inc.

Job No: FA44984

Marana Project; Marana, AZ
Project No: 1229.3

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA44984-1	06/14/17	08:45	DG	06/15/17	AQ	Ground Water	WELLSC07R-2017-06-14
FA44984-2	06/14/17	09:25	DG	06/15/17	AQ	Ground Water	WELLSC05R-2017-06-14
FA44984-3	06/14/17	11:55	DG	06/15/17	AQ	Ground Water	WELLINAOFFR-2017-06-14
FA44984-4	06/14/17	12:00	DG	06/15/17	AQ	Field Blank Water	FB-2017-06-14 (INA-OFFR)

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hargis + Associates, Inc. **Job No:** FA44984

Site: Marana Project; Marana, AZ **Report Date:** 7/24/2017 2:28:40

3 Sample(s) and 1 Field Blank(s) were collected on 06/14/2017 and were received at SGS Accutest Southeast (SASE) on 06/15/2017 properly preserved, at 3.8 Deg. C and intact. These Samples received an SASE job number of FA44984. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65686

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA44984-2MS, FA44984-2MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for PFOSA are outside control limits.

Matrix Spike Recovery(s) for EtFOSAA, MeFOSAA, Perfluorodecanesulfonic acid, Perfluorodecanoic acid, Perfluorododecanoic acid, Perfluorononanoic acid, Perfluorooctanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic acid, PFOSA are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for Perfluorodecanesulfonic acid, Perfluorononanoic acid, Perfluorooctanesulfonic acid, Perfluorooctanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, PFOSA, EtFOSAA, MeFOSAA, Perfluorodecanoic acid, Perfluorododecanoic acid, Perfluoroheptanoic acid, Perfluorohexanoic acid, Perfluoroundecanoic acid are outside control limits. Probable cause is due to matrix interference.

RPD(s) for MSD for EtFOSAA, MeFOSAA, Perfluorodecanoic acid, Perfluorododecanoic acid, Perfluoroheptanoic acid, Perfluorohexanoic acid, Perfluoroundecanoic acid are outside control limits for sample OP65686-MSD. Probable cause is due to sample non-homogeneity.

Sample(s) FA44984-2, OP65686-MS, OP65686-MSD, FA44984-1, FA44984-3 have surrogates outside control limits. Probable cause is due to matrix interference.

OP65686-MS for Perfluorotridecanoic acid: AZ:M2

OP65686-MS for Perfluoroundecanoic acid: AZ:M2

OP65686-MS for 13C2-PFDA: Outside control limits. AZ:S6

OP65686-MS for Perfluorotetradecanoic acid: AZ:M2

OP65686-MS for PFOSA: AZ:M7

OP65686-MS for d5-EtFOSAA: Outside control limits. AZ:S6

OP65686-MS for Perfluorooctanoic acid: AZ:M2

OP65686-MS for EtFOSAA: AZ:M2

OP65686-MS for MeFOSAA: AZ:M2

OP65686-MS for Perfluorodecanesulfonic acid: AZ:M2

OP65686-MS for Perfluorodecanoic acid: AZ:M2

OP65686-MS for Perfluorododecanoic acid: AZ:M2

OP65686-MS for Perfluorononanoic acid: AZ:M2

OP65686-MSD for Perfluoroheptanoic acid: AZ:R2

OP65686-MSD for Perfluorohexanoic acid: AZ:R2

OP65686-MSD for Perfluoroundecanoic acid: AZ:R2

OP65686-MSD for 13C2-PFDA: Outside control limits. AZ:S6

OP65686-MSD for d5-EtFOSAA: Outside control limits. AZ:S6

OP65686-MSD for EtFOSAA: AZ:R2

OP65686-MSD for MeFOSAA: AZ:R2

OP65686-MSD for Perfluorododecanoic acid: AZ:R2

OP65686-MSD for Perfluorodecanoic acid: AZ:R2

FA44984-1: Confirmed by re-extraction and reanalysis.

FA44984-1 for 13C2-PFDA: Outside control limits. AZ:S7

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65686

FA44984-1 for d5-NEtFOSAA: Outside control limits. AZ:S7
FA44984-1 for Perfluoropentanoic acid: AZ:E4
FA44984-1 for Perfluorooctanoic acid: AZ:E4
FA44984-1 for Perfluorohexanoic acid: AZ:E4
FA44984-1 for PFOSA: Associated BS recovery outside control limits. AZ:L2
FA44984-1 for Perfluorobutanesulfonic acid: AZ:E4
FA44984-2 for d5-NEtFOSAA: Outside control limits due to matrix interference. Confirmed by MS/MSD. AZ:S6
FA44984-2 for Perfluorobutanoic acid: AZ:E4
FA44984-2 for Perfluorohexanoic acid: AZ:E4
FA44984-2 for Perfluorooctanoic acid: AZ:E4
FA44984-2 for Perfluoropentanoic acid: AZ:E4
FA44984-2 for 13C2-PFDA: Outside control limits due to matrix interference. Confirmed by MS/MSD. AZ:S6
FA44984-2 for PFOSA: Associated BS and MS\MSD recovery outside control limits. AZ:L2
FA44984-3: Confirmed by re-extraction and reanalysis.
FA44984-3 for Perfluorobutanoic acid: AZ:E4
FA44984-3 for PFOSA: Associated BS recovery outside control limits. AZ:L2
FA44984-3 for 13C2-PFDA: Outside control limits. AZ:S7
FA44984-3 for d5-NEtFOSAA: Outside control limits. AZ:S7
FA44984-3 for Perfluorooctanoic acid: AZ:E4
FA44984-4 for PFOSA: Associated BS recovery outside control limits. AZ:L2

Matrix: AQ **Batch ID:** OP66032

FA44984-1: Confirmation run.
FA44984-3: Confirmation run.

Extractables by GCMS By Method SW846 8270D BY SIM

Matrix: AQ **Batch ID:** OP65613

All samples were extracted within the recommended method holding time.
All samples were analyzed within the recommended method holding time.
All method blanks for this batch meet method specific criteria.
Sample(s) FA44989-2MS, FA44989-2MSD were used as the QC samples indicated.
Sample(s) FA44984-1, OP65613-MSD have surrogates outside control limits.
OP65613-MSD for 2-Fluorobiphenyl: Outside control limits. Surrogate does not reference target analyte. AZ:N1

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____
Kim Benham, Client Services (signature on file)

Summary of Hits

Job Number: FA44984
Account: Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ
Collected: 06/14/17

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA44984-1	**WELLSC07R-2017-06-14**					
Perfluorobutanoic acid [a]		0.0182	0.016	0.0080	ug/l	EPA 537 MOD
Perfluoropentanoic acid [b]		0.0132 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanoic acid [b]		0.00968 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid [b]		0.0138 J	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid [b]		0.0151 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [a]		0.0231	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [a]		0.0470	0.016	0.0040	ug/l	EPA 537 MOD
FA44984-2	**WELLSC05R-2017-06-14**					
Perfluorobutanoic acid [c]		0.0131 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluoropentanoic acid [c]		0.0137 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorohexanoic acid [c]		0.0105 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanoic acid [c]		0.0107 J	0.017	0.0042	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid		0.0172	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid		0.0195	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.0487	0.017	0.0042	ug/l	EPA 537 MOD
FA44984-3	**WELLINAOFFR-2017-06-14**					
Perfluorobutanoic acid [b]		0.00824 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid [b]		0.00821 J	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [a]		0.0317	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [a]		0.0907	0.016	0.0040	ug/l	EPA 537 MOD
FA44984-4	**FB-2017-06-14 (INA-OFFR)**					

No hits reported in this sample.

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmed by re-extraction and reanalysis. AZ:E4
(c) AZ:E4

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	WELLSC07R-2017-06-14		
Lab Sample ID:	FA44984-1	**Date Sampled:**	06/14/17
Matrix:	AQ - Ground Water	**Date Received:**	06/15/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3526.D	1	07/14/17 23:06	NAF	06/27/17 08:00	OP65686	S2Q81
Run #2 [b]	Q37052.D	1	07/21/17 09:13	NAF	07/19/17 10:30	OP66032	SQ939

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0182	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.0132	0.016	0.0080	ug/l	J
307-24-4	Perfluorohexanoic acid [c]	0.00968	0.016	0.0080	ug/l	J
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid [c]	0.0138	0.016	0.0040	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid [c]	0.0151	0.016	0.0080	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0231	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0470	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLSC07R-2017-06-14		
Lab Sample ID:	FA44984-1	**Date Sampled:**	06/14/17
Matrix:	AQ - Ground Water	**Date Received:**	06/15/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	67%	117%	61-134%
	13C2-PFDA	12% [e]	109%	62-128%
	d5-EtFOSAA	12% [e]	97%	57-135%

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLSC07R-2017-06-14		
Lab Sample ID:	FA44984-1	**Date Sampled:**	06/14/17
Matrix:	AQ - Ground Water	**Date Received:**	06/15/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101643.D	1	06/26/17 15:18	NJ	06/21/17 19:00	OP65613	SW4436
Run #2							

	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	99%		42-108%
321-60-8	2-Fluorobiphenyl	84%		40-106%
1718-51-0	Terphenyl-d14	35% [a]		39-121%

(a) Outside control limits. Surrogate does not reference target analyte. AZ:N1

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLSC05R-2017-06-14		
Lab Sample ID:	FA44984-2	**Date Sampled:**	06/14/17
Matrix:	AQ - Ground Water	**Date Received:**	06/15/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q3527.D	1	07/14/17 23:27	NAF	06/27/17 08:00	OP65686	S2Q81
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [a]	0.0131	0.017	0.0083	ug/l	J
2706-90-3	Perfluoropentanoic acid [a]	0.0137	0.017	0.0083	ug/l	J
307-24-4	Perfluorohexanoic acid [a]	0.0105	0.017	0.0083	ug/l	J
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid [a]	0.0107	0.017	0.0042	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0172	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0195	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0487	0.017	0.0042	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLSC05R-2017-06-14		
Lab Sample ID:	FA44984-2	**Date Sampled:**	06/14/17
Matrix:	AQ - Ground Water	**Date Received:**	06/15/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	76%		61-134%
	13C2-PFDA	20% c		62-128%
	d5-EtFOSAA	17% c		57-135%

(a) AZ:E4
(b) Associated BS and MS\MSD recovery outside control limits. AZ:L2
(c) Outside control limits due to matrix interference. Confirmed by MS/MSD. AZ:S6

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLSC05R-2017-06-14		
Lab Sample ID:	FA44984-2	**Date Sampled:**	06/14/17
Matrix:	AQ - Ground Water	**Date Received:**	06/15/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101644.D	1	06/26/17 15:42	NJ	06/21/17 19:00	OP65613	SW4436
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	96%		42-108%
321-60-8	2-Fluorobiphenyl	85%		40-106%
1718-51-0	Terphenyl-d14	53%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLINAOFFR-2017-06-14		
Lab Sample ID:	FA44984-3	**Date Sampled:**	06/14/17
Matrix:	AQ - Ground Water	**Date Received:**	06/15/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3530.D	1	07/15/17 00:30	NAF	06/27/17 08:00	OP65686	S2Q81
Run #2 [b]	Q37053.D	1	07/21/17 09:33	NAF	07/19/17 10:30	OP66032	SQ939

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [c]	0.00824	0.016	0.0080	ug/l	J
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid [c]	0.00821	0.016	0.0040	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0317	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0907	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLINAOFFR-2017-06-14		
Lab Sample ID:	FA44984-3	**Date Sampled:**	06/14/17
Matrix:	AQ - Ground Water	**Date Received:**	06/15/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	75%	115%	61-134%
	13C2-PFDA	22% [e]	114%	62-128%
	d5-EtFOSAA	20% [e]	107%	57-135%

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLINAOFFR-2017-06-14		
Lab Sample ID:	FA44984-3	**Date Sampled:**	06/14/17
Matrix:	AQ - Ground Water	**Date Received:**	06/15/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101645.D	1	06/26/17 16:05	NJ	06/21/17 19:00	OP65613	SW4436
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	90%		42-108%
321-60-8	2-Fluorobiphenyl	91%		40-106%
1718-51-0	Terphenyl-d14	47%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-14 (INA-OFFR)		
Lab Sample ID:	FA44984-4	**Date Sampled:**	06/14/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/15/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q3531.D	1	07/15/17 00:50	NAF	06/27/17 08:00	OP65686	S2Q81
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [a]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-14 (INA-OFFR)		
Lab Sample ID:	FA44984-4	**Date Sampled:**	06/14/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/15/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	90%		61-134%
	13C2-PFDA	73%		62-128%
	d5-EtFOSAA	62%		57-135%

(a) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: FA44984
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
L2	The associated blank spike recovery was below laboratory acceptance limits.
M2	Matrix spike recovery was low; the associated blank spike recovery was acceptable.
M7	Matrix spike recovery was low. Data reported per ADEQ policy 0154.000. Matrix Interference was confirmed.
N1	See case narrative.
R2	RPD/RSD exceeded the laboratory acceptance limit. See Case Narrative.
S6	Surrogate recovery was below laboratory and method acceptance limits. Reextraction and/or reanalysis confirms low recovery caused by matrix effect.
S7	Surrogate recovery was below laboratory and method acceptance limits. Unable to confirm matrix effect.

FA 44984

SGS ACCUTEST

SGS Accutest Southeast
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.accutest.com

SGS ACCUTEST JOB # : PAGE 1 OF 1

SGS Accutest Quote # | SKIFF #

Client / Reporting Information

Company Name: Hargis + Associates, Inc.
Address: 7400 N. ORACLE RD # 202
City: TUCSON State: AZ Zip: 85704
Project Contact: Chris Perkovac Email: cperkovac@hargis.com
Phone #: 520-881-7300
Sampler(s) Name(s) (Printed)
Sampler 1: DLG Sampler 2:

Project Information

Project Name: Marana Project
Street
City State
Project #: 1229
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid

SGS Accutest Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZNA	DI WATER	MEOH	LC537 List/EPA 537	8270 SIM WS 14 DIOX									LAB USE ONLY
1	WellSC07R-2017-06-14	6/14/17	0845	DLG	GW	4		X								X	X									
2	WellSC05R-2017-06-14		0925		GW	4		X								X	X									
3	WellINADFR-2017-06-14		1155		GW	4		X								X	X									
4	FB-2017-06-14 (INA-OFFR)		1200		WW	2		X						X		X										

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- COMMERCIAL "A" (RESULTS ONLY)
- COMMERCIAL "B" (RESULTS PLUS QC)
- REDT1 (EPA LEVEL 3)
- FULLT1 (EPA LEVEL 4)
- EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1 DLG H+A	6/14/17 1355	2	3	6/14/17 1700	4 Fedex
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 3.8

http://www.sgs.com/en/terms-and-conditions

Effective Date 04/24/2017

SGS COC Florida new art 5 2 17 rev 042417 SI

FA44984: Chain of Custody
Page 1 of 2

SGS Accutest Sample Receipt Summary

Job Number: FA44984 **Client:** HARGIS **Project:** 1229

Date / Time Received: 6/15/2017 9:30:00 AM **Delivery Method:** FEDEX **Airbill #'s:** 7868 8262 5110

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.4);

Cooler Temps (Corrected) °C: Cooler 1: (3.8);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☑	☐
2. Trip Blank listed on COC	☐		☑	☐
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: JORGEC Date: 6/15/2017 9:30:00 AM Reviewer: P.H Date: 6/17/2017

FA44984: Chain of Custody
Page 2 of 2

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA44984
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65613-MB	W101642.D	1	06/26/17	NJ	06/21/17	OP65613	SW4436

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44984-1, FA44984-2, FA44984-3

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	99%	42-108%
321-60-8	2-Fluorobiphenyl	86%	40-106%
1718-51-0	Terphenyl-d14	54%	39-121%

Method Blank Summary

Job Number: FA44984
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65686-MB	2Q3525.D	1	07/14/17	NAF	06/27/17	OP65686	S2Q81

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44984-1, FA44984-2, FA44984-3, FA44984-4

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	92%	61-134%
	13C2-PFDA	88%	62-128%
	d5-EtFOSAA	58%	57-135%

Blank Spike Summary

Job Number: FA44984
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65613-BS	W101641.D	1	06/26/17	NJ	06/21/17	OP65613	SW4436

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44984-1, FA44984-2, FA44984-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	10	1.9	19	15-69

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	78%	42-108%
321-60-8	2-Fluorobiphenyl	95%	40-106%
1718-51-0	Terphenyl-d14	71%	39-121%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA44984
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65686-BS	2Q3524.D	1	07/14/17	NAF	06/27/17	OP65686	S2Q81

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44984-1, FA44984-2, FA44984-3, FA44984-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.140	91	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.169	110	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.154	100	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.164	107	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.161	105	74-137
375-95-1	Perfluorononanoic acid	0.154	0.164	107	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.149	97	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.110	71	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.0927	60	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.0868	56	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.0882	57	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.159	103	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.177	115	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.154	0.137	89	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.147	96	70-134
335-77-3	Perfluorodecanesulfonic acid	0.154	0.0961	62	56-127
754-91-6	PFOSA	0.154	ND	0*	40-142
2355-31-9	MeFOSAA	0.154	0.111	72	57-128
2991-50-6	EtFOSAA	0.154	0.104	68	55-135
27619-97-2	6:2 Fluorotelomer sulfonate	0.154	0.143	93	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.154	0.123	80	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	91%	61-134%
	13C2-PFDA	92%	62-128%
	d5-EtFOSAA	73%	57-135%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA44984
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65613-MS	W101648.D	1	06/26/17	NJ	06/21/17	OP65613	SW4436
OP65613-MSD	W101649.D	1	06/26/17	NJ	06/21/17	OP65613	SW4436
FA44989-2	W101647.D	1	06/26/17	NJ	06/21/17	OP65613	SW4436

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA44984-1, FA44984-2, FA44984-3

CAS No.	Compound	FA44989-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	0.30	U	20	7.4	37	20	10.1	51	31	15-69/31

CAS No.	Surrogate Recoveries	MS	MSD	FA44989-2	Limits
4165-60-0	Nitrobenzene-d5	80%	90%	104%	42-108%
321-60-8	2-Fluorobiphenyl	92%	110%* [a]	100%	40-106%
1718-51-0	Terphenyl-d14	53%	60%	57%	39-121%

(a) Outside control limits. Surrogate does not reference target analyte. AZ:N1

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA44984
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65686-MS	2Q3528.D	1	07/14/17	NAF	06/27/17	OP65686	S2Q81
OP65686-MSD	2Q3529.D	1	07/15/17	NAF	06/27/17	OP65686	S2Q81
FA44984-2	2Q3527.D	1	07/14/17	NAF	06/27/17	OP65686	S2Q81

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA44984-1, FA44984-2, FA44984-3, FA44984-4

CAS No.	Compound	FA44984-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0131	J	0.333	0.271	77	0.333	0.216	61	23	20-120/30
2706-90-3	Perfluoropentanoic acid	0.0137	J	0.333	0.321	92	0.333	0.244	69	27	40-131/30
307-24-4	Perfluorohexanoic acid	0.0105	J	0.333	0.269	78	0.333	0.197	56* [a]	31* [b]	63-146/30
375-85-9	Perfluoroheptanoic acid	ND		0.333	0.249	75	0.333	0.179	54* [a]	33* [b]	71-138/30
335-67-1	Perfluorooctanoic acid	0.0107	J	0.333	0.209	59* [a]	0.333	0.160	45* [a]	27	74-137/30
375-95-1	Perfluorononanoic acid	ND		0.333	0.125	37* [a]	0.333	0.131	39* [a]	5	76-140/30
335-76-2	Perfluorodecanoic acid	ND		0.333	0.0595	18* [a]	0.333	0.0866	26* [a]	37* [b]	65-148/30
2058-94-8	Perfluoroundecanoic acid	ND		0.333	0.0374	11* [a]	0.333	0.0599	18* [a]	46* [b]	57-138/30
307-55-1	Perfluorododecanoic acid	ND		0.333	0.0419	13* [a]	0.333	0.0585	18* [a]	33* [b]	58-118/30
72629-94-8	Perfluorotridecanoic acid	ND		0.333	0.0587	18* [a]	0.333	0.0639	19* [a]	8	52-120/30
376-06-7	Perfluorotetradecanoic acid	ND		0.333	0.0825	25* [a]	0.333	0.0744	22* [a]	10	49-122/30
375-73-5	Perfluorobutanesulfonic acid	0.0172		0.333	0.341	97	0.333	0.301	85	12	73-148/30
355-46-4	Perfluorohexanesulfonic acid	0.0195		0.333	0.380	108	0.333	0.332	94	13	74-142/30
375-92-8	Perfluoroheptanesulfonic acid	ND		0.333	0.305	91	0.333	0.309	93	1	74-123/30
1763-23-1	Perfluorooctanesulfonic acid	0.0487		0.333	0.300	75	0.333	0.233	55* [a]	25	70-134/30
335-77-3	Perfluorodecanesulfonic acid	ND		0.333	0.168	50* [a]	0.333	0.137	41* [a]	20	56-127/30
754-91-6	PFOSA	ND		0.333	ND	0* [c]	0.333	ND	0* [c]	nc	40-142/30
2355-31-9	MeFOSAA	ND		0.333	0.0358	11* [a]	0.333	0.0733	22* [a]	69* [b]	57-128/30
2991-50-6	EtFOSAA	ND		0.333	0.0342	10* [a]	0.333	0.0701	21* [a]	69* [b]	55-135/30
27619-97-2	6:2 Fluorotelomer sulfonate	ND		0.333	0.309	93	0.333	0.338	101	9	70-153/30
39108-34-4	8:2 Fluorotelomer sulfonate	ND		0.333	0.218	65	0.333	0.241	72	10	61-154/30

CAS No.	Surrogate Recoveries	MS	MSD	FA44984-2	Limits
	13C2-PFHxA	74%	61%	76%	61-134%
	13C2-PFDA	17%* [e]	29%* [e]	20%* [d]	62-128%
	d5-EtFOSAA	10%* [e]	21%* [e]	17%* [d]	57-135%

(a) AZ:M2
(b) AZ:R2
(c) AZ:M7
(d) Outside control limits due to matrix interference. Confirmed by MS/MSD. AZ:S6
(e) Outside control limits. AZ:S6

* = Outside of Control Limits.

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Automated Report

Technical Report for

Hargis + Associates, Inc.

Marana Project; Marana, AZ

1229.3

SGS Accutest Job Number: FA45275

Sampling Date: 06/23/17

Report to:

Hargis + Associates, Inc
7400 N Oracle Rd Suite 202
Tucson, AZ 85704
CPERKOVAC@HARGIS.COM

ATTN: Chris Perkovac

Total number of pages in report: **33**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Elvin Kumar 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(L-A-B L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AK, AR, GA, IA, KY, MA, NV, OK, OR, UT, WA

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SGS Accutest

Sample Summary

Hargis + Associates, Inc.

Job No: FA45275

Marana Project; Marana, AZ
Project No: 1229.3

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA45275-1	06/23/17	06:55	DG	06/24/17	AQ	Ground Water	WELLA024A-2017-06-23
FA45275-2	06/23/17	07:55	DG	06/24/17	AQ	Ground Water	WELLA030A-2017-06-23
FA45275-3	06/23/17	08:05	DG	06/24/17	AQ	Field Blank Water	FB-2017-06-23 (A-030A)
FA45275-4	06/23/17	09:00	DG	06/24/17	AQ	Ground Water	WELLM007A-2017-06-23

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hargis + Associates, Inc. **Job No:** FA45275

Site: Marana Project; Marana, AZ **Report Date** 7/24/2017 8:05:31 PM

3 Samples and 1 Field Blank were collected on 06/23/2017 and were received at SGS Accutest Southeast (SASE) on 06/24/2017 properly preserved, at 3.8 Deg. C and intact. These Samples received an SASE job number of FA45275. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65686

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA44984-2MS, FA44984-2MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for PFOSA are outside control limits.

Matrix Spike Recovery(s) for EtFOSAA, MeFOSAA, Perfluorodecanesulfonic acid, Perfluorodecanoic acid, Perfluorododecanoic acid, Perfluorononanoic acid, Perfluorooctanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic acid are outside control limits. Probable cause is due to matrix interference. AZ:M2

Matrix Spike Duplicate Recovery(s) for Perfluorodecanesulfonic acid, Perfluorononanoic acid, Perfluorooctanesulfonic acid, Perfluorooctanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, EtFOSAA, MeFOSAA, Perfluorodecanoic acid, Perfluorododecanoic acid, Perfluoroheptanoic acid, Perfluorohexanoic acid, Perfluoroundecanoic acid are outside control limits. Probable cause is due to matrix interference. AZ:M2

Matrix Spike / Matrix Spike Duplicate Recovery(s) for PFOSA are outside control limits. Probable cause is due to matrix interference. AZ:M7

RPD(s) for MSD for EtFOSAA, MeFOSAA, Perfluorodecanoic acid, Perfluorododecanoic acid, Perfluoroheptanoic acid, Perfluorohexanoic acid, Perfluoroundecanoic acid are outside control limits for sample OP65686-MSD. Probable cause is due to sample non-homogeneity. AZ:R2

Sample(s) FA45275-3, FA45275-4, OP65686-MS, OP65686-MSD have surrogates outside control limits. Probable cause is due to matrix interference.

FA45275-3 for d5-NEtFOSAA: Outside control limits. AZ:S7

FA45275-4 for d5-NEtFOSAA: Outside control limits. AZ:S7

OP65686-MS for 13C2-PFDA: Outside control limits. AZ:S6

OP65686-MS for d5-EtFOSAA: Outside control limits. AZ:S6

OP65686-MSD for 13C2-PFDA: Outside control limits. AZ:S6

OP65686-MSD for d5-EtFOSAA: Outside control limits. AZ:S6

FA45275-3 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA45275-3: Confirmed ND by re-extraction and reanalysis.

FA45275-4 for Perfluorobutanesulfonic acid: AZ:E4

FA45275-4 for Perfluorobutanoic acid: AZ:E4

FA45275-4 for Perfluoroheptanoic acid: AZ:E4

FA45275-4 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA45275-4: Confirmed by re-extraction and reanalysis.

Matrix: AQ **Batch ID:** OP66032

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Blank Spike Recovery(s) for Perfluorobutanoic acid are outside control limits.

The following samples were extracted outside of holding time for method EPA 537 MOD: FA45275-1, FA45275-2, FA45275-3, FA45275-4

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP66032

FA45275-1: Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results. AZ:H4

FA45275-1 for Perfluorobutanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45275-2: Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results. AZ:H4

FA45275-2 for Perfluorobutanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45275-3: Confirmation run.

FA45275-4: Confirmation run.

Extractables by GCMS By Method SW846 8270D BY SIM

Matrix: AQ **Batch ID:** OP65774

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA45330-6MS, FA45330-6MSD were used as the QC samples indicated.

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used

Narrative prepared by:

_____ Date: July 24, 2017

Lovelie Metzgar, QA Officer (signature on file)

Summary of Hits

Job Number: FA45275
Account: Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ
Collected: 06/23/17

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA45275-1	**WELLA024A-2017-06-23**					
Perfluoropentanoic acid [a]		0.0134 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorohexanoic acid [b]		0.0174	0.017	0.0083	ug/l	EPA 537 MOD
Perfluoroheptanoic acid [a]		0.00832 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanoic acid [a]		0.0133 J	0.017	0.0042	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid [b]		0.0179	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [b]		0.0258	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [b]		0.0351	0.017	0.0042	ug/l	EPA 537 MOD
FA45275-2	**WELLA030A-2017-06-23**					
Perfluoropentanoic acid [a]		0.0135 J	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorohexanoic acid [b]		0.0164	0.015	0.0077	ug/l	EPA 537 MOD
Perfluoroheptanoic acid [a]		0.00777 J	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorooctanoic acid [a]		0.0129 J	0.015	0.0038	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid [b]		0.0171	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [b]		0.0254	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [b]		0.0342	0.015	0.0038	ug/l	EPA 537 MOD
FA45275-3	**FB-2017-06-23 (A-030A)**					
No hits reported in this sample.						
FA45275-4	**WELLM007A-2017-06-23**					
Perfluorobutanoic acid [c]		0.0143 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluoropentanoic acid [d]		0.0358	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanoic acid [d]		0.0294	0.016	0.0080	ug/l	EPA 537 MOD
Perfluoroheptanoic acid [c]		0.0119 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid [d]		0.0218	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid [c]		0.0148 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [d]		0.0274	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [d]		0.0835	0.016	0.0040	ug/l	EPA 537 MOD

(a) Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results. AZ:H4 AZ:E4
(b) Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results. AZ:H4
(c) Confirmed by re-extraction and reanalysis. AZ:E4
(d) Confirmed by re-extraction and reanalysis.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	WELLA024A-2017-06-23		
Lab Sample ID:	FA45275-1	**Date Sampled:**	06/23/17
Matrix:	AQ - Ground Water	**Date Received:**	06/24/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q37054.D	1	07/21/17 09:52	NAF	07/19/17 10:30	OP66032	SQ939
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [b]	ND	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.0134	0.017	0.0083	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0174	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid [c]	0.00832	0.017	0.0083	ug/l	J
335-67-1	Perfluorooctanoic acid [c]	0.0133	0.017	0.0042	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0179	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0258	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0351	0.017	0.0042	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLA024A-2017-06-23		
Lab Sample ID:	FA45275-1	**Date Sampled:**	06/23/17
Matrix:	AQ - Ground Water	**Date Received:**	06/24/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	109%		61-134%
	13C2-PFDA	101%		62-128%
	d5-EtFOSAA	107%		57-135%

(a) Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results. AZ:H4
(b) Associated BS recovery outside control limits. AZ:L2
(c) AZ:E4

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLA024A-2017-06-23		
Lab Sample ID:	FA45275-1	**Date Sampled:**	06/23/17
Matrix:	AQ - Ground Water	**Date Received:**	06/24/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101705.D	1	07/01/17 12:42	FS	06/30/17 13:30	OP65774	SW4438
Run #2							

	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	89%		42-108%
321-60-8	2-Fluorobiphenyl	82%		40-106%
1718-51-0	Terphenyl-d14	80%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLA030A-2017-06-23		
Lab Sample ID:	FA45275-2	**Date Sampled:**	06/23/17
Matrix:	AQ - Ground Water	**Date Received:**	06/24/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q37055.D	1	07/21/17 10:12	NAF	07/19/17 10:30	OP66032	SQ939
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [b]	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.0135	0.015	0.0077	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0164	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid [c]	0.00777	0.015	0.0077	ug/l	J
335-67-1	Perfluorooctanoic acid [c]	0.0129	0.015	0.0038	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0171	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0254	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0342	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLA030A-2017-06-23		
Lab Sample ID:	FA45275-2	**Date Sampled:**	06/23/17
Matrix:	AQ - Ground Water	**Date Received:**	06/24/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	108%		61-134%
	13C2-PFDA	94%		62-128%
	d5-EtFOSAA	93%		57-135%

(a) Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results. AZ:H4
(b) Associated BS recovery outside control limits. AZ:L2
(c) AZ:E4

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLA030A-2017-06-23		
Lab Sample ID:	FA45275-2	**Date Sampled:**	06/23/17
Matrix:	AQ - Ground Water	**Date Received:**	06/24/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101706.D	1	07/01/17 13:05	FS	06/30/17 13:30	OP65774	SW4438
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	86%		42-108%
321-60-8	2-Fluorobiphenyl	82%		40-106%
1718-51-0	Terphenyl-d14	87%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-23 (A-030A)		
Lab Sample ID:	FA45275-3	**Date Sampled:**	06/23/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/24/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3536.D	1	07/15/17 02:34	NAF	06/27/17 08:00	OP65686	S2Q81
Run #2 [b]	Q37056.D	1	07/21/17 10:32	NAF	07/19/17 10:30	OP66032	SQ939

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-23 (A-030A)		
Lab Sample ID:	FA45275-3	**Date Sampled:**	06/23/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/24/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	83%	117%	61-134%
	13C2-PFDA	68%	110%	62-128%
	d5-EtFOSAA	54% [d]	104%	57-135%

(a) Confirmed ND by re-extraction and reanalysis.
(b) Confirmation run.
(c) Associated BS recovery outside control limits. AZ:L2
(d) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLM007A-2017-06-23		
Lab Sample ID:	FA45275-4	**Date Sampled:**	06/23/17
Matrix:	AQ - Ground Water	**Date Received:**	06/24/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3537.D	1	07/15/17 02:55	NAF	06/27/17 08:00	OP65686	S2Q81
Run #2 [b]	Q37057.D	1	07/21/17 10:52	NAF	07/19/17 10:30	OP66032	SQ939

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [c]	0.0143	0.016	0.0080	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0358	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	0.0294	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid [c]	0.0119	0.016	0.0080	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0218	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid [c]	0.0148	0.016	0.0080	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0274	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0835	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLM007A-2017-06-23		
Lab Sample ID:	FA45275-4	**Date Sampled:**	06/23/17
Matrix:	AQ - Ground Water	**Date Received:**	06/24/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	73%	108%	61-134%
	13C2-PFDA	65%	103%	62-128%
	d5-EtFOSAA	42% [e]	105%	57-135%

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLM007A-2017-06-23		
Lab Sample ID:	FA45275-4	**Date Sampled:**	06/23/17
Matrix:	AQ - Ground Water	**Date Received:**	06/24/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101707.D	1	07/01/17 13:28	FS	06/30/17 13:30	OP65774	SW4438
Run #2							

	Initial Volume	Final Volume
Run #1	1030 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.15	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	78%		42-108%
321-60-8	2-Fluorobiphenyl	76%		40-106%
1718-51-0	Terphenyl-d14	69%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: FA45275
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time.
L2	The associated blank spike recovery was below laboratory acceptance limits.
M2	Matrix spike recovery was low; the associated blank spike recovery was acceptable.
M7	Matrix spike recovery was low. Data reported per ADEQ policy 0154.000. Matrix Interference was confirmed.
R2	RPD/RSD exceeded the laboratory acceptance limit. See Case Narrative.
S6	Surrogate recovery was below laboratory and method acceptance limits. Reextraction and/or reanalysis confirms low recovery caused by matrix effect.
S7	Surrogate recovery was below laboratory and method acceptance limits. Unable to confirm matrix effect.

SGS PHOENIX ACCUTEST

CHAIN OF CUSTODY

PAGE 1 OF 1

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking #: | Bottle Order Control #:
SGS Accutest Quote #: | SGS Accutest Job #: FA45275

Client / Reporting Information

Company Name: Hargis + Associates
Street Address: 7400 N. ORACLE RD.
City: Tucson State: AZ Zip: 85704
Project Contact: CHRIS PERKOVAC E-mail: cperkovac@hargis.com
Phone #: 520-881-7300 Fax #:
Sampler(s) Name(s): DLG Phone #:

Project Information

Project Name: Marana Project
Street:
City: State:
Project #: 1229
Client Purchase Order #:
Project Manager:

Billing Information (If different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank

SGS Accutest Sample #	Field ID / Point of Collection	Collection Date	Time	Sampled By	Matrix	# of bottles	HCl	NaOH	ZA/NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	TSP	NaHSO4	ENCORE	OTHER	LC537 List/EPA 537	8270 Sim 14 DIOX	LAB USE ONLY
1	wellA024A-2017-06-23	6/23/17	0655	DLG	GW	4						X							X	X	
2	wellA030A-2017-06-23		0755		GW	4						X							X	X	
3	FB-2017-06-23 (A-030A)		0805		WW	2						X	X						X		
4	wellLM007A-2017-06-23		0900		GW	4						X							X	X	

Turnaround Time (Business days)

- [x] Standard
- [ ] 5 Day *RUSH*
- [ ] 4 Day *RUSH*
- [ ] 3 Day *RUSH*
- [ ] 2 Day *RUSH*
- [ ] 1 Day *EMERGENCY*

Approved By (SGS Accutest PM): / Date:

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULT1 (Level 3+4)
- [ ] REDT1 (Level 3+4)
- [ ] Commercial "C"
- [ ] TRRP
- [ ] EDD Format
- [ ] Other _____

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Comments / Special Instructions

Form: SM021-0

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Date Time:	Relinquished By:	Date Time:	Received By:	Date Time:
1 DLG	6/23/17 1400	1 [signature]	6/23/17 1400	2 [signature]	6/23/17 1600	2 Fedex	
3 FR	06/24/17 0930	[signature]		4		4	
5		5					

Custody Seal # | [ ] Intact [ ] Not intact | Preserved where applicable [ ] | On Ice [ ] | Cooler Temp. 3.8

FA45275: Chain of Custody
Page 1 of 2

SGS Accutest Sample Receipt Summary

Job Number: FA45275 **Client:** HARGIS ASSOCIATES **Project:** MARANA PROJECT

Date / Time Received: 6/24/2017 9:30:00 AM **Delivery Method:** fx **Airbill #'s:** 786979962760

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** N/A

Cooler Temps (Raw Measured) °C: Cooler 1: (3.4);

Cooler Temps (Corrected) °C: Cooler 1: (3.8);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☐		☐
4. Cooler temp verification	N/A		
5. Cooler media	N/A		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: carlosp Date: 6/24/2017 9:30:00 AM Reviewer: TL Date: 6/24/2017

FA45275: Chain of Custody
Page 2 of 2

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA45275
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65774-MB	W101703.D	1	07/01/17	FS	06/30/17	OP65774	SW4438

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA45275-1, FA45275-2, FA45275-4

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	84%	42-108%
321-60-8	2-Fluorobiphenyl	87%	40-106%
1718-51-0	Terphenyl-d14	80%	39-121%

Method Blank Summary

Job Number: FA45275
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65774-MB	W101715.D	1	07/03/17	NJ	06/30/17	OP65774	SW4439

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA45275-1, FA45275-2, FA45275-4

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	93%	42-108%
321-60-8	2-Fluorobiphenyl	92%	40-106%
1718-51-0	Terphenyl-d14	98%	39-121%

Method Blank Summary

Job Number: FA45275
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65686-MB	2Q3525.D	1	07/14/17	NAF	06/27/17	OP65686	S2Q81

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45275-3, FA45275-4

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	92%	61-134%
	13C2-PFDA	88%	62-128%
	d5-EtFOSAA	58%	57-135%

Method Blank Summary

Job Number: FA45275
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP66032-MB	Q37051.D	1	07/21/17	NAF	07/19/17	OP66032	SQ939

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45275-1, FA45275-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	120%	61-134%
	13C2-PFDA	115%	62-128%

Blank Spike Summary

Job Number: FA45275
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65774-BS	W101704.D	1	07/01/17	FS	06/30/17	OP65774	SW4438

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA45275-1, FA45275-2, FA45275-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	10	2.8	28	15-69

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	66%	42-108%
321-60-8	2-Fluorobiphenyl	67%	40-106%
1718-51-0	Terphenyl-d14	76%	39-121%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA45275
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65774-BS	W101714.D	1	07/03/17	NJ	06/30/17	OP65774	SW4439

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA45275-1, FA45275-2, FA45275-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	10	2.6	26	15-69

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	70%	42-108%
321-60-8	2-Fluorobiphenyl	73%	40-106%
1718-51-0	Terphenyl-d14	73%	39-121%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA45275
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65686-BS	2Q3524.D	1	07/14/17	NAF	06/27/17	OP65686	S2Q81

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45275-3, FA45275-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.140	91	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.169	110	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.154	100	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.164	107	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.161	105	74-137
375-95-1	Perfluorononanoic acid	0.154	0.164	107	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.149	97	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.110	71	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.0927	60	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.0868	56	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.0882	57	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.159	103	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.177	115	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.154	0.137	89	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.147	96	70-134
335-77-3	Perfluorodecanesulfonic acid	0.154	0.0961	62	56-127
754-91-6	PFOSA	0.154	ND	0*	40-142
2355-31-9	MeFOSAA	0.154	0.111	72	57-128
2991-50-6	EtFOSAA	0.154	0.104	68	55-135
27619-97-2	6:2 Fluorotelomer sulfonate	0.154	0.143	93	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.154	0.123	80	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	91%	61-134%
	13C2-PFDA	92%	62-128%
	d5-EtFOSAA	73%	57-135%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA45275
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP66032-BS	Q37050.D	1	07/21/17	NAF	07/19/17	OP66032	SQ939

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45275-1, FA45275-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	ND	0*	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.149	97	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.212	138	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.203	132	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.190	123	74-137
375-95-1	Perfluorononanoic acid	0.154	0.199	129	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.207	135	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.193	125	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.175	114	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.168	109	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.170	110	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.176	114	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.187	122	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.154	0.157	102	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.178	116	70-134
335-77-3	Perfluorodecanesulfonic acid	0.154	0.161	105	56-127
754-91-6	PFOSA	0.154	0.106	69	40-142
2355-31-9	MeFOSAA	0.154	0.147	96	57-128
2991-50-6	EtFOSAA	0.154	0.161	105	55-135
27619-97-2	6:2 Fluorotelomer sulfonate	0.154	0.166	108	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.154	0.184	120	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	127%	61-134%
	13C2-PFDA	113%	62-128%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA45275
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65774-MS	W101716.D	1	07/03/17	NJ	06/30/17	OP65774	SW4439
OP65774-MSD	W101717.D	1	07/03/17	NJ	06/30/17	OP65774	SW4439
FA45330-6	W101711.D	1	07/01/17	FS	06/30/17	OP65774	SW4438

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA45275-1, FA45275-2, FA45275-4

CAS No.	Compound	FA45330-6 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	0.33		19.2	5.2	25	19.2	6.2	31	18	15-69/31

CAS No.	Surrogate Recoveries	MS	MSD	FA45330-6	Limits
4165-60-0	Nitrobenzene-d5	67%	72%	91%	42-108%
321-60-8	2-Fluorobiphenyl	79%	79%	82%	40-106%
1718-51-0	Terphenyl-d14	91%	79%	83%	39-121%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA45275
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65686-MS	2Q3528.D	1	07/14/17	NAF	06/27/17	OP65686	S2Q81
OP65686-MSD	2Q3529.D	1	07/15/17	NAF	06/27/17	OP65686	S2Q81
FA44984-2	2Q3527.D	1	07/14/17	NAF	06/27/17	OP65686	S2Q81

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45275-3, FA45275-4

CAS No.	Compound	FA44984-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0131	J	0.333	0.271	77	0.333	0.216	61	23	20-120/30
2706-90-3	Perfluoropentanoic acid	0.0137	J	0.333	0.321	92	0.333	0.244	69	27	40-131/30
307-24-4	Perfluorohexanoic acid	0.0105	J	0.333	0.269	78	0.333	0.197	56* [a]	31* [b]	63-146/30
375-85-9	Perfluoroheptanoic acid	ND		0.333	0.249	75	0.333	0.179	54* [a]	33* [b]	71-138/30
335-67-1	Perfluorooctanoic acid	0.0107	J	0.333	0.209	59* [a]	0.333	0.160	45* [a]	27	74-137/30
375-95-1	Perfluorononanoic acid	ND		0.333	0.125	37* [a]	0.333	0.131	39* [a]	5	76-140/30
335-76-2	Perfluorodecanoic acid	ND		0.333	0.0595	18* [a]	0.333	0.0866	26* [a]	37* [b]	65-148/30
2058-94-8	Perfluoroundecanoic acid	ND		0.333	0.0374	11* [a]	0.333	0.0599	18* [a]	46* [b]	57-138/30
307-55-1	Perfluorododecanoic acid	ND		0.333	0.0419	13* [a]	0.333	0.0585	18* [a]	33* [b]	58-118/30
72629-94-8	Perfluorotridecanoic acid	ND		0.333	0.0587	18* [a]	0.333	0.0639	19* [a]	8	52-120/30
376-06-7	Perfluorotetradecanoic acid	ND		0.333	0.0825	25* [a]	0.333	0.0744	22* [a]	10	49-122/30
375-73-5	Perfluorobutanesulfonic acid	0.0172		0.333	0.341	97	0.333	0.301	85	12	73-148/30
355-46-4	Perfluorohexanesulfonic acid	0.0195		0.333	0.380	108	0.333	0.332	94	13	74-142/30
375-92-8	Perfluoroheptanesulfonic acid	ND		0.333	0.305	91	0.333	0.309	93	1	74-123/30
1763-23-1	Perfluorooctanesulfonic acid	0.0487		0.333	0.300	75	0.333	0.233	55* [a]	25	70-134/30
335-77-3	Perfluorodecanesulfonic acid	ND		0.333	0.168	50* [a]	0.333	0.137	41* [a]	20	56-127/30
754-91-6	PFOSA	ND		0.333	ND	0* [c]	0.333	ND	0* [c]	nc	40-142/30
2355-31-9	MeFOSAA	ND		0.333	0.0358	11* [a]	0.333	0.0733	22* [a]	69* [b]	57-128/30
2991-50-6	EtFOSAA	ND		0.333	0.0342	10* [a]	0.333	0.0701	21* [a]	69* [b]	55-135/30
27619-97-2	6:2 Fluorotelomer sulfonate	ND		0.333	0.309	93	0.333	0.338	101	9	70-153/30
39108-34-4	8:2 Fluorotelomer sulfonate	ND		0.333	0.218	65	0.333	0.241	72	10	61-154/30

CAS No.	Surrogate Recoveries	MS	MSD	FA44984-2	Limits
	13C2-PFHxA	74%	61%	76%	61-134%
	13C2-PFDA	17%* [e]	29%* [e]	20%* [d]	62-128%
	d5-EtFOSAA	10%* [e]	21%* [e]	17%* [d]	57-135%

(a) AZ:M2
(b) AZ:R2
(c) AZ:M7
(d) Outside control limits due to matrix interference. Confirmed by MS/MSD. AZ:S6
(e) Outside control limits. AZ:S6

* = Outside of Control Limits.

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Automated Report

Technical Report for

Hargis + Associates, Inc.

Marana Project; Marana, AZ

1229.3

SGS Accutest Job Number: FA45317

Sampling Date: 06/22/17

Report to:

Hargis + Associates, Inc
7400 N Oracle Rd Suite 202
Tucson, AZ 85704
CPERKOVAC@HARGIS.COM

ATTN: Chris Perkovac

Total number of pages in report: **31**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Elvin Kumar 407-425-6700

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SGS Accutest

Sample Summary

Hargis + Associates, Inc.

Job No: FA45317

Marana Project; Marana, AZ
Project No: 1229.3

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA45317-1	06/22/17	09:00	DLG	06/27/17	AQ	Ground Water	WELLWR133B-2017-06-22
FA45317-2	06/22/17	11:24	DLG	06/27/17	AQ	Ground Water	WELLA039A-2017-06-22
FA45317-3	06/22/17	12:20	DLG	06/27/17	AQ	Ground Water	WELLZ011A-2017-06-22
FA45317-4	06/22/17	12:25	DLG	06/27/17	AQ	Field Blank Water	FB-2017-06-22 (Z-011A)

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hargis + Associates, Inc. **Job No:** FA45317

Site: Marana Project; Marana, AZ **Report Date:** 7/19/2017 7:36:22 PM

3 Sample(s) and 1 Field Blank(s) were collected on 06/22/2017 and were received at SGS Accutest Southeast (SASE) on 06/27/2017 properly preserved, at 2.2 Deg. C and intact. These Samples received an SASE job number of FA45317. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65758

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA45317-2MS, FA45317-2MSD were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Blank Spike Recovery(s) for Perfluorodecanesulfonic acid, Perfluorododecanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, PFOSA are outside control limits.

Matrix Spike Recovery(s) for EtFOSAA, MeFOSAA, Perfluorodecanesulfonic acid, Perfluorodecanoic acid, Perfluorododecanoic acid, Perfluorononanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic acid, PFOSA are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for EtFOSAA, MeFOSAA, Perfluorodecanesulfonic acid, Perfluorododecanoic acid, Perfluoroheptanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic acid, PFOSA, Perfluorodecanoic acid, Perfluorononanoic acid, Perfluorooctanesulfonic acid, Perfluorooctanoic acid are outside control limits. Probable cause is due to matrix interference.

RPD(s) for MSD for 8:2 Fluorotelomer sulfonate, Perfluorodecanoic acid, Perfluorononanoic acid, Perfluorooctanesulfonic acid, Perfluorooctanoic acid are outside control limits for sample OP65758-MSD. Probable cause is due to sample non-homogeneity.

Sample(s) OP65758-MB, FA45317-2, FA45317-1, OP65758-MS, OP65758-MSD have surrogates outside control limits.

OP65758-MS for d5-EtFOSAA: Outside control limits. AZ:S12

OP65758-MS for Perfluorodecanoic acid: AZ:M7

OP65758-MS for Perfluorotridecanoic acid: AZ:M7

OP65758-MS for Perfluorodecanesulfonic acid: AZ:M7

OP65758-MS for MeFOSAA: AZ:M7

OP65758-MS for EtFOSAA: AZ:M7

OP65758-MS for Perfluoroundecanoic acid: AZ:M7

OP65758-MS for PFOSA: AZ:M7

OP65758-MS for 13C2-PFDA: Outside control limits. AZ:S12

OP65758-MS for 13C2-PFHxA: Outside control limits. AZ:S12

OP65758-MS for Perfluorododecanoic acid: AZ:M7

OP65758-MS for Perfluorononanoic acid: AZ:M7

OP65758-MSD for 13C2-PFDA: Outside control limits. AZ:S12

OP65758-MSD for 8:2 Fluorotelomer sulfonate: AZ:R9

OP65758-MSD for Perfluorodecanoic acid: AZ:R9

OP65758-MSD for d5-EtFOSAA: Outside control limits. AZ:S12

OP65758-MSD for Perfluorooctanoic acid: AZ:R9

OP65758-MSD for Perfluorooctanesulfonic acid: AZ:R9

OP65758-MSD for Perfluorononanoic acid: AZ:R9

FA45317-1 for d5-NEtFOSAA: Outside control limits.

FA45317-1 for 13C2-PFDA: Outside control limits.

FA45317-1 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA45317-1 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45317-1 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45317-1 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45317-1: Confirmed ND by re-extraction and reanalysis.

FA45317-1 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65758

FA45317-2 for 13C2-PFDA: Outside control limits due to matrix interference. Confirmed by MS/MSD.

FA45317-2 for d5-NEtFOSAA: Outside control limits due to matrix interference. Confirmed by MS/MSD.

FA45317-2 for Perfluorooctanesulfonic acid: AZ:E4

FA45317-2 for Perfluorohexanesulfonic acid: AZ:E4

FA45317-2 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. Insufficient sample for re-extraction. AZ:L2

FA45317-2 for PFOSA: Associated BS recovery outside control limits. Insufficient sample for re-extraction. AZ:L2

FA45317-2 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. Insufficient sample for re-extraction. AZ:L2

FA45317-2 for Perfluorododecanoic acid: Associated BS recovery outside control limits. Insufficient sample for re-extraction. AZ:L2

FA45317-2 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. Insufficient sample for re-extraction. AZ:L2

FA45317-3 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA45317-3 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA45317-3 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45317-3 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45317-3 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45317-4: Confirmation run.

Matrix: AQ **Batch ID:** OP65951

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

The following samples were extracted outside of holding time for method EPA 537 MOD: FA45317-1, FA45317-3, FA45317-4

Blank Spike Recovery(s) for Perfluorobutanoic acid, Perfluorodecanesulfonic acid, Perfluorododecanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic acid, PFOSA are outside control limits.

Sample(s) FA45317-2, FA45317-1 have surrogates outside control limits.

FA45317-1: Confirmation run.

FA45317-3: Confirmation run.

FA45317-4: Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results.

Extractables by GCMS By Method SW846 8270D BY SIM

Matrix: AQ **Batch ID:** OP65755

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA45317-1MS, FA45317-1MSD were used as the QC samples indicated.

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Kim Benham, Client Services (signature on file)

Summary of Hits

Job Number: FA45317
Account: Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ
Collected: 06/22/17

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA45317-1	**WELLWR133B-2017-06-22**					
No hits reported in this sample.						
FA45317-2	**WELLA039A-2017-06-22**					
Perfluorohexanesulfonic acid [a]		0.0110 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [a]		0.0105 J	0.016	0.0040	ug/l	EPA 537 MOD
FA45317-3	**WELLZ011A-2017-06-22**					
No hits reported in this sample.						
FA45317-4	**FB-2017-06-22 (Z-011A)**					
Perfluorohexanesulfonic acid [b]		0.00900 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [c]		0.0395	0.016	0.0040	ug/l	EPA 537 MOD
6:2 Fluorotelomer sulfonate [b]		0.0255 J	0.040	0.016	ug/l	EPA 537 MOD

(a) AZ:E4
(b) Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results. AZ:E4
(c) Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	WELLWR133B-2017-06-22		
Lab Sample ID:	FA45317-1	**Date Sampled:**	06/22/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3593.D	1	07/18/17 13:59	NAF	06/30/17 08:00	OP65758	S2Q82
Run #2 [b]	2Q3506.D	1	07/14/17 16:10	NAF	07/13/17 08:30	OP65951	S2Q81

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [c]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLWR133B-2017-06-22		
Lab Sample ID:	FA45317-1	**Date Sampled:**	06/22/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	73%	94%	61-134%
	13C2-PFDA	54% [d]	71%	62-128%
	d5-EtFOSAA	41% [d]	78%	57-135%

(a) Confirmed ND by re-extraction and reanalysis.
(b) Confirmation run.
(c) Associated BS recovery outside control limits. AZ:L2
(d) Outside control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLWR133B-2017-06-22		
Lab Sample ID:	FA45317-1	**Date Sampled:**	06/22/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101692.D	1	06/30/17 23:02	NJ	06/29/17 16:00	OP65755	SW4437
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	89%		42-108%
321-60-8	2-Fluorobiphenyl	82%		40-106%
1718-51-0	Terphenyl-d14	81%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLA039A-2017-06-22		
Lab Sample ID:	FA45317-2	**Date Sampled:**	06/22/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q3315.D	1	07/11/17 07:05	NAF	06/30/17 08:00	OP65758	S2Q77
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [a]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [a]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [a]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid [b]	0.0110	0.016	0.0080	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [b]	0.0105	0.016	0.0040	ug/l	J
335-77-3	Perfluorodecanesulfonic acid [a]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [a]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLA039A-2017-06-22		
Lab Sample ID:	FA45317-2	**Date Sampled:**	06/22/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	62%		61-134%
	13C2-PFDA	47% [c]		62-128%
	d5-EtFOSAA	28% [c]		57-135%

(a) Associated BS recovery outside control limits. Insufficient sample for re-extraction. AZ:L2
(b) AZ:E4
(c) Outside control limits due to matrix interference. Confirmed by MS/MSD.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLA039A-2017-06-22		
Lab Sample ID:	FA45317-2	**Date Sampled:**	06/22/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101695.D	1	07/01/17 00:11	NJ	06/29/17 16:00	OP65755	SW4437
Run #2							

	Initial Volume	Final Volume
Run #1	1030 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.15	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	100%		42-108%
321-60-8	2-Fluorobiphenyl	91%		40-106%
1718-51-0	Terphenyl-d14	88%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLZ011A-2017-06-22		
Lab Sample ID:	FA45317-3	**Date Sampled:**	06/22/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3597.D	1	07/18/17 15:26	NAF	06/30/17 08:00	OP65758	S2Q82
Run #2 [b]	2Q3507.D	1	07/14/17 16:30	NAF	07/13/17 08:30	OP65951	S2Q81

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [c]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLZ011A-2017-06-22		
Lab Sample ID:	FA45317-3	**Date Sampled:**	06/22/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	94%	93%	61-134%
	13C2-PFDA	77%	63%	62-128%
	d5-EtFOSAA	77%	72%	57-135%

(a) Confirmed ND by re-extraction and reanalysis.
(b) Confirmation run.
(c) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLZ011A-2017-06-22		
Lab Sample ID:	FA45317-3	**Date Sampled:**	06/22/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101696.D	1	07/01/17 00:34	NJ	06/29/17 16:00	OP65755	SW4437
Run #2							

	Initial Volume	Final Volume
Run #1	1030 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.15	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	89%		42-108%
321-60-8	2-Fluorobiphenyl	80%		40-106%
1718-51-0	Terphenyl-d14	79%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-22 (Z-011A)		
Lab Sample ID:	FA45317-4	**Date Sampled:**	06/22/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3508.D	1	07/14/17 16:51	NAF	07/13/17 08:30	OP65951	S2Q81
Run #2 [b]	2Q3598.D	1	07/18/17 15:53	NAF	06/30/17 08:00	OP65758	S2Q82

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid [c]	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [c]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid [d]	0.00900	0.016	0.0080	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0395	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate [d]	0.0255	0.040	0.016	ug/l	J
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-22 (Z-011A)		
Lab Sample ID:	FA45317-4	**Date Sampled:**	06/22/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	92%	94%	61-134%
	13C2-PFDA	81%	64%	62-128%
	d5-EtFOSAA	94%	64%	57-135%

(a) Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results.
(b) Confirmation run.
(c) Associated BS recovery outside control limits. AZ:L2
(d) AZ:E4

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: FA45317
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
L2	The associated blank spike recovery was below laboratory acceptance limits.
M7	Matrix spike recovery was low. Data reported per ADEQ policy 0154.000. Matrix Interference was confirmed.
R9	Sample RPD exceeded the laboratory acceptance limit.
S12	Surrogate recovery was low. Data reported per ADEQ policy 0154.000.

SGS PHOENIX ACCUTEST

CHAIN OF CUSTODY

FA45317

PAGE 1 OF 1

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.accutest.com

FedEx Tracking # 7794 9668 3710
Bottle Order Control #
SGS Accutest Quote #
SGS Accutest Job #

Client / Reporting Information

Company Name: Hargis + Associates, Inc.
Street Address: 7400 N. ORACLE RD #202
City State Zip: Tucson AZ 85704
Project Contact: Chris Perkovic cperkovic@hargis.com
Phone #: 520-881-7300 Fax #:
Sampler(s) Name(s): DLG Phone #:

Project Information

Project Name: Marana Project
Street
City State
Client Purchase Order #
Project #: 1229
Project Manager

Billing Information (if different from Report to)

Company Name
Street Address
City State Zip
Attention:

Requested Analyses: LC537 List / EDA 537; 8270 SIM 14 DIOX.

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank

SGS Accutest Sample #	Field ID / Point of Collection	Collection Date	Time	Sampled By	Matrix	# of bottles	HCl	NaOH	Zn/NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	TSP	NaHSO4	ENCORE	OTHER	LC537 List / EDA 537	8270 SIM 14 DIOX.	LAB USE ONLY
1	Well WR133B-2017-06-22	6/22/17	0900	DLG	GW	4						X							X	X	
2	Well A039A-2017-06-22		1124		GW	4						X							X	X	
3	Well Z011A-2017-06-22		1220		GW	4						X							X	X	
4	FB-2017-06-22 (Z-011A)		1225		GW	2						X							X		

Turnaround Time (Business days)

- [x] Standard
- [ ] 5 Day *RUSH*
- [ ] 4 Day *RUSH*
- [ ] 3 Day *RUSH*
- [ ] 2 Day *RUSH*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (SGS Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULT1 (Level 3+4)
- [ ] REDT1 (Level 3+4)
- [ ] Commercial "C"
- [ ] TRRP
- [ ] EDD Format
- [ ] Other _____

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Comments / Special Instructions

Form: SM021-0

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Date Time:	Relinquished By:	Date Time:	Received By:	Date Time:
1		6/23/17 1605		6/26/17 1000		6/26/17 1300		6/26/17 1300
2	Relinquished by Sampler:	Date Time:	Received By:	Date Time:	Relinquished By:	Date Time:	Received By:	Date Time:
3		6/23/17 1700	Fed-EX	6/23/17 1700A	Fx			06/27/17 915
4	Relinquished by:	Date Time:	Received By:	Date Time:	Custody Seal #	Intact / Not intact	Preserved where applicable	On Ice / Cooler Temp.
5			5					0.2

5.2 5

FA45317: Chain of Custody
Page 1 of 2

SGS Accutest Sample Receipt Summary

Job Number: FA45317 **Client:** HARGIS & ASSOC. **Project:** MARANA PROJECT

Date / Time Received: 6/27/2017 9:15:00 AM **Delivery Method:** FED EX **Airbill #'s:** 7794 9664 3710

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (1.8);

Cooler Temps (Corrected) °C: Cooler 1: (2.2);

Cooler Information	Y	N
1. Custody Seals Present	☑	☐
2. Custody Seals Intact	☑	☐
3. Temp criteria achieved	☑	☐
4. Cooler temp verification	IR Gun	
5. Cooler media	Ice (Bag)	

Trip Blank Information	Y	N	N/A
1. Trip Blank present / cooler	☐	☑	☐
2. Trip Blank listed on COC	☐	☑	☐
	W	**S**	**N/A**
3. Type Of TB Received	☐	☐	☑

Sample Information	Y	N	N/A
1. Sample labels present on bottles	☑	☐	
2. Samples preserved properly	☑	☐	
3. Sufficient volume/containers recvd for analysis:	☑	☐	
4. Condition of sample	Intact		
5. Sample recvd within HT	☑	☐	
6. Dates/Times/IDs on COC match Sample Label	☐	☑	
7. VOCs have headspace	☐	☐	☑
8. Bottles received for unspecified tests	☐	☑	
9. Compositing instructions clear	☐	☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐	☐	☑
11. % Solids Jar received?	☐	☐	☑
12. Residual Chlorine Present?	☐	☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments SAMPLE #3 AMBERS TIME READ 1225. COC READS 1220.

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 6/27/2017 9:15:00 AM Reviewer: P.H Date: 6/27/2017

FA45317: Chain of Custody
Page 2 of 2

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA45317
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65755-MB	W101691.D	1	06/30/17	NJ	06/29/17	OP65755	SW4437

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA45317-1, FA45317-2, FA45317-3

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	93%	42-108%
321-60-8	2-Fluorobiphenyl	81%	40-106%
1718-51-0	Terphenyl-d14	83%	39-121%

Method Blank Summary

Job Number: FA45317
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65758-MB	2Q3308.D	1	07/11/17	NAF	06/30/17	OP65758	S2Q77

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45317-1, FA45317-2, FA45317-3

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	90%	61-134%
	13C2-PFDA	70%	62-128%
	d5-EtFOSAA	51%*	57-135%

Method Blank Summary

Job Number: FA45317
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65951-MB	2Q3505.D	1	07/14/17	NAF	07/13/17	OP65951	S2Q81

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45317-4

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	88%	61-134%
	13C2-PFDA	75%	62-128%
	d5-EtFOSAA	81%	57-135%

Blank Spike Summary

Job Number: FA45317
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65755-BS	W101690.D	1	06/30/17	NJ	06/29/17	OP65755	SW4437

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA45317-1, FA45317-2, FA45317-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	10	3.0	30	15-69

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	76%	42-108%
321-60-8	2-Fluorobiphenyl	87%	40-106%
1718-51-0	Terphenyl-d14	93%	39-121%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA45317
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65758-BS	2Q3307.D	1	07/11/17	NAF	06/30/17	OP65758	S2Q77

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45317-1, FA45317-2, FA45317-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.146	95	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.155	101	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.154	100	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.156	101	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.159	103	74-137
375-95-1	Perfluorononanoic acid	0.154	0.152	99	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.148	96	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.106	69	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.0691	45*	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.0616	40*	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.0642	42*	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.153	99	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.163	106	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.154	0.150	97	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.142	92	70-134
335-77-3	Perfluorodecanesulfonic acid	0.154	0.0760	49*	56-127
754-91-6	PFOSA	0.154	0.0347	23*	40-142
2355-31-9	MeFOSAA	0.154	0.124	81	57-128
2991-50-6	EtFOSAA	0.154	0.109	71	55-135
27619-97-2	6:2 Fluorotelomer sulfonate	0.154	0.147	96	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.154	0.153	99	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	91%	61-134%
	13C2-PFDA	82%	62-128%
	d5-EtFOSAA	67%	57-135%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA45317
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65951-BS	2Q3504.D	1	07/14/17	NAF	07/13/17	OP65951	S2Q81

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45317-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.0129	8*	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.134	87	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.137	89	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.135	88	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.136	88	74-137
375-95-1	Perfluorononanoic acid	0.154	0.131	85	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.119	77	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.0803	52*	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.0608	40*	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.0576	37*	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.0585	38*	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.131	85	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.144	94	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.154	0.142	92	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.116	75	70-134
335-77-3	Perfluorodecanesulfonic acid	0.154	0.0648	42*	56-127
754-91-6	PFOSA	0.154	0.0421	27*	40-142
2355-31-9	MeFOSAA	0.154	0.104	68	57-128
2991-50-6	EtFOSAA	0.154	0.0947	62	55-135
27619-97-2	6:2 Fluorotelomer sulfonate	0.154	0.148	96	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.154	0.123	80	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	95%	61-134%
	13C2-PFDA	81%	62-128%
	d5-EtFOSAA	67%	57-135%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA45317
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65755-MS	W101693.D	1	06/30/17	NJ	06/29/17	OP65755	SW4437
OP65755-MSD	W101694.D	1	06/30/17	NJ	06/29/17	OP65755	SW4437
FA45317-1	W101692.D	1	06/30/17	NJ	06/29/17	OP65755	SW4437

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA45317-1, FA45317-2, FA45317-3

CAS No.	Compound	FA45317-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	ND		20	8.4	42	20	9.1	46	8	15-69/31

CAS No.	Surrogate Recoveries	MS	MSD	FA45317-1	Limits
4165-60-0	Nitrobenzene-d5	77%	82%	89%	42-108%
321-60-8	2-Fluorobiphenyl	90%	93%	82%	40-106%
1718-51-0	Terphenyl-d14	91%	96%	81%	39-121%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA45317
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65758-MS	2Q3311.D	1	07/11/17	NAF	06/30/17	OP65758	S2Q77
OP65758-MSD	2Q3312.D	1	07/11/17	NAF	06/30/17	OP65758	S2Q77
FA45317-2	2Q3315.D	1	07/11/17	NAF	06/30/17	OP65758	S2Q77

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45317-1, FA45317-2, FA45317-3

CAS No.	Compound	FA45317-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	ND		0.333	0.249	75	0.333	0.251	75	1	20-120/30
2706-90-3	Perfluoropentanoic acid	ND		0.333	0.265	79	0.333	0.264	79	0	40-131/30
307-24-4	Perfluorohexanoic acid	ND		0.333	0.246	74	0.333	0.228	68	8	63-146/30
375-85-9	Perfluoroheptanoic acid	ND		0.333	0.254	76	0.333	0.187	56*	30	71-138/30
335-67-1	Perfluorooctanoic acid	ND		0.333	0.275	82	0.333	0.172	52*	46* [a]	74-137/30
375-95-1	Perfluorononanoic acid	ND		0.333	0.242	73* [b]	0.333	0.163	49*	39* [a]	76-140/30
335-76-2	Perfluorodecanoic acid	ND		0.333	0.197	59* [b]	0.333	0.143	43*	32* [a]	65-148/30
2058-94-8	Perfluoroundecanoic acid	ND		0.333	0.160	48* [b]	0.333	0.145	43*	10	57-138/30
307-55-1	Perfluorododecanoic acid	ND		0.333	0.144	43* [b]	0.333	0.149	45*	3	58-118/30
72629-94-8	Perfluorotridecanoic acid	ND		0.333	0.156	47* [b]	0.333	0.162	49*	4	52-120/30
376-06-7	Perfluorotetradecanoic acid	ND		0.333	0.186	56	0.333	0.187	56	1	49-122/30
375-73-5	Perfluorobutanesulfonic acid	ND		0.333	0.384	115	0.333	0.342	103	12	73-148/30
355-46-4	Perfluorohexanesulfonic acid	0.0110	J	0.333	0.409	119	0.333	0.345	100	17	74-142/30
375-92-8	Perfluoroheptanesulfonic acid	ND		0.333	0.324	97	0.333	0.258	77	23	74-123/30
1763-23-1	Perfluorooctanesulfonic acid	0.0105	J	0.333	0.294	85	0.333	0.192	54*	42* [a]	70-134/30
335-77-3	Perfluorodecanesulfonic acid	ND		0.333	0.177	53* [b]	0.333	0.166	50*	6	56-127/30
754-91-6	PFOSA	ND		0.333	ND	0* [b]	0.333	ND	0*	nc	40-142/30
2355-31-9	MeFOSAA	ND		0.333	0.162	49* [b]	0.333	0.132	40*	20	57-128/30
2991-50-6	EtFOSAA	ND		0.333	0.142	43* [b]	0.333	0.124	37*	14	55-135/30
27619-97-2	6:2 Fluorotelomer sulfonate	ND		0.333	0.315	94	0.333	0.344	103	9	70-153/30
39108-34-4	8:2 Fluorotelomer sulfonate	ND		0.333	0.282	85	0.333	0.205	61	32* [a]	61-154/30

CAS No.	Surrogate Recoveries	MS	MSD	FA45317-2	Limits
	13C2-PFHxA	60%* [c]	63%	62%	61-134%
	13C2-PFDA	46%* [c]	39%* [c]	47%* [d]	62-128%
	d5-EtFOSAA	41%* [c]	38%* [c]	28%* [d]	57-135%

(a) AZ:R9
(b) AZ:M7
(c) Outside control limits. AZ:S12
(d) Outside control limits due to matrix interference. Confirmed by MS/MSD.

* = Outside of Control Limits.

SGS ACCUTEST IS PART OF SGS, THE WORLD'S LEADING INSPECTION, VERIFICATION, TESTING AND CERTIFICATION COMPANY.

e-Hardcopy 2.0
Automated Report

Technical Report for

Hargis + Associates, Inc.

Marana Project; Marana, AZ

1229.3

SGS Accutest Job Number: FA45330

Sampling Date: 06/26/17

Report to:

Hargis + Associates, Inc
7400 N Oracle Rd Suite 202
Tucson, AZ 85704
CPERKOVAC@HARGIS.COM

ATTN: Chris Perkovac

Total number of pages in report: 52

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Elvin Kumar 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(L-A-B L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AK, AR, GA, IA, KY, MA, NV, OK, OR, UT, WA

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SGS Accutest

Sample Summary

Hargis + Associates, Inc.

Job No: FA45330

Marana Project; Marana, AZ
Project No: 1229.3

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA45330-1	06/26/17	08:25	DLG	06/27/17	AQ	Ground Water	WELL7-2017-06-26
FA45330-2	06/26/17	08:45	DLG	06/27/17	AQ	Ground Water	WELL16L-2017-06-26
FA45330-3	06/26/17	09:10	DLG	06/27/17	AQ	Ground Water	WELL21K-2017-06-26
FA45330-4	06/26/17	08:50	DLG	06/27/17	AQ	Field Blank Water	FB-2017-06-26(16L)
FA45330-5	06/26/17	09:15	DLG	06/27/17	AQ	Field Blank Water	FB-2017-06-26(21K)
FA45330-6	06/26/17	09:45	DLG	06/27/17	AQ	Ground Water	WELL1F-2017-06-26
FA45330-7	06/26/17	09:50	DLG	06/27/17	AQ	Field Blank Water	FB-2017-06-26(1F)
FA45330-8	06/26/17	10:05	DLG	06/27/17	AQ	Ground Water	WELL36C-2017-06-26
FA45330-9	06/26/17	10:10	DLG	06/27/17	AQ	Field Blank Water	FB-2017-06-26(36C)
FA45330-10	06/26/17	10:25	DLG	06/27/17	AQ	Ground Water	WELL26E-2017-06-26
FA45330-11	06/26/17	10:30	DLG	06/27/17	AQ	Field Blank Water	FB-2017-06-26(26E)

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hargis + Associates, Inc. **Job No:** FA45330

Site: Marana Project; Marana, AZ **Report Date:** 7/19/2017 7:35:44 PM

6 Sample(s) and 5 Field Blank(s) were collected on 06/26/2017 and were received at SGS Accutest Southeast (SASE) on 06/27/2017 properly preserved, at 2.4 Deg. C and intact. These Samples received an SASE job number of FA45330. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65758

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA45317-2MS, FA45317-2MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for Perfluorodecanesulfonic acid, Perfluorododecanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, PFOSA are outside control limits.

Matrix Spike Recovery(s) for EtFOSAA, MeFOSAA, Perfluorodecanesulfonic acid, Perfluorodecanoic acid, Perfluorododecanoic acid, Perfluorononanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic acid, PFOSA are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for EtFOSAA, MeFOSAA, Perfluorodecanesulfonic acid, Perfluorododecanoic acid, Perfluoroheptanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic acid, PFOSA, Perfluorodecanoic acid, Perfluorononanoic acid, Perfluorooctanesulfonic acid, Perfluorooctanoic acid are outside control limits. Probable cause is due to matrix interference.

RPD(s) for MSD for 8:2 Fluorotelomer sulfonate, Perfluorodecanoic acid, Perfluorononanoic acid, Perfluorooctanesulfonic acid, Perfluorooctanoic acid are outside control limits for sample OP65758-MSD. Probable cause is due to sample non-homogeneity.

Sample(s) OP65758-MB, FA45330-6, FA45330-1, FA45330-11, FA45330-2, FA45330-3, FA45330-10, FA45330-8, OP65758-MS, OP65758-MSD have surrogates outside control limits.

OP65758-MS for 13C2-PFDA: Outside control limits. AZ:S12

OP65758-MS for Perfluorodecanesulfonic acid: AZ:M7

OP65758-MS for MeFOSAA: AZ:M7

OP65758-MS for EtFOSAA: AZ:M7

OP65758-MS for d5-EtFOSAA: Outside control limits. AZ:S12

OP65758-MS for 13C2-PFHxA: Outside control limits. AZ:S12

OP65758-MS for PFOSA: AZ:M7

OP65758-MS for Perfluoroundecanoic acid: AZ:M7

OP65758-MS for Perfluorotridecanoic acid: AZ:M7

OP65758-MS for Perfluorononanoic acid: AZ:M7

OP65758-MS for Perfluorododecanoic acid: AZ:M7

OP65758-MS for Perfluorodecanoic acid: AZ:M7

OP65758-MSD for Perfluorononanoic acid: AZ:R9

OP65758-MSD for Perfluorodecanoic acid: AZ:R9

OP65758-MSD for 8:2 Fluorotelomer sulfonate: AZ:R9

OP65758-MSD for Perfluorooctanesulfonic acid: AZ:R9

OP65758-MSD for 13C2-PFDA: Outside control limits. AZ:S12

OP65758-MSD for d5-EtFOSAA: Outside control limits. AZ:S12

OP65758-MSD for Perfluorooctanoic acid: AZ:R9

FA45330-1 for 13C2-PFDA: Outside control limits.

FA45330-1 for d5-NEtFOSAA: Outside control limits.

FA45330-1: Confirmation run.

FA45330-2 for 13C2-PFDA: Outside control limits.

FA45330-2 for d5-NEtFOSAA: Outside control limits.

FA45330-2: Confirmation run.

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65758

FA45330-3: Confirmed by re-extraction and reanalysis.
FA45330-3 for d5-NEtFOSAA: Outside control limits.
FA45330-3 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-3 for Perfluorohexanoic acid: AZ:E4
FA45330-3 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-3 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-3 for PFOSA: Associated BS recovery outside control limits. AZ:L2
FA45330-3 for Perfluorobutanesulfonic acid: AZ:E4
FA45330-3 for Perfluorobutanoic acid: AZ:E4
FA45330-3 for Perfluorooctanoic acid: AZ:E4
FA45330-3 for 13C2-PFDA: Outside control limits.
FA45330-3 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-4 for PFOSA: Associated BS recovery outside control limits. AZ:L2
FA45330-4 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-4 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-4 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-4 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-4: Confirmed ND by re-extraction and reanalysis.
FA45330-5: Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported.
FA45330-5 for Perfluorooctanesulfonic acid: AZ:E4
FA45330-5 for PFOSA: Associated BS recovery outside control limits. AZ:L2
FA45330-5 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-5 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-5 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-5 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-6 for Perfluorobutanesulfonic acid: AZ:E4
FA45330-6 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-6 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-6 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-6 for PFOSA: Associated BS recovery outside control limits. AZ:L2
FA45330-6 for Perfluorohexanoic acid: AZ:E4
FA45330-6 for Perfluorobutanoic acid: AZ:E4
FA45330-6 for Perfluorooctanoic acid: AZ:E4
FA45330-6 for Perfluoropentanoic acid: AZ:E4
FA45330-6 for 13C2-PFDA: Outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis beyond hold time.
FA45330-6 for d5-NEtFOSAA: Outside control limits.
FA45330-6 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-7: Confirmation run.
FA45330-8: Hits did not confirm by re-extraction and reanalysis beyond holdtime.
FA45330-8 for d5-NEtFOSAA: Outside control limits.
FA45330-8 for 13C2-PFDA: Outside control limits.
FA45330-8 for Perfluorooctanoic acid: AZ:E4 FA45330-9: Confirmation run.
FA45330-8 for PFOSA: Associated BS recovery outside control limits. AZ:L2
FA45330-8 for Perfluorohexanoic acid: AZ:E4
FA45330-8 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-8 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-8 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-8 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-10 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2
FA45330-10: Hits did not confirm by re-extraction and reanalysis beyond holdtime.
FA45330-10 for Perfluorooctanoic acid: AZ:E4
FA45330-10 for PFOSA: Associated BS recovery outside control limits. AZ:L2

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65758

FA45330-10 for 13C2-PFDA: Outside control limits.

FA45330-10 for 13C2-PFHxA: Outside control limits.

FA45330-10 for d5-NEtFOSAA: Outside control limits.

FA45330-10 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA45330-10 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45330-10 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45330-11: Confirmed by re-extraction and reanalysis.

FA45330-11 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA45330-11 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45330-11 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45330-11 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45330-11 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA45330-11 for Perfluorooctanesulfonic acid: AZ:E4

Matrix: AQ **Batch ID:** OP65951

All method blanks for this batch meet method specific criteria.

The following samples were extracted outside of holding time for method EPA 537 MOD: FA45330-11, FA45330-3, FA45330-4, FA45330-6, FA45330-8, FA45330-1, FA45330-2, FA45330-7, FA45330-9, FA45330-11

Blank Spike Recovery(s) for Perfluorobutanoic acid, Perfluorodecanesulfonic acid, Perfluorododecanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic acid, PFOSA are outside control limits.

Sample(s) FA45330-6, FA45330-1, FA45330-11, FA45330-2, FA45330-3, FA45330-10, FA45330-8, OP65758-MS, OP65758-MSD have surrogates outside control limits.

FA45330-1: Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results.

FA45330-2: Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results.

FA45330-3 for 13C2-PFHxA: Outside control limits.

FA45330-3: Confirmation run.

FA45330-4: Confirmation run.

FA45330-6 for 13C2-PFDA: Outside control limits.

FA45330-6: Confirmation run.

FA45330-7: Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results.

FA45330-8: Confirmation run.

FA45330-9: Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results.

FA45330-11: Confirmation run.

FA45330-11 for 13C2-PFDA: Outside control limits.

FA45330-11 for d5-NEtFOSAA: Outside control limits.

Extractables by GCMS By Method SW846 8270D BY SIM

Matrix: AQ **Batch ID:** OP65774

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA45330-6MS, FA45330-6MSD were used as the QC samples indicated.

FA45330-3 for 1,4-Dioxane: AZ:E4

FA45330-8 for 1,4-Dioxane: AZ:E4

FA45330-10 for 1,4-Dioxane: AZ:E4

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Kim Benham, Client Services (signature on file)

Summary of Hits

Job Number: FA45330
Account: Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ
Collected: 06/26/17

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Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA45330-1	**WELL7-2017-06-26**					
Perfluorohexanoic acid [a]		0.0103 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid [a]		0.00736 J	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [b]		0.0326	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [b]		0.139	0.016	0.0040	ug/l	EPA 537 MOD
FA45330-2	**WELL16L-2017-06-26**					
Perfluoropentanoic acid [a]		0.0142 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanoic acid [b]		0.0165	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid [b]		0.0223	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid [a]		0.0111 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [b]		0.0598	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [b]		0.117	0.016	0.0040	ug/l	EPA 537 MOD
1,4-Dioxane		0.30	0.30	0.15	ug/l	SW846 8270D BY SIM
FA45330-3	**WELL21K-2017-06-26**					
Perfluorobutanoic acid [c]		0.0117 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluoropentanoic acid [d]		0.0171	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorohexanoic acid [c]		0.0155 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanoic acid [c]		0.0135 J	0.017	0.0042	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid [c]		0.0124 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [d]		0.0472	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [d]		0.0911	0.017	0.0042	ug/l	EPA 537 MOD
1,4-Dioxane [e]		0.27 J	0.30	0.15	ug/l	SW846 8270D BY SIM
FA45330-4	**FB-2017-06-26(16L)**					
No hits reported in this sample.						
FA45330-5	**FB-2017-06-26(21K)**					
Perfluorooctanesulfonic acid [f]		0.0114 J	0.017	0.0042	ug/l	EPA 537 MOD
FA45330-6	**WELL1F-2017-06-26**					
Perfluorobutanoic acid [e]		0.0122 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluoropentanoic acid [e]		0.0102 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorohexanoic acid [e]		0.00931 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanoic acid [e]		0.00801 J	0.017	0.0042	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid [e]		0.0132 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid		0.0386	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.0369	0.017	0.0042	ug/l	EPA 537 MOD

Summary of Hits

Job Number: FA45330
Account: Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ
Collected: 06/26/17

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
1,4-Dioxane		0.33	0.30	0.15	ug/l	SW846 8270D BY SIM
FA45330-7	**FB-2017-06-26(1F)**					
Perfluoropentanoic acid [a]		0.0112 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanoic acid [b]		0.0307	0.016	0.0080	ug/l	EPA 537 MOD
Perfluoroheptanoic acid [a]		0.0108 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid [a]		0.00541 J	0.016	0.0040	ug/l	EPA 537 MOD
FA45330-8	**WELL36C-2017-06-26**					
Perfluorohexanoic acid [g]		0.00931 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanoic acid [g]		0.0125 J	0.017	0.0042	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [h]		0.0691	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [h]		0.203	0.017	0.0042	ug/l	EPA 537 MOD
1,4-Dioxane [e]		0.16 J	0.30	0.15	ug/l	SW846 8270D BY SIM
FA45330-9	**FB-2017-06-26(36C)**					
Perfluorohexanoic acid [a]		0.0104 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid [b]		0.0173	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [b]		0.0574	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [b]		0.106	0.016	0.0040	ug/l	EPA 537 MOD
FA45330-10	**WELL26E-2017-06-26**					
Perfluorooctanoic acid [g]		0.00444 J	0.017	0.0042	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [h]		0.0355	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [h]		0.0497	0.017	0.0042	ug/l	EPA 537 MOD
1,4-Dioxane [e]		0.20 J	0.30	0.15	ug/l	SW846 8270D BY SIM
FA45330-11	**FB-2017-06-26(26E)**					
Perfluorooctanesulfonic acid [c]		0.00422 J	0.017	0.0042	ug/l	EPA 537 MOD

(a) Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results. AZ:E4
(b) Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results.
(c) Confirmed by re-extraction and reanalysis. AZ:E4
(d) Confirmed by re-extraction and reanalysis.
(e) AZ:E4
(f) Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported. AZ:E4
(g) Hits did not confirm by re-extraction and reanalysis beyond holdtime. AZ:E4
(h) Hits did not confirm by re-extraction and reanalysis beyond holdtime.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	WELL7-2017-06-26		
Lab Sample ID:	FA45330-1	**Date Sampled:**	06/26/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3509.D	1	07/14/17 17:12	NAF	07/13/17 08:30	OP65951	S2Q81
Run #2 [b]	2Q3580.D	1	07/18/17 09:15	NAF	06/30/17 08:00	OP65758	S2Q82

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid [c]	0.0103	0.016	0.0080	ug/l	J
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid [c]	0.00736	0.016	0.0040	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid [d]	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [d]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [d]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0326	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.139	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid [d]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL7-2017-06-26		
Lab Sample ID:	FA45330-1	**Date Sampled:**	06/26/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	100%	69%	61-134%
	13C2-PFDA	89%	56% [e]	62-128%
	d5-EtFOSAA	99%	32% [e]	57-135%

(a) Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results.
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) Outside control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL7-2017-06-26		
Lab Sample ID:	FA45330-1	**Date Sampled:**	06/26/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101708.D	1	07/01/17 13:51	FS	06/30/17 13:30	OP65774	SW4438
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	88%		42-108%
321-60-8	2-Fluorobiphenyl	78%		40-106%
1718-51-0	Terphenyl-d14	76%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL16L-2017-06-26		
Lab Sample ID:	FA45330-2	**Date Sampled:**	06/26/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3510.D	1	07/14/17 17:33	NAF	07/13/17 08:30	OP65951	S2Q81
Run #2 [b]	2Q3581.D	1	07/18/17 09:37	NAF	06/30/17 08:00	OP65758	S2Q82

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.0142	0.016	0.0080	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0165	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	0.0223	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid [c]	0.0111	0.016	0.0080	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0598	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.117	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL16L-2017-06-26		
Lab Sample ID:	FA45330-2	**Date Sampled:**	06/26/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	95%	66%	61-134%
	13C2-PFDA	77%	48% [d]	62-128%
	d5-EtFOSAA	83%	39% [d]	57-135%

(a) Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results.
(b) Confirmation run.
(c) AZ:E4
(d) Outside control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL16L-2017-06-26		
Lab Sample ID:	FA45330-2	**Date Sampled:**	06/26/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101709.D	1	07/01/17 14:14	FS	06/30/17 13:30	OP65774	SW4438
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	0.30	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	90%		42-108%
321-60-8	2-Fluorobiphenyl	78%		40-106%
1718-51-0	Terphenyl-d14	76%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL21K-2017-06-26		
Lab Sample ID:	FA45330-3	**Date Sampled:**	06/26/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3582.D	1	07/18/17 09:59	NAF	06/30/17 08:00	OP65758	S2Q82
Run #2 [b]	2Q3511.D	1	07/14/17 17:54	NAF	07/13/17 08:30	OP65951	S2Q81

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [c]	0.0117	0.017	0.0083	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0171	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid [c]	0.0155	0.017	0.0083	ug/l	J
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid [c]	0.0135	0.017	0.0042	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid [d]	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid [d]	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid [c]	0.0124	0.017	0.0083	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0472	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0911	0.017	0.0042	ug/l	
335-77-3	Perfluorodecanesulfonic acid [d]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL21K-2017-06-26		
Lab Sample ID:	FA45330-3	**Date Sampled:**	06/26/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	78%	55% [e]	61-134%
	13C2-PFDA	48% [e]	67%	62-128%
	d5-EtFOSAA	43% [e]	70%	57-135%

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) Outside control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL21K-2017-06-26		
Lab Sample ID:	FA45330-3	**Date Sampled:**	06/26/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101710.D	1	07/01/17 14:38	FS	06/30/17 13:30	OP65774	SW4438
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane [a]	0.27	0.30	0.15	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	82%		42-108%
321-60-8	2-Fluorobiphenyl	79%		40-106%
1718-51-0	Terphenyl-d14	75%		39-121%

(a) AZ:E4

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-26(16L)		
Lab Sample ID:	FA45330-4	**Date Sampled:**	06/26/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3583.D	1	07/18/17 10:21	NAF	06/30/17 08:00	OP65758	S2Q82
Run #2 [b]	2Q3512.D	1	07/14/17 18:15	NAF	07/13/17 08:30	OP65951	S2Q81

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid [c]	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.017	0.0042	ug/l	
335-77-3	Perfluorodecanesulfonic acid [c]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-26(16L)		
Lab Sample ID:	FA45330-4	**Date Sampled:**	06/26/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	96%	91%	61-134%
	13C2-PFDA	69%	86%	62-128%
	d5-EtFOSAA	62%	90%	57-135%

(a) Confirmed ND by re-extraction and reanalysis.
(b) Confirmation run.
(c) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-26(21K)		
Lab Sample ID:	FA45330-5	**Date Sampled:**	06/26/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3584.D	1	07/18/17 10:43	NAF	06/30/17 08:00	OP65758	S2Q82
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid [b]	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [c]	0.0114	0.017	0.0042	ug/l	J
335-77-3	Perfluorodecanesulfonic acid [b]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-26(21K)		
Lab Sample ID:	FA45330-5	**Date Sampled:**	06/26/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	96%		61-134%
	13C2-PFDA	65%		62-128%
	d5-EtFOSAA	59%		57-135%

(a) Hit did not confirm by re-extraction and reanalysis beyond holdtime. Higher hit reported.
(b) Associated BS recovery outside control limits. AZ:L2
(c) AZ:E4

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL1F-2017-06-26		
Lab Sample ID:	FA45330-6	**Date Sampled:**	06/26/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q3585.D	1	07/18/17 11:05	NAF	06/30/17 08:00	OP65758	S2Q82
Run #2 [a]	2Q3516.D	1	07/14/17 19:38	NAF	07/13/17 08:30	OP65951	S2Q81

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [b]	0.0122	0.017	0.0083	ug/l	J
2706-90-3	Perfluoropentanoic acid [b]	0.0102	0.017	0.0083	ug/l	J
307-24-4	Perfluorohexanoic acid [b]	0.00931	0.017	0.0083	ug/l	J
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid [b]	0.00801	0.017	0.0042	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid [c]	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid [b]	0.0132	0.017	0.0083	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0386	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0369	0.017	0.0042	ug/l	
335-77-3	Perfluorodecanesulfonic acid [c]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL1F-2017-06-26		
Lab Sample ID:	FA45330-6	**Date Sampled:**	06/26/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	77%	93%	61-134%
	13C2-PFDA	23% [e]	50% [d]	62-128%
	d5-EtFOSAA	26% [d]	65%	57-135%

(a) Confirmation run.
(b) AZ:E4
(c) Associated BS recovery outside control limits. AZ:L2
(d) Outside control limits.
(e) Outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis beyond hold time.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL1F-2017-06-26		
Lab Sample ID:	FA45330-6	**Date Sampled:**	06/26/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101711.D	1	07/01/17 15:01	FS	06/30/17 13:30	OP65774	SW4438
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	0.33	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	91%		42-108%
321-60-8	2-Fluorobiphenyl	82%		40-106%
1718-51-0	Terphenyl-d14	83%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-26(1F)		
Lab Sample ID:	FA45330-7	**Date Sampled:**	06/26/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3517.D	1	07/14/17 19:59	NAF	07/13/17 08:30	OP65951	S2Q81
Run #2 [b]	2Q3586.D	1	07/18/17 11:26	NAF	06/30/17 08:00	OP65758	S2Q82

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.0112	0.016	0.0080	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0307	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid [c]	0.0108	0.016	0.0080	ug/l	J
335-67-1	Perfluorooctanoic acid [c]	0.00541	0.016	0.0040	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-26(1F)		
Lab Sample ID:	FA45330-7	**Date Sampled:**	06/26/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	90%	96%	61-134%
	13C2-PFDA	73%	81%	62-128%
	d5-EtFOSAA	68%	69%	57-135%

(a) Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results.
(b) Confirmation run.
(c) AZ:E4

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL36C-2017-06-26		
Lab Sample ID:	FA45330-8	**Date Sampled:**	06/26/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3587.D	1	07/18/17 11:48	NAF	06/30/17 08:00	OP65758	S2Q82
Run #2 [b]	2Q3518.D	1	07/14/17 20:20	NAF	07/13/17 08:30	OP65951	S2Q81

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid [c]	0.00931	0.017	0.0083	ug/l	J
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid [c]	0.0125	0.017	0.0042	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid [d]	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid [d]	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0691	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.203	0.017	0.0042	ug/l	
335-77-3	Perfluorodecanesulfonic acid [d]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL36C-2017-06-26		
Lab Sample ID:	FA45330-8	**Date Sampled:**	06/26/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	73%	97%	61-134%
	13C2-PFDA	35% [e]	82%	62-128%
	d5-EtFOSAA	31% [e]	88%	57-135%

(a) Hits did not confirm by re-extraction and reanalysis beyond holdtime.
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) Outside control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL36C-2017-06-26		
Lab Sample ID:	FA45330-8	**Date Sampled:**	06/26/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101718.D	1	07/03/17 15:44	NJ	06/30/17 13:30	OP65774	SW4439
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane [a]	0.16	0.30	0.15	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	80%		42-108%
321-60-8	2-Fluorobiphenyl	68%		40-106%
1718-51-0	Terphenyl-d14	66%		39-121%

(a) AZ:E4

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RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-26(36C)		
Lab Sample ID:	FA45330-9	**Date Sampled:**	06/26/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3519.D	1	07/14/17 20:40	NAF	07/13/17 08:30	OP65951	S2Q81
Run #2 [b]	2Q3588.D	1	07/18/17 12:10	NAF	06/30/17 08:00	OP65758	S2Q82

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid [c]	0.0104	0.016	0.0080	ug/l	J
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	0.0173	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid [d]	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [d]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [d]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0574	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.106	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid [d]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

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Report of Analysis

Client Sample ID:	FB-2017-06-26(36C)		
Lab Sample ID:	FA45330-9	**Date Sampled:**	06/26/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	89%	95%	61-134%
	13C2-PFDA	76%	64%	62-128%
	d5-EtFOSAA	82%	61%	57-135%

(a) Sample re-extracted beyond hold time; re-extract results reported because they were higher than the original results.
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL26E-2017-06-26		
Lab Sample ID:	FA45330-10	**Date Sampled:**	06/26/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3589.D	1	07/18/17 12:32	NAF	06/30/17 08:00	OP65758	S2Q82
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid [b]	0.00444	0.017	0.0042	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid [c]	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0355	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0497	0.017	0.0042	ug/l	
335-77-3	Perfluorodecanesulfonic acid [c]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL26E-2017-06-26		
Lab Sample ID:	FA45330-10	**Date Sampled:**	06/26/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	59% [d]		61-134%
	13C2-PFDA	43% [d]		62-128%
	d5-EtFOSAA	42% [d]		57-135%

(a) Hits did not confirm by re-extraction and reanalysis beyond holdtime.
(b) AZ:E4
(c) Associated BS recovery outside control limits. AZ:L2
(d) Outside control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELL26E-2017-06-26		
Lab Sample ID:	FA45330-10	**Date Sampled:**	06/26/17
Matrix:	AQ - Ground Water	**Date Received:**	06/27/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101719.D	1	07/03/17 16:08	NJ	06/30/17 13:30	OP65774	SW4439
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane [a]	0.20	0.30	0.15	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	89%		42-108%
321-60-8	2-Fluorobiphenyl	91%		40-106%
1718-51-0	Terphenyl-d14	86%		39-121%

(a) AZ:E4

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-26(26E)		
Lab Sample ID:	FA45330-11	**Date Sampled:**	06/26/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q3592.D	1	07/18/17 13:37	NAF	06/30/17 08:00	OP65758	S2Q82
Run #2 [b]	2Q3521.D	1	07/14/17 21:22	NAF	07/13/17 08:30	OP65951	S2Q81

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid [c]	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [d]	0.00422	0.017	0.0042	ug/l	J
335-77-3	Perfluorodecanesulfonic acid [c]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-26(26E)		
Lab Sample ID:	FA45330-11	**Date Sampled:**	06/26/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/27/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	98%	93%	61-134%
	13C2-PFDA	74%	22% [e]	62-128%
	d5-EtFOSAA	72%	32% [e]	57-135%

(a) Confirmed by re-extraction and reanalysis.
(b) Confirmation run.
(c) Associated BS recovery outside control limits. AZ:L2
(d) AZ:E4
(e) Outside control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: FA45330
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
L2	The associated blank spike recovery was below laboratory acceptance limits.
M7	Matrix spike recovery was low. Data reported per ADEQ policy 0154.000. Matrix Interference was confirmed.
R9	Sample RPD exceeded the laboratory acceptance limit.
S12	Surrogate recovery was low. Data reported per ADEQ policy 0154.000.

PHOENIX

SGS ACCUTEST

CHAIN OF CUSTODY

FA45330

PAGE 1 OF 1

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking #: | Bottle Order Control #:
SGS Accutest Quote #: | SGS Accutest Job #:

Client / Reporting Information

Company Name: Hargis + Associates, Inc
Street Address: 7400 N. ORACLE RD #202
City / State / Zip: TUCSON AZ 85704
Project Contact: CHRIS PERKOWITZ
E-mail: cperkowitz@hargis.com
Phone #: 520-881-7300
Fax #:
Sampler(s) Name(s): DLG CHRIS PERKOWITZ
Phone #:

Project Information

Project Name: Marana Project
Street:
City / State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City / State / Zip:
Attention:

Requested Analyses: LC537 LIST / EPA 537; 8270 SIM 1,4 DIOX

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank

SGS Accutest Sample #	Field ID / Point of Collection	Date	Time	Sampled By	Matrix	# of bottles	HCl	NaOH	ZnAc/NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	TSP	NaHSO4	ENCORE	OTHER	LC537 LIST / EPA 537	8270 SIM 1,4 DIOX	LAB USE ONLY
1	Well 7-2017-06-26	6/26/17	0825	DLG	GW	4						X							X	X	
2	Well 16L-2017-06-26		0845		GW	4						X							X	X	
3	Well 21K-2017-06-26		0910		GW	4						X							X	X	
4	FB-2017-06-26 (16L)		0850		WW	2						X	X						X		
5	FB-2017-06-26 (21K)		0915		WW	2						X	X						X		
6	Well 1F-2017-06-26		0945		GW	4						X							X	X	
7	FB-2017-06-26 (1F)		0950		WW	2						X	X						X		
8	Well 26C-2017-06-26		1005		GW	4						X							X	X	
9	FB-2017-06-26 (26C)		1010		WW	2						X	X						X		
10	Well 26E-2017-06-26		1025		GW	4						X							X	X	
11	FB-2017-06-26 (26E)		1030		WW	2						X	X						X		

Turnaround Time (Business days)

- [X] Standard
- [ ] 5 Day *RUSH*
- [ ] 4 Day *RUSH*
- [ ] 3 Day *RUSH*
- [ ] 2 Day *RUSH*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Labilink

Approved By (SGS Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULT1 (Level 3+4)
- [ ] REDT1 (Level 3+4)
- [ ] Commercial "C"
- [ ] TRRP
- [ ] EDD Format
- [ ] Other _____

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Comments / Special Instructions

Form: SM021-0

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Date Time:	Relinquished By:	Date Time:	Received By:	Date Time:
1	6/26/17 1500	1	6/26/17 1500	2	6/26/17 1630	2 Fedex	
3 Fx		3	06/27/17	4		4	
5		5					

Custody Seal #: Y — [ ] Intact [ ] Not intact — Preserved where applicable: [ ] — On Ice: [ ] — Cooler Temp. 2.4, 2.6

FA45330: Chain of Custody
Page 1 of 2

SGS Accutest Sample Receipt Summary

Job Number: FA45330 **Client:** HARGIS & ASSOC. **Project:** MARANA PROJECT

Date / Time Received: 6/27/2017 9:15:00 AM **Delivery Method:** FED EX **Airbill #'s:** 7870 0266 0749

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 2

Cooler Temps (Raw Measured) °C: Cooler 1: (2.0); Cooler 2: (2.2);

Cooler Temps (Corrected) °C: Cooler 1: (2.4); Cooler 2: (2.6);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☑	☐
2. Trip Blank listed on COC	☐		☑	☐
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 6/27/2017 9:15:00 AM Reviewer: P.H Date: 6/27/2017

FA45330: Chain of Custody
Page 2 of 2

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA45330
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65774-MB	W101703.D	1	07/01/17	FS	06/30/17	OP65774	SW4438

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA45330-1, FA45330-2, FA45330-3, FA45330-6, FA45330-8, FA45330-10

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	84%	42-108%
321-60-8	2-Fluorobiphenyl	87%	40-106%
1718-51-0	Terphenyl-d14	80%	39-121%

Method Blank Summary

Job Number: FA45330
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65774-MB	W101715.D	1	07/03/17	NJ	06/30/17	OP65774	SW4439

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA45330-1, FA45330-2, FA45330-3, FA45330-6, FA45330-8, FA45330-10

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	93%	42-108%
321-60-8	2-Fluorobiphenyl	92%	40-106%
1718-51-0	Terphenyl-d14	98%	39-121%

Method Blank Summary

Job Number: FA45330
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65758-MB	2Q3308.D	1	07/11/17	NAF	06/30/17	OP65758	S2Q77

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45330-3, FA45330-4, FA45330-5, FA45330-6, FA45330-8, FA45330-10, FA45330-11

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	90%	61-134%
	13C2-PFDA	70%	62-128%
	d5-EtFOSAA	51%*	57-135%

Method Blank Summary

Job Number: FA45330
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65951-MB	2Q3505.D	1	07/14/17	NAF	07/13/17	OP65951	S2Q81

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45330-1, FA45330-2, FA45330-7, FA45330-9

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	88%	61-134%
	13C2-PFDA	75%	62-128%
	d5-EtFOSAA	81%	57-135%

Blank Spike Summary

Job Number: FA45330
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65774-BS	W101704.D	1	07/01/17	FS	06/30/17	OP65774	SW4438

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA45330-1, FA45330-2, FA45330-3, FA45330-6, FA45330-8, FA45330-10

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	10	2.8	28	15-69

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	66%	42-108%
321-60-8	2-Fluorobiphenyl	67%	40-106%
1718-51-0	Terphenyl-d14	76%	39-121%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA45330
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65774-BS	W101714.D	1	07/03/17	NJ	06/30/17	OP65774	SW4439

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA45330-1, FA45330-2, FA45330-3, FA45330-6, FA45330-8, FA45330-10

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	10	2.6	26	15-69

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	70%	42-108%
321-60-8	2-Fluorobiphenyl	73%	40-106%
1718-51-0	Terphenyl-d14	73%	39-121%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA45330
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65758-BS	2Q3307.D	1	07/11/17	NAF	06/30/17	OP65758	S2Q77

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45330-3, FA45330-4, FA45330-5, FA45330-6, FA45330-8, FA45330-10, FA45330-11

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.146	95	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.155	101	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.154	100	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.156	101	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.159	103	74-137
375-95-1	Perfluorononanoic acid	0.154	0.152	99	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.148	96	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.106	69	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.0691	45*	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.0616	40*	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.0642	42*	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.153	99	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.163	106	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.154	0.150	97	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.142	92	70-134
335-77-3	Perfluorodecanesulfonic acid	0.154	0.0760	49*	56-127
754-91-6	PFOSA	0.154	0.0347	23*	40-142
2355-31-9	MeFOSAA	0.154	0.124	81	57-128
2991-50-6	EtFOSAA	0.154	0.109	71	55-135
27619-97-2	6:2 Fluorotelomer sulfonate	0.154	0.147	96	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.154	0.153	99	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	91%	61-134%
	13C2-PFDA	82%	62-128%
	d5-EtFOSAA	67%	57-135%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA45330
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65951-BS	2Q3504.D	1	07/14/17	NAF	07/13/17	OP65951	S2Q81

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45330-1, FA45330-2, FA45330-7, FA45330-9

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.0129	8*	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.134	87	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.137	89	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.135	88	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.136	88	74-137
375-95-1	Perfluorononanoic acid	0.154	0.131	85	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.119	77	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.0803	52*	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.0608	40*	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.0576	37*	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.0585	38*	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.131	85	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.144	94	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.154	0.142	92	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.116	75	70-134
335-77-3	Perfluorodecanesulfonic acid	0.154	0.0648	42*	56-127
754-91-6	PFOSA	0.154	0.0421	27*	40-142
2355-31-9	MeFOSAA	0.154	0.104	68	57-128
2991-50-6	EtFOSAA	0.154	0.0947	62	55-135
27619-97-2	6:2 Fluorotelomer sulfonate	0.154	0.148	96	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.154	0.123	80	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	95%	61-134%
	13C2-PFDA	81%	62-128%
	d5-EtFOSAA	67%	57-135%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA45330
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65774-MS	W101716.D	1	07/03/17	NJ	06/30/17	OP65774	SW4439
OP65774-MSD	W101717.D	1	07/03/17	NJ	06/30/17	OP65774	SW4439
FA45330-6	W101711.D	1	07/01/17	FS	06/30/17	OP65774	SW4438

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA45330-1, FA45330-2, FA45330-3, FA45330-6, FA45330-8, FA45330-10

CAS No.	Compound	FA45330-6 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	0.33		19.2	5.2	25	19.2	6.2	31	18	15-69/31

CAS No.	Surrogate Recoveries	MS	MSD	FA45330-6	Limits
4165-60-0	Nitrobenzene-d5	67%	72%	91%	42-108%
321-60-8	2-Fluorobiphenyl	79%	79%	82%	40-106%
1718-51-0	Terphenyl-d14	91%	79%	83%	39-121%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA45330
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65758-MS	2Q3311.D	1	07/11/17	NAF	06/30/17	OP65758	S2Q77
OP65758-MSD	2Q3312.D	1	07/11/17	NAF	06/30/17	OP65758	S2Q77
FA45317-2	2Q3315.D	1	07/11/17	NAF	06/30/17	OP65758	S2Q77

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45330-3, FA45330-4, FA45330-5, FA45330-6, FA45330-8, FA45330-10, FA45330-11

CAS No.	Compound	FA45317-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	ND		0.333	0.249	75	0.333	0.251	75	1	20-120/30
2706-90-3	Perfluoropentanoic acid	ND		0.333	0.265	79	0.333	0.264	79	0	40-131/30
307-24-4	Perfluorohexanoic acid	ND		0.333	0.246	74	0.333	0.228	68	8	63-146/30
375-85-9	Perfluoroheptanoic acid	ND		0.333	0.254	76	0.333	0.187	56*	30	71-138/30
335-67-1	Perfluorooctanoic acid	ND		0.333	0.275	82	0.333	0.172	52*	46* [a]	74-137/30
375-95-1	Perfluorononanoic acid	ND		0.333	0.242	73* [b]	0.333	0.163	49*	39* [a]	76-140/30
335-76-2	Perfluorodecanoic acid	ND		0.333	0.197	59* [b]	0.333	0.143	43*	32* [a]	65-148/30
2058-94-8	Perfluoroundecanoic acid	ND		0.333	0.160	48* [b]	0.333	0.145	43*	10	57-138/30
307-55-1	Perfluorododecanoic acid	ND		0.333	0.144	43* [b]	0.333	0.149	45*	3	58-118/30
72629-94-8	Perfluorotridecanoic acid	ND		0.333	0.156	47* [b]	0.333	0.162	49*	4	52-120/30
376-06-7	Perfluorotetradecanoic acid	ND		0.333	0.186	56	0.333	0.187	56	1	49-122/30
375-73-5	Perfluorobutanesulfonic acid	ND		0.333	0.384	115	0.333	0.342	103	12	73-148/30
355-46-4	Perfluorohexanesulfonic acid	0.0110	J	0.333	0.409	119	0.333	0.345	100	17	74-142/30
375-92-8	Perfluoroheptanesulfonic acid	ND		0.333	0.324	97	0.333	0.258	77	23	74-123/30
1763-23-1	Perfluorooctanesulfonic acid	0.0105	J	0.333	0.294	85	0.333	0.192	54*	42* [a]	70-134/30
335-77-3	Perfluorodecanesulfonic acid	ND		0.333	0.177	53* [b]	0.333	0.166	50*	6	56-127/30
754-91-6	PFOSA	ND		0.333	ND	0* [b]	0.333	ND	0*	nc	40-142/30
2355-31-9	MeFOSAA	ND		0.333	0.162	49* [b]	0.333	0.132	40*	20	57-128/30
2991-50-6	EtFOSAA	ND		0.333	0.142	43* [b]	0.333	0.124	37*	14	55-135/30
27619-97-2	6:2 Fluorotelomer sulfonate	ND		0.333	0.315	94	0.333	0.344	103	9	70-153/30
39108-34-4	8:2 Fluorotelomer sulfonate	ND		0.333	0.282	85	0.333	0.205	61	32* [a]	61-154/30

CAS No.	Surrogate Recoveries	MS	MSD	FA45317-2	Limits
	13C2-PFHxA	60%* [c]	63%	62%	61-134%
	13C2-PFDA	46%* [c]	39%* [c]	47%* [d]	62-128%
	d5-EtFOSAA	41%* [c]	38%* [c]	28%* [d]	57-135%

(a) AZ:R9
(b) AZ:M7
(c) Outside control limits. AZ:S12
(d) Outside control limits due to matrix interference. Confirmed by MS/MSD.

* = Outside of Control Limits.

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e-Hardcopy 2.0
Automated Report

Technical Report for

Hargis + Associates, Inc.

Marana Project; Marana, AZ

1229.3

SGS Accutest Job Number: FA45434

Sampling Date: 06/28/17

Report to:

Hargis + Associates, Inc
7400 N Oracle Rd Suite 202
Tucson, AZ 85704
CPERKOVAC@HARGIS.COM

ATTN: Chris Perkovac

Total number of pages in report: **28**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Elvin Kumar 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(L-A-B L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AK, AR, GA, IA, KY, MA, NV, OK, OR, UT, WA

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SGS Accutest

Sample Summary

Hargis + Associates, Inc.

Job No: FA45434

Marana Project; Marana, AZ
Project No: 1229.3

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA45434-1	06/28/17	07:00	DG	06/29/17	AQ	Ground Water	WELLSS012A-2017-06-28
FA45434-2	06/28/17	08:25	DG	06/29/17	AQ	Ground Water	WELLWR161A-2017-06-28
FA45434-3	06/28/17	09:53	DG	06/29/17	AQ	Ground Water	WELLWR239A-2017-06-28
FA45434-4	06/28/17	09:58	DG	06/29/17	AQ	Field Blank Water	FB-2017-06-28 (WR-239A)

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hargis + Associates, Inc. **Job No:** FA45434

Site: Marana Project; Marana, AZ **Report Date:** 8/1/2017 2:57:33 PM

3 Sample(s) and 1 Field Blank(s) were collected on 06/28/2017 and were received at SGS Accutest Southeast (SASE) on 06/29/2017 properly preserved, at 3.2 Deg. C and intact. These Samples received an SASE job number of FA45434. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65823

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA45435-1MS, FA45435-1MSD were used as the QC samples indicated.

Sample(s) FA45434-1, FA45434-2 have compound(s) reported with a “B” qualifier, indicating analyte is found in the associated method blank.

Blank Spike Recovery(s) for Perfluorodecanesulfonic acid, Perfluorododecanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, PFOSA are outside control limits.

Matrix Spike Recovery(s) for Perfluorotetradecanoic acid, Perfluorotridecanoic acid are outside control limits. Probable cause is due to matrix interference. % RPD was within control limits in MS/MSD.

Matrix Spike Duplicate Recovery(s) for Perfluorodecanesulfonic acid, Perfluorododecanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid are outside control limits. Probable cause is due to matrix interference. % RPD was within control limits in MS/MSD.

Sample(s) OP65823-BS, FA45434-3, FA45434-1 have surrogates outside control limits.

OP65823-MB for Perfluorooctanesulfonic acid: AZ:B1

OP65823-BS for Perfluorodecanesulfonic acid: AZ:L2

OP65823-BS for d5-EtFOSAA: AZ:S12

OP65823-BS for Perfluorododecanoic acid: AZ:L2

OP65823-BS for Perfluorotetradecanoic acid: AZ:L2

OP65823-BS for Perfluorotridecanoic acid: AZ:L2

OP65823-BS for PFOSA: AZ:L2

FA45434-1 for Perfluorooctanoic acid: AZ:E4

FA45434-1 for Perfluorohexanoic acid: AZ:E4

FA45434-1 for Perfluorobutanesulfonic acid: AZ:E4

FA45434-1 for Perfluorooctanesulfonic acid: AZ:B1

FA45434-1 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45434-1 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45434-1 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45434-1 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA45434-1 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA45434-1: Associated BS recovery outside control limits. Sample confirmed by re-extraction and reanalysis beyond hold time. AZ:L2

FA45434-1 for Perfluoropentanoic acid: AZ:E4

FA45434-2 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA45434-2 for Perfluorohexanesulfonic acid: AZ:E4

FA45434-2 for Perfluorooctanesulfonic acid: AZ:B1

FA45434-2 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45434-2: Associated BS recovery outside control limits. Sample confirmed by re-extraction and reanalysis beyond hold time. AZ:L2

FA45434-2 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45434-2 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA45434-2 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45434-2 for Perfluorooctanoic acid: AZ:E4

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65823

FA45434-2 for Perfluoropentanoic acid: AZ:E4

FA45434-3 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA45434-3 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45434-3 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45434-3: Associated BS recovery outside control limits. AZ:L2

FA45434-3 for d5-NEtFOSAA: Outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis beyond hold time. AZ:S6

FA45434-3 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA45434-3 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45434-4: Associated BS recovery outside control limits. Sample confirmed ND by re-extraction and reanalysis beyond hold time. AZ:L2

FA45434-4 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45434-4 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA45434-4 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45434-4 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

FA45434-4 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2

Matrix: AQ **Batch ID:** OP66128

Sample(s) FA45434-3, FA45434-1 have surrogates outside control limits. Probable cause is due to matrix interference.

FA45434-1 for d5-NEtFOSAA: Outside control limits. AZ:S7

FA45434-1 for 13C2-PFDA: Outside control limits. AZ:S7

FA45434-1: Confirmation run.

FA45434-2: Confirmation run.

FA45434-3: Confirmation run.

FA45434-3 for 13C2-PFDA: Outside control limits. AZ:S7

FA45434-3 for d5-NEtFOSAA: Outside control limits. AZ:S6

FA45434-4: Confirmation run.

Extractables by GCMS By Method SW846 8270D BY SIM

Matrix: AQ **Batch ID:** OP65828

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA45434-3MS, FA45434-3MSD were used as the QC samples indicated.

Sample(s) FA45434-1, FA45434-3 have surrogates outside control limits. Outside control limits. Surrogate does not reference target analyte. AZ:S12

FA45434-3 for Terphenyl-d14: Outside control limits. Surrogate does not reference target analyte. AZ:S12

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Kim Benham, Client Services (signature on file)

Summary of Hits

Job Number: FA45434
Account: Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ
Collected: 06/28/17

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA45434-1	**WELLSS012A-2017-06-28**					
Perfluoropentanoic acid [a]		0.00944 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanoic acid [a]		0.0107 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid [a]		0.00815 J	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid [a]		0.0149 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [b]		0.0714	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [c]		0.0216 B	0.016	0.0040	ug/l	EPA 537 MOD
FA45434-2	**WELLWR161A-2017-06-28**					
Perfluorobutanoic acid [b]		0.0439	0.017	0.0083	ug/l	EPA 537 MOD
Perfluoropentanoic acid [a]		0.00999 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorohexanoic acid [b]		0.0175	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanoic acid [a]		0.0151 J	0.017	0.0042	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid [b]		0.141	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [a]		0.0116 J	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [c]		0.0249 B	0.017	0.0042	ug/l	EPA 537 MOD

FA45434-3 **WELLWR239A-2017-06-28**

No hits reported in this sample.

FA45434-4 **FB-2017-06-28 (WR-239A)**

No hits reported in this sample.

(a) Associated BS recovery outside control limits. Sample confirmed by re-extraction and reanalysis beyond hold time. AZ:L2 AZ:E4
(b) Associated BS recovery outside control limits. Sample confirmed by re-extraction and reanalysis beyond hold time. AZ:L2
(c) Associated BS recovery outside control limits. Sample confirmed by re-extraction and reanalysis beyond hold time. AZ:L2 AZ:B1

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	WELLSS012A-2017-06-28		
Lab Sample ID:	FA45434-1	**Date Sampled:**	06/28/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q37115.D	1	07/22/17 05:58	NAF	07/05/17 08:00	OP65823	SQ939
Run #2 [b]	2Q4053.D	1	07/28/17 17:48	NAF	07/25/17 08:00	OP66128	S2Q91

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.00944	0.016	0.0080	ug/l	J
307-24-4	Perfluorohexanoic acid [c]	0.0107	0.016	0.0080	ug/l	J
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid [c]	0.00815	0.016	0.0040	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [d]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [d]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid [c]	0.0149	0.016	0.0080	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0714	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [e]	0.0216	0.016	0.0040	ug/l	B
335-77-3	Perfluorodecanesulfonic acid [d]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLSS012A-2017-06-28		
Lab Sample ID:	FA45434-1	**Date Sampled:**	06/28/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	86%	71%	61-134%
	13C2-PFDA	74%	36% [f]	62-128%
	d5-EtFOSAA	59%	36% [f]	57-135%

(a) Associated BS recovery outside control limits. Sample confirmed by re-extraction and reanalysis beyond hold time. AZ:L2
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) AZ:B1
(f) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLSS012A-2017-06-28		
Lab Sample ID:	FA45434-1	**Date Sampled:**	06/28/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101766.D	1	07/07/17 16:48	FS	07/05/17 16:00	OP65828	SW4441
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	68%		42-108%
321-60-8	2-Fluorobiphenyl	53%		40-106%
1718-51-0	Terphenyl-d14	20% [a]		39-121%

(a) Outside control limits. Surrogate does not reference target analyte. AZ:S12

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLWR161A-2017-06-28		
Lab Sample ID:	FA45434-2	**Date Sampled:**	06/28/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q37116.D	1	07/22/17 06:18	NAF	07/05/17 08:00	OP65823	SQ939
Run #2 [b]	2Q4054.D	1	07/28/17 18:10	NAF	07/25/17 08:00	OP66128	S2Q91

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0439	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.00999	0.017	0.0083	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0175	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid [c]	0.0151	0.017	0.0042	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid [d]	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid [d]	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.141	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid [c]	0.0116	0.017	0.0083	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [e]	0.0249	0.017	0.0042	ug/l	B
335-77-3	Perfluorodecanesulfonic acid [d]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLWR161A-2017-06-28		
Lab Sample ID:	FA45434-2	**Date Sampled:**	06/28/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	84%	119%	61-134%
	13C2-PFDA	85%	118%	62-128%
	d5-EtFOSAA	71%	109%	57-135%

(a) Associated BS recovery outside control limits. Sample confirmed by re-extraction and reanalysis beyond hold time. AZ:L2
(b) Confirmation run.
(c) AZ:E4
(d) Associated BS recovery outside control limits. AZ:L2
(e) AZ:B1

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLWR239A-2017-06-28		
Lab Sample ID:	FA45434-3	**Date Sampled:**	06/28/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q37117.D	1	07/22/17 06:38	NAF	07/05/17 08:00	OP65823	SQ939
Run #2 [b]	2Q4055.D	1	07/28/17 18:32	NAF	07/25/17 08:00	OP66128	S2Q91

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid [a]	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid [a]	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid [a]	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.017	0.0042	ug/l	
335-77-3	Perfluorodecanesulfonic acid [a]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [a]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLWR239A-2017-06-28		
Lab Sample ID:	FA45434-3	**Date Sampled:**	06/28/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	81%	78%	61-134%
	13C2-PFDA	62%	57% [c]	62-128%
	d5-EtFOSAA	49% [e]	50% [d]	57-135%

(a) Associated BS recovery outside control limits. AZ:L2
(b) Confirmation run.
(c) Outside control limits. AZ:S7
(d) Outside control limits. AZ:S6
(e) Outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis beyond hold time. AZ:S6

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLWR239A-2017-06-28		
Lab Sample ID:	FA45434-3	**Date Sampled:**	06/28/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W101767.D	1	07/07/17 17:11	FS	07/05/17 16:00	OP65828	SW4441
Run #2							

	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	74%		42-108%
321-60-8	2-Fluorobiphenyl	64%		40-106%
1718-51-0	Terphenyl-d14	22% [a]		39-121%

(a) Outside control limits. Surrogate does not reference target analyte. AZ:S12

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-28 (WR-239A)		
Lab Sample ID:	FA45434-4	**Date Sampled:**	06/28/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/29/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q37118.D	1	07/22/17 06:58	NAF	07/05/17 08:00	OP65823	SQ939
Run #2 [b]	2Q4056.D	1	07/28/17 18:53	NAF	07/25/17 08:00	OP66128	S2Q91

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid [c]	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	ND	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.017	0.0042	ug/l	
335-77-3	Perfluorodecanesulfonic acid [c]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-28 (WR-239A)		
Lab Sample ID:	FA45434-4	**Date Sampled:**	06/28/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/29/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	85%	67%	61-134%
	13C2-PFDA	68%	78%	62-128%
	d5-EtFOSAA	59%	60%	57-135%

(a) Associated BS recovery outside control limits. Sample confirmed ND by re-extraction and reanalysis beyond hold time. AZ:L2
(b) Confirmation run.
(c) Associated BS recovery outside control limits. AZ:L2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: FA45434
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
B1	Target analyte detected in method blank at or above the method reporting limit.
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
L2	The associated blank spike recovery was below laboratory acceptance limits.
S6	Surrogate recovery was below laboratory and method acceptance limits. Reextraction and/or reanalysis confirms low recovery caused by matrix effect.
S7	Surrogate recovery was below laboratory and method acceptance limits. Unable to confirm matrix effect.
S12	Surrogate recovery was low. Data reported per ADEQ policy 0154.000.

FA45434

SGS ACCUTEST

SGS Accutest Southeast
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.accutest.com

SGS ACCUTEST JOB # : PAGE 1 OF 1

SGS Accutest Quote # | SKIFF #

Client / Reporting Information

Company Name: Hargis + Associates Inc.
Address: 7400 N. ORACLE RD #202
City: TUCSON State: AZ Zip: 85704
Project Contact: Chris Berkowitz Email:
Phone #: 520-881-7300
Sampler(s) Name(s) (Printed) Sampler 1: DLG Sampler 2:

Project Information

Project Name: Marana Project
Street
City State
Project #
Fax #
Client Purchase Order #

Analytical Information

LC537 / EPA 537
BB27D SIM 14 DioX

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid

SGS Accutest Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MEOH	LC537	BB27D SIM 14 DioX	LAB USE ONLY
1	Well SS012A-2017-06-28	6/28/17	0700	DLG	GW	4		X								X	X	
2	Well WR161A-2017-06-28		0825	DLG	GW	2		X								X		
3	Well WR239A-2017-06-28		0953	DLG	GW	4		X								X	X	
4	FB-2017-06-28 (WR-239A)		0958	DLG	WW	2		X						X		X		

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	DLG	6/28/17 1430	2	3	06/28/17 1630	4 Fedex
	Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5	Fx		6 06/29/17 930	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 3.2

http://www.sgs.com/en/terms-and-conditions
Effective Date 04/24/2017

SGS COC Florida new art 5 2 17 rev 042417 SI

5.2 5

FA45434: Chain of Custody
Page 1 of 2

SGS Accutest Sample Receipt Summary

Job Number: FA45434 **Client:** HARGIS & ASSOC. **Project:** MARANA PROJECT

Date / Time Received: 6/29/2017 9:30:00 AM **Delivery Method:** FED EX **Airbill #'s:** 7870 3031 8725

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.8);

Cooler Temps (Corrected) °C: Cooler 1: (3.2);

Cooler Information	Y	N
1. Custody Seals Present	☑	☐
2. Custody Seals Intact	☑	☐
3. Temp criteria achieved	☑	☐
4. Cooler temp verification	IR Gun	
5. Cooler media	Ice (Bag)	

Trip Blank Information	Y	N	N/A
1. Trip Blank present / cooler	☐	☑	☐
2. Trip Blank listed on COC	☐	☑	☐
	W	**S**	**N/A**
3. Type Of TB Received	☐	☐	☑

Sample Information	Y	N	N/A
1. Sample labels present on bottles	☑	☐	
2. Samples preserved properly	☑	☐	
3. Sufficient volume/containers recvd for analysis:	☑	☐	
4. Condition of sample	Intact		
5. Sample recvd within HT	☑	☐	
6. Dates/Times/IDs on COC match Sample Label	☑	☐	
7. VOCs have headspace	☐	☐	☑
8. Bottles received for unspecified tests	☐	☑	
9. Compositing instructions clear	☐	☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐	☐	☑
11. % Solids Jar received?	☐	☐	☑
12. Residual Chlorine Present?	☐	☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 6/29/2017 9:30:00 AM Reviewer: P.H Date: 6/29/2017

FA45434: Chain of Custody
Page 2 of 2

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA45434
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65828-MB	W101764.D	1	07/07/17	FS	07/05/17	OP65828	SW4441

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA45434-1, FA45434-3

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	78%	42-108%
321-60-8	2-Fluorobiphenyl	67%	40-106%
1718-51-0	Terphenyl-d14	68%	39-121%

Method Blank Summary

Job Number: FA45434
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65823-MB	Q37104.D	1	07/22/17	NAF	07/05/17	OP65823	SQ939

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45434-1, FA45434-2, FA45434-3, FA45434-4

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [a]	0.0616	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	96%	61-134%
	13C2-PFDA	93%	62-128%
	d5-EtFOSAA	64%	57-135%

(a) AZ:B1

Blank Spike Summary

Job Number: FA45434
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65828-BS	W101765.D	1	07/07/17	FS	07/05/17	OP65828	SW4441

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA45434-1, FA45434-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	10	2.9	29	15-69

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	76%	42-108%
321-60-8	2-Fluorobiphenyl	75%	40-106%
1718-51-0	Terphenyl-d14	83%	39-121%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA45434
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65823-BS	Q37103.D	1	07/22/17	NAF	07/05/17	OP65823	SQ939

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45434-1, FA45434-2, FA45434-3, FA45434-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.169	110	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.170	110	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.162	105	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.168	109	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.169	110	74-137
375-95-1	Perfluorononanoic acid	0.154	0.162	105	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.155	101	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.109	71	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.0821	53* [a]	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.0746	48* [a]	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.0717	47* [a]	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.161	105	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.162	105	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.154	0.148	96	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.149	97	70-134
335-77-3	Perfluorodecanesulfonic acid	0.154	0.0821	53* [a]	56-127
754-91-6	PFOSA	0.154	0.0152	10* [a]	40-142
2355-31-9	MeFOSAA	0.154	0.0986	64	57-128
2991-50-6	EtFOSAA	0.154	0.0899	58	55-135
27619-97-2	6:2 Fluorotelomer sulfonate	0.154	0.159	103	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.154	0.154	100	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	97%	61-134%
	13C2-PFDA	92%	62-128%
	d5-EtFOSAA	56%* [b]	57-135%

(a) AZ:L2
(b) AZ:S12

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA45434
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65828-MS	W101768.D	1	07/07/17	FS	07/05/17	OP65828	SW4441
OP65828-MSD	W101769.D	1	07/07/17	FS	07/05/17	OP65828	SW4441
FA45434-3	W101767.D	1	07/07/17	FS	07/05/17	OP65828	SW4441

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA45434-1, FA45434-3

CAS No.	Compound	FA45434-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	ND		20	6.5	33	20	5.7	29	13	15-69/31

CAS No.	Surrogate Recoveries	MS	MSD	FA45434-3	Limits
4165-60-0	Nitrobenzene-d5	89%	96%	74%	42-108%
321-60-8	2-Fluorobiphenyl	95%	99%	64%	40-106%
1718-51-0	Terphenyl-d14	54%	50%	22%* [a]	39-121%

(a) Outside control limits. Surrogate does not reference target analyte. AZ:S12

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA45434
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65823-MS	Q37107.D	1	07/22/17	NAF	07/05/17	OP65823	SQ939
OP65823-MSD	Q37108.D	1	07/22/17	NAF	07/05/17	OP65823	SQ939
FA45435-1 [a]	Q37106.D	1	07/22/17	NAF	07/05/17	OP65823	SQ939

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45434-1, FA45434-2, FA45434-3, FA45434-4

CAS No.	Compound	FA45435-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	ND		0.333	0.128	38	0.333	0.129	39	1	20-120/30
2706-90-3	Perfluoropentanoic acid	0.0329		0.333	0.383	105	0.333	0.376	103	2	40-131/30
307-24-4	Perfluorohexanoic acid	0.0231		0.333	0.348	97	0.333	0.334	93	4	63-146/30
375-85-9	Perfluoroheptanoic acid	0.0186		0.333	0.366	104	0.333	0.338	96	8	71-138/30
335-67-1	Perfluorooctanoic acid	0.0158	J	0.333	0.367	105	0.333	0.351	101	4	74-137/30
375-95-1	Perfluorononanoic acid	ND		0.333	0.344	103	0.333	0.315	94	9	76-140/30
335-76-2	Perfluorodecanoic acid	ND		0.333	0.359	108	0.333	0.298	89	19	65-148/30
2058-94-8	Perfluoroundecanoic acid	ND		0.333	0.310	93	0.333	0.242	73	25	57-138/30
307-55-1	Perfluorododecanoic acid	ND		0.333	0.219	66	0.333	0.179	54*	20	58-118/30
72629-94-8	Perfluorotridecanoic acid	ND		0.333	0.170	51*	0.333	0.155	46*	9	52-120/30
376-06-7	Perfluorotetradecanoic acid	ND		0.333	0.154	46*	0.333	0.147	44*	5	49-122/30
375-73-5	Perfluorobutanesulfonic acid	0.0119	J	0.333	0.342	99	0.333	0.335	97	2	73-148/30
355-46-4	Perfluorohexanesulfonic acid	0.0771		0.333	0.401	97	0.333	0.389	94	3	74-142/30
375-92-8	Perfluoroheptanesulfonic acid	ND		0.333	0.306	92	0.333	0.313	94	2	74-123/30
1763-23-1	Perfluorooctanesulfonic acid	0.0580	B	0.333	0.384	98	0.333	0.336	83	13	70-134/30
335-77-3	Perfluorodecanesulfonic acid	ND		0.333	0.202	61	0.333	0.175	52*	14	56-127/30
754-91-6	PFOSA	ND		0.333	0.327	98	0.333	0.344	103	5	40-142/30
2355-31-9	MeFOSAA	ND		0.333	0.272	82	0.333	0.245	73	10	57-128/30
2991-50-6	EtFOSAA	ND		0.333	0.260	78	0.333	0.221	66	16	55-135/30
27619-97-2	6:2 Fluorotelomer sulfonate	ND		0.333	0.329	99	0.333	0.340	102	3	70-153/30
39108-34-4	8:2 Fluorotelomer sulfonate	ND		0.333	0.349	105	0.333	0.312	94	11	61-154/30

CAS No.	Surrogate Recoveries	MS	MSD	FA45435-1	Limits
	13C2-PFHxA	90%	92%	97%	61-134%
	13C2-PFDA	92%	82%	91%	62-128%
	d5-EtFOSAA	71%	64%	73%	57-135%

(a) Associated BS recovery outside control limits. Insufficient sample for re-extraction. AZ:L2

* = Outside of Control Limits.

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e-Hardcopy 2.0
Automated Report

Technical Report for

Hargis + Associates, Inc.

Marana Project; Marana, AZ

1229.3

SGS Accutest Job Number: FA45435

Sampling Date: 06/27/17

Report to:

Hargis + Associates, Inc
7400 N Oracle Rd Suite 202
Tucson, AZ 85704
CPERKOVAC@HARGIS.COM

ATTN: Chris Perkovac

Total number of pages in report: **32**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Elvin Kumar 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(L-A-B L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AK, AR, GA, IA, KY, MA, NV, OK, OR, UT, WA

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SGS Accutest

Sample Summary

Hargis + Associates, Inc.

Job No: FA45435

Marana Project; Marana, AZ
Project No: 1229.3

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA45435-1	06/27/17	07:30	DG	06/29/17	AQ	Ground Water	WELLSS019A-2017-06-27
FA45435-2	06/27/17	08:25	DG	06/29/17	AQ	Ground Water	WELLB036A-2017-06-27
FA45435-3	06/27/17	08:30	DG	06/29/17	AQ	Field Blank Water	FB-2017-06-27 (B-036A)
FA45435-4	06/27/17	09:15	DG	06/29/17	AQ	Ground Water	WELLSS013A-2017-06-27
FA45435-5	06/27/17	11:00	DG	06/29/17	AQ	Ground Water	WELLE032A-2017-06-27

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hargis + Associates, Inc. **Job No:** FA45435

Site: Marana Project; Marana, AZ **Report Date:** 8/1/2017 3:22:57 PM

4 Sample(s) and 1 Field Blank(s) were collected on 06/27/2017 and were received at SGS Accutest Southeast (SASE) on 06/29/2017 properly preserved, at 2.3 Deg. C and intact. These Samples received an SASE job number of FA45435. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65823

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA45435-1MS, FA45435-1MSD were used as the QC samples indicated.

Sample(s) FA45435-1, FA45435-2 have compound(s) reported with a “B” qualifier, indicating analyte is found in the associated method blank.

Blank Spike Recovery(s) for Perfluorodecanesulfonic acid, Perfluorododecanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, PFOSA are outside control limits.

Matrix Spike Recovery(s) for Perfluorotetradecanoic acid, Perfluorotridecanoic acid are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for Perfluorodecanesulfonic acid, Perfluorododecanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid are outside control limits. Probable cause is due to matrix interference.

Sample(s) OP65823-BS, FA45435-2, FA45435-3, FA45435-5 have surrogates outside control limits. Probable cause is due to matrix interference.

OP65823-MB for Perfluorooctanesulfonic acid: AZ:B1

OP65823-BS for Perfluorodecanesulfonic acid: AZ:L2

OP65823-BS for Perfluorododecanoic acid: AZ:L2

OP65823-BS for Perfluorotetradecanoic acid: AZ:L2

OP65823-BS for Perfluorotridecanoic acid: AZ:L2

OP65823-BS for PFOSA: AZ:L2

OP65823-BS for d5-EtFOSAA: AZ:S12

FA45435-1 for Perfluorotetradecanoic acid: Associated BS and MS\MSD recovery outside control limits.

FA45435-1 for Perfluorododecanoic acid: Associated BS and MS\MSD recovery outside control limits.

FA45435-1 for Perfluorodecanesulfonic acid: Associated BS and MS\MSD recovery outside control limits.

FA45435-1 for Perfluorooctanoic acid: AZ:E4

FA45435-1: Associated BS recovery outside control limits. Insufficient sample for re-extraction. AZ:L2

FA45435-1 for Perfluorobutanesulfonic acid: AZ:E4

FA45435-1 for Perfluorooctanesulfonic acid: AZ:B1

FA45435-1 for PFOSA: Associated BS recovery outside control limits.

FA45435-1 for Perfluorotridecanoic acid: Associated BS and MS\MSD recovery outside control limits.

FA45435-2: Associated BS recovery outside control limits. AZ:L2

FA45435-2 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits.

FA45435-2 for d5-NEtFOSAA: Outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis beyond hold time. AZ:S6

FA45435-2 for Perfluorooctanesulfonic acid: AZ:B1,E4

FA45435-2 for PFOSA: Associated BS recovery outside control limits.

FA45435-2 for Perfluorotridecanoic acid: Associated BS recovery outside control limits.

FA45435-2 for Perfluorododecanoic acid: Associated BS recovery outside control limits.

FA45435-2 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits.

FA45435-3 for PFOSA: Associated BS recovery outside control limits.

FA45435-3 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits.

FA45435-3: Associated BS recovery outside control limits. AZ:L2

FA45435-3 for Perfluorododecanoic acid: Associated BS recovery outside control limits.

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65823

FA45435-3 for Perfluorotridecanoic acid: Associated BS recovery outside control limits.

FA45435-3 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits.

FA45435-4 for Perfluorododecanoic acid: Associated BS recovery outside control limits.

FA45435-4 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits.

FA45435-4 for PFOSA: Associated BS recovery outside control limits.

FA45435-4 for Perfluorotridecanoic acid: Associated BS recovery outside control limits.

FA45435-4 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits.

FA45435-4: Associated BS recovery outside control limits. Sample confirmed ND by re-extraction and reanalysis beyond hold time. AZ:L2

FA45435-5: Associated BS recovery outside control limits. Sample confirmed ND by re-extraction and reanalysis beyond hold time. AZ:L2

FA45435-5 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits.

FA45435-5 for PFOSA: Associated BS recovery outside control limits.

FA45435-5 for Perfluorotridecanoic acid: Associated BS recovery outside control limits.

FA45435-5 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits.

FA45435-5 for Perfluorododecanoic acid: Associated BS recovery outside control limits.

Matrix: AQ **Batch ID:** OP66128

Sample(s) FA45435-2, FA45435-3, FA45435-5 have surrogates outside control limits. Probable cause is due to matrix interference.

FA45435-2 for 13C2-PFDA: Outside control limits. AZ:S7

FA45435-2 for d5-NEtFOSAA: Outside control limits. AZ:S6

FA45435-2: Confirmation run.

FA45435-3 for 13C2-PFDA: Outside control limits. AZ:S7

FA45435-3 for d5-NEtFOSAA: Outside control limits. AZ:S7

FA45435-3: Confirmation run.

FA45435-4: Confirmation run.

FA45435-5 for 13C2-PFDA: Outside control limits. AZ:S7

FA45435-5 for 13C2-PFHxA: Outside control limits. AZ:S7

FA45435-5 for d5-NEtFOSAA: Outside control limits. AZ:S7

FA45435-5: Confirmation run.

Extractables by GCMS By Method SW846 8270D BY SIM

Matrix: AQ **Batch ID:** OP65799

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA45376-1MS, FA45376-1MSD were used as the QC samples indicated.

Sample(s) OP65799-MB have surrogates outside control limits.

OP65799-MB for Nitrobenzene-d5: Outside control limits. AZ:S4

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Kim Benham, Client Services (signature on file)

Summary of Hits

Job Number: FA45435
Account: Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ
Collected: 06/27/17

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA45435-1	**WELLSS019A-2017-06-27**					
Perfluoropentanoic acid [a]		0.0329	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanoic acid [a]		0.0231	0.016	0.0080	ug/l	EPA 537 MOD
Perfluoroheptanoic acid [a]		0.0186	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid [b]		0.0158 J	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid [b]		0.0119 J	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [a]		0.0771	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [c]		0.0580 B	0.016	0.0040	ug/l	EPA 537 MOD
FA45435-2	**WELLB036A-2017-06-27**					
Perfluorooctanesulfonic acid [d]		0.00861 JB	0.016	0.0040	ug/l	EPA 537 MOD

FA45435-3 **FB-2017-06-27 (B-036A)**

No hits reported in this sample.

FA45435-4 **WELLSS013A-2017-06-27**

No hits reported in this sample.

FA45435-5 **WELLE032A-2017-06-27**

No hits reported in this sample.

(a) Associated BS recovery outside control limits. Insufficient sample for re-extraction. AZ:L2
(b) Associated BS recovery outside control limits. Insufficient sample for re-extraction. AZ:L2 AZ:E4
(c) Associated BS recovery outside control limits. Insufficient sample for re-extraction. AZ:L2 AZ:B1
(d) Associated BS recovery outside control limits. AZ:L2 AZ:B1,E4

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	WELLSS019A-2017-06-27		
Lab Sample ID:	FA45435-1	**Date Sampled:**	06/27/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q37106.D	1	07/22/17 03:01	NAF	07/05/17 08:00	OP65823	SQ939
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0329	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	0.0231	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0186	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid [b]	0.0158	0.016	0.0040	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [c]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid [b]	0.0119	0.016	0.0080	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0771	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [d]	0.0580	0.016	0.0040	ug/l	B
335-77-3	Perfluorodecanesulfonic acid [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [e]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLSS019A-2017-06-27		
Lab Sample ID:	FA45435-1	**Date Sampled:**	06/27/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	97%		61-134%
	13C2-PFDA	91%		62-128%
	d5-EtFOSAA	73%		57-135%

(a) Associated BS recovery outside control limits. Insufficient sample for re-extraction. AZ:L2
(b) AZ:E4
(c) Associated BS and MS\MSD recovery outside control limits.
(d) AZ:B1
(e) Associated BS recovery outside control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLSS019A-2017-06-27		
Lab Sample ID:	FA45435-1	**Date Sampled:**	06/27/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U062325.D	1	07/13/17 15:28	FS	07/03/17 14:00	OP65799	SU2717
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	104%		42-108%
321-60-8	2-Fluorobiphenyl	101%		40-106%
1718-51-0	Terphenyl-d14	83%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLB036A-2017-06-27		
Lab Sample ID:	FA45435-2	**Date Sampled:**	06/27/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q37111.D	1	07/22/17 04:40	NAF	07/05/17 08:00	OP65823	SQ939
Run #2 [b]	2Q4057.D	1	07/28/17 19:15	NAF	07/25/17 08:00	OP66128	S2Q91

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [c]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [d]	0.00861	0.016	0.0040	ug/l	JB
335-77-3	Perfluorodecanesulfonic acid [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLB036A-2017-06-27		
Lab Sample ID:	FA45435-2	**Date Sampled:**	06/27/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	79%	62%	61-134%
	13C2-PFDA	69%	54% [e]	62-128%
	d5-EtFOSAA	52% [g]	40% [f]	57-135%

(a) Associated BS recovery outside control limits. AZ:L2
(b) Confirmation run.
(c) Associated BS recovery outside control limits.
(d) AZ:B1,E4
(e) Outside control limits. AZ:S7
(f) Outside control limits. AZ:S6
(g) Outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis beyond hold time. AZ:S6

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLB036A-2017-06-27		
Lab Sample ID:	FA45435-2	**Date Sampled:**	06/27/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U062326.D	1	07/13/17 15:52	FS	07/03/17 14:00	OP65799	SU2717
Run #2							

	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.29	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	100%		42-108%
321-60-8	2-Fluorobiphenyl	97%		40-106%
1718-51-0	Terphenyl-d14	42%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-27 (B-036A)		
Lab Sample ID:	FA45435-3	**Date Sampled:**	06/27/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/29/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q37112.D	1	07/22/17 04:59	NAF	07/05/17 08:00	OP65823	SQ939
Run #2 [b]	2Q4058.D	1	07/28/17 19:37	NAF	07/25/17 08:00	OP66128	S2Q91

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [c]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-2017-06-27 (B-036A)		
Lab Sample ID:	FA45435-3	**Date Sampled:**	06/27/17
Matrix:	AQ - Field Blank Water	**Date Received:**	06/29/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	87%	94%	61-134%
	13C2-PFDA	69%	59% [d]	62-128%
	d5-EtFOSAA	58%	43% [d]	57-135%

(a) Associated BS recovery outside control limits. AZ:L2
(b) Confirmation run.
(c) Associated BS recovery outside control limits.
(d) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLSS013A-2017-06-27		
Lab Sample ID:	FA45435-4	**Date Sampled:**	06/27/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q37113.D	1	07/22/17 05:19	NAF	07/05/17 08:00	OP65823	SQ939
Run #2 [b]	2Q4059.D	1	07/28/17 19:59	NAF	07/25/17 08:00	OP66128	S2Q91

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [c]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLSS013A-2017-06-27		
Lab Sample ID:	FA45435-4	**Date Sampled:**	06/27/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	86%	79%	61-134%
	13C2-PFDA	87%	104%	62-128%
	d5-EtFOSAA	69%	65%	57-135%

(a) Associated BS recovery outside control limits. Sample confirmed ND by re-extraction and reanalysis beyond hold time. AZ:L2
(b) Confirmation run.
(c) Associated BS recovery outside control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLSS013A-2017-06-27		
Lab Sample ID:	FA45435-4	**Date Sampled:**	06/27/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U062327.D	1	07/13/17 16:16	FS	07/03/17 14:00	OP65799	SU2717
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	99%		42-108%
321-60-8	2-Fluorobiphenyl	94%		40-106%
1718-51-0	Terphenyl-d14	65%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLE032A-2017-06-27		
Lab Sample ID:	FA45435-5	**Date Sampled:**	06/27/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q37114.D	1	07/22/17 05:39	NAF	07/05/17 08:00	OP65823	SQ939
Run #2 [b]	2Q4060.D	1	07/28/17 20:21	NAF	07/25/17 08:00	OP66128	S2Q91

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [c]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.016	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLE032A-2017-06-27		
Lab Sample ID:	FA45435-5	**Date Sampled:**	06/27/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	92%	52% [d]	61-134%
	13C2-PFDA	79%	52% [d]	62-128%
	d5-EtFOSAA	63%	46% [d]	57-135%

(a) Associated BS recovery outside control limits. Sample confirmed ND by re-extraction and reanalysis beyond hold time. AZ:L2
(b) Confirmation run.
(c) Associated BS recovery outside control limits.
(d) Outside control limits. AZ:S7

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLE032A-2017-06-27		
Lab Sample ID:	FA45435-5	**Date Sampled:**	06/27/17
Matrix:	AQ - Ground Water	**Date Received:**	06/29/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U062328.D	1	07/13/17 16:40	FS	07/03/17 14:00	OP65799	SU2717
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	95%		42-108%
321-60-8	2-Fluorobiphenyl	91%		40-106%
1718-51-0	Terphenyl-d14	70%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: FA45435
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
B1	Target analyte detected in method blank at or above the method reporting limit.
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
L2	The associated blank spike recovery was below laboratory acceptance limits.
S4	Surrogate recovery was above laboratory and method acceptance limits. No target analytes were detected in the sample.
S6	Surrogate recovery was below laboratory and method acceptance limits. Reextraction and/or reanalysis confirms low recovery caused by matrix effect.
S7	Surrogate recovery was below laboratory and method acceptance limits. Unable to confirm matrix effect.
S12	Surrogate recovery was low. Data reported per ADEQ policy 0154.000.

SGS ACCUTEST

SGS Accutest Southeast
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.accutest.com

FA45435

SGS ACCUTEST JOB # : PAGE 1 OF 1

SGS Accutest Quote # | SKIFF #

Client / Reporting Information

Company Name: Hargis + Associates, Inc.
Address: 7400 N. ORACLE RD #202
City: TUCSON State: AZ Zip: 85704
Project Contact: CHRIS PERKOVAC Email: cperkovac@hargis
Phone #: 520-881-7300
Sampler(s) Name(s) (Printed)
Sampler 1: DLG Sampler 2:

Project Information

Project Name: Marana Project
Street
City State
Project #
Fax #
Client Purchase Order #

Analytical Information

SGS Accutest Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MEOH	LCS37 LIST/EPA 537	8270D SIM 14 DIO X	LAB USE ONLY
1	Well SS019A-2017-06-27	6/27/17	0730	DLG	GW	4		X								X	X	
2	Well B036A-2017-06-27		0825		GW	4		X								X	X	
3	FB-2017-06-27 (B-036A)		0830		WW	2		X						X		X		
4	Well SS013A-2017-06-27		0915		GW	4		X								X	X	
5	Well E032A-2017-06-27		1100		GW	4		X								X	X	

Matrix Codes
DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- COMMERCIAL "A" (RESULTS ONLY)
- COMMERCIAL "B" (RESULTS PLUS QC)
- REDT1 (EPA LEVEL 3)
- FULLT1 (EPA LEVEL 4)
- EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1 DLG	6/28/17 1430	2	3	6/28/17 1630	4 Fedex
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5 Fx		6 06/29/17 930	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 2.3

http://www.sgs.com/en/terms-and-conditions

Effective Date 04/24/2017

SGS COC Florida new art 5 2 17 rev 042417 SI

FA45435: Chain of Custody
Page 1 of 2

SGS Accutest Sample Receipt Summary

Job Number: FA45435 **Client:** HARGIS & ASSOC. **Project:** MARANA PROJECT

Date / Time Received: 6/29/2017 9:30:00 AM **Delivery Method:** FED EX **Airbill #'s:** 7870 3031 8725

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (1.9);

Cooler Temps (Corrected) °C: Cooler 1: (2.3);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☑	☐
2. Trip Blank listed on COC	☐		☑	☐
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 6/29/2017 9:30:00 AM Reviewer: P.H Date: 6/29/2017

FA45435: Chain of Custody
Page 2 of 2

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA45435
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65799-MB	U062318.D	1	07/13/17	FS	07/03/17	OP65799	SU2717

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA45435-1, FA45435-2, FA45435-4, FA45435-5

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.15	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	109%* [a]	42-108%
321-60-8	2-Fluorobiphenyl	99%	40-106%
1718-51-0	Terphenyl-d14	92%	39-121%

(a) Outside control limits. AZ:S4

Method Blank Summary

Job Number: FA45435
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65823-MB	Q37104.D	1	07/22/17	NAF	07/05/17	OP65823	SQ939

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45435-1, FA45435-2, FA45435-3, FA45435-4, FA45435-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [a]	0.0616	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	96%	61-134%
	13C2-PFDA	93%	62-128%
	d5-EtFOSAA	64%	57-135%

(a) AZ:B1

Blank Spike Summary

Job Number: FA45435
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65799-BS	U062314.D	1	07/13/17	FS	07/03/17	OP65799	SU2717

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA45435-1, FA45435-2, FA45435-4, FA45435-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	10	3.4	34	15-69

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	76%	42-108%
321-60-8	2-Fluorobiphenyl	70%	40-106%
1718-51-0	Terphenyl-d14	80%	39-121%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA45435
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65823-BS	Q37103.D	1	07/22/17	NAF	07/05/17	OP65823	SQ939

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45435-1, FA45435-2, FA45435-3, FA45435-4, FA45435-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.169	110	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.170	110	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.162	105	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.168	109	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.169	110	74-137
375-95-1	Perfluorononanoic acid	0.154	0.162	105	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.155	101	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.109	71	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.0821	53* [a]	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.0746	48* [a]	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.0717	47* [a]	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.161	105	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.162	105	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.154	0.148	96	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.149	97	70-134
335-77-3	Perfluorodecanesulfonic acid	0.154	0.0821	53* [a]	56-127
754-91-6	PFOSA	0.154	0.0152	10* [a]	40-142
2355-31-9	MeFOSAA	0.154	0.0986	64	57-128
2991-50-6	EtFOSAA	0.154	0.0899	58	55-135
27619-97-2	6:2 Fluorotelomer sulfonate	0.154	0.159	103	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.154	0.154	100	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	97%	61-134%
	13C2-PFDA	92%	62-128%
	d5-EtFOSAA	56%* [b]	57-135%

(a) AZ:L2
(b) AZ:S12

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA45435
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65799-MS	U062319.D	1	07/13/17	FS	07/03/17	OP65799	SU2717
OP65799-MSD	U062320.D	1	07/13/17	FS	07/03/17	OP65799	SU2717
FA45376-1	U062329.D	1	07/13/17	FS	07/03/17	OP65799	SU2717

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

FA45435-1, FA45435-2, FA45435-4, FA45435-5

CAS No.	Compound	FA45376-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	0.29	U	19	9.4	49	19	10	53	6	15-69/31

CAS No.	Surrogate Recoveries	MS	MSD	FA45376-1	Limits
4165-60-0	Nitrobenzene-d5	88%	91%	93%	42-108%
321-60-8	2-Fluorobiphenyl	93%	97%	85%	40-106%
1718-51-0	Terphenyl-d14	44%	44%	42%	39-121%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA45435
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65823-MS	Q37107.D	1	07/22/17	NAF	07/05/17	OP65823	SQ939
OP65823-MSD	Q37108.D	1	07/22/17	NAF	07/05/17	OP65823	SQ939
FA45435-1 [a]	Q37106.D	1	07/22/17	NAF	07/05/17	OP65823	SQ939

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45435-1, FA45435-2, FA45435-3, FA45435-4, FA45435-5

CAS No.	Compound	FA45435-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	ND		0.333	0.128	38	0.333	0.129	39	1	20-120/30
2706-90-3	Perfluoropentanoic acid	0.0329		0.333	0.383	105	0.333	0.376	103	2	40-131/30
307-24-4	Perfluorohexanoic acid	0.0231		0.333	0.348	97	0.333	0.334	93	4	63-146/30
375-85-9	Perfluoroheptanoic acid	0.0186		0.333	0.366	104	0.333	0.338	96	8	71-138/30
335-67-1	Perfluorooctanoic acid	0.0158	J	0.333	0.367	105	0.333	0.351	101	4	74-137/30
375-95-1	Perfluorononanoic acid	ND		0.333	0.344	103	0.333	0.315	94	9	76-140/30
335-76-2	Perfluorodecanoic acid	ND		0.333	0.359	108	0.333	0.298	89	19	65-148/30
2058-94-8	Perfluoroundecanoic acid	ND		0.333	0.310	93	0.333	0.242	73	25	57-138/30
307-55-1	Perfluorododecanoic acid	ND		0.333	0.219	66	0.333	0.179	54*	20	58-118/30
72629-94-8	Perfluorotridecanoic acid	ND		0.333	0.170	51*	0.333	0.155	46*	9	52-120/30
376-06-7	Perfluorotetradecanoic acid	ND		0.333	0.154	46*	0.333	0.147	44*	5	49-122/30
375-73-5	Perfluorobutanesulfonic acid	0.0119	J	0.333	0.342	99	0.333	0.335	97	2	73-148/30
355-46-4	Perfluorohexanesulfonic acid	0.0771		0.333	0.401	97	0.333	0.389	94	3	74-142/30
375-92-8	Perfluoroheptanesulfonic acid	ND		0.333	0.306	92	0.333	0.313	94	2	74-123/30
1763-23-1	Perfluorooctanesulfonic acid	0.0580	B	0.333	0.384	98	0.333	0.336	83	13	70-134/30
335-77-3	Perfluorodecanesulfonic acid	ND		0.333	0.202	61	0.333	0.175	52*	14	56-127/30
754-91-6	PFOSA	ND		0.333	0.327	98	0.333	0.344	103	5	40-142/30
2355-31-9	MeFOSAA	ND		0.333	0.272	82	0.333	0.245	73	10	57-128/30
2991-50-6	EtFOSAA	ND		0.333	0.260	78	0.333	0.221	66	16	55-135/30
27619-97-2	6:2 Fluorotelomer sulfonate	ND		0.333	0.329	99	0.333	0.340	102	3	70-153/30
39108-34-4	8:2 Fluorotelomer sulfonate	ND		0.333	0.349	105	0.333	0.312	94	11	61-154/30

CAS No.	Surrogate Recoveries	MS	MSD	FA45435-1	Limits
	13C2-PFHxA	90%	92%	97%	61-134%
	13C2-PFDA	92%	82%	91%	62-128%
	d5-EtFOSAA	71%	64%	73%	57-135%

(a) Associated BS recovery outside control limits. Insufficient sample for re-extraction. AZ:L2

* = Outside of Control Limits.

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e-Hardcopy 2.0
Automated Report

Technical Report for

Hargis + Associates, Inc.

Marana Project; Marana, AZ

1229.3

SGS Accutest Job Number: FA45522

Sampling Date: 06/30/17

Report to:

Hargis + Associates, Inc
7400 N Oracle Rd Suite 202
Tucson, AZ 85704
CPERKOVAC@HARGIS.COM

ATTN: Chris Perkovac

Total number of pages in report: **16**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Elvin Kumar 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(L-A-B L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AK, AR, GA, IA, KY, MA, NV, OK, OR, UT, WA

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SGS Accutest

Sample Summary

Hargis + Associates, Inc.

Job No: FA45522

Marana Project; Marana, AZ
Project No: 1229.3

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA45522-1	06/30/17	13:30	DG	07/01/17	AQ	Ground Water	WELLIRR436-2017-06-30

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hargis + Associates, Inc. **Job No:** FA45522

Site: Marana Project; Marana, AZ **Report Date:** 8/1/2017 3:14:36 PM

1 Sample(s) were collected on 06/30/2017 and were received at SGS Accutest Southeast (SASE) on 07/01/2017 properly preserved, at 2.5 Deg. C and intact. These Samples received an SASE job number of FA45522. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP65823

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA45435-1MS, FA45435-1MSD were used as the QC samples indicated.

Sample(s) FA45522-1 have compound(s) reported with a “B” qualifier, indicating analyte is found in the associated method blank.

Blank Spike Recovery(s) for Perfluorodecanesulfonic acid, Perfluorododecanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, PFOSA are outside control limits.

Matrix Spike Recovery(s) for Perfluorotetradecanoic acid, Perfluorotridecanoic acid are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for Perfluorodecanesulfonic acid, Perfluorododecanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid are outside control limits. Probable cause is due to matrix interference.

Sample(s) OP65823-BS, FA45522-1 have surrogates outside control limits.

OP65823-MB for Perfluorooctanesulfonic acid: AZ:B1

OP65823-BS for d5-EtFOSAA: AZ:S12

OP65823-BS for PFOSA: AZ:L2

OP65823-BS for Perfluorotridecanoic acid: AZ:L2

OP65823-BS for Perfluorododecanoic acid: AZ:L2

OP65823-BS for Perfluorotetradecanoic acid: AZ:L2

OP65823-BS for Perfluorodecanesulfonic acid: AZ:L2

FA45522-1: Associated BS recovery outside control limits. Sample confirmed by re-extraction and reanalysis beyond hold time. AZ:L2

FA45522-1 for Perfluorotetradecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45522-1 for Perfluorododecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45522-1 for PFOSA: Associated BS recovery outside control limits. AZ:L2

FA45522-1 for Perfluorooctanesulfonic acid: AZ:E4,B1

FA45522-1 for d5-NEtFOSAA: Outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis beyond hold time. AZ:S6

FA45522-1 for Perfluorotridecanoic acid: Associated BS recovery outside control limits. AZ:L2

FA45522-1 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits. AZ:L2

Matrix: AQ **Batch ID:** OP66128

Sample(s) FA45522-1 have surrogates outside control limits. Probable cause is due to matrix interference.

FA45522-1 for d5-NEtFOSAA: Outside control limits. AZ:S6

FA45522-1: Confirmation run.

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Kim Benham, Client Services (signature on file)

Summary of Hits

Job Number: FA45522
Account: Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ
Collected: 06/30/17

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA45522-1	**WELLIRR436-2017-06-30**					
Perfluorooctanesulfonic acid [a]		0.00741 JB	0.016	0.0040	ug/l	EPA 537 MOD

(a) Associated BS recovery outside control limits. Sample confirmed by re-extraction and reanalysis beyond hold time. AZ:L2 AZ:E4,B1

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	WELLIRR436-2017-06-30		
Lab Sample ID:	FA45522-1	**Date Sampled:**	06/30/17
Matrix:	AQ - Ground Water	**Date Received:**	07/01/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q37105.D	1	07/22/17 02:41	NAF	07/05/17 08:00	OP65823	SQ939
Run #2 [b]	2Q4063.D	1	07/28/17 21:26	NAF	07/25/17 08:00	OP66128	S2Q91

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid [c]	ND	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	ND	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	ND	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	ND	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [d]	0.00741	0.016	0.0040	ug/l	JB
335-77-3	Perfluorodecanesulfonic acid [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	ND	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	ND	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.040	0.016	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WELLIRR436-2017-06-30		
Lab Sample ID:	FA45522-1	**Date Sampled:**	06/30/17
Matrix:	AQ - Ground Water	**Date Received:**	07/01/17
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Marana Project; Marana, AZ		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	85%	106%	61-134%
	13C2-PFDA	75%	77%	62-128%
	d5-EtFOSAA	53% f	55% e	57-135%

(a) Associated BS recovery outside control limits. Sample confirmed by re-extraction and reanalysis beyond hold time. AZ:L2
(b) Confirmation run.
(c) Associated BS recovery outside control limits. AZ:L2
(d) AZ:E4,B1
(e) Outside control limits. AZ:S6
(f) Outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis beyond hold time. AZ:S6

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: FA45522
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
B1	Target analyte detected in method blank at or above the method reporting limit.
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
L2	The associated blank spike recovery was below laboratory acceptance limits.
S6	Surrogate recovery was below laboratory and method acceptance limits. Reextraction and/or reanalysis confirms low recovery caused by matrix effect.
S12	Surrogate recovery was low. Data reported per ADEQ policy 0154.000.

SGS PHOENIX ACCUTEST

CHAIN OF CUSTODY

FA45522 PAGE 1 OF 1

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job #

Client / Reporting Information

Company Name: Hargis + Assoc.
Street Address: 7400 N. Oracle Rd
City State Zip: Tucson AZ 85704
Project Contact: Chris Parkere
E-mail:
Phone #: 520-831-7300
Fax #:
Sampler(s) Name(s): DLG
Phone #:

Project Information

Project Name: Marana Project
Street:
City State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City State Zip:
Attention:

Requested Analyses: EPA 537 / 537 Mod

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank

SGS Accutest Sample #	Field ID / Point of Collection	Collection Date	Collection Time	Sampled By	Matrix	# of bottles	HCl	NaOH	Zn/NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	TSP	NaHSO4	ENCORE	OTHER	537 Mod / EPA 537	LAB USE ONLY
1	Well IRR436-2017-06-30	6/30/17	1330	DLG	GW	2						X							X	

Turnaround Time (Business days)

- (X) Standard
- ( ) 5 Day *RUSH*
- ( ) 4 Day *RUSH*
- ( ) 3 Day *RUSH*
- ( ) 2 Day *RUSH*
- ( ) 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (SGS Accutest PM): / Date:

Data Deliverable Information

- ( ) Commercial "A" (Level 1)
- ( ) Commercial "B" (Level 2)
- ( ) FULT1 (Level 3+4)
- ( ) REDT1 (Level 3+4)
- ( ) Commercial "C"
- ( ) TRRP
- ( ) EDD Format
- ( ) Other _____

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Form: SM021-0

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Date Time:	Relinquished By:	Date Time:	Received By:	Date Time:
1 DLG	6/30/17 1435	1 [signature]	6/30/17 1435	2 [signature]	6/30/17 1700	2 FedEx	
Relinquished by Sampler: 3 FX	Date Time:	Received By: 3 [signature]	Date Time: 07/01/17 1045	Relinquished By:	Date Time:	Received By: 4	Date Time:
Relinquished by: 5	Date Time:	Received By: 5	Date Time:	Custody Seal #	( ) Intact ( ) Not Intact	Preserved where applicable ( )	On Ice ( ) Cooler Temp. 2.5

5.2 5

FA45522: Chain of Custody
Page 1 of 2

SGS Accutest Sample Receipt Summary

Job Number: FA45522 **Client:** HARGIS & ASSOC. **Project:** MARANA PROJECT

Date / Time Received: 7/1/2017 10:45:00 AM **Delivery Method:** FED EX **Airbill #'s:** 7870 5559 0580

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.1);

Cooler Temps (Corrected) °C: Cooler 1: (2.5);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☑	☐
2. Trip Blank listed on COC	☐		☑	☐
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 7/1/2017 10:45:00 AM Reviewer: _____ Date: _____

FA45522: Chain of Custody
Page 2 of 2

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA45522
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65823-MB	Q37104.D	1	07/22/17	NAF	07/05/17	OP65823	SQ939

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45522-1

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [a]	0.0616	0.015	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	96%	61-134%
	13C2-PFDA	93%	62-128%
	d5-EtFOSAA	64%	57-135%

(a) AZ:B1

Blank Spike Summary

Job Number: FA45522
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65823-BS	Q37103.D	1	07/22/17	NAF	07/05/17	OP65823	SQ939

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45522-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.169	110	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.170	110	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.162	105	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.168	109	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.169	110	74-137
375-95-1	Perfluorononanoic acid	0.154	0.162	105	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.155	101	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.109	71	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.0821	53* [a]	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.0746	48* [a]	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.0717	47* [a]	49-122
375-73-5	Perfluorobutanesulfonic acid	0.154	0.161	105	73-148
355-46-4	Perfluorohexanesulfonic acid	0.154	0.162	105	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.154	0.148	96	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.149	97	70-134
335-77-3	Perfluorodecanesulfonic acid	0.154	0.0821	53* [a]	56-127
754-91-6	PFOSA	0.154	0.0152	10* [a]	40-142
2355-31-9	MeFOSAA	0.154	0.0986	64	57-128
2991-50-6	EtFOSAA	0.154	0.0899	58	55-135
27619-97-2	6:2 Fluorotelomer sulfonate	0.154	0.159	103	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.154	0.154	100	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	97%	61-134%
	13C2-PFDA	92%	62-128%
	d5-EtFOSAA	56%* [b]	57-135%

(a) AZ:L2
(b) AZ:S12

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA45522
Account: HARGAZT Hargis + Associates, Inc.
Project: Marana Project; Marana, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP65823-MS	Q37107.D	1	07/22/17	NAF	07/05/17	OP65823	SQ939
OP65823-MSD	Q37108.D	1	07/22/17	NAF	07/05/17	OP65823	SQ939
FA45435-1 [a]	Q37106.D	1	07/22/17	NAF	07/05/17	OP65823	SQ939

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA45522-1

CAS No.	Compound	FA45435-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	ND		0.333	0.128	38	0.333	0.129	39	1	20-120/30
2706-90-3	Perfluoropentanoic acid	0.0329		0.333	0.383	105	0.333	0.376	103	2	40-131/30
307-24-4	Perfluorohexanoic acid	0.0231		0.333	0.348	97	0.333	0.334	93	4	63-146/30
375-85-9	Perfluoroheptanoic acid	0.0186		0.333	0.366	104	0.333	0.338	96	8	71-138/30
335-67-1	Perfluorooctanoic acid	0.0158	J	0.333	0.367	105	0.333	0.351	101	4	74-137/30
375-95-1	Perfluorononanoic acid	ND		0.333	0.344	103	0.333	0.315	94	9	76-140/30
335-76-2	Perfluorodecanoic acid	ND		0.333	0.359	108	0.333	0.298	89	19	65-148/30
2058-94-8	Perfluoroundecanoic acid	ND		0.333	0.310	93	0.333	0.242	73	25	57-138/30
307-55-1	Perfluorododecanoic acid	ND		0.333	0.219	66	0.333	0.179	54*	20	58-118/30
72629-94-8	Perfluorotridecanoic acid	ND		0.333	0.170	51*	0.333	0.155	46*	9	52-120/30
376-06-7	Perfluorotetradecanoic acid	ND		0.333	0.154	46*	0.333	0.147	44*	5	49-122/30
375-73-5	Perfluorobutanesulfonic acid	0.0119	J	0.333	0.342	99	0.333	0.335	97	2	73-148/30
355-46-4	Perfluorohexanesulfonic acid	0.0771		0.333	0.401	97	0.333	0.389	94	3	74-142/30
375-92-8	Perfluoroheptanesulfonic acid	ND		0.333	0.306	92	0.333	0.313	94	2	74-123/30
1763-23-1	Perfluorooctanesulfonic acid	0.0580	B	0.333	0.384	98	0.333	0.336	83	13	70-134/30
335-77-3	Perfluorodecanesulfonic acid	ND		0.333	0.202	61	0.333	0.175	52*	14	56-127/30
754-91-6	PFOSA	ND		0.333	0.327	98	0.333	0.344	103	5	40-142/30
2355-31-9	MeFOSAA	ND		0.333	0.272	82	0.333	0.245	73	10	57-128/30
2991-50-6	EtFOSAA	ND		0.333	0.260	78	0.333	0.221	66	16	55-135/30
27619-97-2	6:2 Fluorotelomer sulfonate	ND		0.333	0.329	99	0.333	0.340	102	3	70-153/30
39108-34-4	8:2 Fluorotelomer sulfonate	ND		0.333	0.349	105	0.333	0.312	94	11	61-154/30

CAS No.	Surrogate Recoveries	MS	MSD	FA45435-1	Limits
	13C2-PFHxA	90%	92%	97%	61-134%
	13C2-PFDA	92%	82%	91%	62-128%
	d5-EtFOSAA	71%	64%	73%	57-135%

(a) Associated BS recovery outside control limits. Insufficient sample for re-extraction. AZ:L2

* = Outside of Control Limits.

ATTACHMENT 2

PIMA COUNTY
WASTEWATER RECLAMATION
201 NORTH STONE AVENUE
TUCSON, ARIZONA 85701-1207

JACKSON JENKINS
DIRECTOR

PH: (520) 724-6500
FAX: (520) 724-9635

August 22, 2018

TO: Chuck Wesselhoft, Jackson Jenkins, Barbara Escobar

FROM: Jim Dubois, Anna Martin

SUBJECT: Review of ADEQ PFAS and 1,4-Dioxane Study conducted in 2017

We have reviewed the results of ADEQ surface and groundwater sampling conducted by Hargis and Associates, Inc. in May/June 2017. Attached is a summary of that data. Also we have developed some interpretation with regard to potential sources. The Town of Marana is using Carollo Engineers, Inc. as their consultant for PFAS issues, but no data collected by them was available for review.

JD/AM:klb
Attachment

EXECUTIVE SUMMARY

Results of the 2017 ADEQ sampling of groundwater and surface water in the Santa Cruz River indicate that PFAS compounds and 1,4-Dioxane were detected at nearly all locations in the river, and at varying concentrations and locations in groundwater. Despite this area-wide sampling, there is no coherent pattern for forming definitive conclusions about extent and levels of these contaminants, or for pinpointing likely sources.

Since no enforceable regulatory levels exist for these compounds, results can only be compared to EPA's non-enforceable health advisory and screening levels. Pima County should keep abreast of the development of federal drinking water standards, cleanup levels, and surface water standards for these constituents of emerging concern. Currently, the only benchmark set locally has been Tucson Water's cleanup target of 0.35 ug/l for 1,4 Dioxane at the Tucson Airport Remedial Project treatment plant.

ADEQ limited sample locations to areas in proximity to the Santa Cruz River, which necessarily limits the assessment of possible sources, based on this data alone. Nevertheless, due to varied historical and current land use along the river, a multitude of possible sources exists which warrant further investigation.

- The most highly contaminated wells with ***PFOS+PFOA*** (>100 ng/l) are four CMID irrigation wells located north of Ina Road and south of Marana Road, and one Tucson Water well located south of Congress Street.
- Each of the four CMID wells are located over 0.5 mile from the Santa Cruz River, while less contaminated wells are generally closer to the river.
- The highest ***1,4-Dioxane*** level of any well in the study is SRC-W38S, located over 0.5 mile from the Santa Cruz River, within the Shannon Road-Rillito WQARF area east of I-10 and north of Ruthrauff Road. ***1,4-Dioxane*** concentration in this well was 1 ug/l.

ADEQ's data does not definitively confirm or refute effluent as a contributing source for down-gradient groundwater contamination. Levels of PFOS+PFOA in river samples and monitor wells along the river are far lower than those detected in the CMID wells in Marana included in the study. Furthermore, the CMID wells have a different ratio of PFOS to PFOA. With regard to 1,4 Dioxane, ADEQ surface water data reveal elevated levels at downstream locations (Avra Valley Road and northward). Levels of 1,4-Dioxane that are ten times higher in the river in this area indicate a surface water source downstream of the wastewater treatment plants that is unrelated to the effluent.

This technical memo identifies opportunities for additional sampling by Pima County. These include RWRD continuing river sampling and conducting additional targeted studies of sewage and effluent, with PDEQ assessing landfill monitor wells and leachate. Also, as a next step, Pima County should encourage formation of a working group of all involved parties, including ADEQ, to participate in a comprehensive, unbiased, regional investigation to identify and assess sources of these compounds in our community and to cooperatively determine extent and levels of these pollutants in soil, groundwater, and surface water media at sites of concern throughout the metro Tucson area.

I. COMPOUNDS OF CONCERN

Perfluoroalkyl and polyfluoroalkyl substances (PFAS) are fluorinated aliphatic (carbon chain) substances. PFAS have been used for many decades in products such as water and stain repellants, mist suppressants, fire-fighting foams, and the manufacture of non-stick coatings (Mass DEP, 2017). PFAS consist of a broad range of substances including polymers and non-polymers. Non-polymer PFAS are most commonly detected in the environment and humans, appear to be more abundant at PFAS investigation sites, have federal or state guidance levels, and are included in most laboratory PFAS analyte lists (ITRC, 2018). The two non-polymers ***PFOS*** and ***PFOA*** can be resistant to breakdown, and therefore persist in the environment.

Non-Polymers

- ***Perfluorooctanoic acid (PFOA)*** – PFOA was used in the production of PTFE (Teflon) (Buck, et al., 2011) and to make protective coatings. PFOA is a terminal degradation product of other PFAS, such as fluorotelomer alcohols (FTOH) (ITRC, 2018).
- ***Perfluorooctane sulfonic acid (PFOS)*** – PFOS was used to make stain and water resistant products such as Scotchguard, and also used in fire-fighting foams discussed further below. PFOS is also a terminal degradation product of other PFAS (ITRC, 2018).
- ***Fluorotelomer Substances*** – Fluorotelomer alcohols (FTOH) are used in the production of polymers and surface coatings. FTOH can degrade to form PFOA (ITRC, 2018). Fluorotelomer substances are now used in newer fire-fighting foams.

Polymers

- ***Polytetrafluoroethylene (PTFE, or Teflon)*** is believed to pose less immediate risk to human health and the environment relative to some non-polymer PFAS (ITRC, 2018). However, because fluoropolymers may have potential to release PFAS compounds to groundwater samples when present in sampling equipment (such as pumps, piping) fluoropolymers are discussed within this document.

1,4-Dioxane is a synthetic industrial chemical with widespread use in many products, including as a stabilizer in certain chlorinated solvents, as a solvent in paint strippers, greases and waxes, as an "inert" ingredient in pesticides and fumigants, in detergents and as a wetting/dispersing agent (USEPA, 2014). Because of its use with solvents in aircraft manufacturing, 1,4 Dioxane is found in groundwater at the Tucson Airport Remediation Project site. This chemical also has been present in many personal care products and cosmetics. 1,4-Dioxane is highly mobile and is relatively resistant to biodegradation in soil and groundwater.

Regulatory Levels

There are no drinking water or surface water standards for these compounds. They are identified as contaminants of emerging concern (CEC). States and EPA are developing health information one compound at a time. For PFAS there are currently federal advisories for only two compounds. In May 2016, the EPA issued a lifetime drinking water Health Advisory for ***PFOS+PFOA*** of 70 ng/l (0.070 ug/l), for either chemical, individually or collectively. In 2017, the EPA calculated a Screening Level of 0.46 ug/l for ***1,4-Dioxane*** in tap water, and in 2012 established a lifetime health advisory of 0.2 mg/l in drinking water. In 2013 EPA risk assessments indicated that the drinking water concentration representing a $1x10^{-6}$ cancer risk level for 1,4-Dioxane is 0.35 ug/l.

II. USES AND SOURCES OF THESE CHEMICAL COMPOUNDS

There are many potential sources of ***PFAS*** compounds, including manufacturing of fluoropolymers, chrome plating operations, food contact materials, surfactants and industrial detergents, aviation hydraulic fluid, stain and water repellent fabrics, waxes, and paints (OECD/UNEP, 2013).

Primary uses of ***1,4-Dioxane*** involve use as a stabilizer for certain chlorinated solvents such as TCA, as a wetting and dispersing agent, and as a laboratory solvent. Many products contain ***1,4-Dioxane***, such as paint strippers, dyes, greases, varnishes and waxes, detergents, and some personal products such as deodorants, shampoos and cosmetics (EPA, 2014). Additionally, ***1,4-Dioxane*** is an ingredient in several concrete admixtures used to stabilize and assist in concrete washout, and to reduce concrete shrinkage (USEPA, 2017). Below are some more probable sources or conduits of these compounds in our community, given the information currently available regarding land use in the study area.

Aqueous film-forming foams (AFFFs) – AFFFs are fire-fighting foams used for extinguishing flammable liquid fires, typically stored and used for fire suppression, fire training and flammable vapor suppression at military installations and civilian airports. Additionally, local fire departments have used and maintained AFFFs in their inventories. Early foams utilized ***PFOS***, and ***fluorotelomer compounds*** were used later.

However, earlier foams may still be stored and used due to long shelf life (ITRC, 2018). Additionally, some fluorotelomer compounds may degrade in the environment to produce ***PFOA*** and other perfluoroalkyl acids (NGWA, 2017).

Landfill leachate and surface runoff – Leachate from some municipal solid waste landfills has been shown to be a source of ***PFAS*** compounds and ***1,4-Dioxane***, reportedly due to the presence of consumer goods, such as furniture or carpet treated with hydrophobic, stain-resistant coatings (ITRC, 2018) and disposal of products containing 1,4-Dioxane.

Concrete Additive – ***1,4-Dioxane*** is an ingredient in several concrete admixtures used to stabilize and assist in concrete washout, and to reduce concrete shrinkage. Specific products include: Eucon W.O., Mastermatrix UW450, Pieri Aquarol Tt-31, Master Glenium 7700, Masterlife SRA 20, Masterpolyheed 1020, Masterlife CRA 007, and Master Glenium 3030 (USEPA, 2017).

Pesticides and Fumigants – Pesticides and fumigants may contain ***1,4-Dioxane*** as an inert ingredient (USEPA, 2014). Some examples of products include: Vitaflo 280c (fungicide), Procure 480sc (fungicide), TERRAGUARD SC (fungicide), Timectin 0.15ec Ag (insecticide), Sirocco (miticide), AGNIQUE MMF G (mosquito larvicide), AGNIQUE MMF (mosquito larvicide), Florimite SC (miticide), BELMONT 2,7 FS (seed treatment, fungicide) (USEPA, 2017).

Wastewater treatment plants – The two Tucson metropolitan treatment plants receive discharge from permitted facilities, many of them industrial. Permits are required for discharge into the county sewer system, however emerging contaminants were not historically of concern. More importantly, water providers may have been unaware of recently detected or undetected contaminant plumes within service areas, potentially containing ***PFAS*** and ***1,4-Dioxane***. Contamination from unrecognized areas could be pumped by water providers and introduced into the sewer system by domestic use. Although not a source of contamination, the treatment plants may act as conduits of these compounds from the collection system to discharge points.

Land application of biosolids – Application of PFAS-containing biosolids as a soil amendment for agriculture may result in detectable ***PFAS*** concentrations in surface and groundwater in the vicinity of fields where applied for an extended period of time (ITRC, 2018). Limited data is available on the leachability of these compounds to groundwater. Less information is available on ***1,4-Dioxane*** in biosolids.

Teflon and fluorinated materials used in sampling – This potential source applies only to groundwater samples. Teflon tape is used on the fittings at the wellhead where samples are collected. Additionally, pump piping may have Teflon tape or PTFE-containing pipe thread paste at connections. Finally, some of the pumps used to collect samples may have Teflon and/or Viton parts. Although not all fluoropolymers such as Teflon emit ***PFAS***, the effects of potential contamination from these compounds cannot be determined without either 1) sampling uncontaminated water using this equipment by collecting an equipment blank, or 2) sampling groundwater using portable confirmed PFAS-free equipment, or 3) replacing the current dedicated equipment with confirmed PFAS-free dedicated equipment. It should be noted that uncertainty about the equipment used to sample Marana wells and other wells may call this data into question.

III. RESULTS OF MAY/JUNE 2017 ADEQ SURFACE AND GROUNDWATER SAMPLING OF RWRD WELLS

At the request of ADEQ, RWRD provided access for ADEQ's consultant (Hargis and Associates, Inc.) during scheduled May/June river and monitor well sampling events. Monitor wells represent shallow groundwater at depths of approximately 130-150 feet, a part of the aquifer likely to be heavily influenced by discharge to the river. Surface water flow sampled in the river was effluent and was not influenced by stormflow. Sampling events took place on several days over this time period. ADEQ's consultant collected a total of eleven surface water and four groundwater samples from RWRD sites. ADEQ samples were

analyzed for PFAS and 1,4-Dioxane, while RWRD added only 1,4-Dioxane to the regular suite of analytes. Data collected during May and June 2017 represent a single sampling event for each well and river location. As such, the data represents a "snapshot" in time, and does not reflect short or long term changes in concentration.

PFAS

Figure 1 below shows surface water data in relation to location downstream of the two treatment facilities. SC-01 through SC-11 correspond to monitor well locations and also river monitoring locations, proceeding from upstream to downstream, respectively. There were no detections of combined PFOS+PFOA exceeding the EPA Health Advisory of 70 ng/l in ADEQ samples.

Surface Water - PFOS+PFOA was detected in all ADEQ surface water samples. PFOS+PFOA concentrations were less than 30 ng/l, with the exception river location SC-07, located near Avra Valley Road, approximately 7 miles downstream of the Tres Rios WRF. At the location of SC-07, PFOS+PFOA was detected at 47 ng/l.

Groundwater - PFOS+PFOA was detected in all four ADEQ groundwater samples, at combined concentrations ranging from approximately 17 – 60 ng/l. The highest concentration was detected at well SC-07R, which is adjacent to the SC-07 river sampling location.

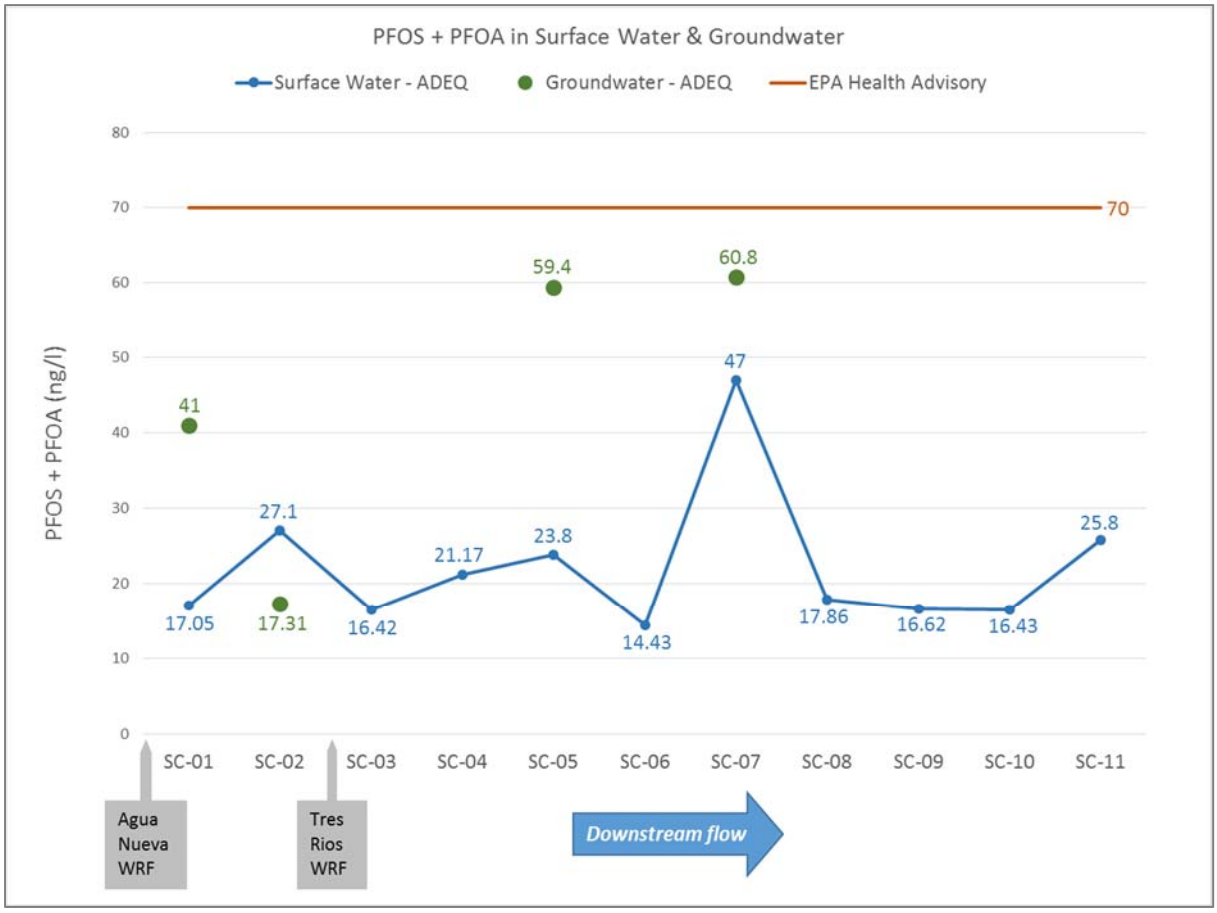

Figure 1: PFOS/PFOA Concentrations in Surface Water and Groundwater

1,4-Dioxane

Figure 2 below shows surface water data in relation to location downstream of the two treatment facilities. There were several detections of 1,4-Dioxane exceeding the current EPA Screening Level of 0.46 ug/l in ADEQ samples.

Surface Water - 1,4-Dioxane was detected in all but one ADEQ surface water sample (SC-10, located near Sanders Road). Surface water samples closest to the two treatment facility outfalls had lower 1,4-Dioxane concentrations ranging from 0.26 - 0.28 ugl/l, below the EPA Screening Level of 0.46 ug/l. However downstream at river locations SC-07, SC-08 and SC-11, surface water concentrations are considerably higher, ranging from 2.9 - 4.7 ug/l.

Groundwater - 1,4-Dioxane was detected in two of the four ADEQ groundwater samples, at concentrations ranging from approximately 0.34 – 0.72 ug/l. The highest concentration was detected at well SC-01R, closest to the Agua Nueva outfall.

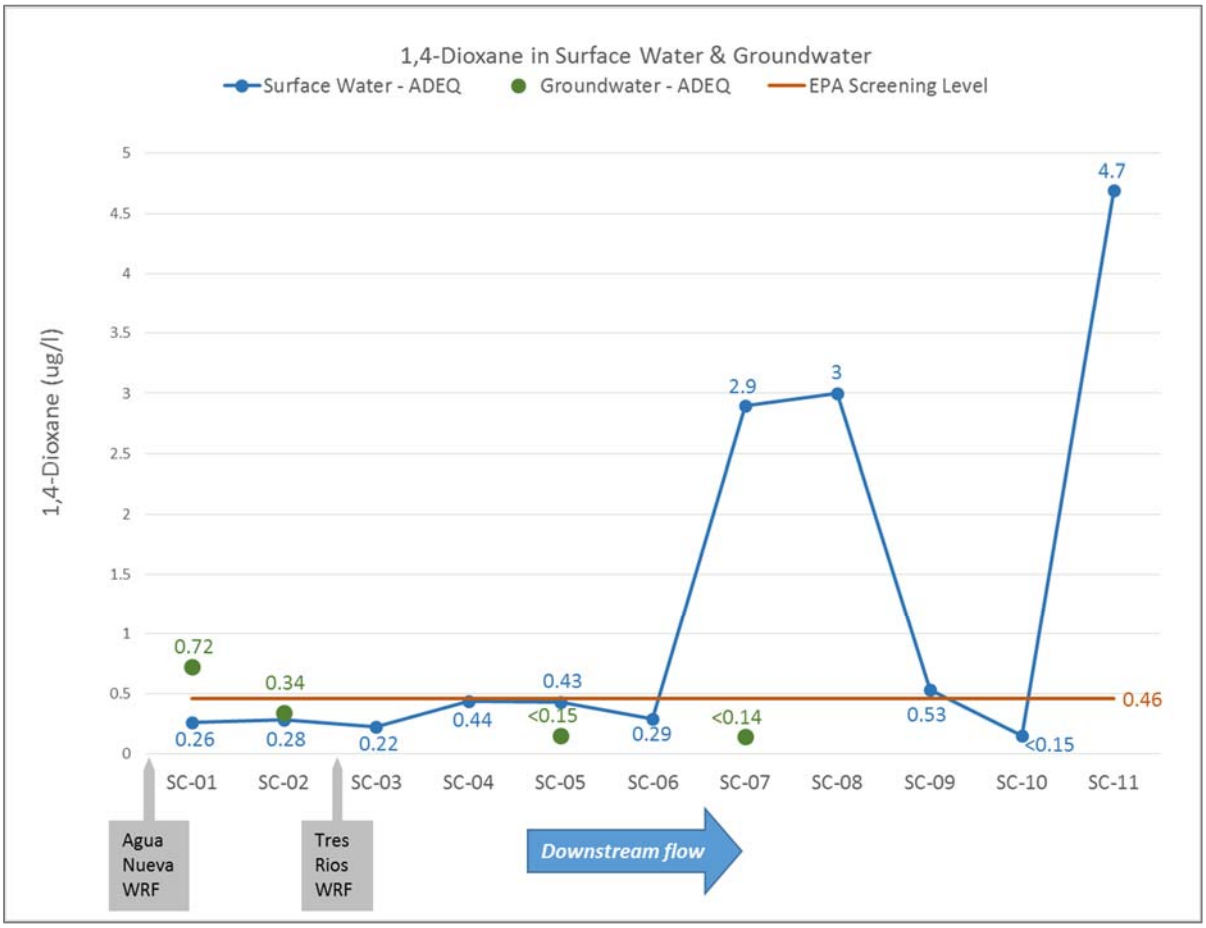

Figure 2: 1,4-Dioxane Concentrations in Surface Water and Groundwater

IV. ADEQ'S REGIONAL GROUNDWATER SAMPLING

In addition to sampling RWRD wells and river locations, Hargis and Associates, Inc. sampled other wells upstream and downstream of the two RWRD metro wastewater reclamation facilities. Wells sampled were located along the Santa Cruz River corridor, ranging as much as approximately 1.5 miles from the river. Attached Figures 5 and 6 (last pages of this memo), from the ADEQ Technical Memo dated August 21, 2017 (Hargis and Associates, Inc.) are maps which show the locations of wells sampled during the 2017 ADEQ study, in addition to concentrations of PFOA+PFOS and 1,4-Dioxane.

General observations regarding the ADEQ data:

- Most highly contaminated wells with ***PFOS+PFOA*** (>100 ng/l) consist of four CMID irrigation wells ranging in location from north of Ina Road to south of Marana Road, in addition to one Tucson Water well located south of Congress Street.
- The four more highly ***PFOS+PFOA*** contaminated CMID wells are located over 0.5 mile from the Santa Cruz River, while less contaminated wells are generally closer to the river.
- The highest ***1,4-Dioxane*** level of any well in the study is SRC-W38S, located over 0.5 mile from the Santa Cruz River, within the Shannon Road-Rillito WQARF area east of I-10 north of Ruthrauff Road. ***1,4-Dioxane*** concentration in this well was 1 ug/l.
- Adjacent to the Santa Cruz River, the RWRD monitor well with the highest level of ***1,4-Dioxane*** is SC-01R, located south of El Camino del Cerro. ***1,4-Dioxane*** was detected at 0.72 ug/l in SC-01R.
- Field blanks were taken each day of the ADEQ study. One of the field blanks collected on 6/26/2017 at the most highly contaminated CMID irrigation well (CMID IRRG #36C) contained ***PFOS+PFOA*** at a concentration of 123 ng/l. The same day, the more highly contaminated CMID wells were sampled, with ***PFOS+PFOA*** detections ranging from 104-215 ng/l. The high detection of these compounds in the field blank casts doubt on the validity of the highest concentrations detected in these CMID irrigation wells sampled on 6/26/2017.

V. DISCUSSION

Evidence that RWRD's effluent is not a significant source of contamination in Marana wells - The data collected by ADEQ provides a snapshot of contaminant concentrations. The data does not definitively confirm or refute effluent as a contributing source for down-gradient contamination. It is possible that relic contamination existed from an historic release in the Tucson metro area, was drawn into the water supply, and has been further dispersed. However, the current data indicates the following:

PFAS

- Based on current conditions, the levels of PFOS+PFOA in river samples (14-47 ng/l) are far less than those detected in CMID wells (104-215 ng/l) (see ADEQ Figure 5). This does not indicate that the river (or metro effluent) is a significant source for the CMID wells.
- PFOS+PFOA levels in metro plant effluent samples collected in December 2016 (17-20 ng/l) are far less than those detected in CMID wells. Again, this does not indicate effluent is a significant source (see Table 1 below).
- Groundwater sampled by ADEQ from up-gradient, Tucson Water wells (LM-007A and SS-019A) which are located approximately five miles south of Agua Nueva WRF along the Santa Cruz River had higher levels of PFOS+PFOA (73-105 ng/l) than RWRD wells (17-60 ng/l) – indicating a significant source lies up-gradient of the Agua Nueva WRF.
- Effluent from outlying facilities (Green Valley, Corona de Tucson, Avra Valley), where there appears to be no industry or probable use of fire-fighting foam, had PFOS+PFOA levels ranging as high as 28 ng/l, indicating the likely ubiquitous nature of these compounds at lower levels in municipal effluent.
- ADEQ data indicate that the ratio of PFOS to PFOA is different in specific areas of the study. The levels of PFOS exceed PFOA by an approximate factor of ten in groundwater from the more highly contaminated CMID irrigation wells. In contrast, in groundwater from wells SC-01R and SC-02R which are proximal to the Agua Nueva WRF, the levels of PFOA exceed PFOS by an approximate factor of two. This leads to the conclusion that areas affected by different sources may have unique signatures of PFOS/PFOA ratios. Based on this difference in ratios detected during the ADEQ study, it does not appear that the effluent is a source of the higher levels PFAS contamination detected in CMID irrigation wells.

Table 1: PFOS/PFOA in Effluent - December 2016

PFOS/PFOA Totals in Effluent (ng/l) - Dec. 2016					
RWRD Facility	Agua Nueva	Tres Rios	Green Valley	Avra Valley	Corona de Tucson
Effluent	20.9	17.6	28.8	10.8	18

(Data from RWRD contract lab)

1,4-Dioxane

- ADEQ surface water data reveal spikes in 1,4-Dioxane levels (2.9-4.7 ug/l) at downstream locations (Avra Valley Road and northward), more than seven miles north of the Tres Rios WRF near Avra Valley Road and Marana Road. These levels are ten times higher than upstream levels (0.22-0.44 ug/l) in the vicinity of the metro treatment plants. Higher levels of 1,4-Dioxane in the river in this area indicate a surface water source downstream that is not related to the effluent.
- Levels in metro plant effluent from samples collected in December 2016 (0.54-0.56 ug/l) and from July 2017 (0.42-0.64 ug/l) are far less than spikes observed in downstream river samples (2.9-4.7 ug/l). This disparity in concentration of 1,4-Dioxane suggests a non-effluent source for the surface water contamination (see Tables 2 and 3, below).
- 1,4-Dioxane levels in effluent at metro and outlying facilities were near or slightly higher than the EPA screening level for drinking water of 0.46 ug/l, and ranged as high as 0.62 ug/l. Presence of the compound in the outlying facilities indicates that this compound occurs even in areas without major industry (see Tables 2 and 3). However, if the data are representative of effluent quality at WRFs, then effluent is likely not the source contributing to higher levels of 1,4-Dioxane in the regional aquifer.

Table 2: 1,4-Dioxane in Effluent - December 2016

1,4-Dioxane in Effluent (ug/l) - Dec. 2016					
RWRD Facility	Agua Nueva	Tres Rios	Green Valley	Avra Valley	Corona de Tucson
Effluent	0.56	0.54	0.43	0.62	0.45

(Data from RWRD contract lab)

Table 3: 1,4-Dioxane in Effluent - July 2017

1,4-Dioxane in Effluent (ug/l) - July 13-14, 2017		
RWRD Facility	Agua Nueva	Tres Rios
Effluent over 24 hrs.	0.55	0.52
	0.59	0.64
	0.42	0.54
	0.43	0.63

(Data from RWRD in-house lab)

<u>Additional discussion of potential sources and conduits of contamination</u> - General information on possible sources of transport of contamination detected in surface and groundwater is provided in Section I of this document. However, **specific** possible sources/conduits for the Tucson metro area are discussed below:

Wastewater treatment plants

Influent to most municipal wastewater treatment plants generally contains these compounds. Although permits are required for discharge into the sewer system, further study is needed to determine whether PFAS

or 1,4-Dioxane are or were constituents of concern for any permitted sources. Since these compounds are emerging contaminants, they may not have been included by operators in commercial sewer discharge permit applications. Wastewater treatment plants are not considered to be sources of these compounds, rather the sewer system and treatment facilities can pass through these compounds at generally low level concentrations. Until recently, water providers have been unaware of groundwater contaminant plumes within service areas. Historically, water supply containing PFAS or 1,4-Dioxane may have been unknowingly introduced to the sewer system by domestic use.

Treating to remove PFAS and 1,4-Dioxane is expensive. Background information provided by Tucson Water on their Advanced Oxidation Process (AOP) Water Treatment Facility used to treat Tucson Airport Remediation Project (TARP) groundwater describes treatment utilizing UV reactors, hydrogen peroxide and granulated activated carbon to oxidize and remove 1,4-Dioxane. This treatment facility reportedly treats up to 8 MGD and cost $18 million to construct. Tucson Water uses a treatment target level for 1,4-Dioxane of 0.35 ug/l, which is the 10^{-6} cancer risk level. Methods used to treat PFAS also include granulated activated carbon and ion-exchange resins (NGWA, 2017). Most routine drinking water treatment processes are not effective in PFAS removal. Advanced treatment is most effective when targeted at hot-spots in identified groundwater plumes, much like Tucson Water's TARP system. The most effective way to reduce PFAS and 1,4 Dioxane in wastewater effluent is to try to identify and control specific sources into the collection system.

Aqueous film-forming foams (AFFF)

As mentioned above, it is possible that historical release(s) of AFFF at Davis Monthan Air Force Base (DM), Tucson International Airport (TIA) or Air National Guard (at TIA) delivered as one or more high concentration slugs to the sewer system, Also, these sites may have washed AFFF into the storm drain system to seep into the aquifer, forming a plume of PFAS groundwater contamination which may have progressed down-gradient.

However, it is also possible that a more recent source is located in the general vicinity of the Tres Rios WRF or further northwest. Potential source facilities in the immediate vicinity of the ADEQ study include the Marana Airport located on Avra Valley Road approximately 3 miles west of the Santa Cruz River, and the Northwest Fire District fire-fighting training facility located north of Ina Road on the west side of I-10. It is unknown whether fire-fighting foam was used at either location; however a promotional video from September 2012 highlighting the new Northwest Fire District facility appears to show foam in some of the footage.

In 2016 Tucson Water shut down several wells in the vicinity of Ina Road near I-10, and northward (downgradient) adjacent to the Santa Cruz River, due to PFOS+PFOA exceeding the 70 ng/l EPA Health Advisory. Wells shut down in 2016, including the location of the Northwest Fire District facility are shown below in Figure 1. Wells recently sampled by ADEQ located near the Ina Road fire-fighting training facility with elevated PFOS+PFOA levels include the PDEQ Solid Waste Office Well (99 ng/l) and CMID IRRG#36C (215 ng/l). (See ADEQ Figure 5). It is possible that the use of old or new AFFF product by the Northwest Fire District facility starting in 2012 may have resulted in the elevated concentrations detected in some of these wells in 2016. Additionally, if AFFF releases have occurred at Tucson Fire's facility near Cushing Street, the Tucson Water wells (LM-007A and SS-019A), discussed above regarding up-gradient groundwater contamination, may have been affected.

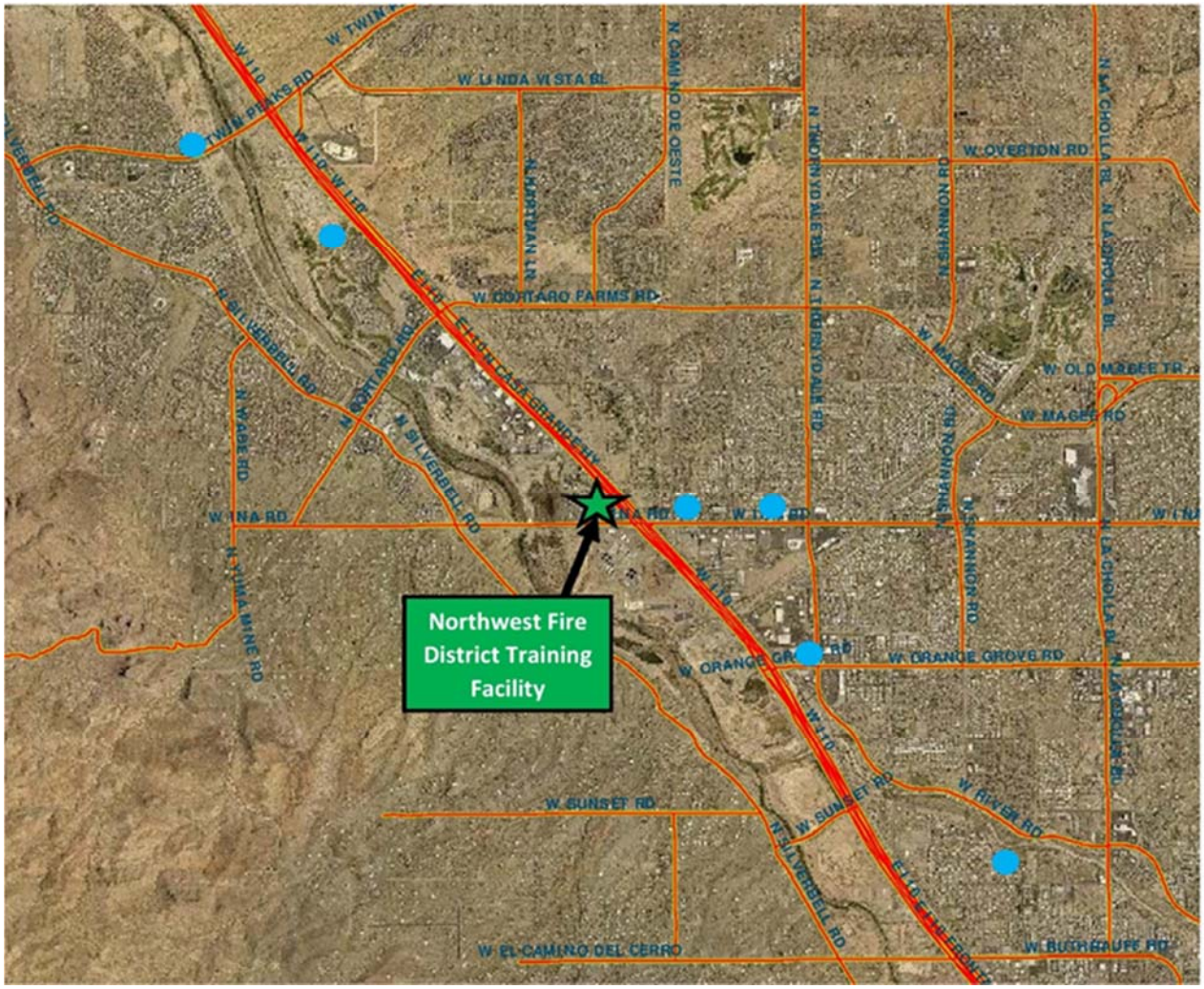

Figure 1: Map showing wells shut down in 2016 exceeding 70 ng/l PFOS+PFOA (blue dots).

Landfills

Leachate and surface runoff from landfills, if uncontrolled or sent to a WWTP, may be a source of PFAS. It is also possible that 1,4-Dioxane may be present in leachate from disposal of materials containing this compound. Three closed landfills and one operating ladfill are located within the ADEQ study area: 1) Camino del Cerro landfill, 2) Ina Road landfill, 3) Silverbell Jail Annex Landfill, and 4) Tangerine landfill. Elevated concentrations of PFOS+PFOA occur in groundwater from wells downgradient of the Ina Road landfill and the Tangerine landfill. However, the Tangerine landfill has a double liner with leachate collection and therefore is less likely to have a discharge to the aquifer. Research would be required to determine the status of leachate and surface runoff for the other landfills, in addition to assessment of what types of waste are contained in each landfill.

Land application of WWTP Biosolids

As noted earlier, there is little data linking biosolids to potential surface water or groundwater presence of PFAS or 1,4 Dioxane. To begin a discussion on potential of local biosolids application to impact release these compounds, more information would need to be collected to determine 1) locations which have historically and are currently receiving biosolids, and 2) concentrations of PFAS and 1,4-Dioxane contained in biosolids generated by Pima County.

Concrete additives

As described in Section I, 1,4-Dioxane is an ingredient in several concrete additives used in concrete washout and to reduce concrete shrinkage. Several sand and gravel operations and one cement producer are located along the Santa Cruz River from approximately Cortaro Road downstream. South of Cortaro Road is Staker & Parson Companies; south of Twin Peaks Road is Cemex; north of Avra Valley Road is a second Cemex facility, Vulcan Materials and Arizona Portland Cement; Granite Construction is located north of Tangerine Road. Several of these facilities have concrete batch plants. The presence of these facilities near downstream sample locations coincides with the spikes of 1,4-Dioxane seen in ADEQ river samples starting at the SC-07 (Avra Valley Road) sampling location.

Agriculture

Section I discusses use of 1,4-Dioxane as an "inert" ingredient in pesticides and fumigants. The compound is also used in mosquito larvicides and miticides. Agricultural land use along the river begins at Avra Valley Road, and extends to Trico Road and beyond. Along this stretch, agricultural fields parallel the river at various distances from the river channel. Aerial photos appear to show drains or tributaries extending from fields to the river at several locations. These potential sources should be evaluated in any further study.

Wells and Groundwater Sampling Equipment

No information is available on the pumps, piping, and fixtures used to purge and sample the wells tested in the ADEQ study. As discussed above, results for PFOS+PFOA for one of the field blanks collected during the study were quite elevated. The source of this contamination is not clear; however it may be due to sampling equipment. At a minimum, recommendations from the National Groundwater Association (2017) for sample collection, preservation, sample container materials and laboratory handling should be used when sampling for PFAS.

Research has been conducted regarding Teflon and Viton content of the dedicated sampling pumps installed in RWRD monitor wells along the Santa Cruz River. These pumps do not appear to contain fluorocarbon polymers. However, some of the column pipe used for pump discharge may have pipe lubricant containing Teflon. Additionally, Teflon tape was used on the above-ground fixtures used for sampling. Removal of Teflon-containing materials from the piping and fixtures should be done during normal well maintenance and repairs. Given that RWRD monitor well pumps are dedicated, and therefore fixed in place unless removed with a hoist, it is impossible to collect a field blank using the pump and piping without the cost of pump removal. Similarly, the dedicated pump and piping would need to be removed to collect a groundwater sample with PFAS-free portable sampling equipment. Any future sampling efforts should pay strict attention to the possibility of introducing PFAS to samples from equipment.

VI. OPPORTUNITIES FOR RWRD

RWRD is in a position to conduct sampling to provide additional data which ADEQ may not pursue. Some opportunities for RWRD include the following:

- PFOS/PFOA and 1,4-Dioxane can be added to the list of compounds analyzed each quarter from four river sampling locations as part of the Living River Project.
- Levels for these compounds can be assessed in primarily residential sewage.
- Targeted sampling can be conducted to identify representative levels of these compounds for various industrial dischargers which contribute to the influent for the two metro treatment plants. Opportunities may be identified to reduce specific inputs to the sewer system with additional data.
- RWRD may recommend that ADEQ investigate other sources of discharge to the river near SC-07, SC-08 and SC-11.
- RWRD may recommend that ADEQ consider the Northwest Fire District Training Facility north of Ina Road as a possible source of AFFF contaminants.

- Recommend that PDEQ sample landfill monitor wells and leachate for PFOS/PFOA and 1,4-Dioxane.
- Collect more data on these compounds in effluent at all WRFs.
- Prepare a map with RWRD's biosolids application sites and assess whether any are near enough to wells that they represent a risk.
- RWRD should keep abreast of the development of federal drinking water standards, cleanup levels, and surface water quality standards for these constituents of emerging concern.
- If possible, RWRD should prompt formation of a working group of all involved parties, including ADEQ, to participate in regional investigation to identify and assess sources of these compounds in our community and to cooperatively determine extent and levels of these pollutants in soil, groundwater, and surface water media at sites of concern throughout the metro Tucson area.

VII. REFERENCES

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USEPA Office of Chemical Safety and Pollution Prevention, February 2017, *"Preliminary Information on Manufacturing, Processing, Distribution, Use, and Disposal: 1,4-Dioxane"*

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ITRC (Interstate Technology Regulatory Council), March 2018, *"Naming Conventions and Physical and Chemical Properties of Per- and Polyfluoroalkyl Substances (PFAS)"*

Sinclair, et al., 2006, *"Mass Loading and Fate of Perfluoroalkyl Surfactants in WWTPs"*

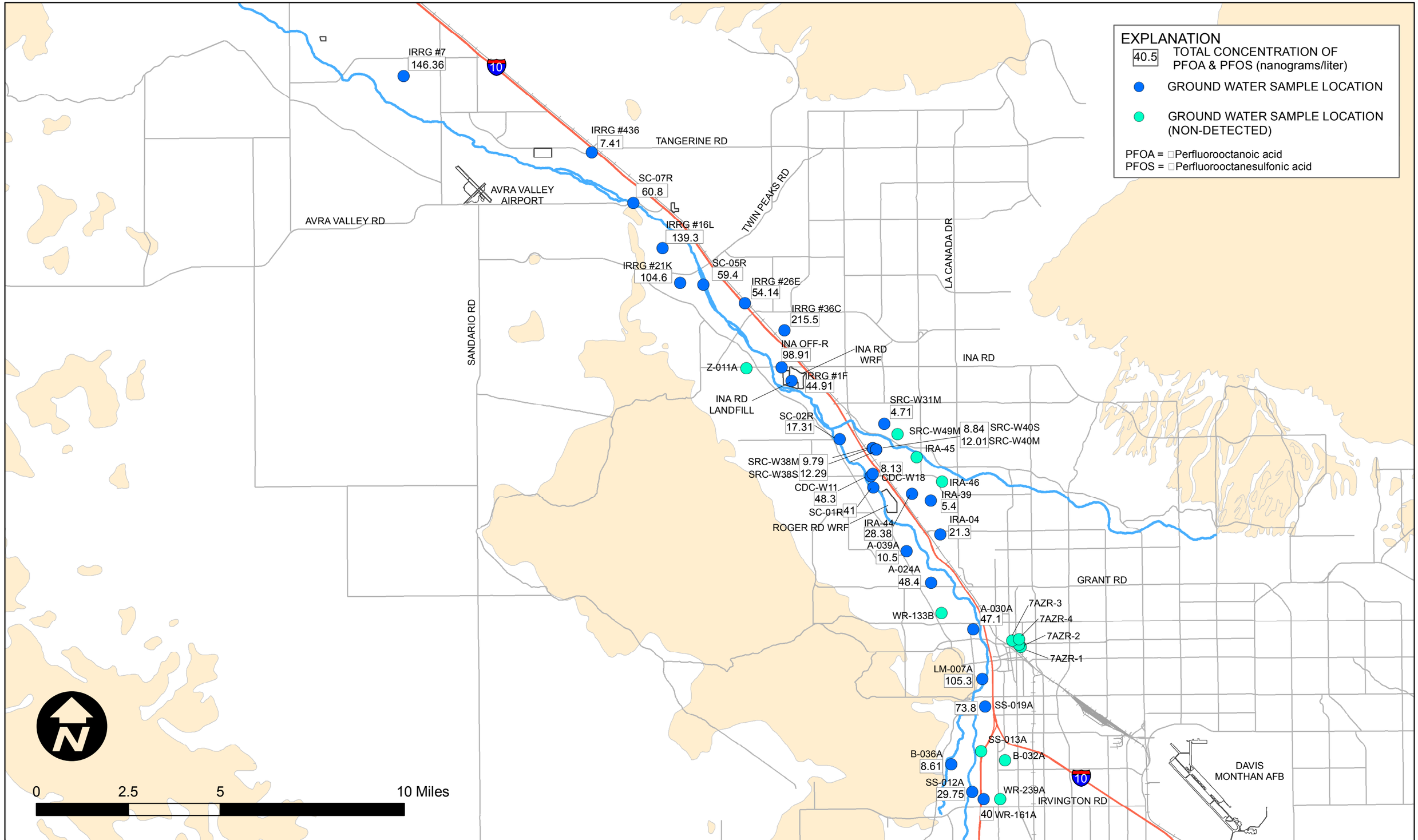

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FIGURE 5 TOTAL PFOA AND PFOS IN GROUND WATER

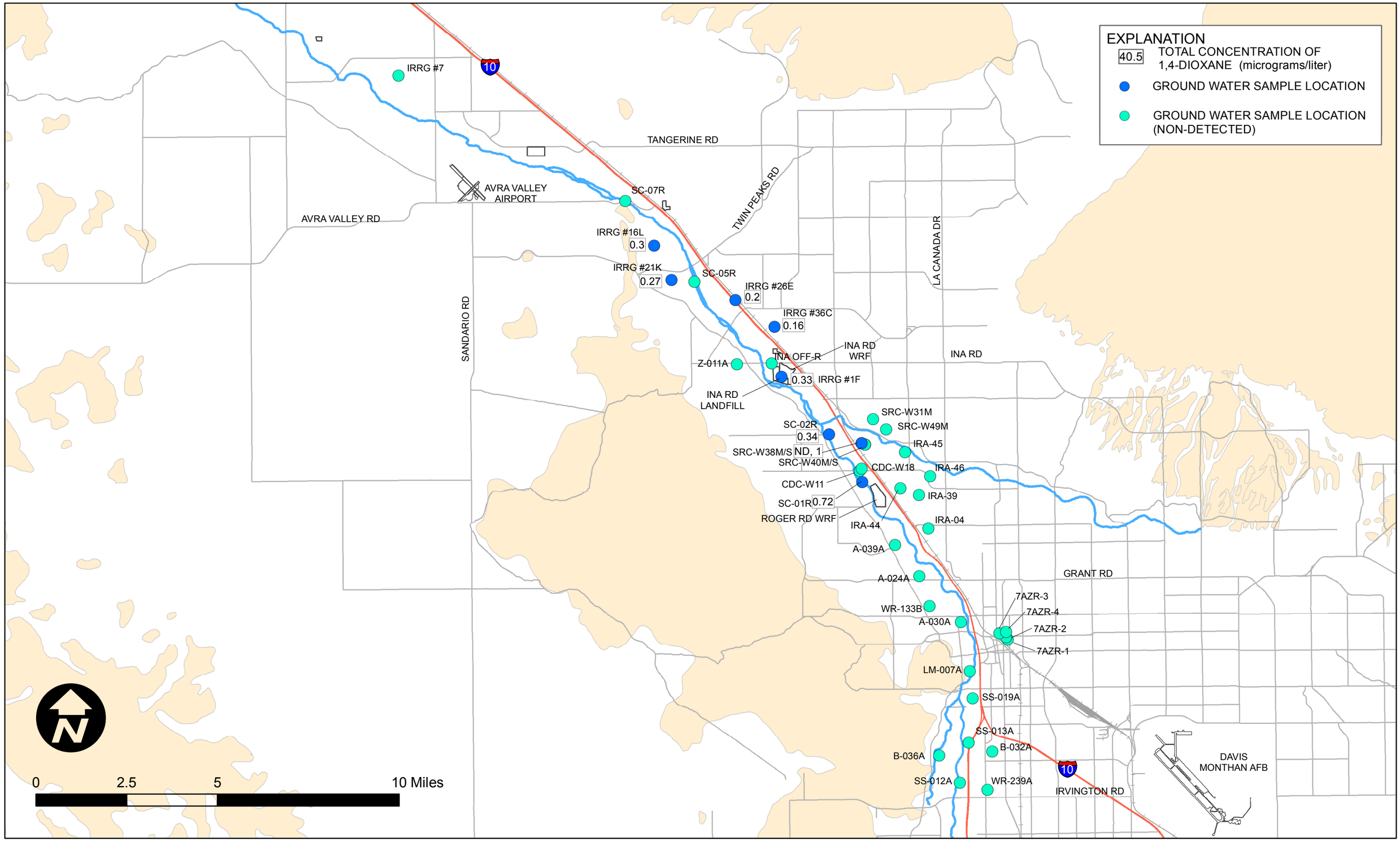

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FIGURE 6 1,4-DIOXANE IN GROUND WATER