TECHNICAL MEMORANDUM

FTB-034 Northwestern Boundary Groundwater US Army Garrison-Fort Buchanan Army Reserves Bayamon, Puerto Rico

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LIST OF ACRONYMS

Acronym	Definition
ABC	Anaerobic Biochem®
AFCEE	Air Force Center for Environmental Excellence
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CMI	Correct Measures Implementation
CMS	Corrective Measures Study
CPR	Caribbean Petroleum Refinery
DCE	Dichloroethylene
DD	Decision Document
DERP	Defense Environmental Restoration Program
DO	Dissolved Oxygen
ERMA	Environmental Remediation Multiple Award
IDIQ	Indefinite Delivery Indefinite Quantity
IDW	Investigative Derived Waste
LLC	Limited Liability Corporation
LTM	Long Term Monitoring
LUCs	Land Use Controls
MCL	Maximum Contaminant Level
MICC	Mission and Installation Contracting Command
MNA	Monitored Natural Attenuation
PBA	Performance Based Acquisition
PCE	Tetrachloroethylene
PP	Proposed Plan
PREQB	Puerto Rico Environmental Quality Board
PVC	Polyvinyl Chloride
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
ROTC	Reserve Officer Training Corps
TCE	Trichloroethylene
TO	Task Order
TOC	Total Organic Carbon
USAEC	US Army Environmental Command
USEPA	US Environmental Protection Agency
VC	Vinyl Chloride
VOCs	Volatile Organic Compounds
ZVI	Zero-valence Iron

1.0 INTRODUCTION

Fort Buchanan is a 746 acre installation located approximately six miles southwest of San Juan, Puerto Rico. The installation is located within two municipalities, namely Bayamon and Guaynabo (**Figure 1-1**).

Camp Buchanan was established in 1923 and later became Fort Buchanan in 1940. Historically, Fort Buchanan was used for maneuver training, range activities, and a supply depot. It has housed a command group that provided support for the United States (U.S.) Army Reserve, the National Guard, the Reserve Officer Training Corps (ROTC), and an Armed Forces Examining and Entrance Station and Intelligence Corps Detachment. From 1966 – 1971, Fort Buchanan was under the Navy command and was transferred back to Army control in 1971. In October 2003, Fort Buchanan became the reserve installation under the U.S. Army Reserve Command.

Today, Fort Buchanan continues to support the reserve- and active-component soldiers in Puerto Rico. Its mission is to provide standardized services and sustainable infrastructure in support of the Armed Forces and the diverse Fort Buchanan community.

Fort Buchanan is located on the northern coastal plain of Puerto Rico and slopes gently upward toward the Cordillera Central Mountains located south of Fort Buchanan. The installation is bordered by Puma Energy Puerto Rico (formerly Caribbean Petroleum Refinery Company [CPR]) to the west, Roosevelt Avenue to the east, road PR-No. 2 to the south, and De Diego Expressway (PR-22) to the north (**Figure 1-2**).

The Northwest Boundary Area, also known as the FTB-34 trichloroethylene (TCE) groundwater site, is a groundwater plume with dissolved TCE concentrations historically ranging from 5 µg/L to 4,040 µg/L (**Figure 1-2**). The TCE groundwater plume is located in the northwestern portion of the installation with the down gradient limits of the plume extending outside the installation boundary.

1.1 Purpose and Scope

KEMRON Environmental Services, Inc. (KEMRON) has been contracted by the United States Army Environmental Command (USAEC) to design and implement the remedy selected in the Corrective Measures Study (CMS) (EA, 2012a) for the Northwest Boundary Area Site (FTB-034) at Fort Buchanan in Bayamon, Puerto Rico just southwest of San Juan. The selected remedy includes treatment of volatile organic compounds (VOCs) in groundwater using Enhanced Bioremediation, Reductive Dechlorination, Monitored Natural Attenuation (MNA), and Land Use Controls (LUCs), as presented in the CMS (EA, 2012a).

This Technical Memo includes the details regarding the implementation and monitoring associated with Enhanced Bioremediation presented in the CMS (EA, 2012a) and approved Corrective Measures Implementation Plan (CMIP) (KEMRON, 2015). The scope of work was performed under a Performance Based Acquisition Firm Fixed Price Task Order (PBA TO) for environmental remediation services for two sites at Fort Buchanan, including the Northwest Boundary Area. The contract to implement the selected remedy in the CMS was issued by the United States Army Environmental Command, Mission and Installation Contracting Command (MICC) Fort Sam Houston, TX. This TO # 002 was issued under KEMRON's Environmental Remediation Multiple Award (ERMA) Indefinite Delivery/Indefinite Quantity (IDIQ) contract, number W91ZLK-13-D-0008, with an award date of 30 January 2014.

Based on the Army's research and confirmed by the United States Environmental Protection Agency (USEPA), there is no consent order for the site nor is there a Resource Conservation and Recovery Act (RCRA) permit or agreed order. Clean up at Fort Buchanan is performed under a voluntary clean up agreement between the Army, USEPA, and the Puerto Rico Environmental Quality Board (PREQB). The RCRA Facility Investigation (RFI) and CMS were not performed as part of a permit requirement or enforcement order, but rather as a response to alleged contamination under the Army's Defense Environmental Restoration Program (DERP) authority utilizing the RCRA corrective action procedures in cooperation with USEPA Region 2 and PREQB. After careful review of the voluntary nature of the remedial process at Ft. Buchanan, the Army has concluded that additional steps are necessary in order to remain compliant with Executive Order 12580, the DERP, and federal fiscal laws and regulations. In accordance with USEPA policy on the coordination of RCRA and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and in furtherance of the Army's responsibilities under the DERP, the Army will produce a final Decision Document (DD), supported by a Proposed Plan (PP) available for public comment, under CERCLA. This DD will rely on the previously produced RCRA studies, investigations, and documents, and will only memorialize the current RCRA remedial decisions.

1.2 Objectives

The selected remedy for the site has been designed to include an interim goal of active remediation of groundwater concentrations of TCE to below 100 µg/L. Achieving the interim goal would result in groundwater achieving the applicable Maximum Contaminant Levels (MCLs) for tetrachloroethylene (PCE), TCE, 1,2-dichloroethylene (DCE), and vinyl chloride (VC) within 30 years utilizing MNA subsequent to the enhanced reductive dechlorination.

2.0 ENHANCED BIOREMEDIATION CORRECTIVE MEASURES IMPLEMENTATION

Enhanced bioremediation via reductive dechlorination at the NWBA was implemented from May to July 2015. To implement enhanced reductive dechlorination at the site with augmentation and stimulation, the dissolved plume exceeding the interim goal of 100 µg/L for TCE was divided into two treatment areas: the source area and a barrier wall to treat the downgradient dissolved groundwater plume. The implementation of the Corrective Measures included the following activities in accordance with the approved CMIP:

- Installed injection/extraction wells in the source area and barrier wall located in the down gradient portion of the plume.
- Performed well development and containerized groundwater in staging area for re-use during injection of groundwater amendments.
- Pre-conditioned the aquifer: mixing biostimulation formula that includes carbon substrate, nutrients, buffering agent, and long-term fatty acids into injection wells (source area) or direct push points (barrier wall).
    - Injected the carbon formula into injection wells or using direct push technology (DPT)
    - Monitored water quality and groundwater levels at nearby monitoring wells (MWs)
- Weekly monitoring of the aquifer until conditions are ideal for injecting the microbes (*Dehalococcoides*)
- Inject *Dehalococcoides* bacteria (KB-1) into the injection/extraction wells in the source area and barrier wall
- Groundwater sampling of select groundwater monitoring wells for water quality, geochemical and chemical parameters.
- Transportation and disposal of investigation derived waste (IDW); and,
- Preparation of this technical memorandum documenting corrective measures implementation activities.

For reductive dehalogenation at the site, the electron donor consisted of Anaerobic Biochem® (ABC®) formula patented by Redox Tech, LLC. ABC® is a patented mixture of lactates, fatty acids, and a phosphate buffer. ABC® contains soluble lactic acid as well as slow- and long-term releasing components, yielding a further reduced environment. Additionally, the ABC® formula includes a long term fatty acid amendment that is a stable, self-emulsifying, blended substrate designed to combine the hydrogen donor properties of readily soluble carbon substrates with enhanced longevity of emulsified vegetable oil products. The formula contains nutrients and methane inhibitors. The ABC® formula is combined with a zero valent iron (ZVI) to produce ABC+®. This reduced environment in turn yields ferrous iron and hydrogen from the ZVI, further acting as reducing agents and energy sources for anaerobes. In addition to halogenated compounds, ABC+® is equally effective at treating mobile heavy metals by promoting their conversion to insoluble forms.

2.1 Site Preparation

KEMRON prepared Fort Buchanan excavation/dig permits in March 2015 for mobilization in April 2015 to begin site preparatory work. The proposed permanent injection wells and barrier wall extent were marked at the site in spray paint and flags for subsurface utility location. The approved excavation permits were received on March 28, 2015 from Fort Buchanan.

GeoEnvirotech, Inc. performed private utility location with a Ground Penetrating Radar (GPR) unit on April 23 and 24, 2015. Any anomalies in the area were marked with flags and subsurface utility locations as provided by Fort Buchanan were confirmed as to the location. Excavation Permits were obtained prior to drilling activities and are included as **Appendix A**.

A memorandum summarizing the Underground Injection Control (UIC) requirements in regards to the upcoming injection work at the NWBA TCE groundwater site, along with a UIC inventory form, was submitted to USEPA and PREQB in April prior to the injection activities. The memorandum summarizes the CERCLA permit equivalency requirements as well as addresses that Class V injection wells are permitted by rule and do not require an individual permit. The UIC permit memorandum is included as **Appendix A**.

2.2 Injection Well Installation

2.2.1 Source Area

As proposed and approved in the CMIP dated February 2015, eight permanent injection wells were installed in the source area from May 4 - 15, 2015 in the approved locations using hollow-stem auger drilling techniques. Injection well locations are illustrated on **Figure 2-1**. During borehole advancement at each location, split-spoon samples were collected every five feet to characterize and log the soil lithology. These wells were constructed of 15 feet of two-inch 0.010 slot, schedule 40 poly vinyl chloride (PVC) screen placed at a depth of approximately 25 to 40 feet (similar to MW-25 and MW-26) with the necessary length of Schedule 40 PVC riser to bring the well to ground surface. The annular space between the well and the borehole wall was filled with a 20/40 gradation quartz sand filter that extends from the base of the well to two feet above the top of the screen. Two feet of bentonite pellets, hydrated in place, were placed above the sand pack to serve as a seal. The remaining annular space was tremie grouted to within two feet of the ground surface. The wells were completed with a flush mounted surface completion encased in a 2-foot by 2-foot by 6-inch concrete pad. The top of the wells have a water tight, locking cap. Field notes are included as **Appendix B**. Boring Log and well construction Diagrams are included as **Appendix C**.

2.2.2 Barrier Wall Treatment Zone

On May 19th through the 26th 2015, six injection wells spaced approximately 40 feet apart horizontally, as proposed and approved in the CMIP, were permanently installed to for injection points in the barrier wall treatment zone. During borehole advancement at each location, split-spoon samples were collected every five feet to characterize and log the soil lithology. These wells were constructed of 10 feet of two-inch 0.010 slot, schedule 40 PVC screen placed at a depth of approximately 20 to 30 feet (similar to MW-11A) with the necessary length of Schedule 40 PVC riser to bring the well to ground surface. The annular space between the well and the borehole wall was filled with a 20/40 gradation quartz sand filter that extends from the base of the well to two feet above the top of the screen. Two feet of bentonite pellets, hydrated in place, were placed above the sand pack to serve as a seal. The remaining annular space was tremie grouted to within two feet of the ground surface. The wells were completed with a flush mounted surface completion encased in a 2-foot by 2-foot by 6-inch concrete pad. The top of the wells have a water tight, locking cap. Injection wells locations are illustrated on **Figure 2-1.** Boring Log and well construction Diagrams are included as **Appendix C**.

2.2.3 Well Development

Once the wells were installed, they were developed in accordance with the KEMRON Standard Operating Procedure (SOP) for Monitoring Well Installation and Oversight. A submersible pump was used to remove groundwater from the wells and water quality parameters, such as DO, ORP, pH, turbidity, and conductivity, were measured during development until parameters indicate development has been achieved (i.e. stable parameters or three well volumes). Turbidity was used as the primary indication of proper well development. The development water with a high sediment load was placed into the onsite roll off dumpsters for offsite disposal. Relatively clear development water was containerized and transferred into poly tanks at the staging area and mixed the ABC® Formula discussed in Section 2.3 below. Filtration of the well development water was not necessary during implementation.

2.3 ABC+® Injections (Aquifer Conditioning)

Upon completion of well development, the aquifer was conditioned by injecting the ABC+® Formula in the source area and barrier wall which includes nutrients, a buffering agent, and a long term fatty acid. The current geochemical conditions are such that natural attenuation is already occurring at the site and has substantially reduced the footprint of the groundwater plume. However, prior to injecting *Dehalococcoides* into the aquifer, it is important to ensure the aquifer contains ideal geochemical conditions.

The ABC® and ABC+® Formula along with Lact Oil was mixed with extracted groundwater prior to injection. Water for injection activities was obtained by extracting groundwater from monitoring/extraction wells within the treatment area at each location via submersible electric pumps. The groundwater was extracted and stored in large poly holding tanks for subsequent mixing with the treatment chemistry. No potable water was utilized for any of the injection activities.

2.3.1 Barrier Wall Aquifer Conditioning

On June 3, 2015, the injection equipment, injection amendments, and personnel were mobilized to the site to set up the injection trailers for use. Groundwater extraction began on June 5th to ensure sufficient groundwater was available for the injections. Injection activities began on June 8, 2015. During the ABC+® formula injections into the 50 barrier wall locations between June 8-12, 2015, groundwater was extracted from injection/extraction wells installed along the barrier wall alignment during the injection activities for source water for mixing the ABC+® formula and Lact Oil. If active injections were occurring on the eastern side of the barrier wall, groundwater was extracted from the western side of the barrier wall so as not to extract the ABC+® enriched groundwater. Groundwater was extracted from site wells on June 5 and June 8 – 11, 2015. It was not necessary to extract groundwater to control mounding or daylighting as the sand aquifer readily accepted the amended solution except as noted below in zones of weathered limestone and clay.

Two Geoprobe® direct push technology (DPT) drilling rigs were utilized during the injection. Fifty (IP-1 through IP-50) temporary DPT injection points were advanced to an attempted target depth of 30 feet bgs spaced approximately ten feet apart horizontally along the proposed barrier wall alignment. Two rows with 25 borings each were installed along the barrier wall alignment. A targeted volume of 360 gallons of a 10% solution of ABC+® and Lact Oil solution was injected into each direct push point. Injections began at the total depth of each DPT boring approximately 30 feet below ground surface (bgs) and continued as the drilling rods were lifted

to a depth of approximately 20 feet bgs. Refusal was encountered in several borings from 25 – 29 feet bgs due to weathered limestone and thick clays being encountered near depth in these borings. The ABC+® Formula was pumped into the formation via DPT borings using air-driven, chemically resistant pumps. Injection pressures in each DPT boring during injection typically ranged from 20 – 40 pounds per square inch (psi) during the injections. However, during the initial valve opening at depth in many of the DPT borings, little to no flow was noted and a spike in pressure was noted up to a max of 80 psi. If this occurred, the drilling rods were raised until the ABC+® began to flow into the boring and the pressure decreased to the target range of 20 – 40 psi. The details of the injection into the DPT points and injection wells are provided in **Table 1** including pressure, flow per depth interval, and time of injection per location. Each of the DPT points was flagged and the locations were documented with a handheld Global Positioning Satellite (GPS) Unit. **Figure 2-1** illustrates the actual locations of the DPT injection point locations.

2.3.2 Source Area Aquifer Conditioning

On June 12, 2015, the injection equipment was moved from the barrier wall location to the source area location across Columbus Street. On June 12, 2015, groundwater was extracted from injection/extraction wells installed in the source area for storage in poly storage tanks moved to the source area location for use during the injection. Approximately 2,000 gallons of groundwater was extracted on Friday June 12 for source water for mixing the ABC® formula and Lact Oil. An additional 1,500 gallons of groundwater with approximately 500 gallons of well development water was pumped into the storage tanks on June 15, 2015. On June 15-16, 2015, approximately 1,000 gallons of a 10% ABC® and Lact Oil solution was injected into each of the eight source area injection wells. The ABC® Formula was pumped into the injection wells using air-driven, chemically resistant pumps into a section of well riser fitted with a valve connection on top of the well. Up to four (4) injection wells were injected into simultaneously during the source area amendment injection. The injection typically lasted for two to three hours at each injection well or 5.5 to 8.33 gallons per minute (gpm) average at injection pressures ranging from approximately 10 to 35 psi. The details of the injection into the injection wells are provided in **Table 1** including pressure, volume of amendment solution injected, and time of injection per location.

2.4 *Dehalococcoides* Injection

Following injection of the ABC+® Formula, groundwater conditions at injection/extraction and nearby wells were monitored for water quality parameters including: temperature, pH, conductivity, Oxidation Reduction Potential (ORP), and Dissolved Oxygen (DO) to verify ideal geochemical conditions. Weekly groundwater quality readings were collected from June 24th through July 9, 2014 to monito the injection wells with regards to ORP, DO, and pH primarily to verify the groundwater chemistry was ideal for *Dehalococcoides* growth and proliferation. The ideal environment for reductive dechlorination of chlorinated solvents in groundwater via *Dehalococcoides* bacteria is groundwater with a neutral pH (6 – 9), low DO levels (2.5 mg/L or less), and negative ORP values with ORP values being the primary indicator of a reducing anaerobic environment. The ORP values reported a decreasing trend, becoming more negative as time passed, during the period following the ABC® formula injections with most injection and source area wells at an average ORP of -129.32 millivolts (mV). **Table 2** summarizes the field water quality measurements.

The *Dehalococcoides* KB-1® was shipped from the SiREM laboratory located in Ontario, Canada, to the site in a pressurized vessel. The shipment was set to arrive at the site on July 16, 2015; however, the KB-1® shipment was held in Customs until July 22, 2015. Upon receipt

of the vessels on July 22, 2015, it was inspected to document all valves were closed and connections secure and weighed to ensure the vessel weight had not changed during vessel shipment from the laboratory.

Following vessel inspection, the tubing and injection point was purged with nitrogen. Tubing was connected to the compressed gas tank regulator attached to the Pressurization Port. A second set of tubing was connected to the Purge Port. The injection tubing was lowered into the injection well to the middle of the well screen. Once the tubing was in place, the oxygen in the tubing and injection well casing was displaced with nitrogen by opening the valves to allow the nitrogen gas to flow through the vessel and purge the tubing and injection well for minimum of five minutes.

Once the well and tubing was filled with the inert gas, the *Dehalococcoides* (KB-1®) were injected into the well. The valves for the tubing connected to the Purge Port and the Inoculation Port were opened to push the KB-1® culture through the injection tubing into the injection well at the desired depth interval.

KB-1® was injected into the injection wells located in the source area and barrier wall on July 23-24, 2015. A total of 20 liters (L) of KB-1® was injected into each of the eight source area injection wells (IW-1through IW-8) and 10 L into each of the six barrier wall injection wells (IW-9 through IW-14). Field notes are included in **Appendix B**.

3.0 LONG TERM MONITORING EVENT – JULY 2015

The first Long Term Monitoring (LTM) was conducted on July 14-22, 2015 in accordance with the approved February 2015 CMIP.

3.1 Groundwater Monitoring Activities

The first LTM event included the following 18 wells included in the sampling network: MW-7A/B, MW-8A/B, MW-11A/B, MW-13B, MW-14A/B, MW-16A/B, MW-15A, MW-25, MW-26, MW-20, OP-3, OP-4, and OP-5. Groundwater monitoring wells are illustrated on **Figure 2-2**.

Low-flow groundwater sampling was performed in accordance with the June 2014 approved Uniform Federal Policy Quality Assurance Project Plan (UFP QAPP) (KEMRON, 2014) and the UFP-QAPP addendum approved in the CMIP. Field water quality parameters, such as pH, DO, temperature and conductivity were monitored and stable prior to sampling. Purge water and decontamination fluids generated during groundwater sampling activities were containerized in the roll off dumpster's located onsite, labeled and sampled for waste characterization in accordance with the approved UFP QAPP (KEMRON, 2015).

Monitoring wells were sampled for VOCs by USEPA Method 8260B, major cations (magnesium, calcium, sodium, and potassium) by USEPA Method 6010C, nitrate and sulfate by USEPA Method 9056, dissolved gasses (methane, ethane, and ethene) by USEPA RSKSOP-175, and Total Organic Carbon (TOC) by USEPA Method 9060, as well as field water quality parameters. All groundwater samples for chemical and geochemical analysis were performed by Microbac Laboratories located in Marietta, Ohio. Current and historical groundwater volatile organic compound concentrations are included on **Table 3**; General Chemistry, Dissolved Gasses, and Select Metals in Groundwater are included on **Table 4**. Field water quality parameters measured during purging are provided on the groundwater sampling logs are presented in **Appendix D** and are summarized on **Table 2**.

3.2 Volatile Organic Compounds Results

Volatile Organic Compounds (VOCs) detected in groundwater during the July 2015 sampling includes the following: 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, 2- Butanone, Acetone, Benzene, chloroform, 1,1,2-trichloroethane (1,1,2-TCA), 1,1-dichloroethene (1,1-DCE), 1,2-dichloroethane (1,2-DCA), Tetrachloroethylene (PCE), TCE, 1,2-DCE, cis-1,2 DCE, trans-1,2 DCE, and vinyl chloride (VC) **(Table 3)**. It should be noted that the groundwater sampling event was conducted in between the ABC® amendment injections which occurred from June 8 – 16, 2015 yet before the augmentation with *Dehalococcoides* bacteria cultures which occurred on July 22 – 24, 2015.

Because the focus of the CMI is to remediate chlorinated solvents in groundwater, the discussion below will focus on the results of those VOCs. Other non-chlorinated VOCs, such as acetone, benzene, and chloroform, were detected at very low levels below the applicable Maximum Contaminant Limit (MCLs) or as estimates from the laboratory below the applicable method detection limit. Of the VOC constituents detected, the following constituents were detected above the Federal MCL:

- 1,1,2-TCA: The maximum detection was 19.7 µg/L in MW-25. This constituent exceeded the MCL in MW-25 and MW-26 during the July 2015 sampling event.

- 1,2-DCE (cis and trans isomers): The maximum detection was 227.8 µg/L total 1,2-DCE in MW-15A. This constituent exceeded the MCL for cis-1,2,-DCE only in MW-15A, MW-25 and MW-26 during the July 2015 sampling event.
- PCE: The maximum detection was 16.4 µg/L in MW-25. This constituent exceeded the MCL in MW-11A and MW-25 during the July 2015 sampling event.
- TCE: The maximum detection was 2,300 µg/L in MW-25. This constituent exceeded the MCL in MW-11A, MW-11B, MW-13B, MW-16B, MW-25, MW-26, and OP-4 during the July 2015 sampling event.
- VC: The maximum detection was 8.22 µg/L in MW-7B. This constituent exceeded the MCL in MW-7B, MW-13B, and MW-15A during the July 2015 sampling event.

Groundwater monitoring wells MW-11A, MW-13B, MW-25 and MW-26 exhibited TCE concentrations above the interim remedial goal of 100 µg/L TCE. The TCE concentrations during the current sampling event increased at MW-13B from 10.4 µg/L in July 2014 to 161 µg/L in July 2015 and at OP-4 from <1 µg/L in July 2014 to 50.9 µg/L in July 2015. A decrease in dissolved TCE concentrations was exhibited since the previous sampling event conducted in July 2014 at MW-11A from 139 µg/L to 123 µg/L, MW-15A from 233 µg/L to 2.15 µg/L, MW-25 from 2,710 µg/L to 2,300 µg/L and MW-26 from 973 µg/L to 711 µg/L. Detected VOC concentrations from the July 2015 sampling event are illustrated on **Figure 3-1** and the July 2014 sampling event concentrations are illustrated on **Figure 3-2** for comparison. A comparison of the TCE groundwater plumes from the previous three sampling events is provided on **Figure 3-3**.

3.3 Quality Assurance/Quality Control

During the July 2015 sampling event, field quality control (QC) samples were collected in accordance with the approved UFP QAPP (KEMRON, 2014). Field duplicates were collected at a rate of one per 10 samples, which resulted in two field duplicates collected for the sampling event. The field duplicate/parent replicate precision was acceptable for all analytes of concern. One matrix spike and one matrix spike duplicate were collected per 20 field samples. Matrix interference was not observed for any of the site constituents of concern (COCs). Field blanks and equipment rinse blanks were collected to document potential for cross contamination during sample field handling and sampling equipment decontamination. Trihalomethanes (bromodichloromethane, chloroform, and chlorodibromomethane) were often observed in the field and equipment rinse blanks and occasionally toluene at concentrations above the method detection limit but below the limit of quantification. Trihalomethanes are believed to be present due to the use of potable water for decontamination of equipment. Generally, these compounds, though present in the field QC blanks, were not detected in the groundwater monitoring samples. In a few instances, chloroform or acetone were also detected in a field sample (i.e. MW-11A, MW-13B, OP-3, and OP-4). Trip blanks submitted with these samples were ND for all analytes. In cases where an analyte was detected in the field or equipment blank and the field samples, the analyte results were qualified as an estimate by the data validator.

A Puerto Rico licensed chemist, Ralph Abbondanza (No. 3803), reviewed and certified each analytical data package produced during the July 2015 sampling. The laboratory analytical data validation and Puerto Rican chemist certification letters are included in **Appendix E**.

4.0 IDW MANAGEMENT

IDW generated at the site includes soil cuttings and decontamination fluids generated during cleaning of reusable, non-dedicated equipment and drilling tools. Soil cuttings generated from injection well installation were containerized in two roll off containers for characterization and disposal. The purged groundwater from the July 2015 sampling event was containerized with the soil for disposal with a portion utilized in the injection solution.

The IDW in each roll off container was sampled according to the QAPP Amendment. Composite soil samples were collected from each roll off and analyzed for TCLP VOCS and RCRA metals. Both composite samples were non-detect for all constituents except low level concentrations of barium. The laboratory analytical data for the IDW is included in Appendix E. A total of 33,920 pounds of soil and groundwater was characterized, profiled and disposed of offsite at Penuelas Valley Landfill on August 3, 2015.

A copy of the disposal documents is included as **Appendix F**.

5.0 CMI FUTURE WORK

5.1 LTM Schedule

The specific wells to be monitored will be dynamic and based on the previous groundwater monitoring results. During each sampling event, a minimum of 10 and a maximum of 15 wells will be sampled. Groundwater monitoring will be performed on a semi-annual basis with annual LTM Reports. Data validation and quality assurance will be performed in accordance with the UFP QAPP Amendment.

The next semi-annual groundwater sampling event is scheduled to be conducted in January 2016. Based on groundwater well location, screened intervals, July 2015 groundwater monitoring data and historical trends, it is proposed to remove groundwater monitoring wells MW-7A, MW-8A, MW-14A/14B, MW-16A from the sampling network for the next sampling event. The sampling plan for the next groundwater sampling event includes: MW-7B, MW-8B, MW-11A/B, MW-12A/B, MW-13B, MW-15A, MW-16B, MW-20, MW-25 and MW-26. Additionally, it is proposed to include offsite groundwater monitoring well OP-4 and OP-5 in the next groundwater sampling event to be analyzed for VOCs only.

5.2 *Dehalococcoides* Population Monitoring

The microbial population will be sampled in accordance with the procedures specified in the UFP Quality Assurance Project Plan (QAPP) Amendment at MW-11A and MW-26 approximately three to four months from injection, planned for October – November 2015, MW-11A, MS-25, and MW-15A in 2017 and 2020 to determine the population size of *Dehalococcoides.* However, this monitoring could occur at a later Long Term Monitoring (LTM) sampling event, if the results of groundwater monitoring indicate it is necessary (i.e. rate of decay significantly slows). Microbial analysis will be performed by SiREM Laboratories, located in Ontario, Canada. The results of the microbial population monitoring will be included and discussed in the annual reports.

5.3 LTM Reporting and Analysis

Contaminant trends will be analyzed once two years of data has been collected as proposed in the approved CMI plan. As part of the evaluation of enhanced bioremediation, contaminant data will be the primary line of evidence used to demonstrate that anaerobic dechlorination is occurring. Reductions in parent compound (TCE) with the presence and increase in daughter products can be used to determine the rate and extent to which degradation is occurring.

Overall, the LTM data evaluation will evaluate multiple lines of evidence to evaluate site conditions. The data will be evaluated for contaminant trends analysis, plume size, evaluation of the geochemical and biological data once two years of post-injection data has been collected and will be updated yearly thereafter. It is expected that there will be an initial marked increase in the ratio of parent to daughter product over time.

Kinetics analysis using SourceDK will be used to provide an estimated timeframe for the site to achieve compliance with the MCLs for groundwater. SourceDK is a remediation timeframe decision support system developed by the Air Force Center for Environmental Excellence (AFCEE) Technology Transfer Division. This kinetics analysis will be conducted using historical analytical data and LTM data and the known extent of TCE contamination exceeding the MCL. The SourceDK modeling results will be summarized in the LTM Reports along with outputs from

the model. If monitoring data indicates a specific factor is limiting bioremediation, amendments, microbes, or buffering agents will be added to the environment, as necessary. The exact limiting factors that will impact degradation rates cannot be predicted and will be determined based on analytical data collected during the LTM activities.

If at any time the data evaluation indicates the concentrations of PCE, TCE and daughter products will not achieve remedial goals within 30 years, or if the data indicates the geochemical conditions are no longer ideal for anaerobic bioremediation, then additional injections will be recommended for the source area and/or barrier wall injection wells. The ABC+® is stated to last for up to 24 months according to the manufacturer and case studies conducted at other sites. Therefore, it is anticipated that at the end of the second year of LTM after injection, an analysis will be conducted to determine if subsequent enhanced bioremediation augmentation will be required.

LTM results and data evaluation will be presented in Annual LTM Reports for review by the Army, USEPA and PREQB. An annual report encompassing the next semi-annual groundwater monitoring events will be prepared following the December 2015 – January 2016 sampling event.

6.0 REFERENCES

EA, 2012a. Northwest Boundary Groundwater Corrective Measure Study, U.S. Army Garrison Fort Buchanan, Puerto Rico. Prepared for the U.S. Army Environmental Command, Aberdeen Proving Ground, Maryland. Final. September.

EA, 2012b. RCRA Facility Investigation Northwest Boundary Investigation, U.S. Army Garrison Fort Buchanan, Puerto Rico. Prepared for the U.S. Army Environmental Command, Aberdeen Proving Ground, Maryland. Final. March.

KEMRON, 2014. Uniform Federal Policy Quality Assurance Project Plan, U.S. Army Garrison Fort Buchanan, Puerto Rico. Prepared for the U.S. Army Environmental Command, Aberdeen Proving Ground, Maryland. Final. July.

KEMRON 2015. Final Fort Buchanan Corrective Measures Implementation Plan, U.S. Army Garrison Fort Buchanan, Puerto Rico. Prepared for the U.S. Army Environmental Command, Aberdeen Proving Ground, Maryland. Final. February.

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FIGURES

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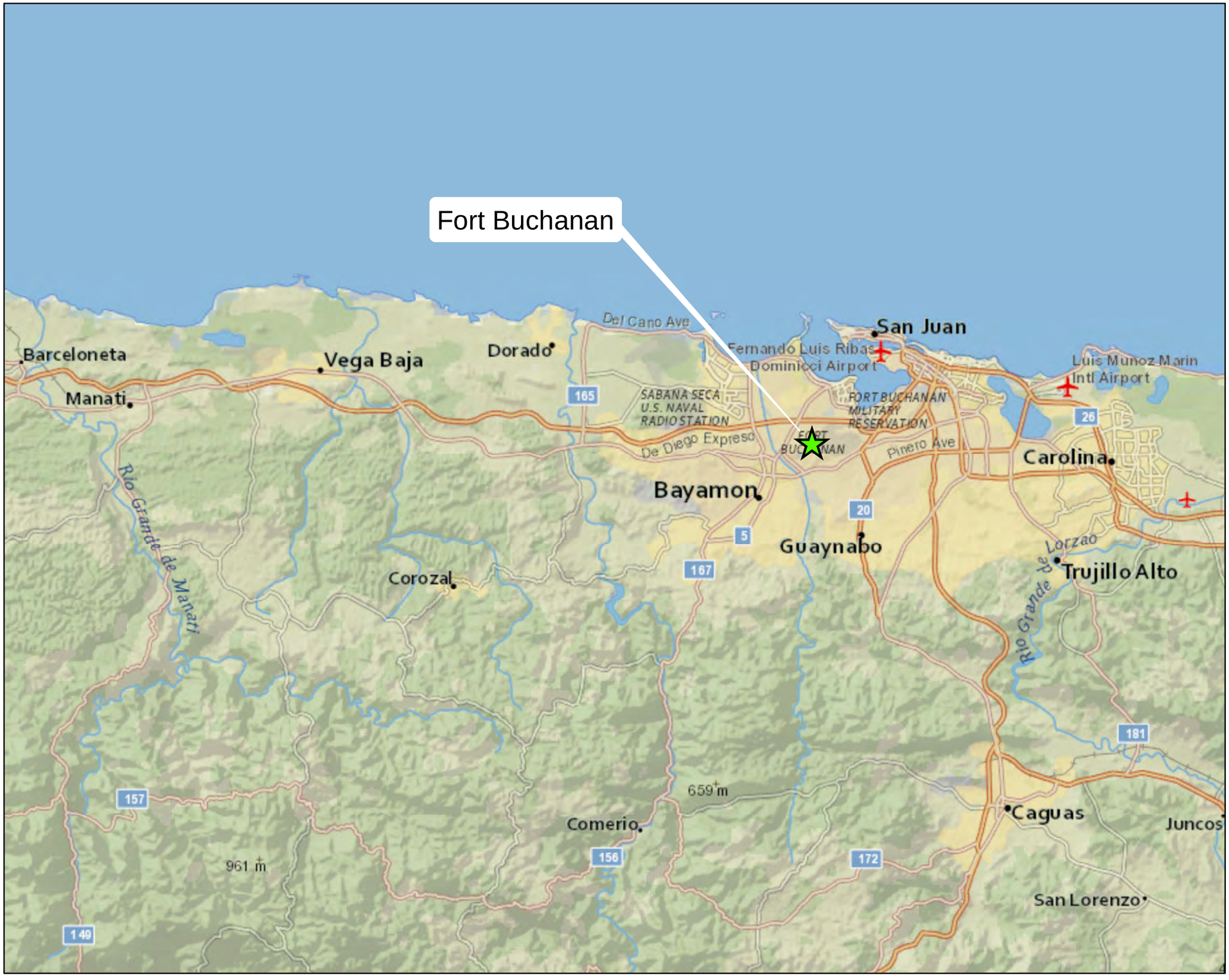


LEGEND

Site Location

LOCATION MAP

NOTES & SOURCES

Service Layer Credits: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

0 2.5 5 10

Kilometers

United States Army Garrison
Fort Buchanan
Puerto Rico

Figure 1-1
Installation Location Map

LEGEND

- Site Features
- 2010 TCE Plume
- Installation Boundary

LOCATION MAP

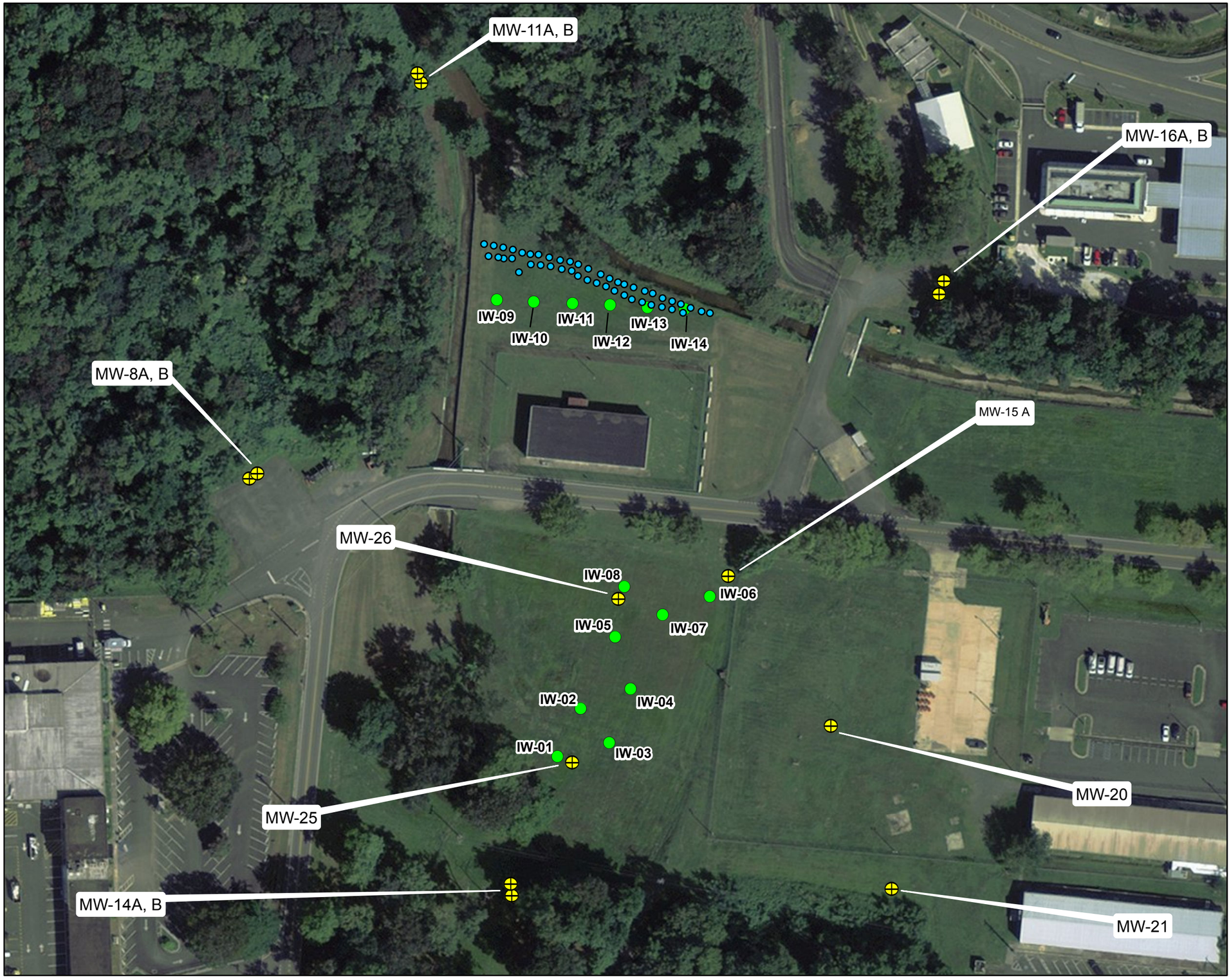
NOTES & SOURCES

Basemap from ESRI 2013.
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.
Plume data from RFI - EA Engineering 2012

0 150 300 600
Meters

United States Army Garrison
Fort Buchanan
Puerto Rico

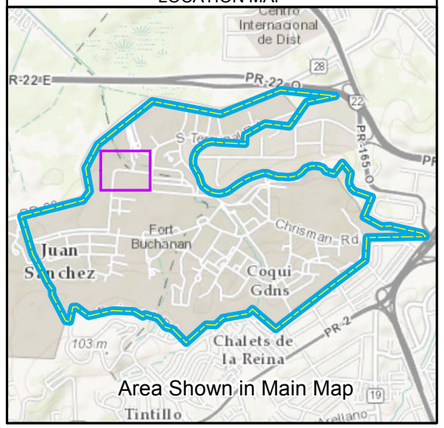
Figure 1-2
Site Location Map



LEGEND

- Injection Points
- Monitoring Well
- Injection Well
- Installation Boundary

LOCATION MAP



NOTES & SOURCES

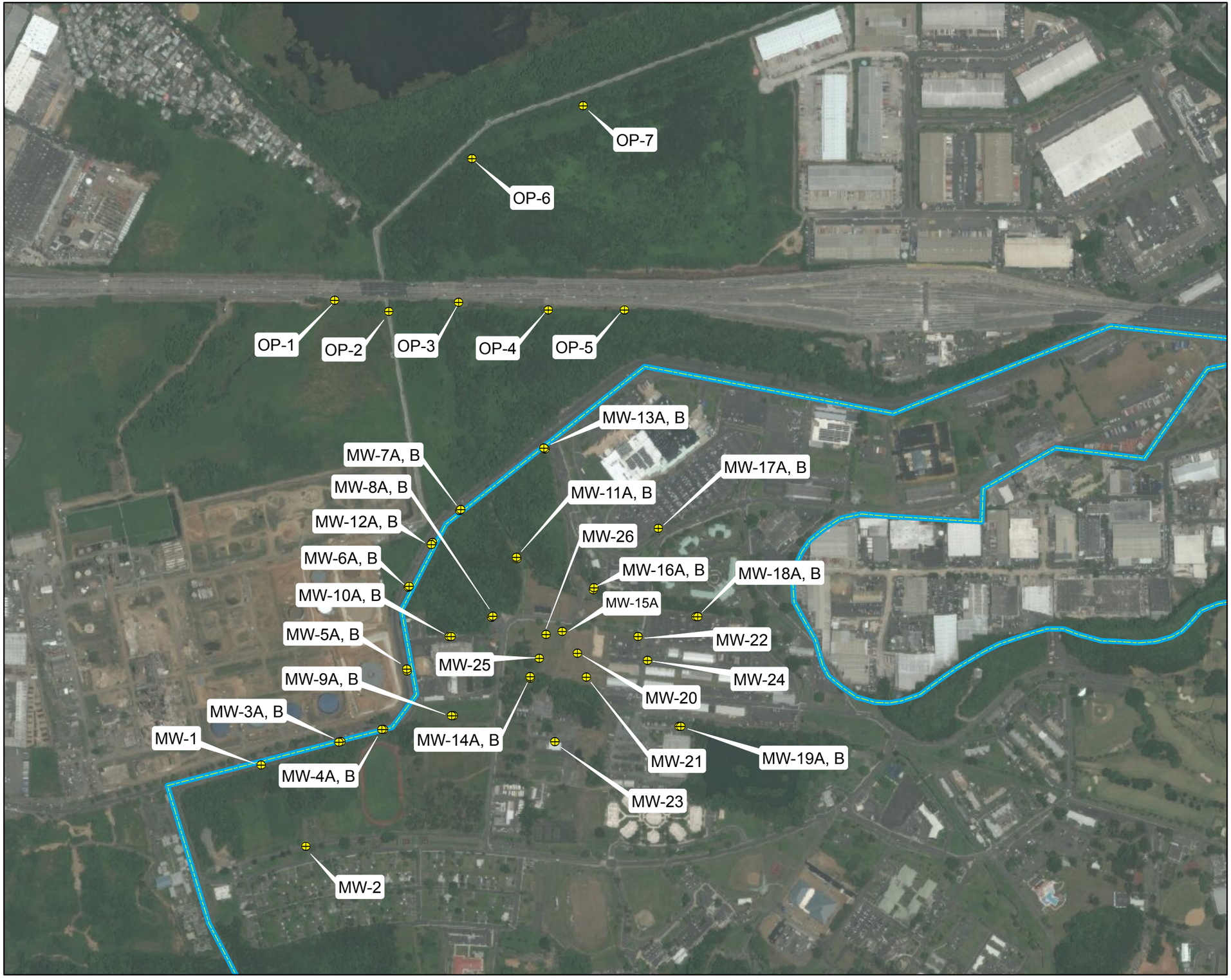
Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

0 12.5 25 50
Meters

N W E S

United States Army Garrison
Fort Buchanan
Puerto Rico

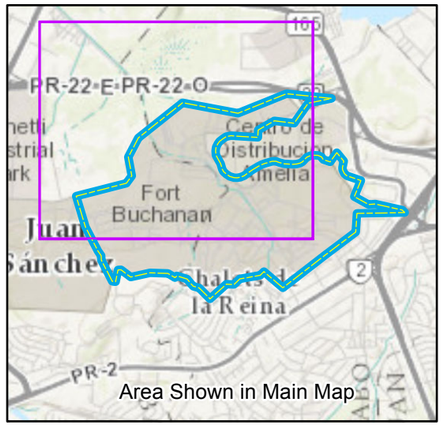
Figure 2-1
Injection Well Locations



LEGEND

Monitoring Well

Installation Boundary



NOTES & SOURCES

Basemap from ESRI 2013

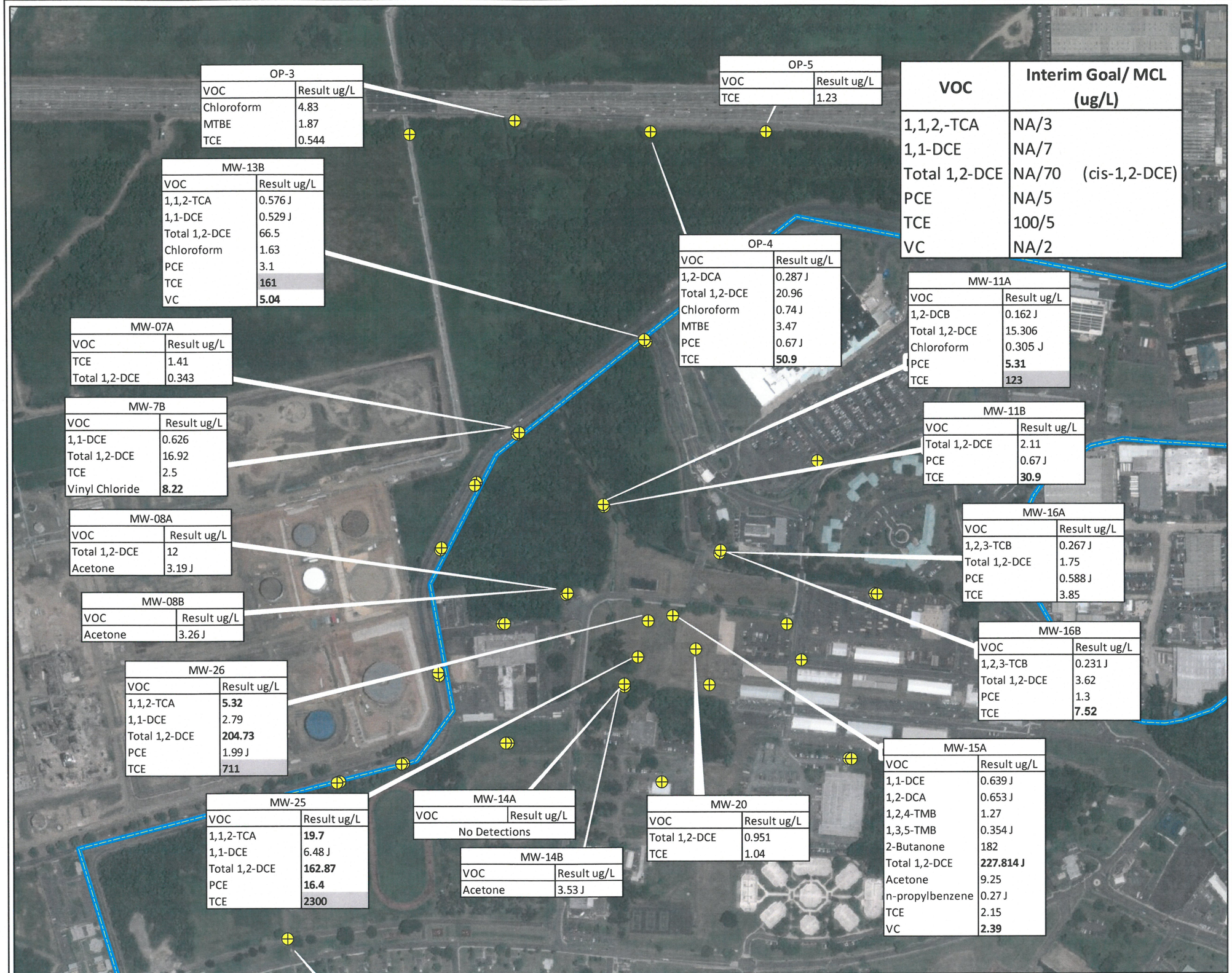
0 100 200 400

Meters

United States Army Garrison
Fort Buchanan
Puerto Rico

Figure 2-2

Monitoring Well Network



OP-3	
VOC	Result ug/L
Chloroform	4.83
MTBE	1.87
TCE	0.544

OP-5	
VOC	Result ug/L
TCE	1.23

VOC	Interim Goal/ MCL (ug/L)
1,1,2,-TCA	NA/3
1,1-DCE	NA/7
Total 1,2-DCE	NA/70 (cis-1,2-DCE)
PCE	NA/5
TCE	100/5
VC	NA/2

MW-13B	
VOC	Result ug/L
1,1,2-TCA	0.576 J
1,1-DCE	0.529 J
Total 1,2-DCE	66.5
Chloroform	1.63
PCE	3.1
TCE	**161**
VC	**5.04**

OP-4	
VOC	Result ug/L
1,2-DCA	0.287 J
Total 1,2-DCE	20.96
Chloroform	0.74 J
MTBE	3.47
PCE	0.67 J
TCE	**50.9**

MW-11A	
VOC	Result ug/L
1,2-DCB	0.162 J
Total 1,2-DCE	15.306
Chloroform	0.305 J
PCE	**5.31**
TCE	**123**

MW-07A	
VOC	Result ug/L
TCE	1.41
Total 1,2-DCE	0.343

MW-7B	
VOC	Result ug/L
1,1-DCE	0.626
Total 1,2-DCE	16.92
TCE	2.5
Vinyl Chloride	**8.22**

MW-11B	
VOC	Result ug/L
Total 1,2-DCE	2.11
PCE	0.67 J
TCE	**30.9**

MW-08A	
VOC	Result ug/L
Total 1,2-DCE	12
Acetone	3.19 J

MW-16A	
VOC	Result ug/L
1,2,3-TCB	0.267 J
Total 1,2-DCE	1.75
PCE	0.588 J
TCE	3.85

MW-08B	
VOC	Result ug/L
Acetone	3.26 J

MW-16B	
VOC	Result ug/L
1,2,3-TCB	0.231 J
Total 1,2-DCE	3.62
PCE	1.3
TCE	**7.52**

MW-26	
VOC	Result ug/L
1,1,2-TCA	**5.32**
1,1-DCE	2.79
Total 1,2-DCE	**204.73**
PCE	1.99 J
TCE	**711**

MW-15A	
VOC	Result ug/L
1,1-DCE	0.639 J
1,2-DCA	0.653 J
1,2,4-TMB	1.27
1,3,5-TMB	0.354 J
2-Butanone	182
Total 1,2-DCE	**227.814 J**
Acetone	9.25
n-propylbenzene	0.27 J
TCE	2.15
VC	**2.39**

MW-25	
VOC	Result ug/L
1,1,2-TCA	**19.7**
1,1-DCE	6.48 J
Total 1,2-DCE	**162.87**
PCE	**16.4**
TCE	**2300**

MW-14A	
VOC	Result ug/L
No Detections	

MW-20	
VOC	Result ug/L
Total 1,2-DCE	0.951
TCE	1.04

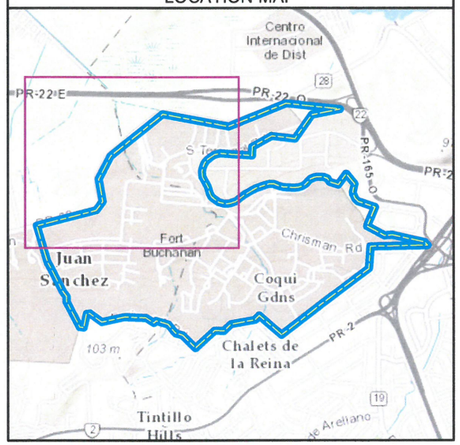
MW-14B	
VOC	Result ug/L
Acetone	3.53 J

LEGEND

Monitoring Well

Installation Boundary

LOCATION MAP



NOTES & SOURCES

Only detections displayed in tables.

Detections in bold indicate exceedance of the MCL.

Highlighted detections indicate an exceedance of the interim remedial goal for TCE (100 ug/L).

Basemap from ESRI 2013

0 65 130 260

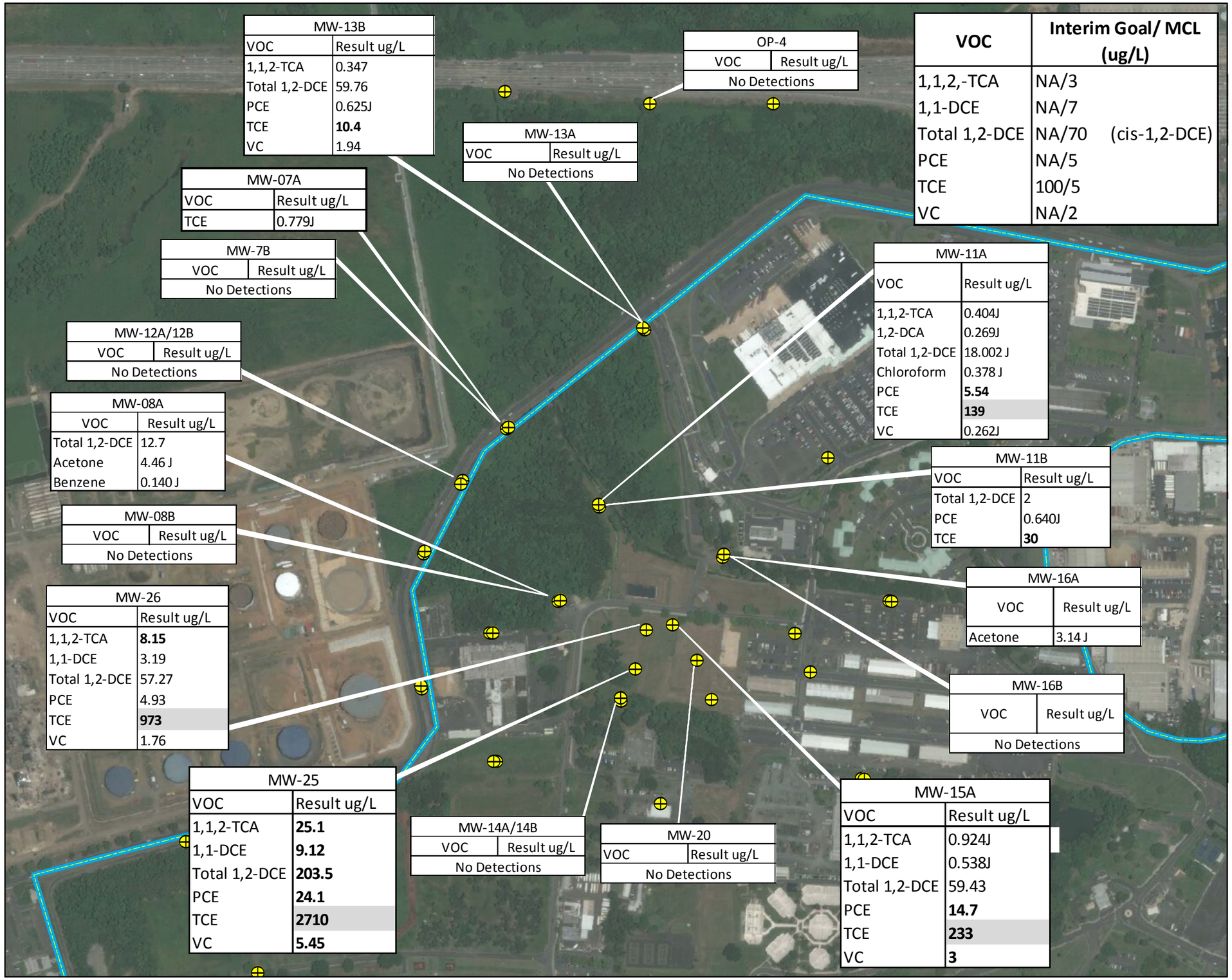
Meters

N W E S

United States Army Garrison
Fort Buchanan
Puerto Rico

Figure 3-1

VOC Detections in Groundwater (2015)



MW-13B	
VOC	Result ug/L
1,1,2-TCA	0.347
Total 1,2-DCE	59.76
PCE	0.625J
TCE	**10.4**
VC	1.94

OP-4	
VOC	Result ug/L
No Detections	

MW-13A	
VOC	Result ug/L
No Detections	

MW-07A	
VOC	Result ug/L
TCE	0.779J

MW-7B	
VOC	Result ug/L
No Detections	

MW-12A/12B	
VOC	Result ug/L
No Detections	

MW-08A	
VOC	Result ug/L
Total 1,2-DCE	12.7
Acetone	4.46 J
Benzene	0.140 J

MW-08B	
VOC	Result ug/L
No Detections	

MW-26	
VOC	Result ug/L
1,1,2-TCA	**8.15**
1,1-DCE	3.19
Total 1,2-DCE	57.27
PCE	4.93
TCE	**973**
VC	1.76

MW-25	
VOC	Result ug/L
1,1,2-TCA	**25.1**
1,1-DCE	**9.12**
Total 1,2-DCE	**203.5**
PCE	**24.1**
TCE	**2710**
VC	**5.45**

MW-14A/14B	
VOC	Result ug/L
No Detections	

MW-20	
VOC	Result ug/L
No Detections	

VOC	Interim Goal/ MCL (ug/L)
1,1,2,-TCA	NA/3
1,1-DCE	NA/7
Total 1,2-DCE	NA/70 (cis-1,2-DCE)
PCE	NA/5
TCE	100/5
VC	NA/2

MW-11A	
VOC	Result ug/L
1,1,2-TCA	0.404J
1,2-DCA	0.269J
Total 1,2-DCE	18.002 J
Chloroform	0.378 J
PCE	**5.54**
TCE	**139**
VC	0.262J

MW-11B	
VOC	Result ug/L
Total 1,2-DCE	2
PCE	0.640J
TCE	**30**

MW-16A	
VOC	Result ug/L
Acetone	3.14 J

MW-16B	
VOC	Result ug/L
No Detections	

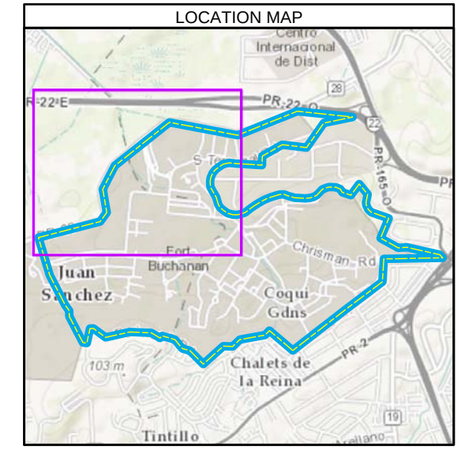
MW-15A	
VOC	Result ug/L
1,1,2-TCA	0.924J
1,1-DCE	0.538J
Total 1,2-DCE	59.43
PCE	**14.7**
TCE	**233**
VC	**3**

LEGEND

Monitoring Well

Installation Boundary

LOCATION MAP



NOTES & SOURCES

Only detections displayed in tables.

Detections in bold indicate exceedance of the MCL

Highlighted detections indicate an exceedance of the interim remedial goal for TCE (100 ug/L).

Basemap from ESRI 2013

0 62.5 125 250

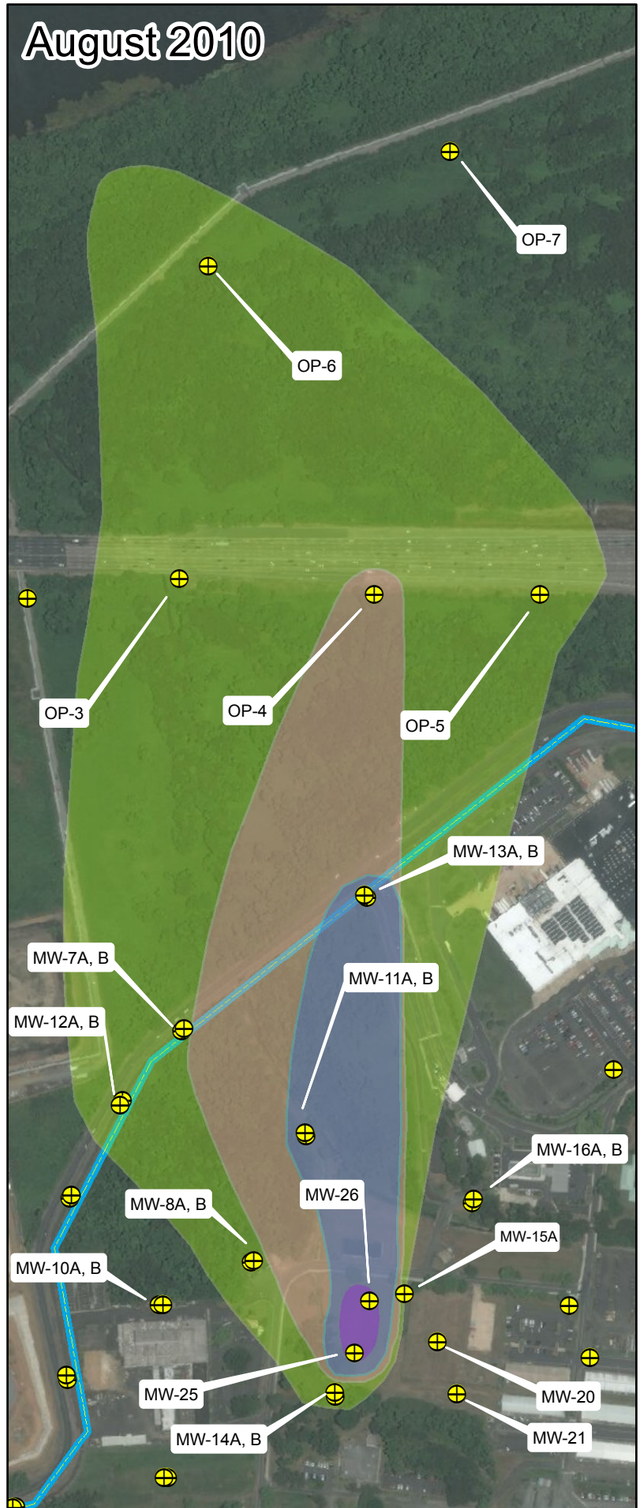
Meters

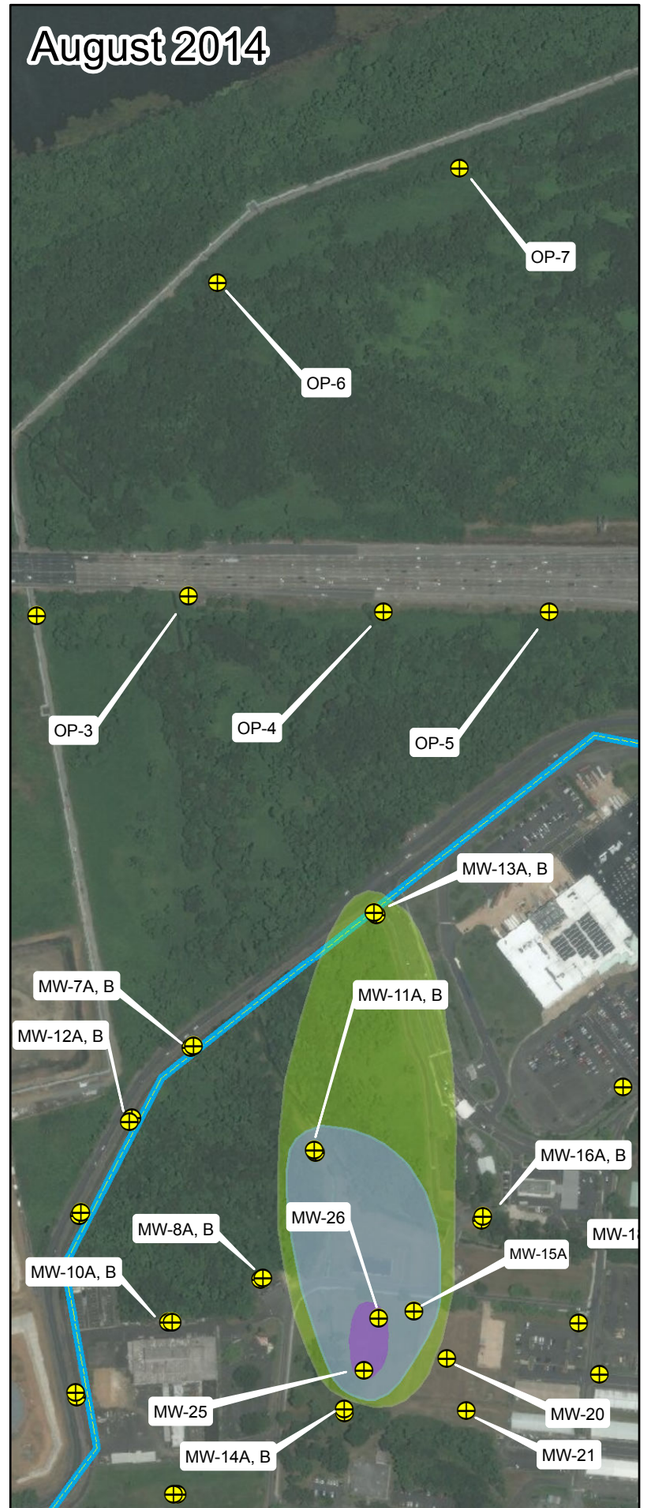
N W E S

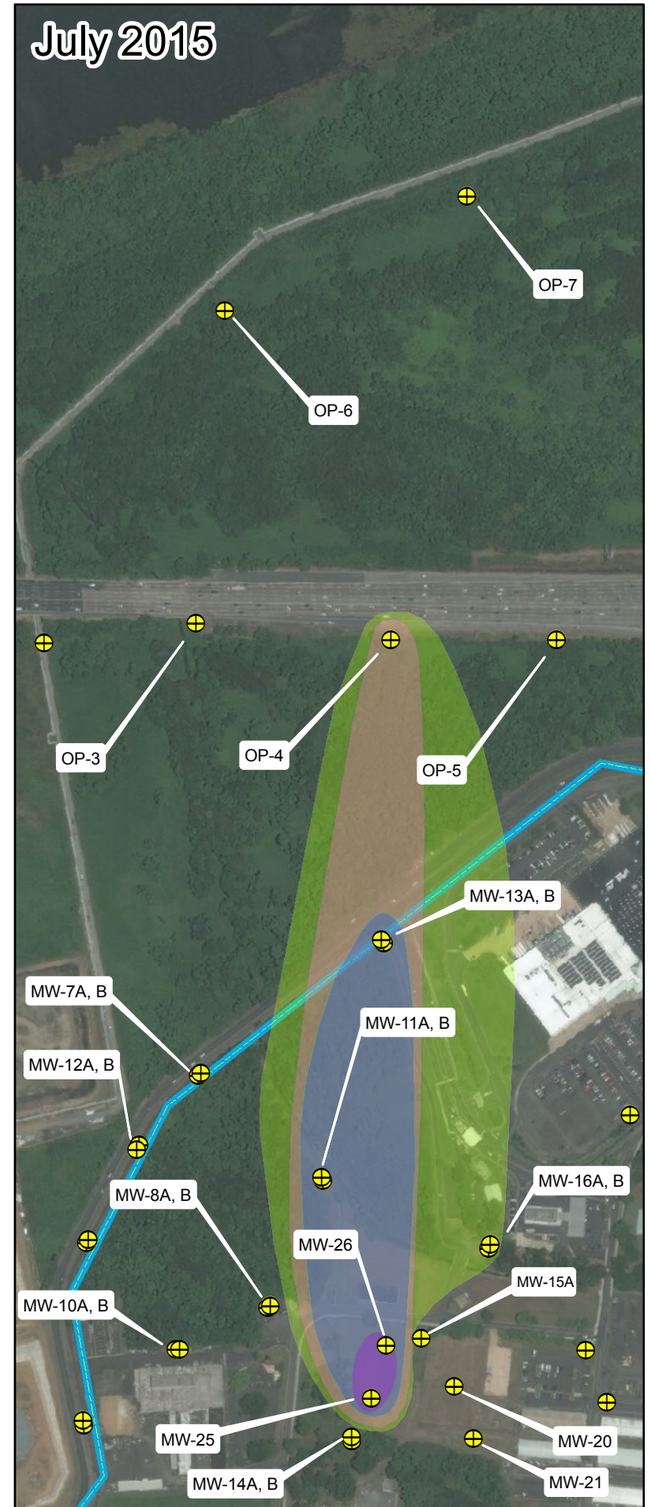
United States Army Garrison
Fort Buchanan
Puerto Rico

Figure 3-2

VOCs Detections in Groundwater (2014)







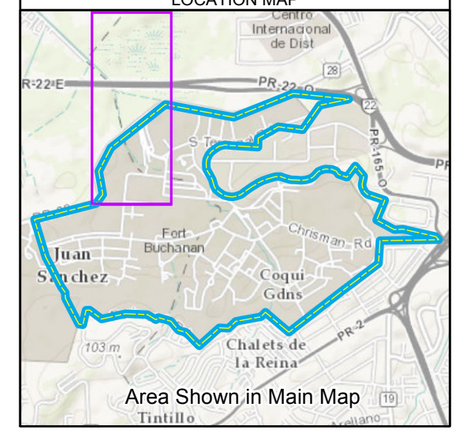
LEGEND

- Installation Boundary
- Monitoring Well

TCE Concentrations

- >500 ug/L
- 100-500 ug/L
- 50-100 ug/L
- 5-50 ug/L

LOCATION MAP



NOTES & SOURCES

Basemap from ESRI 2013

0 62.5 125 250

Meters

United States Army Garrison
Fort Buchanan
Puerto Rico

Figure 3-3

TCE Plume Comparison (2010-2015)

TABLES

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Table 1 Injection Summary
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

Injection Point	Date	Time On	Time Off	Injection Depth	ABC+ Conc.	Injection Pressure (psi)	Injection Volume (gals)	Comments
IP-1	6/8/15	10:45		29-28	10%	60	72	Hit refusal at 29 ft-bgs
				28-27	10%	60	36	
				27-26	10%	40	36	
				26-25	10%	40	36	
				25-24	10%	40	36	
				24-23	10%	40	36	
				23-22	10%	40	36	
				22-21	10%	40	36	
			14:00	21-20	10%	40	36	**Total Volume Injected: 360 gallons**
IP-2	6/8/15	11:30		29-28	10%	40	72	Hit refusal at 29 ft-bgs
				28-27	10%	40	36	
				27-26	10%	40	36	
				26-25	10%	40	36	
				25-24	10%	40	36	
				24-23	10%	40	36	
				23-22	10%	40	36	
				22-21	10%	40	36	
			13:20	21-20	10%	40	36	**Total Volume Injected: 360 gallons**
IP-3	6/8/15	13:30		30-29	10%	40	36	
				29-28	10%	40	36	
				28-27	10%	40	36	
				27-26	10%	40	36	
				26-25	10%	40	36	
				25-24	10%	40	36	
				24-23	10%	40	36	
				23-22	10%	40	36	
				22-21	10%	40	36	
			14:30	21-20	10%	40	36	**Total Volume Injected: 360 gallons**
IP-4	6/8/15	14:00		30-29	10%	30	36	
				29-28	10%	30	36	
				28-27	10%	30	36	
				27-26	10%	30	36	
				26-25	10%	30	36	
				25-24	10%	30	36	
				24-23	10%	30	36	
				23-22	10%	30	36	
				22-21	10%	30	36	
			15:18	21-20	10%	30	36	**Total Volume Injected: 360 gallons**

Table 1 Injection Summary
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

Injection Point	Date	Time On	Time Off	Injection Depth	ABC+ Conc.	Injection Pressure (psi)	Injection Volume (gals)	Comments
IP-5	6/8/15	14:45		30-29	10%	20	36	
				29-28	10%	20	36	
				28-27	10%	20	36	
				27-26	10%	20	36	
				26-25	10%	20	36	
				25-24	10%	20	36	
				24-23	10%	20	36	
				23-22	10%	20	36	
				22-21	10%	20	36	
			15:30	21-20	10%	20	36	**Total Volume Injected: 360 gallons**
IP-6	6/8/15	15:30		26-25	10%	35	144	No flow until 26 ft-bgs
				25-24	10%	35	36	
				24-23	10%	35	36	
				23-22	10%	35	36	
				22-21	10%	35	36	
			16:15	21-20	10%	35	36	**Total Volume Injected: 360 gallons**
IP-7	6/8/15	15:45		23-22	10%	40	288	
				22-21	10%	40	36	
			16:30	21-20	10%	40	36	**Total Volume Injected: 360 gallons**
IP-8	6/9/15	8:22		26-25	10%	20	180	No flow until 26 ft-bgs
				25-24	10%	20	36	
				24-23	10%	20	36	
				23-22	10%	20	36	
				22-21	10%	20	36	
			9:00	21-20	10%	20	36	**Total Volume Injected: 360 gallons**
IP-9	6/9/15	8:30		26-25	10%	60	180	No flow until 26 ft-bgs
				25-24	10%	40	36	
				24-23	10%	40	36	
				23-22	10%	40	36	
				22-21	10%	40	36	
			9:13	21-20	10%	40	36	**Total Volume Injected: 360 gallons**
IP-10	6/9/15	9:30		26-25	10%	60	180	No flow until 26 ft-bgs
				25-24	10%	40	36	
				24-23	10%	40	36	
				23-22	10%	40	36	
				22-21	10%	40	36	
			10:10	21-20	10%	40	36	**Total Volume Injected: 360 gallons**
IP-11	6/9/15	9:36		30-29	10%	60	36	

Table 1 Injection Summary
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

Injection Point	Date	Time On	Time Off	Injection Depth	ABC+ Conc.	Injection Pressure (psi)	Injection Volume (gals)	Comments
				29-28	10%	60	36	
				28-27	10%	60	36	
				27-26	10%	60	36	
				26-25	10%	40	36	
				25-24	10%	40	36	
				24-23	10%	40	36	
				23-22	10%	40	36	
				22-21	10%	40	36	
			10:10	21-20	10%	40	36	**Total Volume Injected: 360 gallons**
IP-12	6/9/15	10:46		30-25	10%	40	180	No flow until 25 ft-bgs
				25-24	10%	40	36	
				24-23	10%	40	36	
				23-22	10%	40	36	
				22-21	10%	40	36	
			11:36	21-20	10%	40	36	**Total Volume Injected: 360 gallons**
IP-13	6/9/15	10:46		30-25	10%	60	180	No flow until 25 ft-bgs
				25-24	10%	40	36	
				24-23	10%	40	36	
				23-22	10%	40	36	
				22-21	10%	40	36	
			11:36	21-20	10%	40	36	**Total Volume Injected: 360 gallons**
IP-14	6/9/15	12:50		30-27	10%	50	108	
				27-26	10%	20	36	
				26-25	10%	20	36	
				25-24	10%	20	36	
				24-23	10%	20	36	
				23-22	10%	20	36	
				22-21	10%	20	36	
			13:50	21-20	10%	20	36	**Total Volume Injected: 360 gallons**

Table 1 Injection Summary
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

Injection Point	Date	Time On	Time Off	Injection Depth	ABC+ Conc.	Injection Pressure (psi)	Injection Volume (gals)	Comments
IP-15	6/9/15	13:00		30-29	10%	60	36	
				29-28	10%	60	36	
				28-27	10%	60	36	
				27-26	10%	60	36	
				26-25	10%	40	36	
				25-24	10%	40	36	
				24-23	10%	40	36	
				23-22	10%	40	36	
				22-21	10%	40	36	
			13:50	21-20	10%	40	36	**Total Volume Injected: 360 gallons**
IP-16	6/9/15	14:00		30-29	10%	35	36	
				29-28	10%	35	36	
				28-27	10%	35	36	
				27-26	10%	20	36	
				26-25	10%	20	36	
				25-24	10%	20	36	
				24-23	10%	20	36	
				23-22	10%	20	36	
				22-21	10%	20	36	
			14:40	21-20	10%	20	36	**Total Volume Injected: 360 gallons**
IP-17	6/9/15	14:05		27-26	10%	20	144	
				26-25	10%	20	36	
				25-24	10%	20	36	
				24-23	10%	20	36	
				23-22	10%	20	36	
				22-21	10%	20	36	
			14:45	21-20	10%	20	36	**Total Volume Injected: 360 gallons**
IP-18	6/9/15	15:15		30-28	10%	50	72	
				28-27	10%	40	36	
				27-26	10%	40	36	
				26-25	10%	40	36	
				25-24	10%	40	36	
				24-23	10%	40	36	
				23-22	10%	40	36	
				22-21	10%	40	36	
			15:50	21-20	10%	40	36	**Total Volume Injected: 360 gallons**

Table 1 Injection Summary
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

Injection Point	Date	Time On	Time Off	Injection Depth	ABC+ Conc.	Injection Pressure (psi)	Injection Volume (gals)	Comments
IP-19	6/9/15	15:15		30-28	10%	60	72	
				28-27	10%	40	36	
				27-26	10%	40	36	
				26-25	10%	40	36	
				25-24	10%	40	36	
				24-23	10%	40	36	
				23-22	10%	40	36	
				22-21	10%	40	36	
			15:40	21-20	10%	40	36	**Total Volume Injected: 360 gallons**
IP-20	6/10/15	7:45		30-28	10%	50	72	
				28-27	10%	30	36	
				27-26	10%	30	36	
				26-25	10%	30	36	
				25-24	10%	30	36	
				24-23	10%	30	36	
				23-22	10%	30	36	
				22-21	10%	30	36	
			9:00	21-20	10%	30	36	**Total Volume Injected: 360 gallons**
IP-21	6/10/15	7:50		30-28	10%	80	72	
				28-27	10%	80	36	
				27-26	10%	40	36	
				26-25	10%	30	36	
				25-24	10%	30	36	
				24-23	10%	30	36	
				23-22	10%	30	36	
				22-21	10%	30	36	
			9:18	21-20	10%	30	36	**Total Volume Injected: 360 gallons**
IP-22	6/10/15	9:20		30-28	10%	80	72	
				28-27	10%	40	36	
				27-26	10%	40	36	
				26-25	10%	40	36	
				25-24	10%	40	36	
				24-23	10%	40	36	
				23-22	10%	40	36	
				22-21	10%	40	36	
			10:00	21-20	10%	40	36	**Total Volume Injected: 360 gallons**

Table 1 Injection Summary
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

Injection Point	Date	Time On	Time Off	Injection Depth	ABC+ Conc.	Injection Pressure (psi)	Injection Volume (gals)	Comments
IP-23	6/10/15	9:20		30-28	10%	60	72	
				28-27	10%	30	36	
				27-26	10%	15	36	
				26-25	10%	15	36	
				25-24	10%	15	36	
				24-23	10%	15	36	
				23-22	10%	15	36	
				22-21	10%	15	36	
			10:02	21-20	10%	15	36	**Total Volume Injected: 360 gallons**
IP-24	6/10/15	10:28		30-28	10%	40	72	
				28-27	10%	25	36	
				27-26	10%	25	36	
				26-25	10%	25	36	
				25-24	10%	25	36	
				24-23	10%	25	36	
				23-22	10%	25	36	
				22-21	10%	25	36	
			10:53	21-20	10%	25	36	**Total Volume Injected: 360 gallons**
IP-25	6/10/15	10:25		30-28	10%	30	72	
				28-27	10%	30	36	
				27-26	10%	20	36	
				26-25	10%	20	36	
				25-24	10%	20	36	
				24-23	10%	20	36	
				23-22	10%	20	36	
				22-21	10%	20	36	
			10:53	21-20	10%	20	36	**Total Volume Injected: 360 gallons**
IP-26	6/10/15	11:11		25	10%	40	72	Refusal at 25 ft-bgs
				25-24	10%	40	72	
				24-23	10%	20	72	
				23-22	10%	20	72	
				22-21	10%	20	36	
			11:55	21-20	10%	20	36	**Total Volume Injected: 360 gallons**

Table 1 Injection Summary
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

Injection Point	Date	Time On	Time Off	Injection Depth	ABC+ Conc.	Injection Pressure (psi)	Injection Volume (gals)	Comments
IP-27	6/10/15	11:18		30-28	10%	30	72	
				28-27	10%	30	36	
				27-26	10%	20	36	
				26-25	10%	20	36	
				25-24	10%	20	36	
				24-23	10%	15	36	
				23-22	10%	15	36	
				22-21	10%	15	36	
			11:50	21-20	10%	15	36	**Total Volume Injected: 360 gallons**
IP-28	6/10/15	13:41		30-28	10%	38	72	
				28-27	10%	40	36	
				27-26	10%	30	36	
				26-25	10%	30	36	
				25-24	10%	30	36	
				24-23	10%	30	36	
				23-22	10%	30	36	
				22-21	10%	30	36	
			14:36	21-20	10%	30	36	**Total Volume Injected: 360 gallons**
IP-29	6/10/15	13:43		30-28	10%	10	72	
				28-27	10%	10	36	
				27-26	10%	10	36	
				26-25	10%	10	36	
				25-24	10%	10	36	
				24-23	10%	10	36	
				23-22	10%	10	36	
				22-21	10%	10	36	
			14:25	21-20	10%	10	36	**Total Volume Injected: 360 gallons**
IP-30	6/10/15	14:45		30-28	10%	5	72	
				28-27	10%	5	36	
				27-26	10%	5	36	
				26-25	10%	5	36	
				25-24	10%	5	36	
				24-23	10%	5	36	
				23-22	10%	5	36	
				22-21	10%	5	36	
			16:04	21-20	10%	5	36	**Total Volume Injected: 360 gallons**

Table 1 Injection Summary
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

Injection Point	Date	Time On	Time Off	Injection Depth	ABC+ Conc.	Injection Pressure (psi)	Injection Volume (gals)	Comments
IP-31	6/10/15	14:39		30-28	10%	20	72	
				28-27	10%	20	36	
				27-26	10%	20	36	
				26-25	10%	20	36	
				25-24	10%	20	36	
				24-23	10%	20	36	
				23-22	10%	20	36	
				22-21	10%	20	36	
			15:45	21-20	10%	20	36	**Total Volume Injected: 360 gallons**
IP-32	6/10/15	16:23		30-28	10%	25	72	
				28-27	10%	20	36	
				27-26	10%	20	36	
				26-25	10%	20	36	
				25-24	10%	20	36	
				24-23	10%	20	36	
				23-22	10%	20	36	
				22-21	10%	20	36	
			16:53	21-20	10%	20	36	**Total Volume Injected: 360 gallons**
IP-33	6/10/15	15:59	15:59	30				Rod broke off at 10 ft-bgs when starting to pull up on rods to commence injection point
IP-33B	6/12/15	8:00		30-28	10%	35	72	
				28-27	10%	35	36	
				27-26	10%	35	36	
				26-25	10%	35	36	
				25-24	10%	35	36	
				24-23	10%	35	36	
				23-22	10%	35	36	
				22-21	10%	35	36	
			8:43	21-20	10%	35	36	**Total Volume Injected: 360 gallons**
IP-34	6/11/15	7:29		30-28	10%	60	72	
				28-27	10%	25	36	
				27-26	10%	25	36	
				26-25	10%	20	36	
				25-24	10%	20	36	
				24-23	10%	20	36	
				23-22	10%	20	36	
				22-21	10%	20	36	
			8:03	21-20	10%	20	36	**Total Volume Injected: 360 gallons**

Table 1 Injection Summary
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

Injection Point	Date	Time On	Time Off	Injection Depth	ABC+ Conc.	Injection Pressure (psi)	Injection Volume (gals)	Comments
IP-35	6/11/15	7:33		30-26	10%	25	144	
				26-25	10%	25	36	
				25-24	10%	25	36	
				24-23	10%	25	36	
				23-22	10%	25	36	
				22-21	10%	25	36	
			8:17	21-20	10%	25	36	**Total Volume Injected: 360 gallons**
IP-36	6/11/15	8:34		28-24	10%	25	144	Refusal at 28 ft-bgs
				24-23	10%	25	36	
				23-22	10%	25	36	
				22-21	10%	25	36	
				21-20	10%	25	36	
				20-19	10%	25	36	
			8:17	19-18	10%	25	36	**Total Volume Injected: 360 gallons**
IP-37	6/11/15	8:43		25-24	10%	25	72	Refusal @ 25 ft-bgs
				24-23	10%	25	72	
				23-22	10%	25	72	
				22-21	10%	25	72	
			9:29	21-20	10%	25	72	**Total Volume Injected: 360 gallons**
IP-38	6/11/15	10:36		30-28	10%	40	72	
				28-27	10%	40	36	
				27-26	10%	40	36	
				26-25	10%	40	36	
				25-24	10%	40	36	
				24-23	10%	40	36	
				23-22	10%	40	36	
				22-21	10%	40	36	
			11:15	21-20	10%	40	36	**Total Volume Injected: 360 gallons**
IP-39	6/11/15	9:53		30-28	10%	30	72	
				28-27	10%	20	36	
				27-26	10%	20	36	
				26-25	10%	20	36	
				25-24	10%	20	36	
				24-23	10%	20	36	
				23-22	10%	20	36	
				22-21	10%	20	36	
			10:43	21-20	10%	20	36	**Total Volume Injected: 360 gallons**
IP-40	6/11/15	11:33		30-28	10%	20	72	

Table 1 Injection Summary
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

Injection Point	Date	Time On	Time Off	Injection Depth	ABC+ Conc.	Injection Pressure (psi)	Injection Volume (gals)	Comments
				28-27	10%	20	36	
				27-26	10%	20	36	
				26-25	10%	20	36	
				25-24	10%	20	36	
				24-23	10%	20	36	
				23-22	10%	20	36	
				22-21	10%	20	36	
			12:15	21-20	10%	20	36	**Total Volume Injected: 360 gallons**
IP-41	6/11/15	11:05		30-28	10%	40	72	
				28-27	10%	40	36	
				27-26	10%	40	36	
				26-25	10%	40	36	
				25-24	10%	40	36	
				24-23	10%	40	36	
				23-22	10%	40	36	
				22-21	10%	40	36	
			11:51	21-20	10%	40	36	**Total Volume Injected: 360 gallons**
IP-42	6/11/15	13:45		30-28	10%	60	72	
				28-27	10%	60	36	
				27-26	10%	40	36	
				26-25	10%	40	36	
				25-24	10%	40	36	
				24-23	10%	40	36	
				23-22	10%	40	36	
				22-21	10%	40	36	
			14:26	21-20	10%	40	36	**Total Volume Injected: 360 gallons**
IP-43	6/11/15	13:17		30-28	10%	30	72	
				28-27	10%	20	36	
				27-26	10%	20	36	
				26-25	10%	20	36	
				25-24	10%	20	36	
				24-23	10%	20	36	
				23-22	10%	20	36	
				22-21	10%	20	36	
			13:49	21-20	10%	20	36	**Total Volume Injected: 360 gallons**

Table 1 Injection Summary
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

Injection Point	Date	Time On	Time Off	Injection Depth	ABC+ Conc.	Injection Pressure (psi)	Injection Volume (gals)	Comments
IP-44	6/11/15	14:31		30-28	10%	40	72	
				28-27	10%	20	36	
				27-26	10%	20	36	
				26-25	10%	20	36	
				25-24	10%	20	36	
				24-23	10%	20	36	
				23-22	10%	20	36	
				22-21	10%	20	36	
			14:59	21-20	10%	20	36	**Total Volume Injected: 360 gallons**
IP-45	6/11/15	14:07		30-28	10%	30	72	
				28-27	10%	30	36	
				27-26	10%	30	36	
				26-25	10%	30	36	
				25-24	10%	30	36	
				24-23	10%	30	36	
				23-22	10%	30	36	
				22-21	10%	30	36	
			14:39	21-20	10%	30	36	**Total Volume Injected: 360 gallons**
IP-46	6/11/15	15:08		26-25	10%	30	180	Refusal @ 26 ft-bgs
				25-24	10%	30	36	
				24-23	10%	30	36	
				23-22	10%	30	36	
				22-21	10%	30	36	
			15:37	21-20	10%	30	36	**Total Volume Injected: 360 gallons**
IP-47	6/11/15	15:07		30-28	10%	35	72	
				28-27	10%	30	36	
				27-26	10%	30	36	
				26-25	10%	30	36	
				25-24	10%	30	36	
				24-23	10%	30	36	
				23-22	10%	30	36	
				22-21	10%	30	36	
			15:37	21-20	10%	30	36	**Total Volume Injected: 360 gallons**

Table 1 Injection Summary
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

Injection Point	Date	Time On	Time Off	Injection Depth	ABC+ Conc.	Injection Pressure (psi)	Injection Volume (gals)	Comments
IP-48	6/12/15	8:00		30-28	10%	45	72	
				28-27	10%	40	36	
				27-26	10%	40	36	
				26-25	10%	40	36	
				25-24	10%	40	36	
				24-23	10%	40	36	
				23-22	10%	40	36	
				22-21	10%	40	36	
			8:43	21-20	10%	40	36	**Total Volume Injected: 360 gallons**
IP-49	6/12/15	8:55		25-24	10%	40	72	
				24-23	10%	40	72	
				23-22	10%	40	72	
				22-21	10%	40	72	
			9:57	21-20	10%	40	72	**Total Volume Injected: 360 gallons**
IP-50	6/12/15	8:55		30-28	10%	30	72	
				28-27	10%	30	36	
				27-26	10%	30	36	
				26-25	10%	30	36	
				25-24	10%	30	36	
				24-23	10%	30	36	
				23-22	10%	30	36	
				22-21	10%	30	36	
			9:57	21-20	10%	30	36	**Total Volume Injected: 360 gallons**
IW-5	6/15/15	8:50	11:48		10%	10	1000	**Total Volume Injected: 1,000 gallons**
IW-6	6/15/15	8:50	11:37		10%	10	1000	**Total Volume Injected: 1,000 gallons**
IW-7	6/15/15	8:50	11:48		10%	10	1000	**Total Volume Injected: 1,000 gallons**
IW-8	6/15/15	8:50	11:29		10%	10	1000	**Total Volume Injected: 1,000 gallons**
IW-1	6/15/15	13:55	16:58		10%	6	400	
	6/16/15	7:52	8:50		10%	10	600	**Total Volume Injected: 1,000 gallons**
IW-2	6/15/15	13:41	14:57		10%	20	1000	**Total Volume Injected: 1,000 gallons**
IW-3	6/15/15	13:41	15:30		10%	35	1000	**Total Volume Injected: 1,000 gallons**
IW-4	6/15/15	15:15	16:58		10%	15	800	
	6/16/15	7:52	8:03		10%	10	200	**Total Volume Injected: 1,000 gallons**

Table 2 Field Water Quality Results
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Bayamon, PR

Well Number	Sample Date	Depth to GW (Ft BTOC)	Volume purged prior to sampling (L)	Oxidation-Reduction Potential (mV)	Conductivity (ms/cm)	Dissolved Oxygen (mg/L)	pH	Temperature (ºC)
MW-1	08/17/10	15.25	13	-4.40	0.820	4.29	6.57	27.17
MW-2B	07/22/15	15.8	14	NM	0.331	0.00	6.90	29.68
MW-3A	08/17/10	23.9	12	72.60	0.766	2.68	6.59	29.53
MW-4A	08/18/10	29.58	10	18.10	0.694	1.32	6.90	29.39
MW-4B	08/18/10	17	13	-15.00	0.763	0.38	6.83	28.52
MW-5A	08/17/10	31.09	10	69.70	0.702	6.70	6.75	30.99
MW-5A	05/13/14	32.02	19	202.50	0.615	2.38	7.24	21.56
MW-6A	08/17/10	2.7	13	67.40	0.601	4.04	6.19	30.04
MW-7A	08/17/10	3.92	10	58.00	0.689	3.47	6.12	27.83
MW-7A	04/30/14	5.1	7	202.00	0.620	0.95	6.62	27.20
MW-7A	04/14/14	4.95	No Purge	213.50	0.063	1.81	7.14	29.43
MW-7A	04/07/14	5.04	No Purge	188.20	0.189	0.02	7.47	28.68
MW-7A	05/13/14	4.79	15	31.60	0.475	1.34	7.01	27.83
MW-7A	07/29/14	4.6	16	12.40	0.795	0.17	6.46	27.09
MW-7A	07/16/15	5.29	8	NM	0.309	0.29	6.48	29.40
MW-7B	04/30/14	5.04	11	31.20	0.108	0.81	6.95	26.90
MW-7B	04/14/14	4.94	No Purge	203.90	0.092	1.1.2	6.60	28.82
MW-7B	04/07/14	5.02	No Purge	155.30	0.202	0.02	7.30	28.91
MW-7B	05/13/14	4.09	15	161.80	0.058	2.32	7.13	27.15
MW-7B	07/29/14	4.92	30	-58.60	1.382	0.04	6.85	28.00
MW-7B	07/16/15	5.14	20	NM	0.026	0.29	5.50	28.02
MW-8A	08/05/14	13.29	9	-129.70	0.544	0.09	6.74	29.13
MW-8A	07/15/15	17.7	3	NM	0.225	2.11	6.81	30.56
MW-8B	07/24/14	15.7	17	6.70	0.799	0.08	6.87	29.48
MW-8B	07/15/15	15.79	20	NM	0.324	0.00	6.84	29.65
MW-8B	07/17/15	15.82	15	NM	0.355	0.00	6.88	29.60
MW-11A	08/18/10	6.76	28	-33.00	0.871	0.66	6.82	26.35
MW-11A	07/29/14	7.65	15	-8.00	0.867	0.14	6.74	26.34
MW-11A	07/16/15	7.84	15	NM	0.375	0.09	6.64	26.99
MW-11B	03/06/14	7.12	86	215.00	0.765	2.87	6.96	26.40
MW-11B	05/13/14	6.47	30	-51.70	0.614	1.10	7.28	25.77
MW-11B	07/30/14	7.18	25	-48.60	0.848	0.05	6.61	26.32
MW-11B	07/15/15	8.14	15	NM	0.328	5.68	6.70	27.44
MW-12A	08/18/10	5.3	12.5	3.40	0.775	1.33	6.72	28.36
MW-12A	07/24/14	6.25	14	-10.70	0.781	6.61	6.82	28.18
MW-12B	08/18/10	5.26	13	38.40	0.721	1.40	6.68	29.36
MW-12B	07/24/12	6.21	25	-65.40	0.807	0.07	7.13	28.46
MW-13A	08/18/10	4.72	15	61.70	0.536	1.79	6.33	31.16
MW-13A	07/30/14	6	18	-24.40	0.580	0.23	6.16	29.78
MW-13B	08/18/10	5.08	13	31.90	0.841	1.26	6.82	29.94
MW-13B	03/07/14	5.65	95	-3.30	0.901	3.17	6.97	27.89
MW-13B	05/13/14	5.5	34	-74.20	0.775	0.85	7.28	28.27
MW-13B	07/30/14	6.02	28	-115.20	0.954	0.04	6.74	28.54
MW-13B	07/17/15	6.2	27	NM	0.001	6.56	4.75	29.69
MW-14A	07/28/14	8.52	17	43.60	0.733	0.17	6.80	26.40
MW-14A	07/14/15	11	3	NM	0.261	4.88	7.39	28.76
MW-14B	04/30/14	Artesian	0	-65.00	0.619	0.80	7.18	30.27
MW-14B	07/28/14	Artesian	18	-75.20	0.784	0.07	6.85	26.95
MW-14B	07/14/15	Artesian	11	NM	0.333	1.45	6.94	28.11

Table 2 Field Water Quality Results
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Bayamon, PR

Well Number	Sample Date	Depth to GW (Ft BTOC)	Volume purged prior to sampling (L)	Oxidation-Reduction Potential (mV)	Conductivity (ms/cm)	Dissolved Oxygen (mg/L)	pH	Temperature (ºC)
MW-15A	04/30/14	15.62	12	32.50	0.696	1.04	6.84	27.39
MW-15A	04/14/14	15.55	No Purge	180.90	0.473	1.87	7.61	27.73
MW-15A	04/07/14	15.61	No Purge	138.50	0.477	0.02	8.00	28.42
MW-15A	05/12/14	14.98	15	16.30	0.801	0.81	7.07	27.90
MW-15A	07/28/14	15.9	15	-23.60	0.911	0.07	6.51	28.15
MW-15A	07/03/15	15.85	NA	-158.60	0.983	3.82	7.11	28.57
MW-15A	07/09/15	15.91	NA	-147.80	1.149	1.07	9.99	28.84
MW-15A	07/14/15	15.69	29	NM	0.541	6.59	6.88	28.39
MW-16A	07/23/14	15.35	15	10.40	0.764	0.12	6.74	28.43
MW-16A	07/15/15	15.57	14	NM	0.328	0.00	6.61	29.01
MW-16B	07/23/14	16.36	23	-33.60	0.813	0.09	6.95	28.97
MW-16B	07/16/15	16.45	20	NM	0.314	0.00	6.84	28.47
MW-20	07/31/14	15.52	12	-38.00	0.874	1.50	6.85	
MW-20	07/16/15	15.95	6	NM	0.365	0.13	6.86	28.20
MW-25	08/18/10	14.64	24	19.00	1.023	0.41	6.63	26.75
MW-25	03/06/14	15.46	42	255.90	1.012	3.00	6.68	26.28
MW-25	05/13/14	14.82	19	-62.20	0.777	1.13	7.11	26.48
MW-25	07/31/14	15.46	16	-18.80	1.043	0.23	6.48	26.85
MW-25	07/03/15	15.76	NA	-138.40	0.981	0.32	7.45	29.54
MW-25	07/09/15	15.82	NA	-105.00	0.889	1.67	9.27	27.90
MW-25	07/14/15	15.7	14	NM	0.434	1.44	6.62	28.05
MW-26	08/18/10	14.62	24	-12.00	0.977	0.40	6.65	27.55
MW-26	04/30/14	15.62	7	52.60	0.751	0.08	6.72	27.54
MW-26	04/14/14	15.54	No Purge	224.50	0.424	2.71	8.06	27.73
MW-26	04/07/14	15.61	No Purge	188.90	0.411	0.04	8.19	27.90
MW-26	05/12/14	14.97	15	82.10	0.716	0.85	7.13	27.27
MW-26	07/31/14	15.52	12	-16.20	0.991	0.13	6.42	27.27
MW-26	07/03/15	15.8	NA	-81.50	0.951	5.28	6.78	29.01
MW-26	07/09/15	15.88	NA	-138.70	1.012	1.46	9.80	28.84
MW-26	07/14/15	15.7	18	NM	0.469	4.71	6.66	28.47
OP-1	08/17/10	11.54	24	29.00	1.118	1.86	6.99	25.92
OP-2	08/17/10	1.56	20	7.00	1.390	0.46	7.04	26.18
OP-3	08/17/10	8.89	24	82.00	1.151	0.65	6.96	25.73
OP-3	07/20/15	8.62	16	NM	0.234	2.23	7.87	28.28
OP-3	07/22/15	9.5	11	NM	0.234	2.38	7.85	28.86
OP-4	08/17/10	5.23	24	67.00	1.148	0.60	7.01	25.46
OP-4	08/05/14	5.8	33	53.00	1.068	0.05	6.79	27.25
OP-4	07/16/15	5.85	30	NM	0.423	2.30	7.15	27.96
OP-5	08/17/10	5.59	20	84.00	0.901	2.70	6.99	27.05
OP-5	07/17/15	5.98	17	NM	0.349	0.00	7.00	29.28
OP-6	08/18/10	9.32	24	-110.00	2.667	0.70	7.02	25.56
IW-1	06/24/15	12.64	NA	NM	0.700	0.84	6.67	28.46
IW-1	07/03/15	12.62	NA	-172.80	0.719	0.53	7.59	28.04
IW-1	07/09/15	12.62	NA	-171.80	7.460	1.07	10.70	28.02
IW-2	06/24/15	12.85	NA	NM	0.806	0.45	6.49	28.31
IW-2	07/03/15	12.98	NA	-180.70	0.770	2.07	7.70	28.43
IW-2	07/09/15	12.98	NA	-189.80	0.774	1.63	10.83	28.72
IW-3	06/24/15	10.3	NA	NM	2.767	1.02	5.53	28.73
IW-3	07/03/15	11.8	NA	-169.30	1.602	0.43	7.19	29.76
IW-3	07/09/15	10.2	NA	-146.20	1.426	1.29	9.88	29.01

Table 2 Field Water Quality Results
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Bayamon, PR

Well Number	Sample Date	Depth to GW (Ft BTOC)	Volume purged prior to sampling (L)	Oxidation-Reduction Potential (mV)	Conductivity (ms/cm)	Dissolved Oxygen (mg/L)	pH	Temperature (ºC)
IW-4	06/24/15	12.76	NA	NM	0.777	0.93	7.08	29.82
IW-4	07/03/15	12.75	NA	-131.70	0.725	2.16	7.33	28.95
IW-4	07/09/15	13.72	NA	-119.30	0.863	1.19	9.58	28.43
IW-5	06/24/15	13.02	NA	NM	3.140	0.63	5.40	28.84
IW-5	07/03/15	12.95	NA	9.20	4.677	1.75	5.56	29.73
IW-5	07/09/15	13.05	NA	-8.50	4.483	1.29	7.24	28.26
IW-6	06/24/15	13.22	NA	NM	3.171	1.45	5.21	28.56
IW-6	07/03/15	13.15	NA	-111.40	2.075	2.03	6.68	28.80
IW-6	07/09/15	13.23	NA	-122.90	1.434	1.96	9.90	29.81
IW-7	06/24/15	13	NA	NM	1.093	0.92	6.23	29.24
IW-7	07/03/15	12.94	NA	-98.10	1.000	6.69	6.89	29.44
IW-7	07/09/15	13.05	NA	-128.20	1.011	1.02	9.64	29.20
IW-8	06/24/15	12.66	NA	NM	2.377	1.57	5.73	28.46
IW-8	07/03/15	12.6	NA	-137.90	2.334	7.06	7.09	28.80
IW-8	07/09/15	13.77	NA	-157.30	2.001	2.43	10.12	29.27
IW-9	06/24/15	8.35	NA	NM	0.976	2.03	5.53	28.23
IW-9	07/03/15	8.35	NA	-134.50	0.868	1.71	7.20	29.02
IW-9	07/09/15	8.38	NA	-89.10	0.758	6.46	9.40	29.19
IW-10	06/24/15	9.46	NA	NM	0.752	3.85	7.07	28.69
IW-10	07/03/15	9.45	NA	-39.30	0.647	1.45	6.44	29.19
IW-10	07/09/15	9.48	NA	-138.10	0.942	1.02	10.28	29.17
IW-11	06/24/15	9.61	NA	9.61	3.344	0.90	5.50	29.41
IW-11	07/03/15	9.65	NA	-11.40	3.936	5.83	5.65	29.47
IW-11	07/09/15	9.66	NA	-56.50	4.555	1.23	8.35	29.21
IW-12	06/24/15	9.46	NA	NM	2.509	1.06	6.17	29.01
IW-12	07/03/15	9.45	NA	-208.50	2.387	2.39	7.94	29.22
IW-12	07/09/15	9.47	NA	-228.10	2.181	0.80	12.03	29.81
IW-13	06/24/15	9.4	NA	NM	0.951	1.53	6.25	28.65
IW-13	07/03/15	9.44	NA	-70.70	1.231	6.45	6.60	28.52
IW-13	07/09/15	9.54	NA	-108.90	1.263	1.53	10.12	29.01
IW-14	06/24/15	9.4	NA	NM	1.896	1.82	4.76	28.57
IW-14	07/03/15	9.43	NA	-50.30	2.390	2.00	5.91	29.14
IW-14	07/09/15	9.44	NA	-142.30	2.835	1.58	10.21	29.81

Note: **Ft BTOC = Feet below top of casing**

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-02	G-03-MW-02	G-03-MW-02, 07-JN-13-DP-3	G-03-MW-03A	G-03-MW-03A	G-03-MW-03A
		Sample ID:	G-03-07-MW-02	G-03-07-MW-02	G-03-07-MW-02	G-03-07-MW-03A	G-03-07-MW-03A	G-03-10-MW-03A
		Sample Date:	1/10/2007	6/13/2007	6/13/2007	1/9/2007	6/12/2007	8/17/2010
Compound	**MCL**	Units						
Volatile Organic Compounds								
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	NA	NA	NA	NA	NA	NA
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	ND	ND	ND
Acetone	NA	ug/l	b	ND	ND	b	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	ND	ND
Trichloroethene	5	ug/l	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND	ND

Notes:
MCL = USEPA Maximum Contaminant Level, June 2011.
NA = Not Analyzed or Not Applicable
ND = Not Detected
a = Compound was not analyzed for
b = Data was Rejected by Data Validator
J = Estimated
Bold = Concentration Exceeds MCL

Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-03B	G-03-MW-03B	G-03-MW-04A	G-03-MW-04A	G-03-MW-04A	G-03-MW-04B
		Sample ID:	G-03-07-MW-03B	G-03-07-MW-03B	G-03-07-MW-04A	G-03-07-MW-04A	G-03-10-MW-04A	G-03-07-MW-04B
		Sample Date:	1/9/2007	6/12/2007	1/9/2007	6/12/2007	8/18/2010	1/9/2007
Compound	**MCL**	Units						
Volatile Organic Compounds								
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	NA	NA	NA	NA	NA	NA
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	ND	ND	ND
Acetone	NA	ug/l	ND	ND	b	ND	ND	b
Benzene	5	ug/l	ND	ND	0.53 J	0.93 J	ND	0.49 J
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	b	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	0.44 J	ND	3.9
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	ND	ND
Trichloroethene	5	ug/l	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND	0.58 J

Notes:
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b = Data was Rejected by Data Validator
J = Estimated
Bold = Concentration Exceeds MCL

Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-04B	G-03-MW-04B	G-03-MW-05A	G-03-MW-05A	G-03-MW-05A	G-03-MW-05A
		Sample ID:	G-03-07-MW-04B	G-03-10-MW-04B	G-03-07-MW-05A	G-03-07-MW-05A	G-03-09-MW-5A	G-03-10-MW-05A
		Sample Date:	6/12/2007	8/18/2010	1/9/2007	6/13/2007	3/11/2009	8/17/2010
Compound	**MCL**	Units						
Volatile Organic Compounds								
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	NA	NA	NA	NA	NA	NA
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	ND	ND	ND
Acetone	NA	ug/l	ND	ND	b	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	0.31 J	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	0.4 J	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	ND	ND
Trichloroethene	5	ug/l	ND	ND	4.6	3	**5.5**	3.7
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND	ND

Notes:
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NA = Not Analyzed or Not Applicable
ND = Not Detected
a = Compound was not analyzed for
b = Data was Rejected by Data Validator
J = Estimated
Bold = Concentration Exceeds MCL

Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-05B	G-03-MW-05B, 07-JA-09-DP	G-03-MW-05B	G-03-MW-06A	G-03-MW-06A
		Sample ID:	G-03-07-MW-05B	G-03-07-MW-05B	G-03-07-MW-05B	G-03-07-MW-06A	G-03-07-MW-06A
		Sample Date:	1/9/2007	1/9/2007	6/13/2007	1/9/2007	6/13/2007
Compound	**MCL**	Units					
Volatile Organic Compounds							
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	NA	NA	NA	NA	NA
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	ND	ND
Acetone	NA	ug/l	b	b	ND	b	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	ND
Trichloroethene	5	ug/l	ND	ND	ND	ND	ND
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND

Notes:
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NA = Not Analyzed or Not Applicable
ND = Not Detected
a = Compound was not analyzed for
b = Data was Rejected by Data Validator
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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-06A	G-03-MW-06B	G-03-MW-06B	G-03-MW-06B	G-03-MW-06B, 08-JA-09-DP2	G-03-MW-06B
		Sample ID:	G-03-10-MW-06A	G-03-07-MW-06B	G-03-07-MW-06B	G-03-08-MW-06B	G-03-08-MW-06B	G-03-08-MW-6B
		Sample Date:	8/17/2010	1/9/2007	6/13/2007	1/9/2008	1/9/2008	5/14/2008
Compound	**MCL**	Units						
Volatile Organic Compounds								
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	0.49 J	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	2.8	3.7	3.6	3.2	2.3
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	NA	NA	NA	NA	NA	2.3
trans-1,2-dichloroethene	100	ug/l	ND	ND	0.39 J	ND	ND	ND
Acetone	NA	ug/l	ND	b	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	ND	ND
Trichloroethene	5	ug/l	ND	**68.2**	**70.1**	**95**	**87.8 J**	**52.1**
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND	ND

Notes:
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NA = Not Analyzed or Not Applicable
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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-06B	G-03-MW-06B, 09-JA-06-DP1	G-03-MW-06B	G-03-MW-07A	G-03-MW-07A G-07-JA-10-DP	G-03-MW-07A
		Sample ID:	G-03-09-MW-06B	G-03-09-MW-06B	G-03-09-MW-6B	G-03-07-MW-07A	G-03-07-MW-07A	G-03-07-MW-07A
		Sample Date:	1/6/2009	1/6/2009	3/10/2009	1/10/2007	1/10/2007	6/13/2007
Compound	**MCL**	Units						
Volatile Organic Compounds								
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	0.48 J	0.51 J	0.5 J	ND	ND	ND
1,2-dichloroethene	NA	ug/l	NA	NA	2.1	ND	ND	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	3.1	3.2	2.1	NA	NA	NA
trans-1,2-dichloroethene	100	ug/l	0.31 J	0.28 J	ND	ND	ND	ND
Acetone	NA	ug/l	ND	ND	ND	b	b	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	ND	ND
Trichloroethene	5	ug/l	**73.8**	**76**	**66.4**	0.95 J	0.92 J	0.69 J
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-07A	G-03-MW-07A	GW-MW-07A	GW-MW-07A	G-03-MW-07B
		Sample ID:	G-03-08-MW-07A	G-03-10-MW-07A	FTB034-GM-MW7A-072914	FTB034-GW-MW7A-071615	G-03-07-MW-07B
		Sample Date:	1/8/2008	8/17/2010	7/29/2014	7/16/2015	1/10/2007
Compound	**MCL**	Units					
Volatile Organic Compounds							
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	0.86 J
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	ND	ND	ND	229
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	NA	ND	ND	0.343	a
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	ND	33.1
Acetone	NA	ug/l	ND	ND	ND	ND	b
Benzene	5	ug/l	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	1.4
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	2.1
Trichloroethene	5	ug/l	0.82 J	0.61 J	0.779 J	1.41	**162**
Vinyl chloride	2	ug/l	ND	ND	ND	ND	**15.5**
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-07B	G-03-MW-07B	G-03-MW-07B	G-03-MW-07B	G-03-MW-07B	G-03-MW-07B
		Sample ID:	G-03-07-MW-07B	G-03-08-MW-07B	G-03-08-MW-7B	G-03-07-MW-07B	G-03-07-MW-07B	G-03-08-MW-07B
		Sample Date:	6/13/2007	1/8/2008	5/14/2008	1/10/2007	6/13/2007	1/8/2008
Compound	**MCL**	Units						
Volatile Organic Compounds								
1,1,2-trichloroethane	5	ug/l	0.57 J	ND	ND	ND	0.57 J	ND
1,1-dichloroethene	7	ug/l	ND	0.59 J	1.1	0.86 J	ND	0.59 J
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	184	204	215	229	184	204
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	a	a	183	a	a	a
trans-1,2-dichloroethene	100	ug/l	21.5	24.3	31.8	33.1	21.5	24.3
Acetone	NA	ug/l	ND	ND	ND	b	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/l	0.70 J	ND	ND	1.4	0.70 J	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	0.92 J	0.68 J	0.81 J	2.1	0.92 J	0.68 J
Trichloroethene	5	ug/l	**108**	**73.5**	**95.5**	**162**	**108**	**73.5**
Vinyl chloride	2	ug/l	**7.8**	**13.7**	**18.3**	**15.5**	**7.8**	**13.7**
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-07B	G-03-MW-07B	GW-MW-07B	FTB034-GW-MW1C-072912	MW-07B
		Sample ID:	G-03-08-MW-7B	G-03-09-MW-07B	FTB034-GW-MW7B-072914	FTB034-GW-MW7B-072912	FTB034-GW-MW1C-072914
		Sample Date:	5/14/2008	1/6/2009 &1/7/2009	7/29/2014	7/29/14	7/29/2014
Compound	**MCL**	Units					
Volatile Organic Compounds							
1,1,2-trichloroethane	5	ug/l	ND	0.29 J	ND	ND	ND
1,1-dichloroethene	7	ug/l	1.1	0.86 J	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	215	NA	ND	ND	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	183	197	ND	ND	ND
trans-1,2-dichloroethene	100	ug/l	31.8	35.4	ND	ND	ND
Acetone	NA	ug/l	ND	ND	ND	2.66 J	2.66 J
Benzene	5	ug/l	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	0.43 J	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	0.81 J	0.95 J	ND	ND	ND
Trichloroethene	5	ug/l	**95.5**	**122**	ND	ND	ND
Vinyl chloride	2	ug/l	**18.3**	**25.6**	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	MW-07B	MW-07B	G-03-MW-07B	G-03-MW-08A	MW-08A
		Sample ID:	FTB034-GM-MW7B-071615	G-03-07-MW-07B	G-03-07-MW-07B	G-03-07-MW-08A	FTB034-GM-MW8A-080514
		Sample Date:	7/16/2015	1/10/2007	1/10/2007	6/13/2007	8/5/2014
Compound	**MCL**	Units					
Volatile Organic Compounds							
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	0.626	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND			ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	17	17	21	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND			ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND			ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND			ND	ND
2-Butanone	NA	ug/l	ND			ND	ND
Cis-1,2-dichloroethene	70	ug/l	15.9	a	NA	NA	12.7
trans-1,2-dichloroethene	100	ug/l	1.02	ND	ND	0.35 J	ND
Acetone	NA	ug/l	ND	b	b	ND	4.46 J
Benzene	5	ug/l	ND	ND	ND	ND	0.140 J
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND			ND	ND
n-Propylbenzene	NA	ug/l	ND			ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	ND
Trichloroethene	5	ug/l	2.5	ND	ND	ND	ND
Vinyl chloride	2	ug/l	**8.22**	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	MW-08A	G-03-MW-08B	G-03-MW-08B	G-03-MW-08B	G-03-MW-08B, 08-JA-09-DP1
		Sample ID:	FTB034-GM-MW8A-071515	G-03-07-MW-08B	G-03-07-MW-08B	G-03-08-MW-08B	G-03-08-MW-08B
		Sample Date:	07/15/2015	1/10/2007	6/13/2007	1/9/2008	1/9/2008
Compound	**MCL**	Units					
Volatile Organic Compounds							
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	12	a	a	a	a
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	ND	ND
Acetone	NA	ug/l	3.19 J	b	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	1.8
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	ND
Trichloroethene	5	ug/l	ND	ND	ND	ND	ND
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-08B	MW-08B	MW-08B	MW-08B	G-03-MW-09A
		Sample ID:	G-03-09-MW-8B	FTB034-GW-MW8B-072414	FTB034-GM-MW8B-071515	FTB034-GM-MW1C-071515	G-03-07-MW-09A
		Sample Date:	3/10/2009	7/24/2014	7/15/2015	7/15/2015	6/12/2007
Compound	**MCL**	Units					
Volatile Organic Compounds							
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	ND	ND	ND	ND	a
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	ND	ND
Acetone	NA	ug/l	ND	ND	3.26 J	3.15 J	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	ND
Trichloroethene	5	ug/l	ND	ND	ND	ND	ND
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-09A	G-03-MW-09B	G-03-MW-09B	G-03-MW-10A	G-03-MW-10A	G-03-MW-10A
		Sample ID:	G-03-08-MW-09A	G-03-07-MW-09B	G-03-08-MW-09B	G-03-07-MW-10A	G-03-08-MW-10A	G-03-09-MW-10A
		Sample Date:	1/9/2008	6/12/2007	1/9/2008	6/13/2007	1/8/2008	3/10/2009
Compound	**MCL**	Units						
Volatile Organic Compounds								
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	a	a	a	a	a	ND
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	ND	ND	ND
Acetone	NA	ug/l	ND	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	ND	ND
Trichloroethene	5	ug/l	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-10B	G-03-MW-10B	G-03-MW-10B	G-03-MW-11A	G-03-MW-11A	G-03-MW-11A
		Sample ID:	G-03-07-MW-10B	G-03-08-MW-10B	G-03-09-MW-10B	G-03-07-MW-11A	G-03-08-MW-11A	G-03-08-MW-11A
		Sample Date:	6/12/2007	1/8/2008	3/10/2009	6/12/2007	1/9/2008	5/14/2008
Compound	**MCL**	Units						
Volatile Organic Compounds								
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	0.73 J	0.69 J	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	0.41 J	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	0.31 J	ND	ND
1,2-dichloroethene	NA	ug/l	ND	ND	ND	18.1	20.7	17.7
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	a	a	ND	a	a	16.8
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	0.76 J	0.79 J	0.87 J
Acetone	NA	ug/l	ND	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	0.56 J	0.62 J	0.62 J
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	**11.1**	**10.5**	**10.2**
Trichloroethene	5	ug/l	ND	ND	ND	**175**	**187**	**171**
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND	ND

Notes:
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NA = Not Analyzed or Not Applicable
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J = Estimated
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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-11A	G-03-MW-11A	G-03-10-MW-11A	GW-MW-11A
		Sample ID:	G-03-09-MW-11A	G-03-10-MW-11A	G-03-MW-11A, 10-AUG-18-DP2	FTB034-GW-MW11A-072914
		Sample Date:	1/6/2009 & 1/7/2009	8/18/2010	8/18/2010	7/29/2014
Compound	**MCL**	Units				
Volatile Organic Compounds						
1,1,2-trichloroethane	5	ug/l	0.81 J	0.51 J	0.52 J	0.404 J
1,1-dichloroethene	7	ug/l	0.38 J	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	0.36 J	ND	ND	0.269 J
1,2-dichloroethene	NA	ug/l	a	21.7	20.7	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	21	21	20	17.3
trans-1,2-dichloroethene	100	ug/l	0.87 J	0.69 J	0.67 J	0.702 J
Acetone	NA	ug/l	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND
Chloroform	80	ug/l	0.75 J	0.4 J	0.38 J	0.378 J
Chloromethane	NA	ug/l	0.5 J	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	**9.8**	**7**	**7.5**	**5.54**
Trichloroethene	5	ug/l	**163**	**174**	**179**	**139**
Vinyl chloride	2	ug/l	0.45 J	ND	ND	0.262 J
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	GW-MW-11A	G-03-MW-11B	G-03-MW-11B	G-03-MW-11B	G-03-MW-11B
		Sample ID:	FTB034-GM-MW11A-071515	G-03-07-MW-11B	G-03-08-MW-11B	G-03-08-MW-11B	G-03-09-MW-11B
		Sample Date:	7/15/2015	6/12/2007	1/9/2008	5/14/2008	1/6/2009
Compound	**MCL**	Units					
Volatile Organic Compounds							
1,1,2-trichloroethane	5	ug/l	ND	1.3	1.2	1.3	1 J
1,1-dichloroethene	7	ug/l	ND	0.72 J	0.63 J	ND	ND
1,2-Dichlorobenzene	NA	ug/l	0.162 J	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	17.4	16.7	17.8	NA
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	14.7	a	a	16.6	14
trans-1,2-dichloroethene	100	ug/l	0.606 J	1.1	0.93 J	1.1	0.77 J
Acetone	NA	ug/l	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND
Chloroform	80	ug/l	0.305 J	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	**5.31**	**11.5**	**8.3**	**9.8**	**6.7**
Trichloroethene	5	ug/l	**123**	**186**	**207**	**229**	**240**
Vinyl chloride	2	ug/l	ND	0.83 J	0.62 J	0.71 J	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well: Sample ID: Sample Date:	GW-MW-11B FTB034-GW-MW11B-073014 7/30/2014	GW-MW-11B FTB034-GM-MW11B-071515 7/15/2015	G-03-MW-12A G-03-07-MW-12A 6/12/2007	G-03-MW-12A, 07-JN-12-DP2 G-03-07-MW-12A 6/12/2007	G-03-MW-12A G-03-08-MW-12A 1/9/2008
Compound	**MCL**	Units					
Volatile Organic Compounds							
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	0.59 J	0.56 J	ND
1,2-dichloroethene	NA	ug/l	ND	ND	20.3	20.3	25.2
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	2	2.11	a	a	a
trans-1,2-dichloroethene	100	ug/l	ND	ND	1.1	1.2	1.1
Acetone	NA	ug/l	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	0.640 J	0.67 J	ND	ND	ND
Trichloroethene	5	ug/l	**30**	**30.9**	**41.2**	**43**	**38.3**
Vinyl chloride	2	ug/l	ND	ND	0.52 J	0.66 J	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-12A	G-03-MW-12A	MW-12A	GW-MW-12A	G-03-MW-12B	G-03-MW-12B
		Sample ID:	G-03-08-MW-12A	G-03-09-MW-12A	G-03-10-MW-12A	FTB034-GW-MW12A-072414	G-03-07-MW-12B	G-03-08-MW-12B
		Sample Date:	5/14/2008	1/7/2009	8/18/2010	7/24/2014	6/12/2007	1/9/2008
Compound	**MCL**	Units						
Volatile Organic Compounds								
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	0.4 J	0.51 J	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	20.4	a	17.3	ND	4.2	5.6
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	19.4	28.1	16.7	ND	a	a
trans-1,2-dichloroethene	100	ug/l	0.97 J	1.1	0.59 J	ND	ND	ND
Acetone	NA	ug/l	ND	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	ND	ND
Trichloroethene	5	ug/l	**31.8**	**26.6**	**45.8**	ND	**36.1**	**39.7**
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-12B	G-03-MW-12B	G-03-MW-12B	GW-MW-12B	G-03-MW-13A	G-03-MW-13A
		Sample ID:	G-03-08-MW-12B	G-03-09-MW-12B	G-03-10-MW-12B	FTB034-GW-MW12B-072414	G-03-07-MW-13A	G-03-08-MW-13A
		Sample Date:	5/14/2008	1/7/2009	8/18/2010	7/24/2014	6/12/2007	1/8/2008
Compound	**MCL**	Units						
Volatile Organic Compounds								
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	7.2	a	12.7	ND	ND	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	ND	ND	ND	ND	ND	ND
trans-1,2-dichloroethene	100	ug/l	ND	0.37 J	ND	ND	ND	ND
Acetone	NA	ug/l	ND	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	ND	ND
Trichloroethene	5	ug/l	**39.1**	**25.2**	**35.5**	ND	ND	ND
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well: Sample ID: Sample Date:	G-03-MW-13A G-03-08-MW-13A 5/14/2008	G-03-MW-13A, 08-MA-14-DP3 G-03-08-MW-13A 5/13/2008	G-03-MW-13A G-03-09-MW-13A 1/7/2009	G-03-MW-13A G-03-10-MW-13A 8/18/2010	G-03-MW-13A G-03-10-MW-13A 8/18/2010	GW-MW-13A FTB034-GW-MW13A-073014 7/30/2014
Compound	**MCL**	Units						
Volatile Organic Compounds								
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	ND	a	ND	ND	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	ND	ND	ND	ND	ND	ND
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	ND	ND	ND
Acetone	NA	ug/l	ND	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	ND	ND
Trichloroethene	5	ug/l	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-13B	G-03-MW-13B, 07-JN-12-DP1	G-03-MW-13B	G-03-MW-13B	G-03-MW-13B	G-03-MW-13B
		Sample ID:	G-03-07-MW-13B	G-03-07-MW-13B	G-03-08-MW-13B	G-03-08-MW-13B	G-03-09-MW-13B	G-03-10-MW-13B
		Sample Date:	6/12/2007	6/12/2007	1/8/2008	5/14/2008	1/7/2009	8/18/2010
Compound	**MCL**	Units						
Volatile Organic Compounds								
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	0.44 J	0.44 J
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	9.3	9	21.2	19.3	a	51.1
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	a	a	a	15.5	16.8	41.4
trans-1,2-dichloroethene	100	ug/l	1.2	1.2	3.7	3.8	3.4	9.7
Acetone	NA	ug/l	ND	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/l	3.4	3.8	2.6	2.1	2	1.4
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	4.4	4	4.4	4.2	4.3	3.4
Trichloroethene	5	ug/l	**81.7**	**85.2**	**122**	**115**	**121**	**154**
Vinyl chloride	2	ug/l	0.76 J	0.76 J	**2.4**	**2.5**	**2.4**	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well: Sample ID: Sample Date:	GW-MW-13B FTB034-GW-MW13B-073014 7/30/2014	GW-MW-13B FTB034-GM-MW13B-071715 7/17/2015	GW-MW-13B FTB034-GM-MW2C-071715 7/17/2015	G-03-MW-14A G-03-08-MW-14A 1/9/2008	G-03-MW-14A G-03-08-MW-14A 5/13/2008
Compound	**MCL**	Units					
Volatile Organic Compounds							
1,1,2-trichloroethane	5	ug/l	0.347 J	0.576 J	0.628 J	ND	ND
1,1-dichloroethene	7	ug/l	ND	0.529 J	0.534 J	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	56.6	57.8	57.9	a	ND
trans-1,2-dichloroethene	100	ug/l	3.16	8.7	8.47	ND	ND
Acetone	NA	ug/l	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND
Chloroform	80	ug/l	0.675 J	1.63	1.56	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	0.625 J	3.1	3.19	ND	ND
Trichloroethene	5	ug/l	**10.4**	**161**	**157**	ND	ND
Vinyl chloride	2	ug/l	1.94	**5.04**	**5.3**	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-14A	G-03-MW-14B	G-03-MW-14B	G-03-MW-14A	GW-MW-14A
		Sample ID:	G-03-09-MW-14A	G-03-08-MW-14B	G-03-08-MW-14B	G-03-09-MW-14A	FTB034-GW-MW14A-072814
		Sample Date:	3/10/2009	1/9/2008	5/13/2008	3/10/2009	7/28/2014
Compound	**MCL**	Units					
Volatile Organic Compounds							
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	ND	a	ND	ND	ND
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	ND	ND
Acetone	NA	ug/l	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	ND
Trichloroethene	5	ug/l	ND	ND	ND	ND	ND
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	GW-MW-14A	MW-14B	GW-MW-14B	GW-MW-14B
		Sample ID:	FTB034-GM-MW14A-071415	G-03-8-MW-14B	FTB034-GW-MW14B-072814	FTB034-GM-MW14B-071415
		Sample Date:	7/14/2015	5/13/2008	7/28/2014	7/14/2015
Compound	**MCL**	Units				
Volatile Organic Compounds						
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	ND	ND	ND	ND
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	ND
Acetone	NA	ug/l	ND	ND	ND	3.53 J
Benzene	5	ug/l	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND
Trichloroethene	5	ug/l	ND	ND	ND	ND
Vinyl chloride	2	ug/l	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-15	G-03-09-MW-15	G-03-MW-15	G-03-MW-15	GW-MW-15A
		Sample ID:	G-03-09-MW-15	G-03-MW-15, 09-JA-07-DP2	G-03-08-MW-15A	G-03-08-MW-15A	FTB034-GW-MW15A-072814
		Sample Date:	1/7/2009 & 1/8/2009	1/7/2009 & 1/8/2009	1/8/2008	5/14/2008	7/28/2014
Compound	**MCL**	Units					
Volatile Organic Compounds							
1,1,2-trichloroethane	5	ug/l	1.2 J	1.4	1.7	1.6	0.924 J
1,1-dichloroethene	7	ug/l	ND	0.68 J	0.67 J	1.1	0.538 J
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	a	NA	57.6	58.4	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	52.2	65.6	a	56.8	58.3
trans-1,2-dichloroethene	100	ug/l	0.88 J	1.3	1.4	1.6	1.13
Acetone	NA	ug/l	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	**25**	**24.7**	**32.5**	**34.1**	**14.7**
Trichloroethene	5	ug/l	**356**	**331**	**378**	**374**	**233**
Vinyl chloride	2	ug/l	2.3 J	**2.6**	**2.7**	**3**	**2.63 J**
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	GW-MW-15A	G-03-MW-16A	G-03-MW-16A	G-03-MW-16A	GW-MW-16A
		Sample ID:	FTB034-GM-MW15A-071415	G-03-08-MW-16A	G-03-08-MW-16A	G-03-09-MW-16A	FTB034-GW-MW16A-072314
		Sample Date:	7/14/2015	1/8/2008	5/13/2008	1/7/2009	7/23/2014
Compound	**MCL**	Units					
Volatile Organic Compounds							
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	0.639 J	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	0.653 J	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	2.3	2.3	NA	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	1.27	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	0.354 J	ND	ND	ND	ND
2-Butanone	NA	ug/l	182	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	**227**	a	2.3	2	ND
trans-1,2-dichloroethene	100	ug/l	0.814 J	ND	ND	ND	ND
Acetone	NA	ug/l	9.25	ND	ND	ND	3.14 J
Benzene	5	ug/l	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	1.1 J	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	0.27 J	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	1.6	1.7	1.6	ND
Trichloroethene	5	ug/l	2.15	**7.9**	**7.7**	**7.5**	ND
Vinyl chloride	2	ug/l	**2.39**	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	GW-MW-16A	G-03-MW-16B	G-03-MW-16B	G-03-MW-16B	GW-MW-16B
		Sample ID:	FTB034-GM-MW16A-071515	G-03-08-MW-16B	G-03-08-MW-16B	G-03-09-MW-16B	FTB034-GW-MW16B-072314
		Sample Date:	7/15/2015	1/8/2008	5/13/2008	1/7/2009	7/23/2014
Compound	**MCL**	Units					
Volatile Organic Compounds							
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	2.4	4.1	NA	ND
1,2,3-Trichlorobenzene	NA	ug/l	0.267 J	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	1.75	a	4.1	3	ND
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	ND	ND
Acetone	NA	ug/l	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	0.588 J	4.2	3.2	3.5	ND
Trichloroethene	5	ug/l	3.85	**18.8**	**15.3**	**16**	ND
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well: Sample ID: Sample Date:	GW-MW-16B FTB034-GM-MW16B-071615 7/16/2015	G-03-MW-17A G-03-08-MW-17A 1/8/2008	G-03-MW-17A, 08-JA-08-DP G-03-08-MW-17A 1/8/2008	G-03-MW-17A G-03-08-MW-17A 5/13/2008	G-03-MW-17A, 08-MA-13-DP2 G-03-08-MW-17A 5/13/2008
Compound	**MCL**	Units					
Volatile Organic Compounds							
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NA	ug/l	0.231 J	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	3.62	a	a	ND	ND
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	ND	ND
Acetone	NA	ug/l	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	1.3	ND	ND	ND	ND
Trichloroethene	5	ug/l	**7.52**	ND	ND	ND	ND
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-18A	G-03-MW-18A	G-03-MW-18A	G-03-MW-18B	G-03-MW-18B	G-03-MW-19A
		Sample ID:	G-03-08-MW-18A	G-03-08-MW-18A	G-03-09-MW-18A	G-03-08-MW-18B	G-03-08-MW-18B	G-03-08-MW-19A
		Sample Date:	1/9/2008	5/13/2008	1/7/2009	1/9/2008	5/13/2008	1/8/2008
Compound	**MCL**	Units						
Volatile Organic Compounds								
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	0.53 J	ND	a	ND	ND	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	a	ND	0.71 J	a	ND	a
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	ND	ND	ND
Acetone	NA	ug/l	ND	ND	ND	ND	7.6 J	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	2.5	0.89 J	ND
Chloroform	80	ug/l	ND	ND	ND	0.94 J	0.68 J	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	ND	ND
Trichloroethene	5	ug/l	**7.8**	**6.6**	**7.5**	0.86 J	0.45 J	ND
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-19A	G-03-MW-19B	G-03-MW-19B	G-03-MW-20	G-03-MW-20	GW-MW-20
		Sample ID:	G-03-08-MW-19A	G-03-08-MW-19B	G-03-08-MW-19B	G-03-08-MW-20	G-03-09-MW-20	FTB034-GW-MW20-072814
		Sample Date:	5/13/2008	1/8/2008	5/13/2008	5/13/2008	1/7/2009	7/28/2014
Compound	**MCL**	Units						
Volatile Organic Compounds								
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	ND	ND	ND	NA	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	ND	a	ND	ND	ND	ND
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	ND	ND	ND
Acetone	NA	ug/l	ND	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	ND	ND
Trichloroethene	5	ug/l	ND	ND	ND	1.2	0.62 J	ND
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	GW-MW-20	G-03-MW-21	G-03-MW-21	G-03-MW-22	G-03-MW-22, 08-MA-13-DP1
		Sample ID:	FTB034-GM-MW20-071615	G-03-08-MW-21	G-03-09-MW-21	G-03-08-MW-22	G-03-08-MW-22
		Sample Date:	7/16/2015	5/13/2008	1/7/2009	5/13/2008	5/13/2008
Compound	**MCL**	Units					
Volatile Organic Compounds							
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	0.52 J	ND	ND
1,2-dichloroethene	NA	ug/l	ND	ND	a	ND	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	0.951	ND	ND	ND	ND
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	ND	ND
Acetone	NA	ug/l	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	0.38 J	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	0.37 J
Trichloroethene	5	ug/l	1.04	ND	ND	1.1	0.8 J
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND

Notes:
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NA = Not Analyzed or Not Applicable
ND = Not Detected
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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-22	G-03-MW-23	G-03-MW-23	G-03-MW-24	G-03-MW-24	G-03-MW-25
		Sample ID:	G-03-09-MW-22	G-03-08-MW-23	G-03-09-MW-23	G-03-08-MW-24	G-03-09-MW-24	G-03-09-MW-25
		Sample Date:	1/6/2009 & 1/7/2009	5/13/2008	1/7/2009	5/13/2008	1/6/2009	1/7/2009
Compound	**MCL**	Units						
Volatile Organic Compounds								
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND	**25.4**
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND	6.6 J
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	a	ND	a	ND	a	a
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	ND	ND	ND	ND	ND	**275**
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	ND	ND	13.3 J
Acetone	NA	ug/l	ND	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	0.58 J	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND	**11.9 J**
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	0.6 J	ND	**27.8**
Trichloroethene	5	ug/l	0.91 J	ND	ND	1.6	0.25 J	**4040**
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND	**7 J**
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-25	G-03-MW-25	GW-MW-25	GW-MW-25	G-03-MW-26
		Sample ID:	G-03-09-MW-25	G-03-10-MW-25	FTB034-GW-MW25-073114	FTB034-GM-MW25-071415	G-03-09-MW-26
		Sample Date:	3/11/2009	8/18/2010	7/31/2014	7/14/2015	1/7/2009
Compound	**MCL**	Units					
Volatile Organic Compounds							
1,1,2-trichloroethane	5	ug/l	**25.7**	**23.8**	**25.1**	**19.7**	**7.4 J**
1,1-dichloroethene	7	ug/l	4.3 J	7.8 J	**9.12**	6.48 J	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	259	270	ND	ND	a
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	**247**	**257**	**192**	**154**	44.1
trans-1,2-dichloroethene	100	ug/l	11.7	13.5	11.5	8.87 J	ND
Acetone	NA	ug/l	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	0.552 J	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	**20.9**	**21.9**	**24.1**	**16.4**	**6.3 J**
Trichloroethene	5	ug/l	**3360**	**3430**	**2710**	**2300**	**1250**
Vinyl chloride	2	ug/l	ND	ND	**5.45**	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-MW-26, 09-JA-07-DP1	G-03-MW-26	G-03-MW-26	GW-MW-26	GW-MW-26
		Sample ID:	G-03-09-MW-26	G-03-09-MW-26	G-03-10-MW-26	FTB034-GW-MW26-073114	FTB034-GW-MW2C-073114
		Sample Date:	1/7/2009	3/11/2009	8/18/2010	7/31/2014	7/31/2014
Compound	**MCL**	Units					
Volatile Organic Compounds							
1,1,2-trichloroethane	5	ug/l	**7.9 J**	**8.4**	**7.7**	**8.15**	**8.37**
1,1-dichloroethene	7	ug/l	ND	1.8 J	ND	3.19	3.17
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	a	46.3	68.7	ND	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	44.5	43.6	65.7	54.4	52.5
trans-1,2-dichloroethene	100	ug/l	ND	2.7	3 J	2.87	2.87
Acetone	NA	ug/l	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	**6 J**	**5.7**	**5.4**	4.93	**5.01**
Trichloroethene	5	ug/l	**1290**	**1150**	**1380**	**973**	**964**
Vinyl chloride	2	ug/l	ND	ND	ND	1.76	1.82
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	GW-MW-26	OP-01	G-03-OP-01	G-03-OP-01, 9-MR-10-DP1	G-03-OP-01	G-03-OP-02
		Sample ID:	FTB034-GM-MW26-071415	G-03-09-OP-01	G-03-09-OP-1	G-03-09-OP-1	G-03-10-OP-1	G-03-09-OP-02
		Sample Date:	7/14/2015	1/6/2009 & 1/7/2009	3/10/2009	3/10/2009	8/17/2010	1/6/2009 & 1/7/2009
Compound	**MCL**	Units						
Volatile Organic Compounds								
1,1,2-trichloroethane	5	ug/l	**5.32**	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	2.79	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	ND	a	0.32 J	0.31 J	ND	a
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	**202**	0.31 J	0.32 J	0.31 J	ND	1.5
trans-1,2-dichloroethene	100	ug/l	2.73	ND	ND	ND	ND	ND
Acetone	NA	ug/l	ND	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	0.2 J	ND	ND	ND	1.2
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND	1.3
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	1.99 J	ND	ND	ND	ND	ND
Trichloroethene	5	ug/l	**711**	1.5	1.2	1.2	0.75 J	**5.2**
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-OP-02	G-03-OP-02, 9-MR-11-DP1	G-03-OP-02	G-03-OP-03	G-03-OP-03	G-03-OP-03	G-03-OP-03
		Sample ID:	G-03-09-OP-2	G-03-09-OP-2	G-03-10-OP-2	G-03-09-OP-03	G-03-09-OP-3	G-03-10-OP-3	FTB034-GM-OP-3-072015
		Sample Date:	3/11/2009	3/11/2009	8/17/2010	1/6/2009	3/10/2009	8/17/2010	7/20/2015
Compound	**MCL**	Units							
Volatile Organic Compounds									
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	1.5	1.5	1.4	a	6	4.9	ND
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	1.5	1.5	1.4	5.6	5.5	4.9	ND
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	0.41 J	0.53 J	ND	ND
Acetone	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/l	0.35 J	0.41 J	ND	1.4	0.66 J	ND	4.83
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND	ND	1.87
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	0.31 J	ND	ND
Trichloroethene	5	ug/l	**5.3**	**5.2**	3.7	**22.6**	**20**	**17.3**	0.544
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-OP-04	G-03-OP-04	G-03-OP-04	GW-OP-4	GW-OP-4	G-03-OP-05	G-03-OP-05
		Sample ID:	G-03-09-OP-04	G-03-09-OP-4	G-03-10-OP-4	FTB034-GW-OP4-080514	FTB034-GM-OP-4-071715	G-03-09-OP-05	G-03-09-OP-5
		Sample Date:	1/6/2009	3/10/2009	8/17/2010	8/5/2014	7/17/2015	1/6/2009 & 1/7/2009	3/10/2009
Compound	**MCL**	Units							
Volatile Organic Compounds									
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	0.287 J	ND	ND
1,2-dichloroethene	NA	ug/l	a	30.6	41.6	ND	ND	a	0.52 J
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	23.9	26.4	35.6	ND	18.9	0.46 J	0.52 J
trans-1,2-dichloroethene	100	ug/l	3.7	4.3	6	ND	2.06	ND	ND
Acetone	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND	0.5 J	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/l	5.2	4.9	2.6	ND	0.74 J	7.4	5.3
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	3.47	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	1.1	1.4	1.4	ND	0.67 J	ND	ND
Trichloroethene	5	ug/l	**68.2**	**75.5**	**89.6**	ND	**50.9**	**6.4**	**6.8**
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well: Sample ID: Sample Date:	G-03-OP-05 G-03-10-OP-5 8/17/2010	G-03-OP-05, 10-AUG-17-DP1 G-03-10-OP-5 8/17/2010	G-03-OP-05 FTB034-GM-OP-5-071715 7/17/2015	G-03-OP-06 G-03-09-OP-6 3/10/2009	G-03-OP-06 G-03-09-OP-6 4/14/2009
Compound	**MCL**	Units					
Volatile Organic Compounds							
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	0.64 J	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	0.33 J	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	ND	ND
1,2-dichloroethene	NA	ug/l	0.63 J	0.7 J	ND	6.3	5
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	0.63 J	0.7 J	ND	5.3	4.4
trans-1,2-dichloroethene	100	ug/l	ND	ND	ND	1	0.54 J
Acetone	NA	ug/l	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND
Chloroform	80	ug/l	3.2	3.6	ND	2.2	1.2
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	1.5	1.1
Trichloroethene	5	ug/l	**6.6**	**7.2**	1.23	**141**	**99.3**
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND

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Table 3 Volatile Organic Compounds in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Puerto Rico

		Monitoring Well:	G-03-OP-06	G-03-OP-07	G-03-OP-07	G-03-CPR-75B	G-03-CPR-83B1	G-03-CPR-83B2	G-03-CPR-84B2
		Sample ID:	G-03-10-OP-6	G-03-09-OP-7	G-03-09-OP-7	G-03-09-CPR-75B	G-03-09-CPR-83B1	G-03-09-CPR-83B2	G-03-09-CPR-84B2
		Sample Date:	8/18/2010	3/10/2009	4/14/2009	3/11/2009	3/11/2009	3/11/2009	3/11/2009
Compound	**MCL**	Units							
Volatile Organic Compounds									
1,1,2-trichloroethane	5	ug/l	ND	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	7	ug/l	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	5	ug/l	ND	ND	ND	0.45 J	ND	ND	ND
1,2-dichloroethene	NA	ug/l	4	ND	9.9	9.7	9.5	16.1	10
1,2,3-Trichlorobenzene	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
2-Butanone	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	70	ug/l	4	ND	9	8.1	8	13.7	9
trans-1,2-dichloroethene	100	ug/l	ND	ND	0.89 J	1.6	1.5	2.4	1
Acetone	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
Benzene	5	ug/l	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	80	ug/l	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/l	ND	ND	ND	ND	0.41 J	0.27 J	ND
Chloromethane	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	5	ug/l	ND	ND	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NA	ug/l	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ug/l	ND	ND	ND	ND	0.63 J	1.4	ND
Trichloroethene	5	ug/l	**37**	ND	**20.3**	**45.8**	**85.5**	**115**	**20.8**
Vinyl chloride	2	ug/l	ND	ND	ND	ND	ND	ND	ND
Xylenes, Total	10,000	ug/l	ND	ND	ND	ND	ND	ND	ND

Notes:
MCL = USEPA Maximum Contaminant Level, June 2011.
NA = Not Analyzed or Not Applicable
ND = Not Detected
a = Compound was not analyzed for
b = Data was Rejected by Data Validator
J = Estimated
Bold = Concentration Exceeds MCL

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Table 4 General Chemistry, Dissolved Gasses and Select Metals in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Bayamon, Puerto Rico

Monitoring Well: **Sample ID:** **Sample Date:**		MW-03A G-03-07-MW-03A 1/9/2007	MW-03B G-03-07-MW-03B 1/9/2007	MW-04A G-03-07-MW-04A 1/9/2007	MW-04B G-03-07-MW-04B 1/9/2007	MW-05A G-03-07-MW-05A 1/9/2007
Compound	**Units**					
General Chemistry						
Sulfate	mg/l	NA	NA	NA	NA	NA
Nitrate	mg/l	NA	NA	NA	NA	NA
Nitrogen as nitrate	mg/l	NA	NA	NA	NA	NA
Dissolved Gasses						
Ethane	ug/l	NA	NA	NA	NA	NA
Ethene	ug/l	NA	NA	NA	NA	NA
Methane	ug/l	NA	NA	NA	NA	NA
Total organic carbon	mg/l	NA	NA	NA	NA	NA
Metals						
Calcium,(total)	ug/l	171,000	105,000	136,000	104,000	135,000
Magnesium,(total)	ug/l	12,100	24,100	10,000	25,200	5,890
Potassium,(total)	ug/l	ND	ND	ND	ND	ND
Sodium,(total)	ug/l	25,400	27,900	26,400	27,900	17,200

Notes:
NA = Not Analyzed
ND = Non-detect
J = Estimated

Table 4 General Chemistry, Dissolved Gasses and Select Metals in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Bayamon, Puerto Rico

Monitoring Well: **Sample ID:** **Sample Date:**		MW-05B G-03-07-MW-05B 1/9/2007	MW-05B DP-G-03-07-MW-05B 1/9/2007	MW-06A G-03-07-MW-06A 1/9/2007	MW-06B G-03-07-MW-06B 1/9/2007
Compound	**Units**				
General Chemistry					
Sulfate	mg/l	NA	NA	NA	NA
Nitrate	mg/l	NA	NA	NA	NA
Nitrogen as nitrate	mg/l	NA	NA	NA	NA
Dissolved Gasses					
Ethane	ug/l	NA	NA	NA	NA
Ethene	ug/l	NA	NA	NA	NA
Methane	ug/l	NA	NA	NA	NA
Total organic carbon	mg/l	NA	NA	NA	NA
Metals					
Calcium,(total)	ug/l	119,000	117,000	97,900	114,000
Magnesium,(total)	ug/l	28,200	28,100	7,340	15,300
Potassium,(total)	ug/l	ND	ND	ND	ND
Sodium,(total)	ug/l	39,100	38,800	15,900	32,200

Notes:
NA = Not Analyzed
ND = Non-detect
J = Estimated

Table 4 General Chemistry, Dissolved Gasses and Select Metals in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Bayamon, Puerto Rico

Monitoring Well: **Sample ID:** **Sample Date:**		MW-07A FTB034-GW-MW7A 7/29/2014	MW-07A FTB034-GM-MW7A-071615 7/16/2015	MW-07B G-03-09-MW-07B 1/6/2009 &1/7/2009	MW-07B FTB034-GW-MW7B 7/29/2014	MW-07B FTB034-GW-MW1C 7/29/2014
Compound	**Units**					
General Chemistry						
Sulfate	mg/l	39.2	35.3	69.6	3.38	3.27
Nitrate	mg/l	ND	0.42	NA	ND	ND
Nitrogen as nitrate	mg/l	NA	NA	ND	NA	NA
Dissolved Gasses						
Ethane	ug/l	ND	ND	0.16	ND	ND
Ethene	ug/l	ND	ND	0.23	ND	ND
Methane	ug/l	6.46	6.85	17.4	4.42 J	4.18 J
Total organic carbon	mg/l	1.29 J	1.95	1.4	7.82 J	7.76 J
Metals						
Calcium,(total)	ug/l	81,700	76,100	NA	6,500	6,450
Magnesium,(total)	ug/l	26,400	24,900	NA	720	673
Potassium,(total)	ug/l	1,980	2,140	NA	707 J	720 J
Sodium,(total)	ug/l	41,300	38,900	NA	3730 J	3670 J

Notes:
NA = Not Analyzed
ND = Non-detect
J = Estimated

Table 4 General Chemistry, Dissolved Gasses and Select Metals in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Bayamon, Puerto Rico

Monitoring Well: **Sample ID:** **Sample Date:**		MW-07B FTB034-GM-MW7B-071615 7/16/2015	MW-08A FTB034-GW-MW8A 7/24/2014	MW-08A FTB034-GM-MW8A-071515 7/15/2015
Compound	**Units**			
General Chemistry				
Sulfate	mg/l	24.3	0.587 J	2.93
Nitrate	mg/l	0.317	ND	ND
Nitrogen as nitrate	mg/l	NA	NA	NA
Dissolved Gasses				
Ethane	ug/l	ND	ND	ND
Ethene	ug/l	1.35 J	ND	ND
Methane	ug/l	6.51	587	723
Total organic carbon	mg/l	3.91	3.39	3.36
Metals				
Calcium,(total)	ug/l	20,600	70,300	60,600
Magnesium,(total)	ug/l	8,790	7,280	5,960
Potassium,(total)	ug/l	804 J	2,420	1,260
Sodium,(total)	ug/l	15,800	20700 J	24,100

Notes:
NA = Not Analyzed
ND = Non-detect
J = Estimated

Table 4 General Chemistry, Dissolved Gasses and Select Metals in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Bayamon, Puerto Rico

Monitoring Well: **Sample ID:** **Sample Date:**		MW-8B FTB034-GW-MW8B 7/24/2014	MW-8B FTB034-GM-MW8B-071515 7/15/2015	MW-8B FTB034-GM-MW1C-071515 7/15/2015 & 7/22/2015	MW-11A G-03-09-MW-11A 1/6/2009 & 1/7/2009	MW-11A FTB034-GW-MW11A 7/29/2014
Compound	**Units**					
General Chemistry						
Sulfate	mg/l	35.2	32.1	35.9 (7/22)	37.6	37.2
Nitrate	mg/l	0.860	ND	ND	NA	0.369 J
Nitrogen as nitrate	mg/l	NA	NA	NA	0.19	NA
Dissolved Gasses						
Ethane	ug/l	ND	ND	ND	ND	ND
Ethene	ug/l	ND	ND	ND	ND	ND
Methane	ug/l	2.02 J	2.77 J	2.89 J	13.8	1.94 J
Total organic carbon	mg/l	2.88	1.65	1.35	ND	1.02 J
Metals						
Calcium,(total)	ug/l	56,600	88,400	89,100	NA	109,000
Magnesium,(total)	ug/l	4,980	24,300	24,300	NA	18,200
Potassium,(total)	ug/l	7,120	2,760	2,740	NA	1,330
Sodium,(total)	ug/l	45,500	39,500	39,200	NA	50,200

Notes:
NA = Not Analyzed
ND = Non-detect
J = Estimated

Table 4 General Chemistry, Dissolved Gasses and Select Metals in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Bayamon, Puerto Rico

Monitoring Well: **Sample ID:** **Sample Date:**		MW-11A FTB034-GM-MW11A 7/15/2015	MW-11B FTB034-GW-MW11B 7/30/2014	MW-11B FTB034-GM-MW11B 7/14/2015	MW-12A FTB034-GW-MW12A 07/24/2014
Compound	**Units**				
General Chemistry					
Sulfate	mg/l	42.3	39.5	43.2	34.5
Nitrate	mg/l	0.475 J	0.669	2.29	1.84
Nitrogen as nitrate	mg/l	NA	NA	NA	NA
Dissolved Gasses					
Ethane	ug/l	ND	ND	ND	ND
Ethene	ug/l	ND	ND	ND	ND
Methane	ug/l	ND	77.6	2.04 J	1.15 J
Total organic carbon	mg/l	3.64	1.75	2.11	2.07
Metals					
Calcium,(total)	ug/l	112,000	127,000	138,000	5,240
Magnesium,(total)	ug/l	19,000	11,300	12,000	355 J
Potassium,(total)	ug/l	1,450	1,330	1,200	3,630
Sodium,(total)	ug/l	52,600	22,700	23,000	38,000

Notes:
NA = Not Analyzed
ND = Non-detect
J = Estimated

Table 4 General Chemistry, Dissolved Gasses and Select Metals in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Bayamon, Puerto Rico

Monitoring Well: **Sample ID:** **Sample Date:**		MW-12B FTB034-GW-MW12B 7/24/2014	MW-13A FTB034-GW-MW13A 7/30/2014	MW-13B FTB034-GW-MW13B 7/30/2014	MW-13B FTB034-GM-MW13B-071715 7/17/2015
Compound	**Units**				
General Chemistry					
Sulfate	mg/l	2.04	35.5	43.6	49.9
Nitrate	mg/l	0.177 J	ND	ND	0.487 J
Nitrogen as nitrate	mg/l	NA	NA	NA	NA
Dissolved Gasses					
Ethane	ug/l	ND	ND	ND	ND
Ethene	ug/l	ND	ND	3.23J	ND
Methane	ug/l	1.75 J	6.1	482	55.3
Total organic carbon	mg/l	2.05	2.18	3.48	1.17
Metals					
Calcium,(total)	ug/l	29,600	65,100	112,000	126,000
Magnesium,(total)	ug/l	2,970	8,720	13,900	17,500
Potassium,(total)	ug/l	4,150	1,440	2,050	2,020
Sodium,(total)	ug/l	7600 J	38,900	47,100	53,500

Notes:
NA = Not Analyzed
ND = Non-detect
J = Estimated

Table 4 General Chemistry, Dissolved Gasses and Select Metals in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Bayamon, Puerto Rico

Monitoring Well: **Sample ID:** **Sample Date:**		MW-13B FTB034-GM-MW2C-071715 7/17/2015	MW-14A FTB034-GW-MW14A 7/28/2014	MW-14A FTB034-GM-MW14A 7/14/2015	MW-14B FTB034-GW-MW14B 7/28/2014	MW-14B FTB034-GM-MW14B-071415 7/14/2015
Compound	**Units**					
General Chemistry						
Sulfate	mg/l	49.1	17.1	19.6	16.1	16.6
Nitrate	mg/l	0.806	0.191	0.232 J	ND	ND
Nitrogen as nitrate	mg/l	NA	NA	NA	NA	ND
Dissolved Gasses						
Ethane	ug/l	ND	ND	ND	ND	ND
Ethene	ug/l	1.14 J	ND	ND	ND	ND
Methane	ug/l	63.5	ND	ND	ND	21,700
Total organic carbon	mg/l	1.6	1.36	0.57 J	1.18	0.578 J
Metals						
Calcium,(total)	ug/l	140,000	93,000	86,100	81,800	92,700
Magnesium,(total)	ug/l	18,100	20,900	21,100	29,100	32,500
Potassium,(total)	ug/l	2,040	1,960	1,730	2,720	2,490
Sodium,(total)	ug/l	53,900	45,400	40,800	39,600	36,900

Notes:
NA = Not Analyzed
ND = Non-detect
J = Estimated

Table 4 General Chemistry, Dissolved Gasses and Select Metals in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Bayamon, Puerto Rico

Monitoring Well: **Sample ID:** **Sample Date:**		MW-15A G-03-09-MW-15A 1/7/2009 & 1/8/2009	MW-15A DP2-G-03-09-MW-15A 1/7/2009 & 1/8/2009	MW-15A FTB034-GW-MW15A 07/28/2014	MW-15A FTB034-GM-MW15A 07/14/2015
Compound	**Units**				
General Chemistry					
Sulfate	mg/l	37.1	37.1	36.4	0.693 J
Nitrate	mg/l	NA	NA	ND	ND
Nitrogen as nitrate	mg/l	ND	ND	NA	NA
Dissolved Gasses					
Ethane	ug/l	0.23	NA	ND	ND
Ethene	ug/l	ND	NA	ND	ND
Methane	ug/l	12	NA	9.45	2,580
Total organic carbon	mg/l	0.38	NA	1.37	32.1
Metals					
Calcium,(total)	ug/l	NA	NA	14,400	197,000
Magnesium,(total)	ug/l	NA	NA	13,300	19,200
Potassium,(total)	ug/l	NA	NA	1,050	1,130
Sodium,(total)	ug/l	NA	NA	41,500	48,700

Notes:
NA = Not Analyzed
ND = Non-detect
J = Estimated

Table 4 General Chemistry, Dissolved Gasses and Select Metals in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Bayamon, Puerto Rico

Monitoring Well: **Sample ID:** **Sample Date:**		MW-16A FTB034-GW-MW16A 07/23/2014	MW-16A FTB034-GM-MW16A-071515 07/15/2015	MW-16B G-03-08-MW-16B 1/8/2008	MW-16B FTB034-GW-MW16B 07/23/2014	MW-16B FTB034-GM-MW16B-071615 07/16/2015
Compound	**Units**					
General Chemistry						
Sulfate	mg/l	72.0	77.4	NA	63.2	51.6
Nitrate	mg/l	0.522J	ND	NA	0.126 J	0.303 J
Nitrogen as nitrate	mg/l	NA	NA	NA	NA	NA
Dissolved Gasses						
Ethane	ug/l	ND	ND	NA	ND	ND
Ethene	ug/l	ND	ND	NA	ND	ND
Methane	ug/l	1.13 J	ND	NA	ND	2.23 J
Total organic carbon	mg/l	1.44	1.78	NA	4.69	1.73
Metals						
Calcium,(total)	ug/l	33,300	92,900	NA	23,600	86,300
Magnesium,(total)	ug/l	1,450	16,800	NA	6,440	23,700
Potassium,(total)	ug/l	4,140	2,080	NA	5,060	2,620
Sodium,(total)	ug/l	68,800	59,600	NA	72,200	50,900

Notes:
NA = Not Analyzed
ND = Non-detect
J = Estimated

Table 4 General Chemistry, Dissolved Gasses and Select Metals in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Bayamon, Puerto Rico

Monitoring Well: **Sample ID:** **Sample Date:**		MW-20 G-03-08-MW-20 5/13/2008	MW-20 FTB034-GW-MW20 7/28/2014 & 7/31/2014	MW-20 FTB034-GM-MW20-071615 7/16/2015	MW-22 G-03-09-MW-22 1/6/2009 & 1/7/2009
Compound	**Units**				
General Chemistry					
Sulfate	mg/l	NA	70.6	ND	25.1
Nitrate	mg/l	NA	ND	0.353 J	NA
Nitrogen as nitrate	mg/l	NA	NA	NA	ND
Dissolved Gasses					
Ethane	ug/l	NA	ND	ND	ND
Ethene	ug/l	NA	ND	ND	ND
Methane	ug/l	NA	ND	1.66 J	0.52
Total organic carbon	mg/l	NA	1.48	1.23	NA
Metals					
Calcium,(total)	ug/l	99,400	47,400	79,800	NA
Magnesium,(total)	ug/l	26,800	23,800	23,700	NA
Potassium,(total)	ug/l	2800 J	3,960	2,430	NA
Sodium,(total)	ug/l	56,900	67,400	52,200	NA

Notes:
NA = Not Analyzed
ND = Non-detect
J = Estimated

Table 4 General Chemistry, Dissolved Gasses and Select Metals in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Bayamon, Puerto Rico

Monitoring Well: **Sample ID:** **Sample Date:**		MW-25 G-03-09-MW-25 1/7/2009	MW-25 FTB034-GW-MW25 7/31/2014	MW-25 FTB034-GM-MW25-071415 7/14/2015	MW-26 G-03-09-MW-26 1/7/2009	MW-26 FTB034-GW-MW26 7/31/2014
Compound	**Units**					
General Chemistry						
Sulfate	mg/l	NA	65.4	74.3	NA	57.2
Nitrate	mg/l	NA	ND	ND	NA	ND
Nitrogen as nitrate	mg/l	NA	NA	NA	NA	NA
Dissolved Gasses						
Ethane	ug/l	NA	ND	ND	NA	ND
Ethene	ug/l	NA	ND	ND	NA	ND
Methane	ug/l	NA	7.45	6.23	NA	9.45
Total organic carbon	mg/l	NA	0.951	1.55	NA	1.45
Metals						
Calcium,(total)	ug/l	152,000	153000 J	167,000	146,000	160000 J
Magnesium,(total)	ug/l	17,700	17,500	16,700	15,300	16,600
Potassium,(total)	ug/l	2610J	1,770	1,350	2070J	1,240
Sodium,(total)	ug/l	50,900	52,400	50,100	42,400	47,800

Notes:
NA = Not Analyzed
ND = Non-detect
J = Estimated

Table 4 General Chemistry, Dissolved Gasses and Select Metals in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Bayamon, Puerto Rico

Monitoring Well: **Sample ID:** **Sample Date:**		MW-26 FTB034-GW-MW2C 7/31/2014	MW-26 FTB034-GM-MW26-071415 7/14/2015	OP-01 G-03-09-OP-01 1/6/2009 & 1/7/2009	OP-02 G-03-09-OP-02 1/6/2009 & 1/7/2009
Compound	**Units**				
General Chemistry					
Sulfate	mg/l	58.0	15	23.2	58.6
Nitrate	mg/l	ND	ND	NA	NA
Nitrogen as nitrate	mg/l	NA	NA	NA	ND
Dissolved Gasses					
Ethane	ug/l	ND	ND	NA	0.88
Ethene	ug/l	ND	ND	NA	ND
Methane	ug/l	13.7	28.8	25.3	3.2
Total organic carbon	mg/l	1.20	457	0.32	0.43
Metals					
Calcium,(total)	ug/l	149000 J	349,000	98,100	108,000
Magnesium,(total)	ug/l	15,700	31,900	17,700	13,200
Potassium,(total)	ug/l	1,230	1,470	2870 J	2850 J
Sodium,(total)	ug/l	44,200	55,700	87,200	187,000

Notes:
NA = Not Analyzed
ND = Non-detect
J = Estimated

Table 4 General Chemistry, Dissolved Gasses and Select Metals in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Bayamon, Puerto Rico

Monitoring Well: **Sample ID:** **Sample Date:**		OP-03 G-03-09-OP-03 1/6/2009	OP-03 FTB034-GM-OP-3-072215 7/20/2015 & 7/22/2015	OP-04 G-03-09-OP-04 1/6/2009	OP-04 G-03-09-OP-04 3/10/2009	OP-04 FTB034-GW-OP-04 8/5/2014	OP-04 FTB034-GM-OP-4-071715 7/17/2015
Compound	**Units**						
General Chemistry							
Sulfate	mg/l	NA	26.8	NA	NA	44.7	53.5
Nitrate	mg/l	NA	ND	NA	NA	1.01	0.231 J
Nitrogen as nitrate	mg/l	NA	NA	NA	NA	NA	1.11
Dissolved Gasses							
Ethane	ug/l	NA	ND	NA	NA	ND	ND
Ethene	ug/l	NA	3.26	NA	NA	ND	ND
Methane	ug/l	NA	14	NA	NA	ND	2.16 J
Total organic carbon	mg/l	NA	1.54	NA	NA	1.41	
Metals							
Calcium,(total)	ug/l	119,000	56,200	105,000	10,500	46,400	102,000
Magnesium,(total)	ug/l	17,400	9,490	15,300	15,300	11,600	15,300
Potassium,(total)	ug/l	2,690 J	2,430	2860 J	2,860 J	5,340	1,420
Sodium,(total)	ug/l	105,000	36,700	141,000	141,000	63,800	101,000

Notes:
NA = Not Analyzed
ND = Non-detect
J = Estimated

Table 4 General Chemistry, Dissolved Gasses and Select Metals in Groundwater
Northwest Boundary Area Site (FTB-034)
Fort Buchanan, Bayamon, Puerto Rico

Monitoring Well: **Sample ID:** **Sample Date:**		OP-05 G-03-09-OP-05 1/6/2009 & 1/7/2009	OP-05 FTB034-GM-OP-5-071715 7/17/2015	OP-06 G-03-09-OP-06 3/10/2009	OP-07 G-03-09-OP-07 3/10/2009
Compound	**Units**				
General Chemistry					
Sulfate	mg/l	51.4	50.4	NA	NA
Nitrate	mg/l	NA	0.886	NA	NA
Nitrogen as nitrate	mg/l	0.73	NA	NA	NA
Dissolved Gasses					
Ethane	ug/l	ND	ND	NA	NA
Ethene	ug/l	ND	ND	NA	NA
Methane	ug/l	18.4	ND	NA	NA
Total organic carbon	mg/l	0.37	1.21	NA	NA
Metals					
Calcium,(total)	ug/l	278,000	111,000	484,000	114,000
Magnesium,(total)	ug/l	20,500	14,400	93,400	22,500
Potassium,(total)	ug/l	6,780 J	3,580	7,060 J	6,270 J
Sodium,(total)	ug/l	58,800	45,600	397,000	364,000

Notes:
NA = Not Analyzed
ND = Non-detect
J = Estimated

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APPENDIX A
INJECTION PERMITS

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Offices:
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MEMO

TO: David Cuevas, Project Manager, USEPA Region 2 Caribbean Office
Gloria Toro Agrait, PREQB

FROM: Jeanette L. Hamm, Project Manager, KEMRON

CC: Anibal Negron, PG, Chief, Environmental Division, Fort Buchanan

Derrick Stepanof, PG, Environmental Restoration Manager, Fort Buchanan

Paul Higgs, REM, Contracting Officer's Representative, MICC-FSH

DATE: 4/29/2015

RE: Underground Injection Control Substantive Permit Requirements

FTB-034 Northwest Boundary Area Groundwater Plume

Army Garrison Fort Buchanan

TEXT:

This memorandum is being prepared on behalf of Army Garrison Fort Buchanan to provide the U.S. Environmental Protection Agency (USEPA) Region 2 Caribbean Office and Puerto Rico Environmental Quality Board (PREQB) with information regarding the proposed subsurface injection of biostimulation formula and *Dehalococcoides* bacterial cultures to promote bioremediation of trichloroethylene (TCE) impacted groundwater from the Northwest Boundary Area (NWBA) Site at Army Garrison Fort Buchanan in Bayamon, Puerto Rico (Site). This letter serves as documentation that the substantive requirements of the Underground Injection Control (UIC) Program Rules are being met while providing the regulatory outline as to why an individual permit for the injection is not required as the future work performed at Army Garrison Fort Buchanan will be conducted under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in accordance with the Army's Defense Environmental Restoration Program (DERP) authority in coordination with USEPA Region 2 and the PREQB.

REGULATORY SUMMARY

The federal regulations for the UIC Program are found in Title 40 of the Code of Federal Regulations (CFR) Part 144. The Safe Drinking Water Act (SDWA) establishes requirements and provisions for the UIC Program. Puerto Rico has obtained primary enforcement responsibility, or primacy, for authority to oversee the injection activities. The requirements for primacy programs are outlined in the UIC regulations at 40 CFR Part 145. A review of the PREQB UIC Regulations appears to be consistent with the federal UIC regulations.

The main objective of the UIC Program is to conserve, maintain, and improve the quality of existing and potential underground water resources as future sources of drinking water. Remediation projects that utilize injection wells as part of the site cleanup activity, such as is the case with the NWBA groundwater corrective measure, include elements that are regulated by the UIC program.

TEXT (continued):

The UIC rules and regulations are identified as an applicable or relevant and appropriate requirement (ARAR) that must be met during the corrective measure implementation. Because these cleanups are intended to benefit the environment and are already overseen by other federal and/or state programs, in most situations, UIC inventory information is sufficient to allow the UIC program to "rule-authorize" these types of injection wells (i.e. they do not require a permit). The Class V wells are authorized by rule in accordance with 40 CFR Part 144.24, subject to submission of inventory information and other information required by the Agency, in accordance with 40 CFR Part 144.26. Once these provisions have been addressed, the Class V wells are permitted by rule and meet all UIC requirements.

Further, CERCLA response actions are exempted by law from the requirement to obtain Federal, State, or local permits related to any activities conducted completely on-site. However, the substantive provisions of the permitting regulations that are ARARs must still be met. Attachment 1 contains an USEPA memo on the Permit Equivalency Process for CERCLA On-site Response Actions. The very nature of the CERCLA process is one that is multi-media and has net-benefit to the environment. A permit is not required for a UIC well unless specific conditions exist. The Class V well(s) KEMRON will install do not fall within the types that require a permit, and since information is being submitted to demonstrate that only beneficial substances will be injected (e.g., designed to benefit the receiving groundwater quality, with no wastes being injected), the information being submitted will address all applicable standards of the UIC regulations.

In order to document that the substantive elements of the UIC Rules have been met, the following specific information is provided:

- Constituents being injected;
- Injection pressure and flow;
- Well design and operation;
- Quality of receiving groundwater; and
- Project contact information.

SITE REMEDY OVERVIEW

The selected remedy for the NWBA includes treatment of volatile organic compounds (VOCs) in groundwater using Enhanced Bioremediation, Reductive Dechlorination, Monitored Natural Attenuation (MNA), and Land Use Controls, as presented in the CMS (EA, 2012). The implementation of the Corrective Measures includes the following activities:

- Installation of injection/extraction wells in the source area and barrier wall located in the down gradient portion of the plume.
- Perform well development and containerize groundwater in the staging area for re-use during injection of groundwater amendments.
- Pre-conditioning the aquifer: mixing biostimulation formula that includes carbon substrate, nutrients, buffering agent, and long-term fatty acids into injection wells (source area) or direct push points (barrier wall).
    - Injecting the carbon formula into injection wells or using direct push technology
    - Monitoring water quality and groundwater levels at nearby monitoring wells
    - Extract groundwater from wells as needed to prevent daylighting and/or increase radius of influence (ROI) and ensure the aquifer is not over-pressurized
- Monitor the aquifer until conditions are ideal for augmenting the naturally occurring microbial population by injecting *Dehalococcoides* bacteria.
- Inject *Dehalococcoides* bacteria into the injection/extraction wells in the source area and barrier wall.
- Long-Term Monitoring - Monitor select groundwater monitoring wells for water quality, geochemical and chemical parameters.

- Update the Installation Master Plan to prevent groundwater as a source of drinking water within the limits of the plume.
- Transportation and disposal of investigation derived waste; and,
- Preparation of a technical memorandum documenting corrective measures implementation activities.

The injection is associated with the approved enhanced bioremediation remedy component as described above to remediate impacted groundwater at the site. The injection wells to be installed at the site meet the UIC definition of a Class V Aquifer remediation well (ARW) defined as follows:

> ***Aquifer Remediation Wells*** *– Class V wells that are used to clean up, treat, or prevent contamination of underground sources of drinking water (USDWs). Treated ground water (pump and treat), bioremediation agents, or other recovery enhancement materials may be injected into the subsurface via Class V wells. These wells may be associated with Resource Conservation and Recovery Act (RCRA) or Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) projects.* (http://water.epa.gov/type/groundwater/uic/glossary.cfm).

The injection wells installed for the groundwater cleanup will be strictly CERCLA remediation project wells. Progress reporting will be conducted to the USEPA Region 2 Caribbean Division and PREQB including the details of the injection and long term groundwater monitoring to document water quality improvements as a result of remedy implementation.

NWBA INJECTION DETAILS

DESCRIPTION

The Final NWBA FTB-034 Corrective Measures Implementation Plan (KEMRON 2015) prepared to document the design and injection parameters has been approved by USEPA Region 2 and PREQB in a letter dated March 17, 2015. Elements from the plan are included herein. Injection of a remedial fluid or reagent into the saturated zone of an aquifer results in the mixing and displacement of the aquifer water present. During the displacement of water in a water table aquifer (phreatic zone), the volume of fluid injected will temporarily cause a localized rise in the water level – a phenomenon referred to as mounding. It is difficult to estimate site behavior during injection of fluids based solely on estimation of site hydraulic characteristics. This is due to the tremendous amount of variability in the subsurface and the dynamic responses as injection proceeds.

During the preparation of the RFI for the site, over 50 slug tests were performed to determine hydraulic conductivity of the older and younger terrace materials, consisting of sands, silts, and gravel under a thick clay overburden. From the slug test data, ranges of hydraulic conductivity were estimated for the various geologic units of the Fort Buchanan NWBA groundwater flow system. Hydraulic conductivity for the younger and older terrace deposits show a substantial range based on slug testing data from 0.05 feet per day to 90 feet per day. The conservative value for the flow velocity used in the USAERDC Groundwater Model was in the range of six to seven feet per day. Further, transducer data was collected to evaluate precipitation recharge and tidal influence during the RFI. Vertical mixing of the water column by recharge and tidal influence was noted in younger and older terrace materials. The responses of the monitoring wells across the NWBA site was significantly different depending on the geologic unit the monitoring well was installed in indicating substantial variability in the subsurface at the site.

KEMRON will use an artful blend of estimated site hydraulics, previous experience on other similar sites, and an intuitive sense of the site's aquifer architecture based on the boring logs and cross sections created for this site. Since the augmentation fluids and amendments are applied in low-volume at a higher concentration to achieve an ideal aquifer, success generally hinges on the rate of vertical fluid acceptance. Although a high volume of fluids will be injected, a low pressure injection is proposed to minimize mounding and soil matrix disturbance or unintended fracturing of the soils. A UIC inventory sheet is included as Attachment 2.

CONSTITUENTS INJECTED

Anaerobic Biochem® (ABC®) Formula Plus, which contains the ABC® formula plus zero valent iron (ZVI), is the selected biostimulation agent selected for the corrective measure. ABC® is a patented mixture of lactates, fatty acids, and a phosphate buffer. ABC® contains soluble lactic acid as well as slow- and long-term releasing components. ABC+® Formula include a long term fatty acid amendment that is a stable, self-emulsifying, blended substrate designed to combine the hydrogen donor properties of readily soluble carbon substrates with enhanced longevity of emulsified vegetable oil products. ABC+® Formula also includes a mixture of ZVI. After being in the aquifer, ZVI can create an abiotic reductive process via electron donation, providing immediate reduction in contaminant concentrations. The concentrated ABC+® formula will be mixed with extracted groundwater and re-injected into the aquifer during the remediation. A Material Safety Data Sheet for the ABC+® formula is included as Attachment 3.

Dehalococcoides (KB-1®) will be injected into the injection wells located in the source area and barrier wall once the aquifer reaches ideal conditions. KB-1® is a naturally occurring, non-pathogenic microbial culture that contains *Dehalococcoides,* the only group of microorganisms documented to promote the complete dechlorination of chlorinated ethenes to non-toxic ethene. A informational data sheet on the KB-1® cultures is included in Attachment 3.

INJECTION PRESSURE AND FLOW RATES

Maximum injection pressures were calculated to prevent unintentional fracturing or structural failure of the formation. The maximum allowable injection pressures in the source area and barrier wall are 1,815 pounds per standard inch (psi) and 1,288 psi, respectively. The injection pressures anticipated for the enhanced bioremediation injection are estimated to range between 20 – 40 psi per well taking into account line, fitting, and friction losses.

The ABC+® Formula will be mixed in 200 gallon polyethylene tanks in the staging area prior to injection. The tank will first be filled with the proper amount of extracted groundwater to achieve a 10% ABC+® Formula solution concentration. Multiple tanks will be mixed concurrently to allow for work to proceed steadily and efficiently. The ABC+® Formula will be pumped into the formation using air-driven, chemically resistant pumps at estimated flowrates of 5 – 20 gallons per minute (gpm) depending on aquifer acceptance. The ABC+® Formula will initially be slowly injected to ensure proper flow rates and safe injection pressures to avoid displacement and/or shifting of the groundwater plume. Once safety measures are checked and confirmed, the ABC+® may be injected at multiple wells simultaneously to effectively disperse the ABC+® into the subsurface. The rate, pressure, and volume will be monitored using a chemically resistant inline electronic flow meter. The water levels and conductivity of nearby wells will be monitored to determine when/if it is necessary to extract groundwater to promote aquifer mixing, increase the ROI, and prevent any over pressurizing of the aquifer.

Once the aquifer reports ideal geochemical conditions, Dehalococcoides (KB-1®) will be injected into the injection wells located in the source area and barrier wall. An estimated total of 220L of KB-

1® will be injected within the treatment areas at the Site. Approximately 20 L of KB-1® will be injected into each injection well in the source area and 10 L of KB-1® per injection well in the barrier wall. Once the well and tubing has been filled with the inert gas, the *Dehalococcoides* (KB-1®) will be injected into the well. The valves for the tubing connected to the Purge Port and the Inoculation Port will be opened to push the KB-1® culture through the injection tubing into the injection well at the desired depth interval.

During the injection of KB-1®, the nitrogen gas will be adjusted to ensure the pressure is no greater than 20-25 psi in the source area (depths up to 30 feet below ground surface), and 15 to 20 psi in the barrier wall. The volume of gas injected into the well is measured to ensure full injection of KB-1®.

WELL DESIGN

All injection/extraction wells will be installed using a Hollow-Stem Auger drilling technique. During borehole advancement at each location, split-spoon samples will be collected every five feet to characterize and log the soil lithology. The wells will be constructed of 10 to 15 feet of two-inch 0.010 slot, schedule 40 poly vinyl chloride (PVC) screen placed at a specified interval with the necessary length of Schedule 40 PVC riser to bring the well to ground surface. In the source area, the injection wells will be screened from approximately 25 to 40 feet (similar to MW-25 and MW-26), and the barrier wall injection/extraction wells will be screened from 20 to 30 feet (similar to MW-11A). Accordingly, direct push points injections will be performed across the 20 to 30 foot interval along the barrier wall.

QUALITY OF RECEIVING GROUNDWATER

Baseline pre-injection groundwater samples were collected in July and August 2014. The data is summarized in the Final CMIP (KEMRON 2015). The remedial driver, Trichloroethylene (TCE) was detected in seven out of the 19 wells sampled. Four wells reported detections exceeding the interim remedial goal for TCE (100 µg/L): MW-25, MW-26, MW-15 and MW-11A which reported TCE at concentrations of 2,710 µg/L, 973 µg/L, 233 µg/L and 139 µg/L, respectively. All other wells either reported concentrations below the interim goal (MW-7A, MW-11B, and MW-13B) or below the detection limit. Overall, the geochemical results from the Pre-CMI sampling indicate the aquifer continues to be anaerobic and ideal for enhanced bioremediation by reductive dechlorination of PCE and TCE and degradation products.

CONTACT INFORMATION

For this project, the primary contacts on behalf of Army Garrison Fort Buchanan are as follows:

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paul.a.higgs.civ@mail.mil
Phone: (210) 466-1727

Attachments:

Attachment 1 - 1992 USEPA Permits and Permit "Equivalency" Processes for CERCLA On-site Response Actions
Attachment 2 - UIC Inventory Sheet
Attachment 3 - ABC+® MSDS and KB-1® Data Sheet

Attachment 1

1992 USEPA Permits and Permit “Equivalency” Process for CERCLA On-site Response Actions

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EPA web site
www.epa.gov/superfund/resources/remedy/pdf/93-55703-s.pdf

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

FEB 19 1992

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

OSWER Directive 9355.7-03

MEMORANDUM

SUBJECT: Permits and Permit "Equivalency" Processes for CERCLA On-site Response Actions

FROM: Henry L. Longest II, Director /s/
Office of Emergency and Remedial Response

TO: Director, Waste Management Division
Regions I, IV, V, VII, and VIII
Director, Emergency and Remedial Response Division
Region II
Director, Hazardous Waste Management Division
Region X

PURPOSE

The purpose of this directive is to clarify the Environmental Protection Agency (EPA) policy with respect to attaining permits for activities at CERCLA sites. CERCLA response actions are exempted by law from the requirement to obtain Federal, State or local permits related to any activities conducted completely on-site. It is our policy to assure all activities conducted on sites are protective of human health and the environment. It is not Agency policy to allow surrogate or permit equivalency procedures to impact the progress or cost of CERCLA site remediation in any respect.

BACKGROUND

In implementing remedial actions, EPA has consistently taken the position that the acquisition of permits is not required for on-site remedial actions. However, this does not remove the requirement to meet (or waive) the substantive provisions of permitting regulations that are applicable or relevant and appropriate requirements (ARARs). (For further discussion on ARARs in general, see the attachment to this directive. For definitions of "substantive" and "administrative," see 55 FR 8756-57 and the CERCLA Compliance with Other Laws Manual, Part I, pages 1-11-12.) The proposed and final 1982 National Oil and

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Hazardous Substances Pollution Contingency Plan (NCP) made no mention of the permit issue. However, EPA addressed the issue in a memorandum entitled "CERCLA Compliance with Other Environmental Statutes" which was attached as an appendix to the proposed 1985 NCP (50 FR 5928, February 12, 1985). The memorandum stated:

> "CERCLA procedural and administrative requirements will be modified to provide safeguards similar to those provided under other laws. Application for and receipt of permits is not required for on-site response actions taken under the Fund-financed or enforcement authorities of CERCLA."

EPA determined in the final rule [1985 NCP section 300.68(a)(3)] that "Federal, State, and local permits are not required for Fund-financed action or remedial actions taken pursuant to Federal action under section 106 of CERCLA." The 1986 amendments to CERCLA codified section 300.68(a)(3) of the 1985 NCP with a statutory provision, section 121(e)(1). CERCLA section 121(e)(1) provides that no Federal, State, or local permit shall be required for the portion of any removal or remedial action conducted entirely <u>on-site</u>, where such remedial action is selected and carried out in compliance with section 121.

The 1990 NCP [section 300.400(e)(1)] implements this permit exemption for "on-site" actions, defining "on-site" as "the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action." The preamble to the NCP (at 55 FR 8689, March 8, 1990) explains that "areal" refers both to the surface areas and the air above the site. EPA policy further defines "on-site" to include the soil and the groundwater plume that are to be remediated. On-site remedial actions may involve limited areas of noncontaminated land; for instance, an on-site treatment plant may need to be located above the plume or simply outside of the waste area itself.

As provided in NCP section 300.400(e)(1), response actions covered by CERCLA section.121(e)(1) include those conducted pursuant to CERCLA sections 104, 106, 120, 121, and 122. Thus response actions conducted by a lead agency, or by a potentially responsible party or other person under an order or consent decree with EPA, are covered under the ambit of CERCLA section 121(e)(1). Response actions by a lead agency include those response actions implemented by EPA, the Coast Guard, or another Federal agency. They also include response actions implemented by a State or political subdivision operating pursuant to a contract or cooperative agreement executed pursuant to CERCLA

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section 104(d)(1), under which EPA selects (or must approve) the remedy. Hereafter, the discussion concerning lead agencies should be understood to include, where appropriate, potentially responsible parties or other persons acting under CERCLA section 106.

DISCUSSION

While permits may not be required for CERCLA on-site response actions, some permitting authorities have attempted to require lead agency participation in a process that is "equivalent" to a permitting process in order to satisfy the authority's concern that there will be compliance with ARARs. In effect, they argue that participation in a permit-like process is necessary to identify the substantive provisions of permitting regulations.

Under a permit "equivalency" process, the lead agency is asked to participate in a process that an applicant would pursue to secure a permit, except that most fees and public hearing requirements are normally waived. The permit "equivalency" process itself has caused delay and cost increases in some response actions. The process holds the potential for further delays and cost increases due to often lengthy review of documents submitted to the permitting authority as if a permit were actually required, and due to the attachment of non-ARAR conditions by the permitting authority to the permit "equivalency." It also suggests, incorrectly, that the approval of a permitting authority is required before a CERCLA action may proceed or before an ARARs determination may be made with respect to the permitting regulations.

Unfortunately, some lead agencies have acquiesced to participation in such "equivalency" processes. Such acquiescence has been rationalized by the fact that it is particularly difficult to determine compliance with the substantive requirements of permitting programs, where levels are set on a site-specific basis, e.g., such as based upon the equipment provided by the remedial action contractor, or as would normally be set in a permit or in the Record of Decision (ROD) at Superfund sites. In some cases, lead agencies have agreed to participate in a permit "equivalency" process, although both the lead agency and the permitting authority have acknowledged the applicability of CERCLA section 121(e)(1).

EPA has consistently rejected the notion that CERCLA response actions are subject to such processes (see Background discussion above). The NCP, while acknowledging the need for coordination and consultation with other agencies, notes (at 55

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FR 8756-7, March 8, 1990) that CERCLA section 121(e))(1) and other CERCLA provisions:

> "...reflect Congress' judgment that CERCLA actions should not be delayed by time-consuming and duplicative administrative requirements such as permitting, although remedies should achieve the substantive standards of applicable or relevant and appropriate laws... EPA's approach is wholly consistent with the overall goal of the Superfund program, to achieve expeditious cleanups, and reflects an understanding of the uniqueness of the CERCLA program, which impacts more than one medium (and thus overlaps with a number of other regulatory and statutory programs). Accordingly, it would be inappropriate to subject CERCLA response actions to the multitude of administrative requirements of other Federal and State offices and agencies.
>
> At the same time, EPA recognizes the benefits of consultation, reporting, etc. To some degree, these functions are accomplished through the State involvement and public participation requirements in the NCP. In addition, EPA has already strongly recommended that its Regional offices (and States when they are the lead agency) establish procedures, protocols or memoranda of understanding that, while not recreating the administrative and procedural aspects of a permit, will ensure early and continuous consultation and coordination with other EPA programs and other agencies. CERCLA Compliance with Other Laws Manual, [Part I], OSWER Directive No. 9234.1-01 (August 8, 1988). In working with States, EPA generally will coordinate and consult with the State Superfund office. That State Superfund office should distribute to or obtain necessary information from other State offices interested in activities at Superfund sites.
>
> The basis for this recommendation is a recognition that such coordination and consultation is often useful to determine how substantive requirements implemented under other EPA programs and by other agencies should be applied to a Superfund action. For example, although the Superfund office will make the final decision on using ARARs, a water office may provide information helpful in determining ARARs when a surface water discharge is part of the Superfund remedy.
>
> EPA also recognizes the importance of providing information to other programs and agencies that maintain environmental data bases. This is particularly true where the remedy includes releases of substances into the air or water and

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the extent of such releases is integral for air and water programs to maintain accurate information on ambient air and surface water quality in order to set statutorily-specified standards."

IMPLEMENTATION

There are several possible ways to alleviate the delays and cost increases caused by a permit "equivalency" process. First, lead agencies can refuse to participate in this process, based on the fact that actual permits are not required under CERCLA section 121(e)(1), and procedural requirements are not ARARs under CERCLA section 121(d)(2) and the NCP.

Alternatively, and preferably, the lead agency could actively consult on a regular and frequent basis with the permitting authority, in situations where the lead agency deems it helpful to hasten ARARs identification. To facilitate such consultation, the lead agency should provide copies of the submittals of the design contractor and remedial action contractor in a timely manner to the permitting authority whose ARARs are the subject of the submittals. The NCP preamble explains (at 55 FR 8757, March 8, 1990) that if EPA is the lead agency, the coordination and consultation with State permitting authorities will generally be conducted through a single State office. Support Agency Cooperative Agreements, Superfund Memoranda of Agreement, or other protocols may be appropriate vehicles to establish specific time limits for the permitting authority to provide technical assistance in the evaluation of site-specific ARARs.

However, any such agreement should be based on the understanding that a procedural "permit" or permit equivalency approval is <u>not</u> required, but that the lead agency is participating in the process in order to facilitate coordination and consultation with the permitting authority. In some instances, because of the need to complete a response action and to avoid delays and cost increases, the lead agency may decide to terminate the consultation process. Nevertheless, this process should result in the lead agency's designing the remedy to meet all of the substantive requirements of the permitting regulations that are ARARs.

NOTE: The above policies and procedures are intended solely as guidance to EPA employees. They do not constitute rulemaking by the Agency, and may not be relied on to create a right or benefit, substantive or procedural, enforceable at law or in equity by any other person. EPA may take action that is at variance with the policies and procedures in this directive.

Attachment

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Attachment

Discussion on ARARs

CERCLA section 121(d)(2)(A) and NCP section 300.430(f)(1)(i)(A) require EPA to select remedies that meet or waive certain Federal or State ARARs. ARARS are defined in the NCP at section 300.5 under the rubrics of "applicable requirements" and "relevant and appropriate requirements." For guidance on ARARs identification, see NCP sections 300.400(g); 300.430(e)(2); 300.515(d)(1) and (3) and (h)(2); CERCLA Compliance with Other Laws Manual, Parts I and II, OSWER Directives No. 9234.1-01 and -02 (August 8, 1988 and August 1989). The NCP does not require the concurrence of States or other Federal agencies (or other EPA program offices) on the Superfund Program's determination as to which standards are ARARs, although consultation with the appropriate State or Federal agency is required.

NCP section 300.435(b)(2) provides that once ARARs are selected, it becomes the responsibility of the lead agency during the Remedial Design (RD) and Remedial Action (RA) to ensure that all Federal and State ARARs identified in the ROD are met. In accordance with CERCLA section 121(d)(4) and NCP section 300.430(f)(1)(ii)(C), EPA may select a remedial action that does not meet an ARAR under any one of 6 waiver circumstances. If waivers from any ARARs are involved, the lead agency is responsible for ensuring that the conditions of the waivers are met. Pursuant to CERCLA section 121(f)(1), States must be provided an opportunity to comment on proposed ARARs waivers and may challenge ARARs waivers, as provided in CERCLA section 121(f)(2)and(3).

Remedial actions must comply with those requirements that are determined to be ARARs at the time of ROD signature. NCP section 300.430(f)(1)(ii)(B), in effect, "freezes" ARARs when the ROD is signed unless compliance with newly promulgated or modified requirements is necessary to ensure the protectiveness of the remedy. If ARARs were not frozen at this point, promulgation of a new or modified requirement could result in a reconsideration of the remedy and a restart of the lengthy design process, even if protectiveness were not compromised. This lack of certainty would adversely affect the operation of the CERCLA program, would be inconsistent with Congress' mandate to expeditiously clean up sites, and could adversely affect negotiations with potentially responsible parties.

As a general policy, EPA considers newly-promulgated requirements or other information as part of the review conducted

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at least every five years, under CERCLA section 121(c), for sites where hazardous substances remain on-site. The review requires EPA to assure that human health and the environment are being protected by the remedial action. Hence, the remedy should be examined in light of any new standards that would be applicable or relevant and appropriate to the circumstances at the site and in light of any other pertinent new information to ensure that the remedy is still protective. However, if such information comes to light at times other than at the five-year reviews, EPA will consider the necessity of acting to modify the remedy at such times.

After the ROD is signed, new information may be generated during the RD/RA process that could affect the remedy selected in the ROD. Such new information may result in "nonsignificant," "significant," or "fundamental" changes to the remedy. Nonsignificant changes are minor changes that usually arise during design and construction, when modifications are made to the functional specifications of the remedy to optimize performance and minimize cost. This may result in minor changes to the type and/or cost of materials, equipment, facilities, services and supplies used to implement the remedy. The lead agency need not prepare an explanation of significant differences for minor changes. These changes should be documented in the post-ROD file, such as the RD/RA case file. Significant changes to a remedy are generally incremental changes to a component of a remedy that do not fundamentally alter the overall remedial approach. The lead agency would need to publish in a local newspaper an explanation of significant differences announcing such changes. On the other hand, if the action, decree, or settlement fundamentally alters the ROD in such manner that the proposed action, with respect to scope, performance, or cost, is no longer reflective of the selected remedy in the ROD, the lead agency will issue a notice of availability and brief description of the proposed amendment to the ROD in a local newspaper in order to facilitate public comment. Proposed ROD amendments should identify new requirements that are ARARs and whether they will be met or waived.

For more guidance on responding to post-ROD information, see "Guide to Addressing Pre-ROD and Post-ROD Changes," Publication No. 9355.3-02FS-4 (April 1991), and "ARARs Q's & A's: General Policy, RCRA, CWA, SDWA, Post-ROD information, and Contingent Waivers," Publication No. 9234.2-01/FS-A (June 1991), Questions 14-16.

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Attachment 2

UIC Inventory Sheet

FOR SAMPLE USE ONLY – COMPARABLE FORMAT ACCEPTABLE

UNDERGROUND DISCHARGE SYSTEM (CLASS V) INVENTORY SHEET

(see instructions on back)

1. Name of facility: Army Garrison - Fort Buchanan Army Reserves

   Address of facility: USAG Fort Buchanan

   City/Town: Fort Buchanan State: PR Zip Code: 00934

   County: Puerto Rico Location:

   Contact Person: Anibal Negron Phone Number: : (787) 707-3575

2. Name of Owner or Operator: Operator: Anibal Negron

   Address of Owner or Operator: USAG Fort Buchanan

   City/Town: Fort Buchanan State: PR Zip Code: 00934

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3. Type & number of system(s): ____Drywell(s) ____Septic System(s) x Other(describe): Injection Wells and DPT points
   Attach a schematic of the system. Attach a map or sketch of the location of the system at the facility.

4. Source of discharge into system: Liquid mixture of extracted groundwater and ABC+ formula. 10% concentration by volume Naturally occurring dehalococcoides bacterial cultures will be injected with an inert gas (nitrogen) to augment the naturally occurring bacterial populations to degrade chlorinated volatiles in groundwater

5. Fluids discharged: Liquid mixture of extracted groundwater and ABC+ formula. 10% concentration by volume Naturally occurring dehalococcoides bacterial cultures will be injected with an inert gas (nitrogen) to augment the naturally occurring bacterial populations to degrade chlorinated volatiles in groundwater

6. Treatment before discharge: None - see above

7. Status of underground discharge system: ☐ Existing ☐ Unused/Abandoned ☐ Under Construction ☑ Proposed

   Approved/Permitted by: Date constructed:

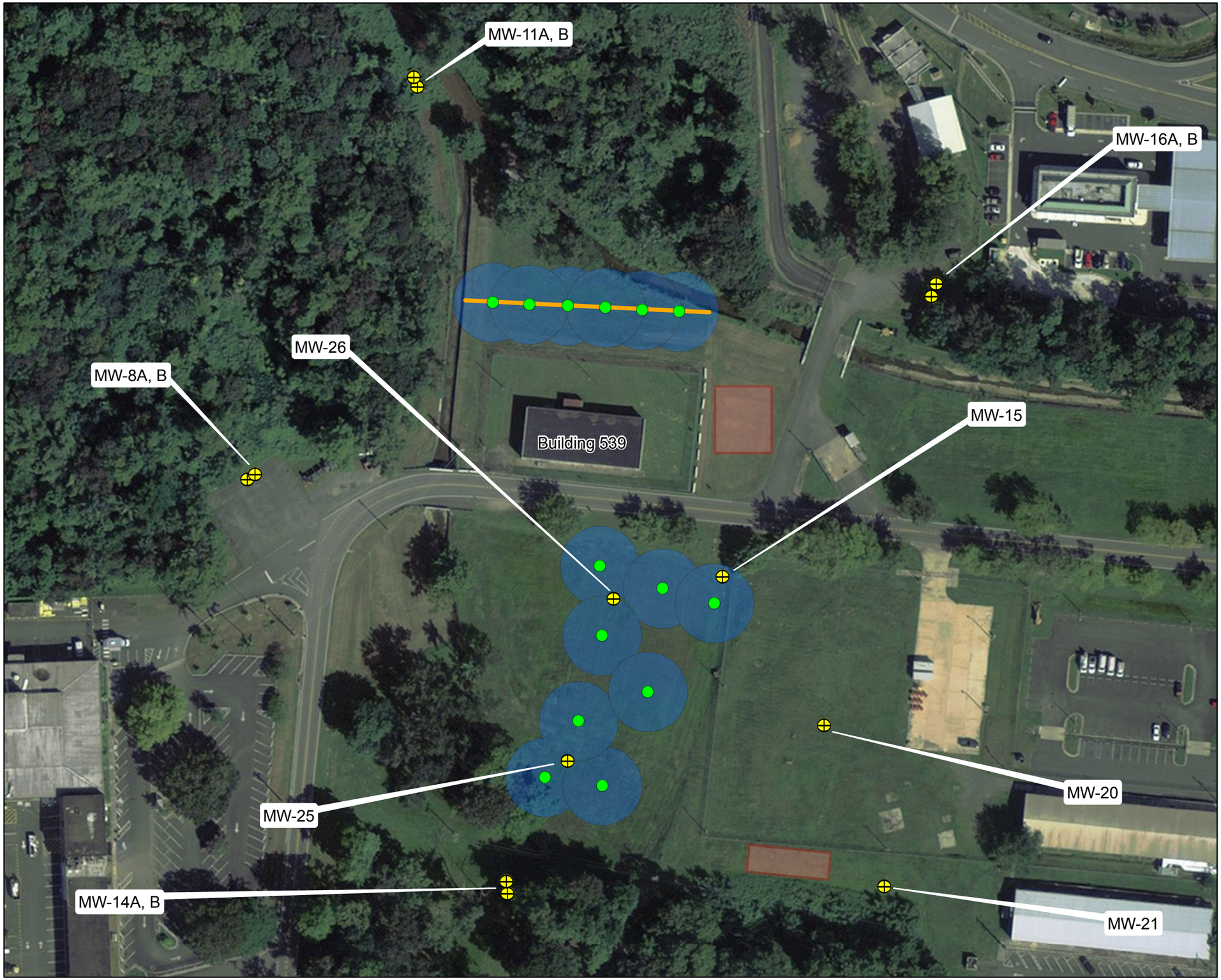
CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

Signature: Date:

Name (printed):

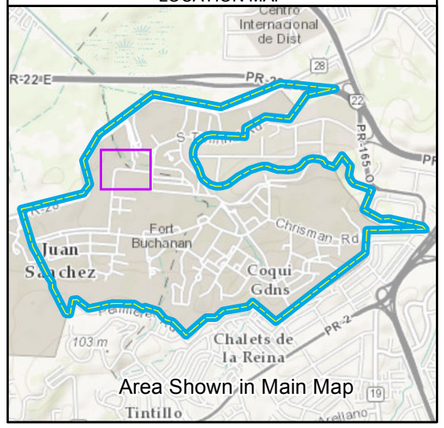
Official Title:



LEGEND

- Monitoring Well
- Proposed Injection/ Extraction Well
- Proposed Barrier Wall (includes 50 DPT injection points)
- Approximate Radius of Influence
- Approximate Locations of Proposed Staging Areas
- Installation Boundary

LOCATION MAP



NOTES & SOURCES

Basemap from ESRI 2013

0 12.5 25 50
Meters

N W E S

United States Army Garrison
Fort Buchanan
Puerto Rico

Figure 5-1
Source Area and Barrier Wall Layout

Attachment 3

ABC+® MSDS and KB-1® Data Sheet

Material Safety Data Sheet	**U.S. Department of Labor**
May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910 1200. Standard must be consulted for specific requirements.	Occupational Safety and Health Administration (Non-Mandatory Form) Form Approved OMB No. 1218-0072
IDENTITY *(as Used on Label and List)* *ABC (Anaerobic BioChem)*	*Note: Blank spaces are not permitted. If any item is not applicable or no information is available, the space must be marked to indicate that.*

Section I

Manufacturer's name REDOX TECH, LLC	Emergency Telephone Number 919-678-0140
Address *(Number, Street, City, State and ZIP Code)*	Telephone Number for Information 919-678-0140
200 Quade Dr, Cary NC 27513	Date Prepared January 2011
	Signature of Preparer *(optional)*

Section II—Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity, Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Mixture of :				
Lactate salts (0 to 60%)			NA	NA
Lactic acid esters (0 to 98.5%)			NA	NA
Phosphate buffer (0 to 0.1%)			NA	NA
Ferrous Iron (0 to 0.1%)			NA	NA
Fatty Acids (0 to 5%)			NA	NA
Propane-1,2,3-triol (0 to 99%)			NA	NA

Section III—Physical/Chemical Characteristics

Boiling Point	> 100 C	Specific Gravity (H_2O = 1)	1.12 - 1.15
Vapor Pressure (mm Hg) Lactic acid esters	2.7 mbar. 20 ^oC	pH	6.0 to 8.0
Vapor Density (AIR = 1) Lactic acid esters	3.8	Evaporation Rate (Butyl Acetate = 1)	No information

Solubility in Water	Fully soluble and miscible
Appearance and Odor	Light yellow to colorless liquid, slight to mild, characteristic odor

Section IV—Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits Lactic acid esters:	LEL	UEL
Lactic acid esters: 61 ^oC (ISO 2719, closed cup)		1.5% (100 ^oC)	11.4% (100 ^oC)

Extinguishing Media	Water spray, carbon dioxide, dry powder, AFFF, foam
Special Fire Fighting Procedures	
Standard procedures for chemical fires	
Unusual Fire and Explosion Hazards	
Thermal decomposition can release irritating gases and vapors	
(Reproduce locally) OSHA 174 Sept. 1985	

Section V—Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	X	Temperatures above 61 °C. Will hydrolyze in presence of water, acids and bases

Incompatibility *(Materials to Avoid)* Strong oxidants

Hazardous Decomposition or Byproducts no known

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

Section VI—Health Hazard Data

Route(s) of Entry	Inhalation? Yes, esters only	Skin? Yes	Ingestion? Yes

Health Hazards *(Acute and Chronic)* Acid esters: Risk of irritation to eyes. Irritating to respiratory system. May degrease skin.

Carcinogenicity None	NTP? No	IARC Monographs? No	OSHA Regulated? No

Signs and Symptoms of Exposure Red irritated skin. May cause light-headedness when used in poorly ventilated area without proper vapor mask..

Medical Conditions Generally Aggravated by Exposure Persons susceptible or sensitive to eye and respiratory irritation

Emergency and First Aid Procedures Inhalation: Move to fresh air; Skin: Wash skin immediately with water. Eyes: Flush with water for at least 15 minutes, consult physician; Ingestion: Drink water and consult physician.

Section VII—Precautions for Safe Handling and Use

Use safety glasses and latex or nitrile gloves. Work in well ventilated area.

Waste Disposal Method ABC can be disposed as waste water or landfilled when in compliance with local regulations

Precautions to Be Taken in Handling and Storing May be F lammable - Do not store near ignition sources or at elevated temperatures.

Avoid long storage times, will break down to innocuous products

Other Precautions Wear PPE when handling and keep containers tightly closed when stored.

Section VII—Control Measures

Respiratory Protection *(Specify Type)* If ventilation inadequate or in confined space, use respirator with filter (DIN 141)

Ventilation	Local Exhaust Acid esters have low vapor pressure (2.7 mbar at 20 °C) Standard HVAC conditions typically adequate	Special Ensure fumes can not reach ignition source
	Mechanical *(General)* Floor or stand fans	Other

Protective Gloves PVA, nitrile or latex	Eye Protection Safety glasses with side shields
Other Protective Clothing or Equipment	
Work/Hygienic Practices Do not eat, drink or smoke while handling. Remove/wash contaminated clothing before reuse.	

MATERIAL SAFETY DATA SHEET

Peerless Metal Powders & Abrasives
124 South Military
Detroit Michigan 48209
Phone # (313) 841-5400

SECTION I IDENTIFICATION

Product Name: Cast Iron Aggregate

CAS No. 65997-19-5

Chemical Family: Metals
Formula: N/A
Date: : December 6, 2011

SECTION II INGREDIENTS AND RECOMMENDED OCCUPATIONAL EXPOSURE LIMITS

Material	CAS No.	Weight %	ACGIH TLV Mg/cu m
Iron	1309-37-1	90 +	5
Carbon	7440-44-0	<4.00	3.5
Manganese	7439-96-5	<0.60	5
Silicon	7440-21-3	< 2.00	10
Chromium	7440-47-3	<0.20	0.5

* C means ceiling limit.
These are limits which shall not be exceeded.

SECTION III PHYSICAL DATA

Melting Point	Density	Appearance and Odor
Base Melt – 2750 degrees F	6.7 gm/cc	grey particles – no odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

Airborne finely dispersed dust may ignite.
Extinguishing Media
Dry chemical, dry sand, graphite to smother fire

Special Fire Fighting Procedures:
Use water only in mist / fog dry application to avoid spreading powder or accumulated dust. Use self-container breathing apparatus and protective clothing.

SECTION V REACTIVE DATA

Stable under normal conditions of storage and transport. Will react with strong oxidizers.

SECTION VI HEALTH HAZARD DATA

No potential health hazards
Other than those listed are known

Major Exposure Hazard

X Inhalation, Skin Contact
X Eyes Contact, Indigestion

Effect Of Overexposure
Inhalation – bronchitis, siderosis
Eyes Contact – mechanical irritation

Emergency and First Aid Procedures
Inhalation – Remove to fresh air
Eye Contact – Irrigate eyes to remove dust particles

MATERIAL SAFETY DATA SHEET

Peerless Metal Powders & Abrasives
124 South Military
Detroit Michigan 48209
Phone # (313) 841-5400

SECTION VII SPILL OR LEAK PROCECURES

Avoid generation of airborne dust during clean-up process
Dispose of in accordance with local, state and federal regulations

SECTION VIII SPECIAL PROTECTION INFORMATION

As needed, use approved dust respirator and approved safety goggles (OSHA 29 CFR 1910.94).
Do not use contact lenses. Ventilation recommended.

SECTION IX SPECIAL PRECAUTIONS

Keep closed containers.
Do not store near strong oxidizers.
Use good housekeeping procedures to avoid creating dust.

The information contained herein has been complied from sources considered reliable and accurate to the best of our knowledge and belief, but is not guaranteed to be so. It relates only to the product listed and does not relate to use of the product in combination with any other material of materials or in a particular processes. Since the use of the MSDS information, the conditions of use of our product and the environment in which that product is placed are not within the control of Peerless Metal Powders and Abrasives, it is the user's obligation and duty to determine the conditions of safest use of the products used as well as the manner in which these products may be affected by the environment in which they may be used.

We urge you to review each MSDS to ensure that your uses of the product take into account the current information available on its potential hazards. It is your responsibility to convey this information to your employees, customers or any one who may be exposed to this product. Please check your files and discard any previous versions as may be applicable. If you have any questions or require additional copies, please contact our sales department.

KB-1®

Bioaugmentation Culture

For bioaugmentation of chlorinated ethene contaminated sites

Contact SiREM for a quotation or more information on our line of leading bioaugmentation cultures

toll free: 1-866-251-1747
phone: (519) 822-2265

KB-1® is a naturally occurring, non-pathogenic microbial culture that contains *Dehalococcoides* (*Dhc*), the only group of microorganisms documented to promote the complete dechlorination of chlorinated ethenes to non-toxic ethene. Although *Dhc* are found in the environment, research indicates these microorganisms are not ubiquitous and not all Dhc are capable of complete dechlorination of chlorinated ethenes. At sites where *Dehalococcoides* are absent, tetrachloroethene (PCE) and trichloroethene (TCE) dechlorination typically stalls at cis-1,2-dichloroethene (cDCE), despite ample electron donor availability. KB-1® is used to establish complete dechlorination at sites that do not contain *Dhc* (or the right *Dhc*), and to accelerate dechlorination rates to achieve treatment goals. Bioaugmentation of aquifer systems with KB-1® provides an active microbial community capable of complete reductive dechlorination, ensuring that PCE, TCE, cDCE and vinyl chloride (VC) are completely dechlorinated to ethene, without undue acclimation periods, and at rates that are suitable for achieving remedial goals.

KB-1® is the most field-demonstrated culture of its type, and its robustness has been demonstrated for both source area and plume remediation in both porous media and fractured bedrock environments.

Benefits of KB-1® Include:

- Low cost: single application
- Works with all commonly used electron donors
- Natural microbial culture (not genetically modified or engineered)
- Certified to be free of known human pathogens
- Rigorous quality control procedures ensure each shipment is of the highest quality, stable, safe, effective and free of chlorinated volatile organic compounds
- Shipped overnight in specially designed stainless steel vessels that prevent exposure to air and which are safe and easy to handle

All KB-1® purchases include:

- Technical support from an experienced SiREM field technician to support successful application to your site
- Complimentary Gene-Trac® *Dehalococcoides* tests to verify the successful delivery and persistence of KB-1® in site groundwater
- KB-1® guarantee - complete dechlorination to ethene*

**Some conditions apply*

KB-1 plus®

Bioaugmentation Culture

Overcome Inhibition at Mixed Chlorinated Solvent Sites

KB-1® Plus are custom-blended microbial culture formulations for bioaugmentation of sites with inhibitory concentrations of chlorinated ethanes and chlorinated methanes, which are often comingled with chlorinated ethenes. KB-1® Plus has been demonstrated to dechlorinate in excess of 200 milligrams per liter (mg/L) of 1,1,1-trichloroethane (1,1,1-TCA) to chloroethane and carbon tetrachloride, chloroform to dichloromethane (DCM) to non-chlorinated end products. Chloroethane can be further degraded under aerobic conditions. These cultures have been developed by SiREM in collaboration with the University of Toronto[1,2] and the United States Geological Survey[3].

Benefits of KB-1® Plus include:

- Overcome inhibition of chloroethene dechlorination caused by 1,1,1-TCA and chloroform
- Only a single application required
- Works with all commonly used electron donors
- Natural microbial culture (not genetically modified)
- Pathogen free
- Rigorous quality control ensures each shipment is effective, stable and safe
- Shipped overnight in specially designed stainless-steel vessels that prevent exposure to air and are safe and easy to handle

All KB-1® Plus purchases include:

- KB-1® Plus Guarantee*
- Technical support to ensure a successful application to your site
- Complimentary Gene-Trac® *Dehalococcoides* and *Dehalobacter* tests to verify the successful delivery, growth and persistence of KB-1® Plus microbes in site groundwater

Contact SiREM for a quotation or more information on our line of leading bioaugmentation products.

toll free: 1-866-251-1747
phone: (519) 822-2265

References

[1]Grostern, A. and E. A. Edwards. 2006. Growth of *Dehalobacter* and *Dehalococcoides* spp. during Degradation of Chlorinated Ethanes. *Appl. Environ. Microbiol*. 72: 428–436.

[2]Grostern, A., M. Duhamel, S. Dworatzek and E. A. Edwards. 2010. Chloroform respiration to dichloromethane by a *Dehalobacter* population. *Environmental Microbiology*. 12: 1053–1060.

[3]Jones E. J. P., M. A. Voytek, M.M. Lorah, J. D. Kirshtein. 2006. Characterization of a Microbial Consortium Capable of Rapid and Simultaneous Dechlorination of 1,1,2,2-Tetrachloroethane and Chlorinated Ethane and Ethene Intermediates. *Bioremediation Journal,* Volume 10: 153-168.

**Some conditions apply*

REQUEST OF EXCAVATION/BORINGS PERMIT IN FORT BUCHANAN
(SOLICITUD DE PERMISO DE EXCAVACION/SONDEO EN EL FUERTE BUCHANAN)

03/12/2015

Date (Fecha)

Project Work Order Number*
(Número de Orden de Trabajo del Proyecto)*
**Mandatory for Permit Approval - Project Owner must provide the Number*
**(Requerido para Aprobación del Permiso - El dueño del proyecto debe proveer el Número)*

1. **Project Name:** Fort Buchanan – TCE Plume Barrier Wall North of Building 539
   (Nombre del Proyecto)
2. **Contract No.:** W91ZLK-13-D-0008
   (No. Contrato)
3. **Contractor's Company Name:** KEMRON Environmental Services Inc.
   (Nombre de la Compañía)
4. **Contractor Rep Name/Title:** Jeanette Hamm/ Project Manager or Joel Morales/Asst. PM
   (Nombre del Representante del Contratista/Título)

   Phone No.: 404-636-0928/904-343-9014
   (No. Teléfono)

Proponent Part

5. **Brief Description of the Excavation/Borings:**
   (Breve Descripción de la Excavación/Sondeo)

   6 permanent 2" monitoring wells will be installed to the north of the Building 539 up to 40 feet deep using a drill rig. Additionally, a total of 50 Direct Push points will be drilled for injection to perform the groundwater remediation. The direct push points will consist of a 1.5" diameter holes to an estimated 30 ' depth. All the points will be located over 50' to the north of Building 539.

6. **Exact Location of Excavation Work:**
   (Localización Exacta del Trabajo de Excavación)

   Please see the attached figure for the exact location of the barrier wall located north of Building 539.

7. **Proposed Work Start Date:** 04/15/2015
   (Fecha Propuesta de Comienzo)
   Estimated Comp Date: 07/01/2015
   (Fecha Estimado de Terminación)

8. **Request Directorate of Public Works (DPW), and NEC, identify to the contractor any underground cables, lines pipes, etc. that the Contractor should be aware of existing conditions.**

   (Solicito al Directorado de Obras Públicas y al "Network Enterprise Center" que identifique al contratista cualquier cable y tubería soterrada para que este pueda estar notificado de la condición existente en el terreno.)

10334859
received
3-18-15

9. **Documents provided by the Contractor:**
(Documentos presentado por el Contratista)

☒ **Drawings/Sketches:**
(Dibujos/Croquis)

☐ **Other:**
(Otro)

10. **Contractor's Signature:** _____
(Firma del Contratista)

Note: The Contractor is responsible to coordinate with proper personnel from NEC and concerned DPW divisions the excavation/boring permit prior to perform any work associated to the requested permit.

(Nota: El Contratista es responsable de coordinar con el personal apropiado del "NEC" y de las divisiones concernientes del Directorado de Obras Públicas el permiso de excavación/sondeo previo a ejecutar cualquier trabajo asociado al permiso solicitado.)

Excavation/Borings Permit Approval

(Aprobación del Permiso de Excavación/Sondeo)

1. **NEC: Point of Contact: Mr. Hipólito Rivera, Bldg. 527, Tel: 707-~~5752~~ 2633)**
   (Punto de Contacto)

   a. **Brief Description of Items Identified:**
   (Breve Descripción de Puntos Encontrados)

   Underground & Aerial Telephone and Fiber Cables

   b. **NEC Reference Maps/Drawings included:**
   (Mapas/Dibujos/Croquis de referencia del "NEC")

   ☑ **Maps/Drawings/Sketches (Mapas/Dibujos/Croquis)**

   ☐ **Other/Specify (Otro/Especifique):**

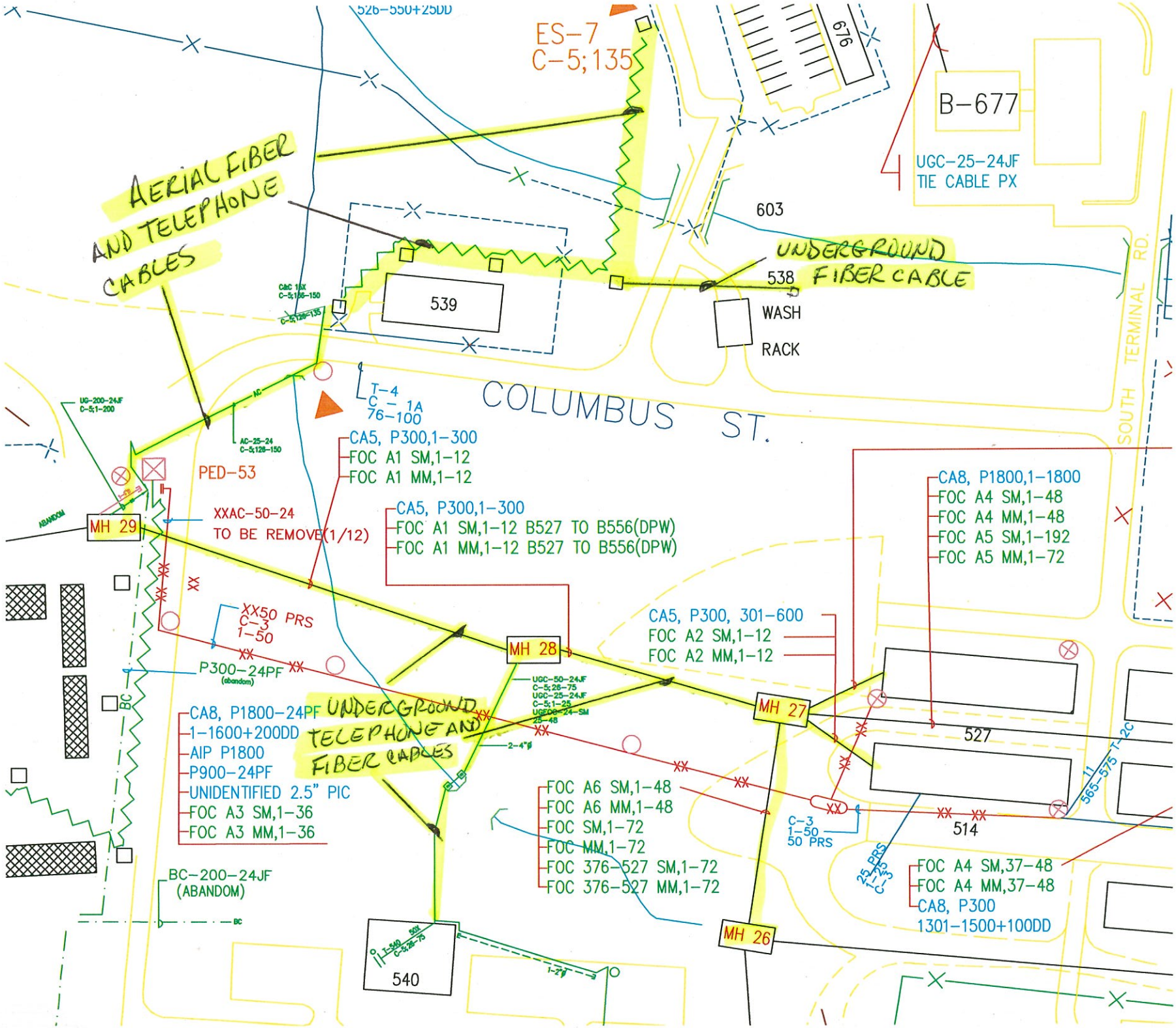
For the Use of the NEC Representative

☑ **APPROVED (APROBADO)** ☐ **DISAPPROVED (NO APROBADO)**

Remarks (Comentarios):

Underground & aerial Telephone and Fiber Cables are marked on Maps & on site.

NEC Rep Approval: Hipólito Rivera HR **Date:** 03/24/201
Name and Signature **(Fecha)** - 03/24/2015.
(Aprobado Representante del "NEC")
(Nombre y Firma)


526-550+250D
ES-7
C-5;135
676
B-677
UGC-25-24JF
TIE CABLE PX
AERIAL FIBER
AND TELEPHONE
CABLES
603
UNDERGROUND
FIBER CABLE
538
WASH
RACK
539
SOUTH TERMINAL RD.
COLUMBUS ST.
T-4
C-1A
76-100
UG-200-24JF
C-5;1-200
AC-25-24
C-5;126-150
PED-53
MH 29
XXAC-50-24
TO BE REMOVE(1/12)
CA5, P300,1-300
FOC A1 SM,1-12
FOC A1 MM,1-12
CA5, P300,1-300
FOC A1 SM,1-12 B527 TO B556(DPW)
FOC A1 MM,1-12 B527 TO B556(DPW)
CA8, P1800,1-1800
FOC A4 SM,1-48
FOC A4 MM,1-48
FOC A5 SM,1-192
FOC A5 MM,1-72
XX50 PRS
C-3
1-50
P300-24PF
(abandon)
MH 28
CA5, P300, 301-600
FOC A2 SM,1-12
FOC A2 MM,1-12
UGC-50-24JF
C-5;26-75
UGC-25-24JF
C-5;1-25
UGEOG-24-SM
25-48
2-4"ø
MH 27
527
CA8, P1800-24PF
1-1600+200DD
AIP P1800
P900-24PF
UNIDENTIFIED 2.5" PIC
FOC A3 SM,1-36
FOC A3 MM,1-36
UNDERGROUND
TELEPHONE AND
FIBER CABLES
FOC A6 SM,1-48
FOC A6 MM,1-48
FOC SM,1-72
FOC MM,1-72
FOC 376-527 SM,1-72
FOC 376-527 MM,1-72
C-3
1-50
50 PRS
514
565-575 T-2C
25 PRS
1-75
C-3
FOC A4 SM,37-48
FOC A4 MM,37-48
CA8, P300
1301-1500+100DD
BC-200-24JF
(ABANDOM)
BC
540
MH 26

For the Use of the DPW - Environmental Division Representative

2. **DPW - Environmental Division: Point of Contact:**
(Punto de Contacto)
Mr. Anibal Negron, Chief Environmental Division, Bldg. 34, Tel: 787-707-3575)

a. **Brief Description of Items Identified:**
(Breve Descripción de Puntos Encontrados)

1. **Restoration Sites** (Area de restauración): _X_ Yes (Si) _ No (No)
2. **Munitions Site** (Area de municiones): __ Yes (Si) _X__ No (No)
3. **Compliance Clean up** (Limpieza de cumplimiento): __ Yes (Si) _X_ No (No)
4. **Critical Habitat** (Habitat crítico): _ Yes (Si) _X_ No (No)
5. **Other** (Otro):

b. **DPW - Environmental Reference Maps/Drawings included:**
(Mapas/Dibujos Ambientales de Referencia incluido)

X☐ **Maps/Drawings/Sketches** (Mapas/Dibujos/Croquis)

☐ **Magnetometer/ geophysical investigation**
(Magnetómetro/Investigación geofísica)

X☐ **Explosive Ordnance Disposal** (Dispocisión de ordenanza explosiva)

X☐ **Natural Resources** (Recursos Naturales)

☐ **Other/Specify** (Otro/Especifique):
- **Munitions Explosives of Concern (MEC) Awareness Pamphlet**
- **Puerto Rico Boa Flyer**
- **TCE Site Figure 3-3 CMIP Final 2015**

☒ **APPROVED** (APROBADO) ☐ **DISAPPROVED** (NO-APROBADO)

Remarks (Comentarios):

A. If any excavated soil and groundwater will be disposed off site it needs to be characterized for proper disposal according to federal and state regulations and deposited in an approved landfill.
B. There is a Puerto Rican Boa Habitat near this area. See flyer.
C. Proposed work in source area of active TCE groundwater site; TCE levels range from 100-3,430 parts per billion (ppb). Protect yourself from contact of groundwater and any chemical that you are injecting into the ground. if you encounter problems call Fort Buchanan DPW Environmental Office 787-707-3575.

Practice munitions safety 3Rs (Sergeant Woof www.denix.osd.mil/ UXO safety):
1. **Recognize** that you may have encountered a munition. Do not touch, move or disturb it.
2. **Retreat** at least 300 feet (a cellular phone may activate it).
3. **Report** it to Fort Buchanan Security 787-707-4911.

DPW – Env. Div. Rep. Approval: Anibal Negron **Date:** 3/18/15
Name and Signature **(Fecha)**
(Aprobado Representante de "DPW – División Ambiental")
(Nombre y Firma)

For the Use of the Engineering Division Representative

3. **DPW - Engineering Division: Point of Contact:**
(Punto de Contacto)
Mr. Luis E. Torres, Chief Engineering Division, Bldg. 34, Tel: 787-707-4044

a. **Brief Description of Items Identified:**
(Descripción Breve de Puntos Encontrados)

Site 2 – 6 permanent monitoring wells to be installed to the North of the Building 539.

Based on utilities reference drawings on record the following items are present in the area of the proposed excavation work:

1. Aerial primary feeder power lines.
2. Storm sewer open drainage on the north-east area.
3. Sanitary sewer lines nearby on east side but not within excavation area.
4. Overhead street lighting system nearby on north-east side but not within excavation area.

b. **DPW - Infrastructure Reference Maps/Drawings included:**
(Mapas/Dibujos de Referencia de Infraestructura incluido):

☒ **Electrical Distribution System (Sistema de Distribución Eléctrica)**

☐ **Water Distribution System (Sistema de Distribución de Agua)**

☒ **Storm Drainage System (Sistema de Drenaje)**

☒ **Wastewater Distribution System (Sistema de Drenaje de Aguas Grises)**

☒ **Other/Specify (Otro/Especifique): Street Lighting System.**

☒ **APPROVED (APROBADO)** ☐ **DISAPPROVED (NO-APROBADO)**

Remarks (Comentarios):

Personnel performing the excavation work must be especially careful as not to damage the existing utilities infrastructure, considering the possibility of having additional lines currently not accounted for in this area.

DPW – ENG. Div. Rep. Approval: For Alex Velez _____ **Date:** 20150327
Name and Signature **(Fecha)**
(Aprobado Representante de "DPW – División de Ingeniería")
(Nombre y Firma)

Special Conditions and/or instructions:
(Condiciones Especial y/o instrucciones)

☐ **Hand Excavation (Excavación a mano)**

☐ **Work to commence or to be accomplish only in the presence of DPW/NEC Personnel**
(Trabajo a comenzar o ser completado será solo en presencia del personal del "DPW/NEC")

☐ **Other:** N/A
(Otro)

Important Notes for the Contractor:

a) **The contractor will be responsible of all damages to these underground utilities and any other in the working area.**
(El contratista será responsable por todo daño a estas y otras utilidades soterradas en el área de trabajo.)

b) **Repairs shall be in accordance to Directorate Public Works specifications and instructions.**
(Las reparaciones serán de acuerdo a las especificaciones e instrucciones del Directorado de Obras Públicas.)

c) **It is recommended that the contractor use electromagnetic equipment (underground detector device) or similar equipment to exactly locate utility lines, in an effort to minimize their rupture.**
(Se recomienda que el contratista utilice equipo electromagnético (detector de líneas soterradas) o equipo similar para localizar las líneas de utilidades con precisión, en un esfuerzo para minimizar sus rupturas.)

d) **The contractor shall restore disturbed area to original condition or better.**
(El Contratista restaurará las áreas perturbadas a su condición original o mejor.)

ELECTRICAL DISTRIBUTION

LEGEND

WOOD POLE — PRIMARY, 13, 200V, 3 , 3W2/0 UNLESS OTHERWISE NOTED

CONC. POLE — PRIMARY, 13, 200V, 3 Ø, 3W2/0 UNLESS OTHERWISE NOTED

PT — PRIMARY TIE 38KV, 3 Ø, 3W

ABS — SWITCH: ABS-AIR BREAK SWITCH
CIRCUIT BREAKER

PREPA — PUERTO RICO ELECTRIC POWER AUTHORITY POWER LINE, 38 KV

UG — UNDERGROUND CABLE: PRIMARY-3#2,15kV, CU
SECONDARY-AS INDICATED.

2–25–1 — CAPACITY
TRANSFORMER
NUMBER OF PHASES
QUANTITY

TX2 — TRANSCLOSURE

T3 — TRANSFORMER

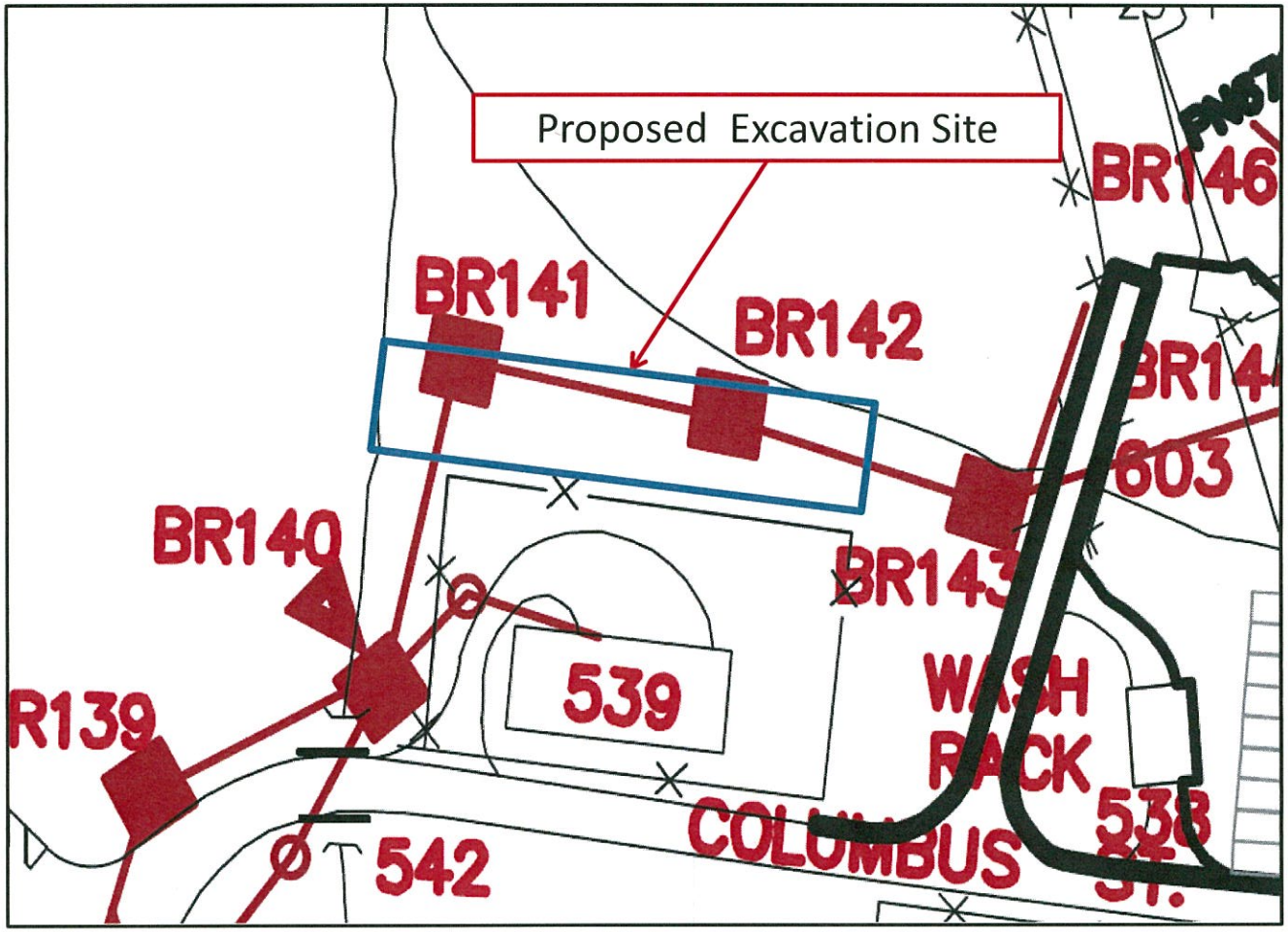
EXISTING SUBSTATION

SW — SWITCHING UNIT

BLACK FEEDER

BROWN FEEDER

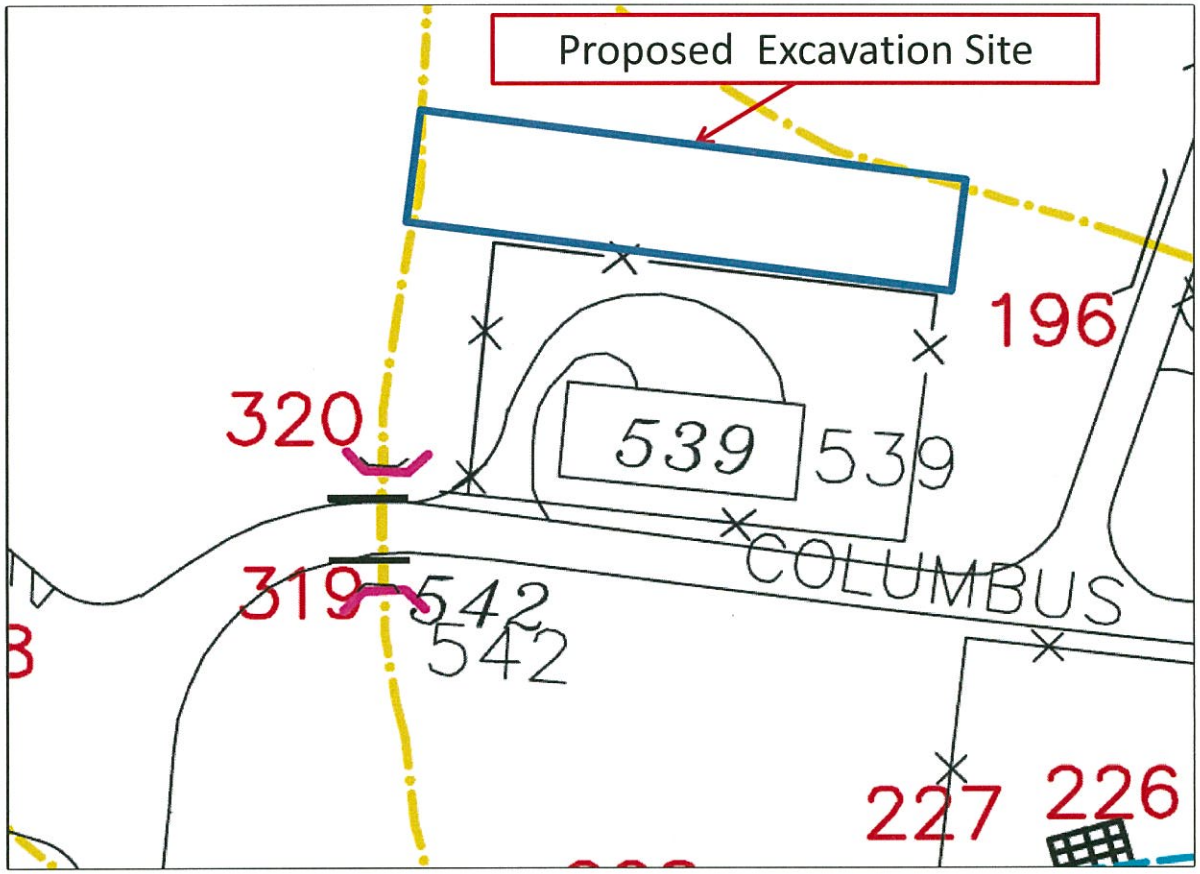
RED FEEDER



STORM DRAINAGE MAP

LEGEND

- MANHOLE
- CATCH BASIN
- STORM SEWER MAIN
- OPEN DRAINAGE
- PAVED INVERT DRAIN



WASTEWATER MAP

LEGEND

8" C	SANITARY SEWER, WITH SIZE AND MATERIAL
F.M.	FORCE MAIN
	ABANDONED IN PLACE
	PLUGGED
	DIRECTION OF FLOW
165	MANHOLE, WITH NUMBER
	SEPTIC TANK
	CLEANOUT
	GREASE TRAP

STREET LIGHTING

LEGEND

OVERHEAD PRIMARY LINE – 13.2 KV

OVERHEAD SECONDARY LINE – 3#8 ALUMINUM TRIPLEX

UNDERGROUND CABLES FOR STREET LIGHTING IN 1" PVC CONDUIT, WIRE SIZE 3 # 10 RHH

WOOD POLE WITH 175 M.V. FIXTURES.

CONCRETE ORNAMENTAL POLE 33 FEET

POLE MOUNTED TRANSFORMER, CAPACITY AS SHOWN

SECONDARY DOWN GUY

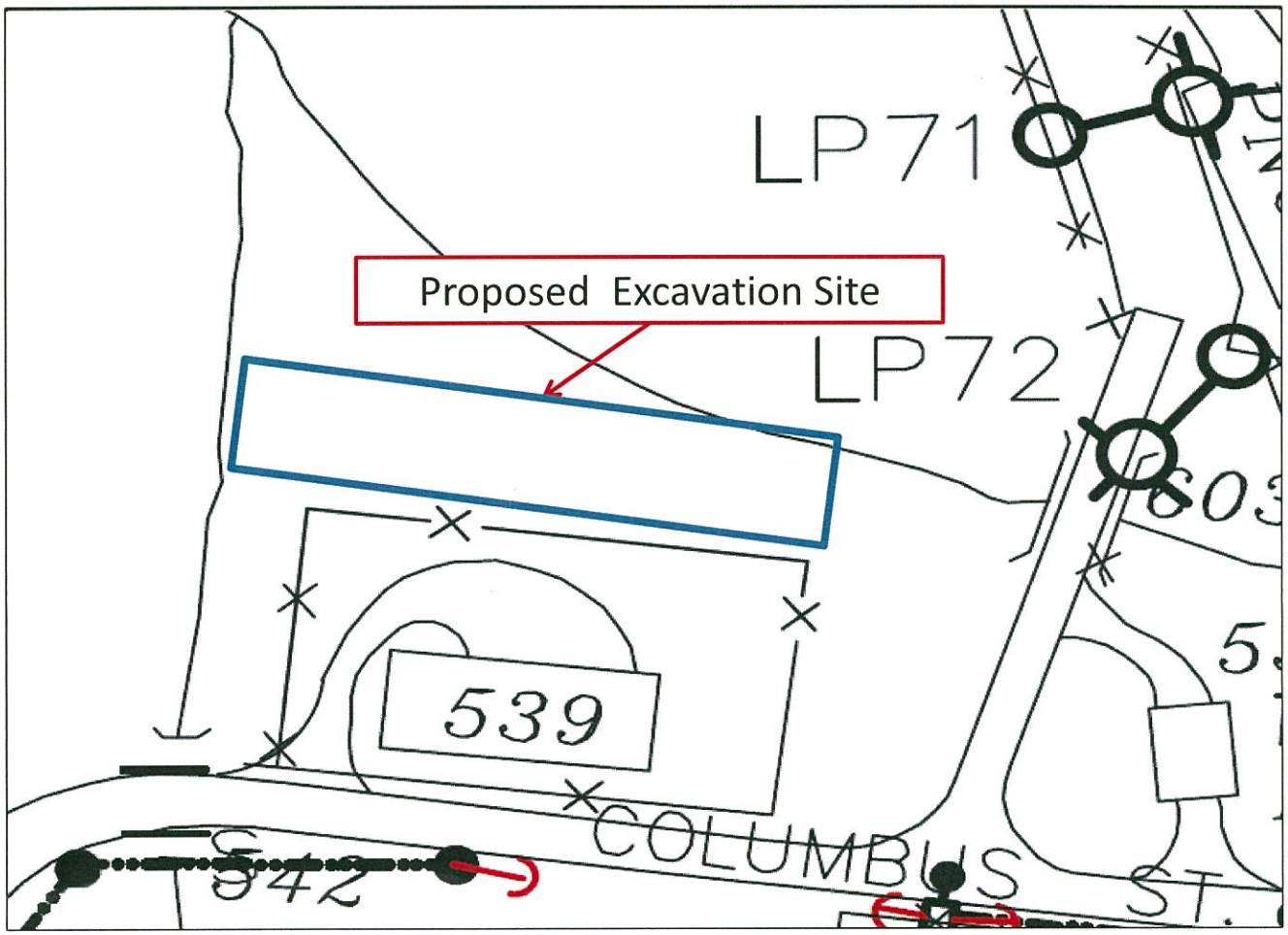
SERVICE DROP, LTG., FIXTURE CONNECTION

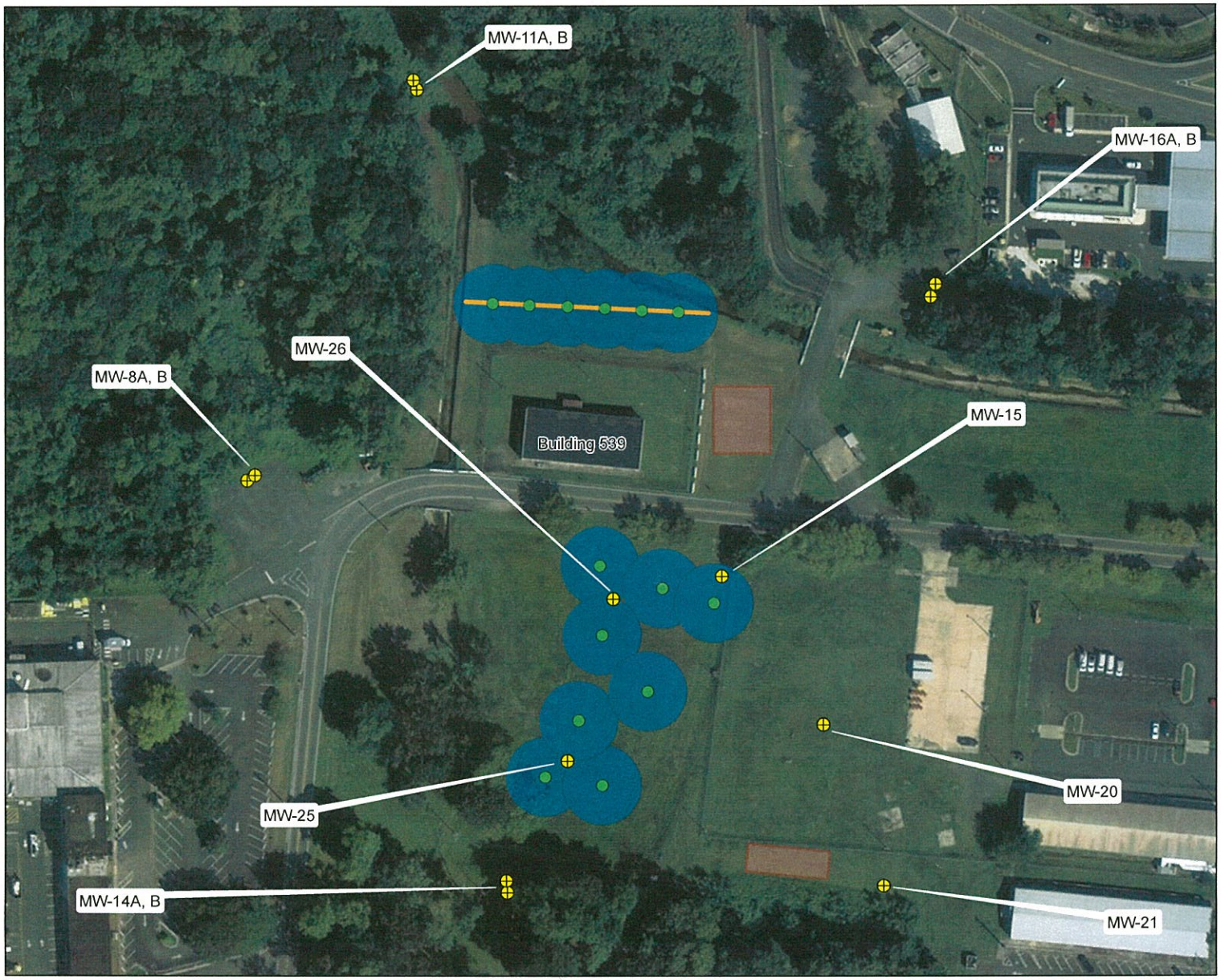
250 HID FLOOD LIGHT (SECURITY LIGHT)

40 FEET CONCRETE UTILITY POLE

DUAL FLOOD LIGHT

DENOTE FOG LIGHT





LEGEND

- Monitoring Well
- Proposed Injection/ Extraction Well
- Proposed Barrier Wall (includes 50 DPT injection points)
- Approximate Radius of Influence
- Approximate Locations of Proposed Staging Areas
- Installation Boundary

LOCATION MAP

NOTES & SOURCES

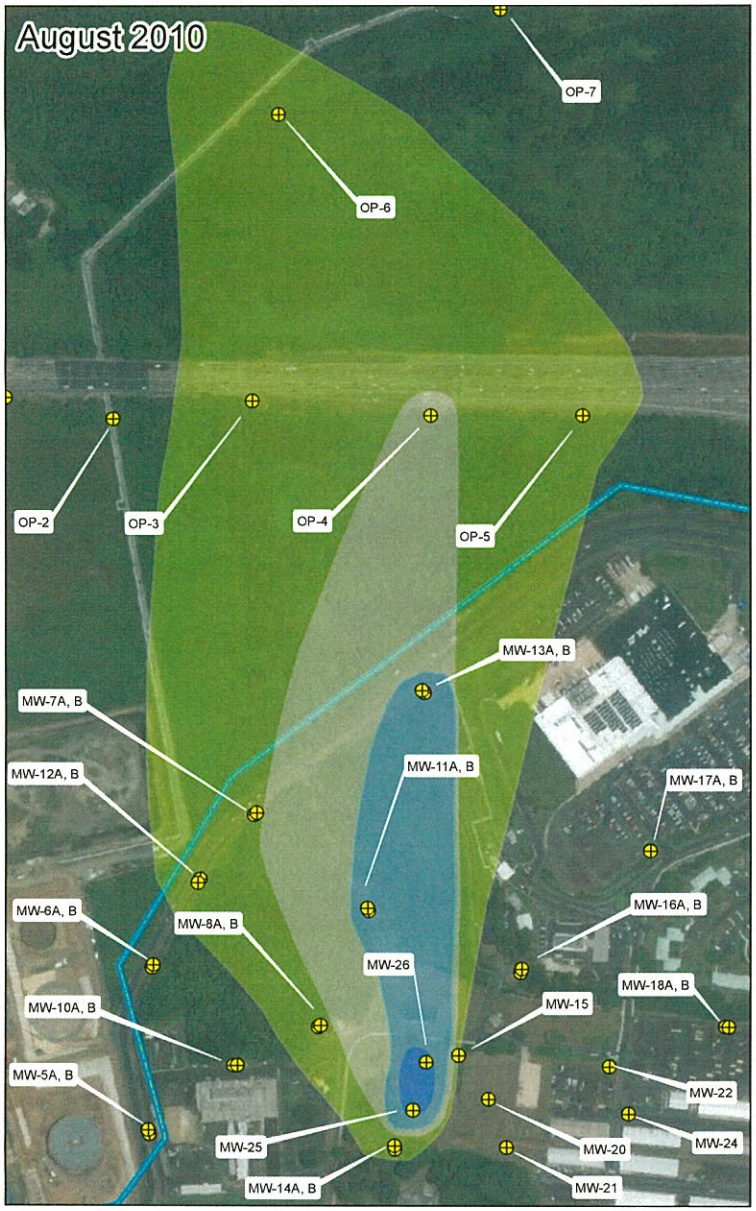
Basemap from ESRI 2013

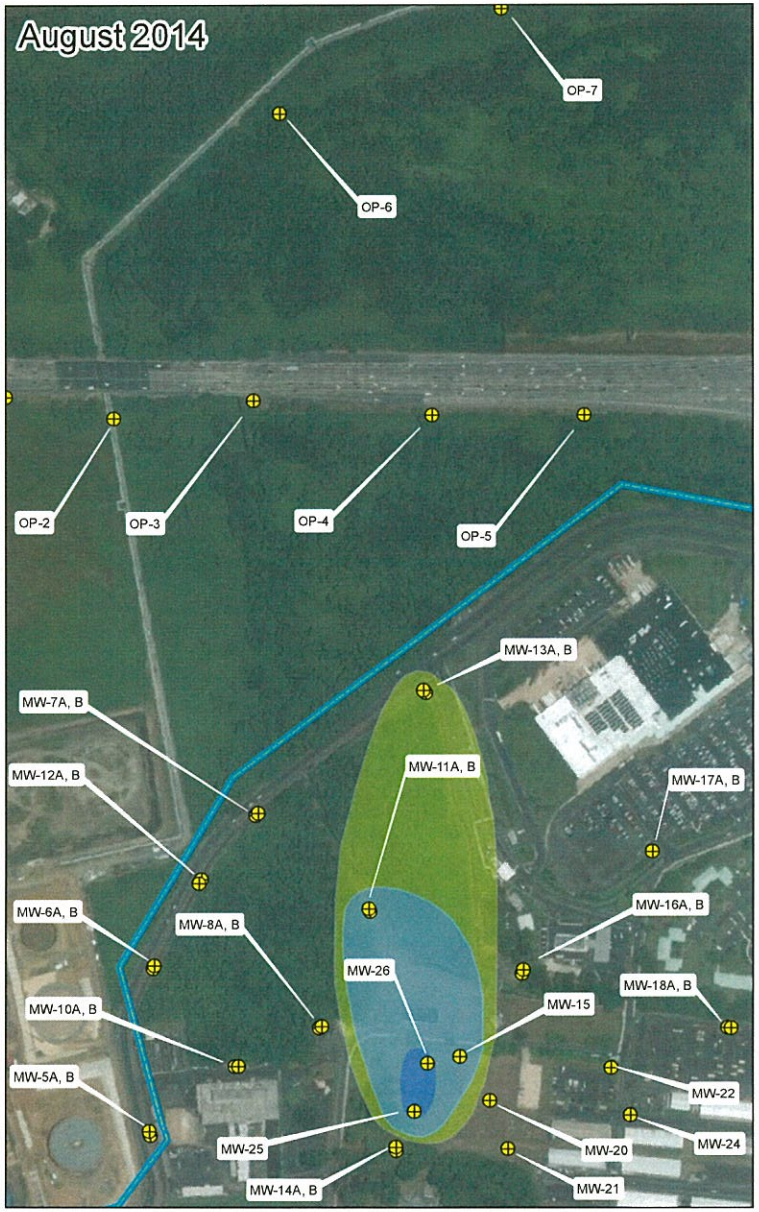
0 12.5 25 50
Meters

N W E S

United States Army Garrison
Fort Buchanan
Puerto Rico

Figure 5-1
Source Area and Barrier Wall Layout





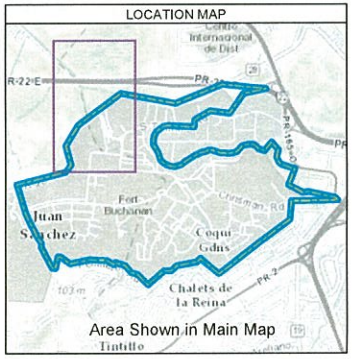
LEGEND

- Installation Boundary
- Monitoring Well

TCE Concentrations

- >500 ug/L
- 100-500 ug/L
- 50-100 ug/L
- 5-50 ug/L

LOCATION MAP



NOTES & SOURCES

Basemap from ESRI 2013

0 50 100 200
Meters

United States Army Garrison
Fort Buchanan
Puerto Rico

Figure 3-3
TCE Plume Comparison (2010 vs 2014)

ARMY GREEN IS ARMY STRONG

Sustaining the Environment for a Secure Future

DIRECTORATE OF PUBLIC WORKS
ENVIRONMENTAL DIVISION
USAG Fort Buchanan, PR 00934
Phone: 787-707-3966
Fax: 787-707-3570

For additional information, visit the Directorate of Public Works Environmental Division at Fort Buchanan Internet Site;

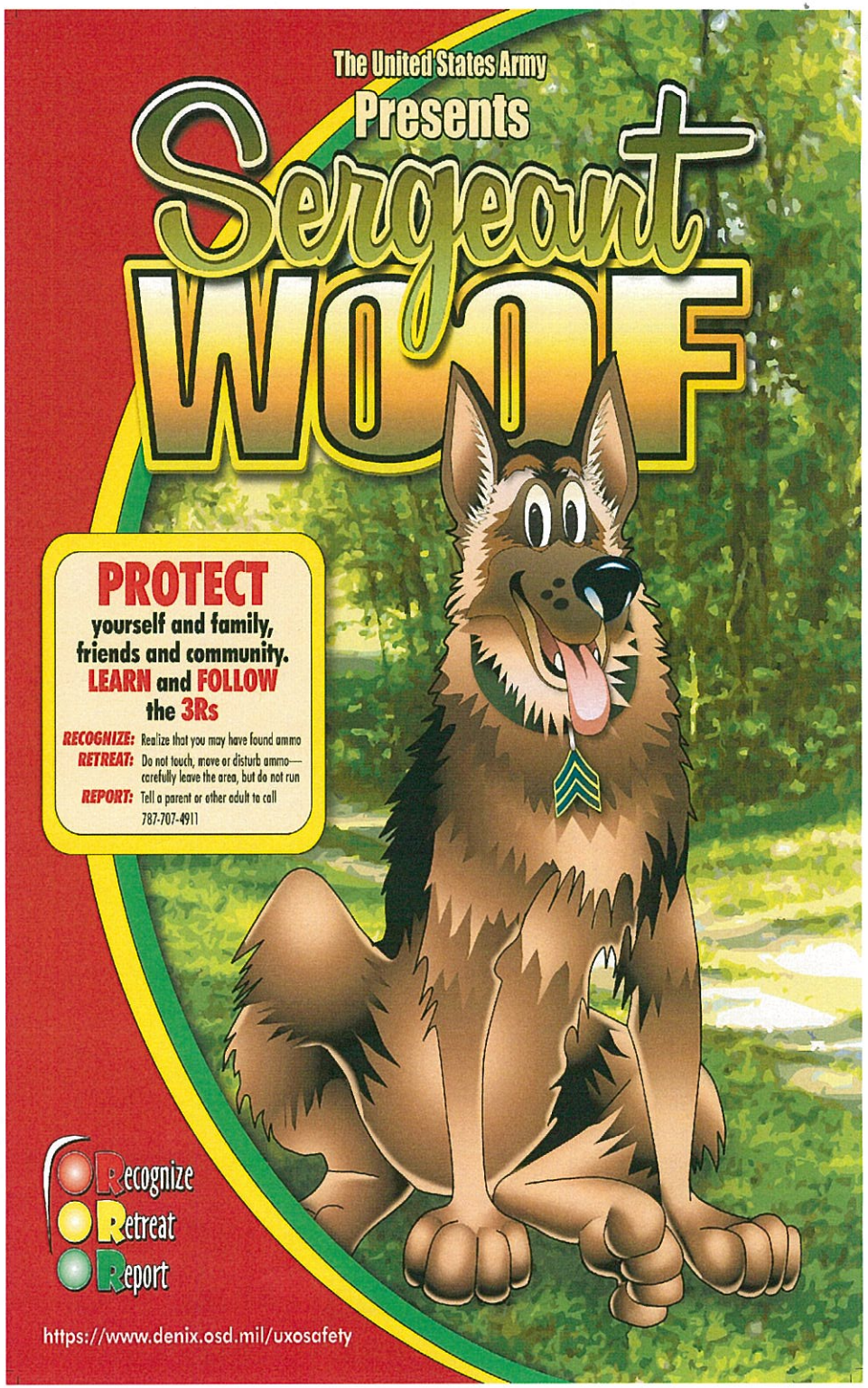
http://www.buchanan.army.mil/dpw/home.html

or access;

http://www.slideshare.net/FortBuchananEnvironment

Fort Buchanan Slideshare® Site Scan it!

13 SEP, SEMS REV, CDL #70



Munitions Explosives of Concern (MEC) Safety Guidelines for the US Army Garrison, Fort Buchanan.

History

The US Army Garrison, Fort Buchanan is an active Army Installation. In the past, munitions training took place at the Installation. The former Camp Buchanan Training Area is currently being restored under the Military Munitions Response Program (MMRP). The lead regulatory agency is the Department of Defense (DOD). The clean-up program is being implemented by the United States Army Environmental Command (USAEC) and guided by the United States Army Corps of Engineers (USACE), Baltimore District. The regulatory frame-work for clean-up is the Comprehensive Environmental Compensation Liability Act (CERCLA). It consists of one (1) Munitions Response Site (MRS) that covers thirty-two acres, inside of the (present day) Fort Buchanan Installation boundary limits. This includes the western half of the golf course, Maxie Williams Jr. Baseball Field, the 1300 Building area and the limestone hill Mogote area.

During the time frame of the 1920s through the 1940s, Camp Buchanan was used as a small arms firing range (contemporary with .30-06 Springfield rifles). According to an Archive Search Report from 1997, Chemical War Fare Materials were used in training and civil disturbances at Camp Buchanan Training Area. Mustard gas was reportedly stored within Fort Buchanan boundaries at that time.

In 1985, thirteen 3-inch Stoke Mortars were found buried in the sub-surface at two locations in the Maxi Williams Jr. Baseball field. In 2001, a post Korean-Age, M29 3.5–inch practice rocket was found on the land surface located north of the Maxi Williams Jr. Baseball Field area. The items found are classified as MEC. There have been no records found as to where these items would have been fired at Camp Buchanan. They may have been brought in during the construction era. These items have been sub-classified as Discarded Military Munitions (DMM).

In 2010, two (2) MEC items were found during construction of the New Armed Forces Reserve Center. On 27 October 2010, a practice hand grenade (M29) was found a few inches below grade. The spotting charge was spent elsewhere. On 20 December 2010, a Stoke Mortar was found a few inches below grade at the same site. The mortar reportedly had a charge and was blown-up in place.

On 27 January 2011, a body of a practice hand-grenade (M-69) was recovered in the grass area adjacent to the Pee Wee Track Field (area 575). This item was described as DMM.

In June 2012, a smoke hand-grenade was found in the subsurface at the construction site of the new DPW Building. In March 2013, an M-15 White Phosphorous hand-grenade was found in subsurface along South Gate Rd. near the Aquatic Park. In October 2013, suspected multiple white-phosphorous hand-grenades were found in the west parking lot of the new DPW Bldg 34.

December 2013 ,3 canon balls found at Bldg.167; and April 2014 a 3-inch Stoke Mortar found in 600 Area.

MEC items may still exist in the sub-surface and may still contain an explosive charge.

Proposed Construction or Excavation Work:

Before any proposed construction or excavation work can begin, the work needs to be coordinated with the Department of Public Works (DPW) at Fort Buchanan and obtain :

- approval from the Master Planner at Fort Buchanan,
- receive construction support materials from the Environmental Division at DPW
- approved excavation permit from DPW and DOIM

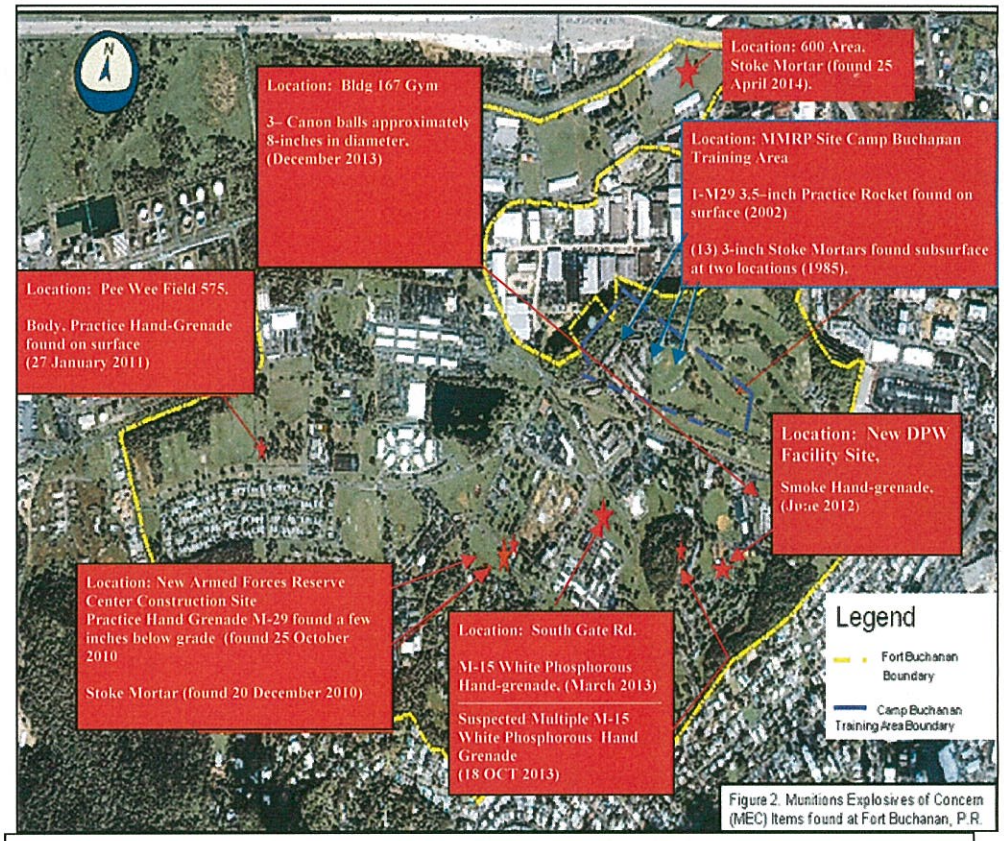
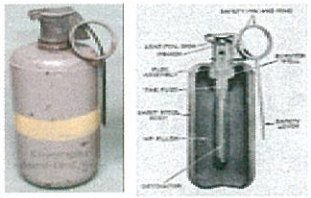


Figure 2. Munitions Explosives of Concern (MEC) Items found at Fort Buchanan, P.R.

3.5 inch Rocket M29 ;Practice Hand Grenade –M29; body of practice hand grenade(M69); Stoke Mortar; CWM Glass Ampule

Canon ball



M-15 White Phosphorous Hand-grenade

What to do if you find a Munitions Explosives of Concern (MEC) item:

Recognize: Recognize you have a possible MEC item (hand grenade, Stoke Mortar, Rockets, Chemical War fare-Glass ampules).

Retreat: Retreat to a safe area (at least 300-feet). Cell phones may activate the MEC.

Report: (Call: 787-707-4911-Fort Buchanan Security)

Do not touch or move the item

Puerto Rican Boa Sightings Reporting Actions

BOA SIGHTINGS MUST BE REPORTED

REPORT TO:

DIRECTORATE OF PUBLIC WORKS
(REGULAR WORKING / BUSINESS HOURS)

ENVIRONMENTAL DIVISION
787-707-3508 / 3575 / 3966
PEST CONTROL
787-407-6800 / 787-707-3894

DIRECTORATE OF EMERGENCY SERVICES
(AFTER REGULAR WORKING / BUSINESS HOURS)

FIRE DEPARTMENT
787-707-3410
POLICE
787-707-3337

BOA SNAKES ARE NON-VENOMOUS AND USUALLY DO NOT BITE HUMANS UNLESS THEY HAVE BEEN DISTURBED. THESE SNAKE-BITES SHOULD BE TREATED IN THE SAME WAY AS ANY OTHER ANIMAL BITE. FIRST CLEAN AND THEN DRESS THE WOUND, AND SEEK PROMPT MEDICAL ATTENTION.

To Report, Use Boa Sighting Form; they can be requested at the DPW Environmental Office, or call 707-3508

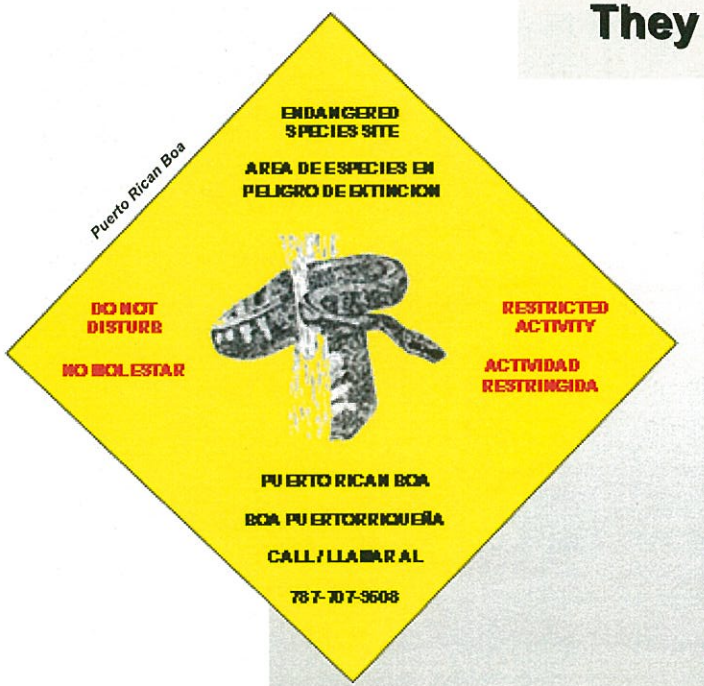
REPORT BOA SIGHTINGS... EVERY TIME !!!

Environmental Division, Directorate of Public Works, Fort Buchanan, P.R. 00934

Fort Buchanan Endangered Species Protection

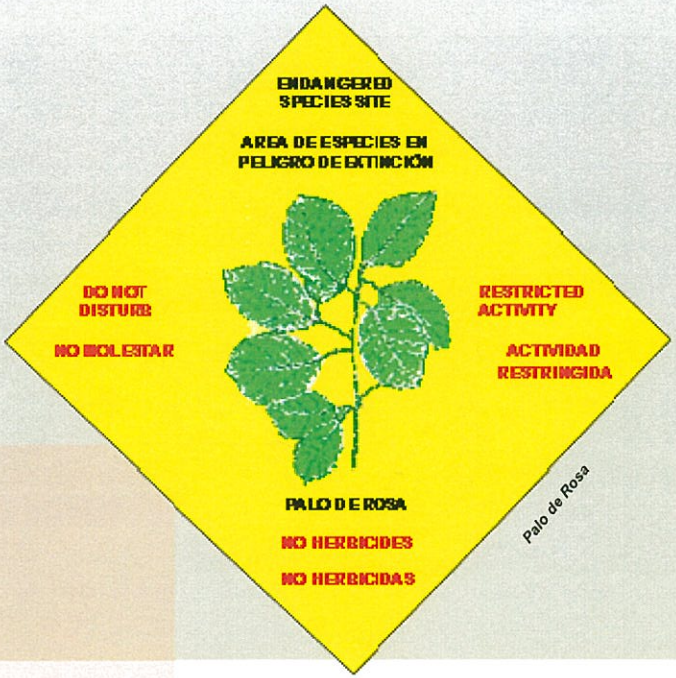
Have You Seen These Signs?

They do Serve a Conservation Purpose!



In accordance with the United States Federal Endangered Species Act, it is illegal to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect any endangered species. Both the Puerto Rican Boa and the Palo de Rosa are listed endangered species found at Fort Buchanan.

Everyone on Fort Buchanan must ensure that their actions do not jeopardize the species or adversely modify their critical habitats.



For additional information call the Environmental Conservation Manager at DPW Environmental Division

Telephone: 787.707.3575 / 3508 / 3966

Directorate of Public Works, Environmental Division, Fort Buchanan, P.R. 00934

DIRECTORATE OF PUBLIC WORKS
ENVIRONMENTAL DIVISION

PUERTO RICAN BOA SIGHTING FORM

FORT BUCHANAN, PR 00934

Name/Phone of person reporting:

Date & Time:

Weather conditions:

Location:

Description of area:

Size of boa/snake (foot):

Condition of Boa: ☐ Healthy ☐ Injured ☐ Dead

Position: ☐ Tree ☐ Ground ☐ Other

Activity: ☐ Moving ☐ Resting ☐ Nesting

☐ Feeding

Comments:

When completed, please forward to:

DPW Environmental Division, Miles Loop 81, Fort Buchanan, PR 00934

Phones: 787-707-3508 Fax: 787-707-3570

For additional information,
visit the Directorate of Public Works Environmental Division at Fort Buchanan Internet Site ;
http://www.buchanan.army.mil/dpw/home.html

FOR OFFICIAL USE ONLY

Type of sighting: ☐ General ☐ Nuisance call ☐ Construction

If nuisance call or construction sighting: ☐ Captured ☐ Escaped

Gender (If identified) ☐ Female ☐ Male

If captured, location of release:

Representative receiving report:

Comments:

REQUEST OF EXCAVATION/BORINGS PERMIT IN FORT BUCHANAN
(SOLICITUD DE PERMISO DE EXCAVACION/SONDEO EN EL FUERTE BUCHANAN)

3/12/2015

Date (Fecha)

Project Work Order Number*
(Número de Orden de Trabajo del Proyecto)*

**Mandatory for Permit Approval - Project Owner must provide the Number*
**(Requerido para Aprobación del Permiso - El dueño del proyecto debe proveer el Número)*

1. **Project Name:** Fort Buchanan – TCE Plume Source Area South of Building 539
   (Nombre del Proyecto)

2. **Contract No.:** W91ZLK-13-D-0008
   (No. Contrato)

3. **Contractor's Company Name:** KEMRON Environmental Services Inc.
   (Nombre de la Compañía)

4. **Contractor Rep Name/Title:** Jeanette Hamm/ Project Manager or Joel Morales/Asst. PM
   (Nombre del Representante del Contratista/Título)

   Phone No.: 404-636-0928/904-343-9014
   (No. Teléfono)

Proponent Part

5. **Brief Description of the Excavation/Borings:**
   (Breve Descripción de la Excavación/Sondeo)

   8 permanent monitoring wells to be installed to the South of the Building 539 across Columbus Street. The monitoring wells will be 2'' diameter and up to 40 feet deep using a drill rig. The wells will be located in the grass field south of Building 539, near MW-25, MW-26 and MW16.

6. **Exact Location of Excavation Work:**
   (Localización Exacta del Trabajo de Excavación)

   Please see the attached figure for the exact location of the wells to be located south of Building 539.

7. **Proposed Work Start Date:** 04/15/2015
   (Fecha Propuesta de Comienzo)

   Estimated Comp Date: 07/01/2015
   (Fecha Estimado de Terminación)

8. **Request Directorate of Public Works (DPW), and NEC, identify to the contractor any underground cables, lines pipes, etc. that the Contractor should be aware of existing conditions.**

(Solicito al Directorado de Obras Públicas y al "Network Enterprise Center" que identifique al contratista cualquier cable y tubería soterrada para que este pueda estar notificado de la condición existente en el terreno.)

10362318

3-18-15
received

9. **Documents provided by the Contractor:**
(Documentos presentado por el Contratista)

☒ **Drawings/Sketches:**
(Dibujos/Croquis)

☐ **Other:**
(Otro)

10. **Contractor's Signature:** _____
(Firma del Contratista)

Note: The Contractor is responsible to coordinate with proper personnel from NEC and concerned DPW divisions the excavation/boring permit prior to perform any work associated to the requested permit.

(Nota: El Contratista es responsable de coordinar con el personal apropiado del "NEC" y de las divisiones concernientes del Directorado de Obras Públicas el permiso de excavación/sondeo previo a ejecutar cualquier trabajo asociado al permiso solicitado.)

Excavation/Borings Permit Approval

(Aprobación del Permiso de Excavación/Sondeo)

1. **NEC: Point of Contact: Mr. Hipólito Rivera, Bldg. 527, Tel: 707-~~5752~~ 2633)**
   (Punto de Contacto)

   a. **Brief Description of Items Identified:**
   (Breve Descripción de Puntos Encontrados)

   Underground & Aerial Telephone and Fiber Cables

   b. **NEC Reference Maps/Drawings included:**
   (Mapas/Dibujos/Croquis de referencia del "NEC")

   ☑ **Maps/Drawings/Sketches** (Mapas/Dibujos/Croquis)

   ☐ **Other/Specify** (Otro/Especifique):

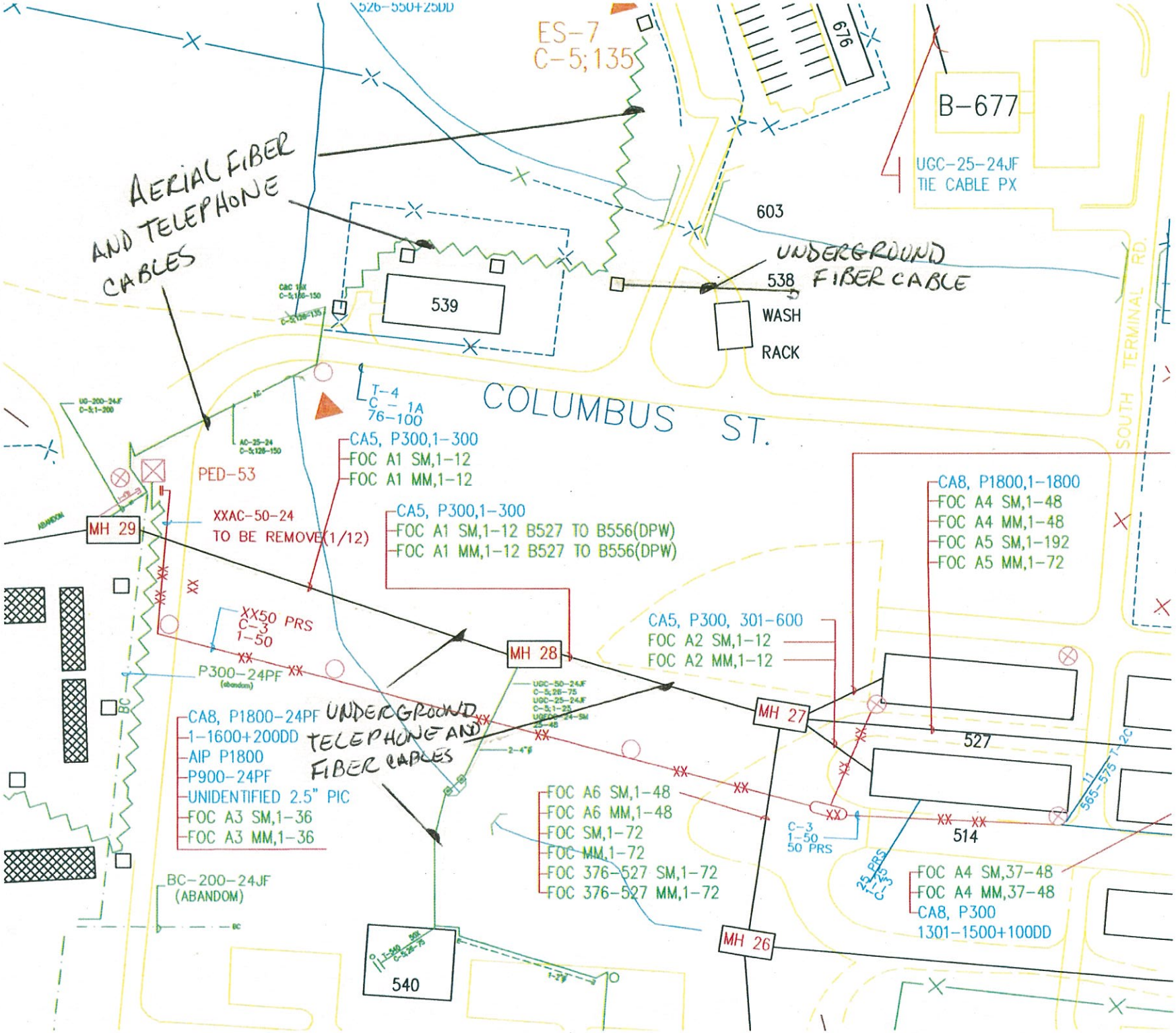
For the Use of the NEC Representative

☑ **APPROVED** (APROBADO) ☐ **DISAPPROVED** (NO APROBADO)

Remarks (Comentarios):

Underground & aerial Telephone and Fiber Cables are marked on Maps & on site.

NEC Rep Approval: Hipólito Rivera HR **Date:** 03/24/201
Name and Signature (Fecha) 03/24/2015.
(Aprobado Representante del "NEC")
(Nombre y Firma)


526-550+25DD
ES-7
C-5;135
676
B-677
UGC-25-24JF
TIE CABLE PX
603
AERIAL FIBER AND TELEPHONE CABLES
UNDERGROUND FIBER CABLE
538
539
WASH
RACK
COLUMBUS ST.
SOUTH TERMINAL RD.
T-4
C-1A
76-100
CA5, P300,1-300
FOC A1 SM,1-12
FOC A1 MM,1-12
PED-53
MH 29
XXAC-50-24
TO BE REMOVE(1/12)
CA5, P300,1-300
FOC A1 SM,1-12 B527 TO B556(DPW)
FOC A1 MM,1-12 B527 TO B556(DPW)
CA8, P1800,1-1800
FOC A4 SM,1-48
FOC A4 MM,1-48
FOC A5 SM,1-192
FOC A5 MM,1-72
XX50 PRS
C-3
1-50
P300-24PF
(abandon)
MH 28
CA5, P300, 301-600
FOC A2 SM,1-12
FOC A2 MM,1-12
MH 27
527
514
CA8, P1800-24PF
1-1600+200DD
AIP P1800
P900-24PF
UNIDENTIFIED 2.5" PIC
FOC A3 SM,1-36
FOC A3 MM,1-36
UNDERGROUND TELEPHONE AND FIBER CABLES
FOC A6 SM,1-48
FOC A6 MM,1-48
FOC SM,1-72
FOC MM,1-72
FOC 376-527 SM,1-72
FOC 376-527 MM,1-72
C-3
1-50
50 PRS
565-575 T-2C
25 PRS
1-25
C-3
FOC A4 SM,37-48
FOC A4 MM,37-48
CA8, P300
1301-1500+100DD
BC-200-24JF
(ABANDOM)
MH 26
540

For the Use of the DPW - Environmental Division Representative

2. **DPW - Environmental Division: Point of Contact:**
(Punto de Contacto)
Mr. Anibal Negron, Chief Environmental Division, Bldg. 34, Tel: 787-707-3575)

a. **Brief Description of Items Identified:**
(Breve Descripción de Puntos Encontrados)

1. **Restoration Sites** (Area de restauración): _X_ Yes (Si) _ No (No)
2. **Munitions Site** (Area de municiones): __ Yes (Si) _X__ No (No)
3. **Compliance Clean up** (Limpieza de cumplimiento): __ Yes (Si) _X_ No (No)
4. **Critical Habitat** (Habitat crítico): _ Yes (Si) _X_ No (No)
5. **Other** (Otro):

b. **DPW - Environmental Reference Maps/Drawings included:**
(Mapas/Dibujos Ambientales de Referencia incluido)

X☐ **Maps/Drawings/Sketches** (Mapas/Dibujos/Croquis)

☐ **Magnetometer/ geophysical investigation**
(Magnetómetro/Investigación geofísica)

X☐ **Explosive Ordnance Disposal** (Dispocisión de ordenanza explosiva)

X☐ **Natural Resources** (Recursos Naturales)

☐ **Other/Specify** (Otro/Especifique):
- **Munitions Explosives of Concern (MEC) Awareness Pamphlet**
- **Puerto Rico Boa Flyer**
- **TCE Site Figure 3-3 CMIP Final 2015**

☒ **APPROVED** (APROBADO) ☐ **DISAPPROVED** (NO-APROBADO)

Remarks (Comentarios):

A. If any excavated soil and groundwater will be disposed off site it needs to be characterized for proper disposal according to federal and state regulations and deposited in an approved landfill.
B. There is a Puerto Rican Boa Habitat near this area. See flyer.
C. Proposed work in source area of active TCE groundwater site; TCE levels range from 100-3,430 parts per billion (ppb). Protect yourself from contact of groundwater and any chemical that you are injecting into the ground. if you encounter problems call Fort Buchanan DPW Environmental Office 787-707-3575.

Practice munitions safety 3Rs (Sergeant Woof www.denix.osd.mil/ UXO safety):
1. **Recognize** that you may have encountered a munition. Do not touch, move or disturb it.
2. **Retreat** at least 300 feet (a cellular phone may activate it).
3. **Report** it to Fort Buchanan Security 787-707-4911.

DPW – Env. Div. Rep. Approval: Anibal Negron **Date:** 8/18/15
Name and Signature **(Fecha)**
(Aprobado Representante de "DPW – División Ambiental")
(Nombre y Firma)

For the Use of the Engineering Division Representative

3. **DPW - Engineering Division: Point of Contact:**
(Punto de Contacto)
Mr. Luis E. Torres, Chief Engineering Division, Bldg. 34, Tel: 787-707-4044

a. **Brief Description of Items Identified:**
(Descripción Breve de Puntos Encontrados)

Site 1 – 8 permanent monitoring wells to be installed to the South of the Building 539.

Based on utilities reference drawings on record the following items are present in the area of the proposed excavation work:

1. Aerial (wood pole) primary feeder power lines nearby on north-west side.
2. Water lines (hydrant) on north side.
3. Storm sewer line across the south area.
4. Open ditches for storm sewer nearby on west area.
5. Sanitary sewer lines across the south area.
6. Overhead power line with secondary down guy nearby on north side.
7. Underground telephone cable and riser pole nearby on north-west side.

b. **DPW - Infrastructure Reference Maps/Drawings included:**
(Mapas/Dibujos de Referencia de Infraestructura incluido):

☒ **Electrical Distribution System (Sistema de Distribución Eléctrica)**

☒ **Water Distribution System (Sistema de Distribución de Agua)**

☒ **Storm Drainage System (Sistema de Drenaje)**

☒ **Wastewater Distribution System (Sistema de Drenaje de Aguas Grises)**

☒ **Other/Specify (Otro/Especifique): Street Lighting System. Telephone.**

☒ **APPROVED (APROBADO)** ☐ **DISAPPROVED (NO-APROBADO)**

Remarks (Comentarios):

Personnel performing the excavation work must be especially careful as not to damage the existing utilities infrastructure, considering the possibility of having additional lines currently not accounted for in this area.

DPW – ENG. Div. Rep. Approval: For Alex Velez **Date:** 20150327
Name and Signature **(Fecha)**
(Aprobado Representante de "DPW – División de Ingeniería")
(Nombre y Firma)

Special Conditions and/or instructions:
(Condiciones Especial y/o instrucciones)

☐ **Hand Excavation (Excavación a mano)** N/A

☐ **Work to commence or to be accomplish only in the presence of DPW/NEC Personnel** N/A
(Trabajo a comenzar o ser completado será solo en presencia del personal del "DPW/NEC")

☐ **Other:** N/A
(Otro)

Important Notes for the Contractor:

a) **The contractor will be responsible of all damages to these underground utilities and any other in the working area.**
(El contratista será responsable por todo daño a estas y otras utilidades soterradas en el área de trabajo.)

b) **Repairs shall be in accordance to Directorate Public Works specifications and instructions.**
(Las reparaciones serán de acuerdo a las especificaciones e instrucciones del Directorado de Obras Públicas.)

c) **It is recommended that the contractor use electromagnetic equipment (underground detector device) or similar equipment to exactly locate utility lines, in an effort to minimize their rupture.**
(Se recomienda que el contratista utilice equipo electromagnético (detector de líneas soterradas) o equipo similar para localizar las líneas de utilidades con precisión, en un esfuerzo para minimizar sus rupturas.)

d) **The contractor shall restore disturbed area to original condition or better.**
(El Contratista restaurará las áreas perturbadas a su condición original o mejor.)

ELECTRICAL DISTRIBUTION

LEGEND

WOOD POLE — PRIMARY, 13, 200V, 3 , 3W2/0 UNLESS OTHERWISE NOTED

CONC. POLE — PRIMARY, 13, 200V, 3 Ø, 3W2/0 UNLESS OTHERWISE NOTED

PT — PRIMARY TIE 38KV, 3 Ø, 3W

ABS — SWITCH: ABS-AIR BREAK SWITCH
CIRCUIT BREAKER

PREPA — PUERTO RICO ELECTRIC POWER AUTHORITY POWER LINE, 38 KV

UG — UNDERGROUND CABLE: PRIMARY-3#2,15kV, CU SECONDARY-AS INDICATED.

2–25–1
CAPACITY
TRANSFORMER
NUMBER OF PHASES
QUANTITY

TX2 — TRANSCLOSURE

T3 — TRANSFORMER

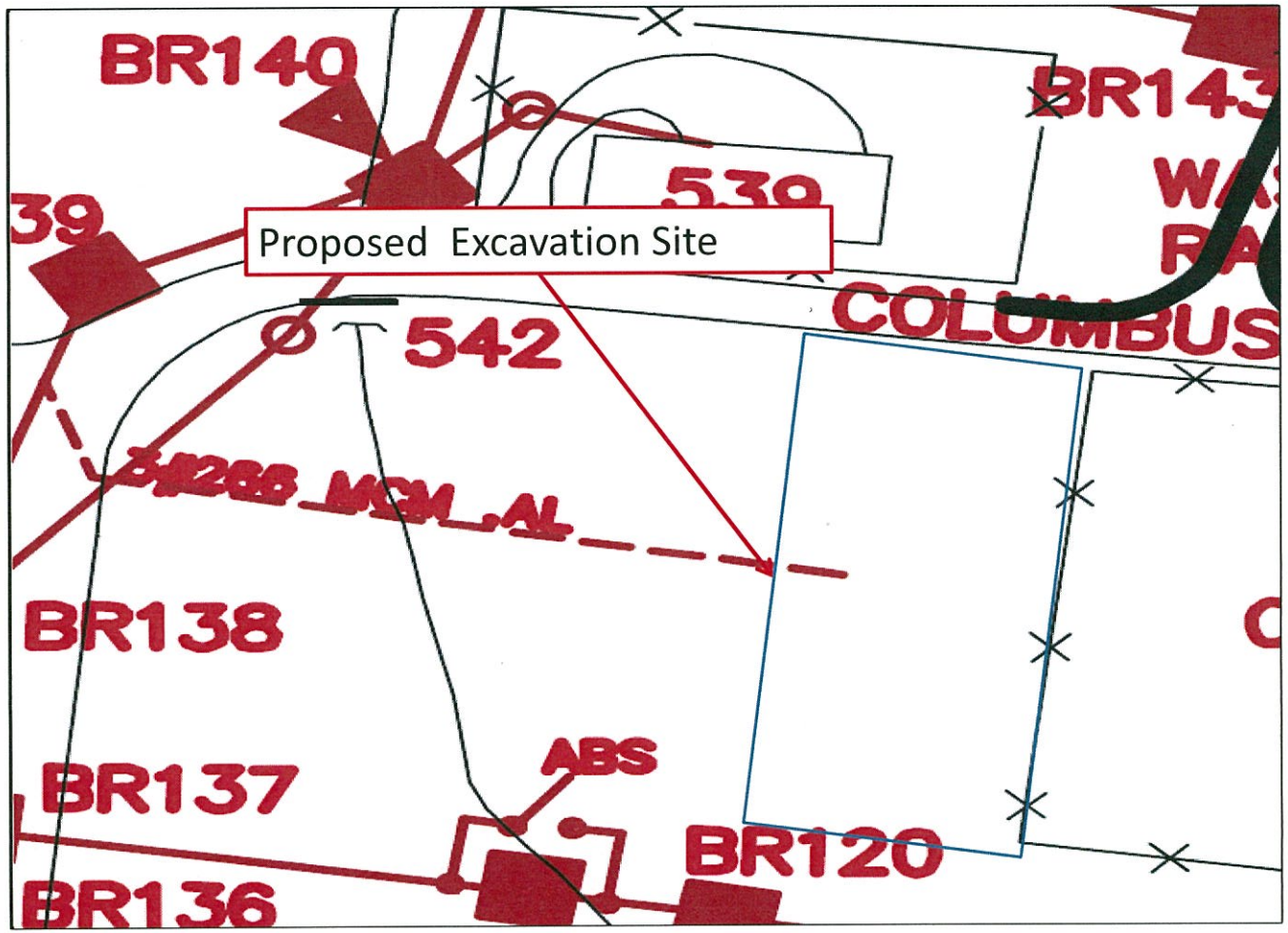
EXISTING SUBSTATION

SW — SWITCHING UNIT

BLACK FEEDER

BROWN FEEDER

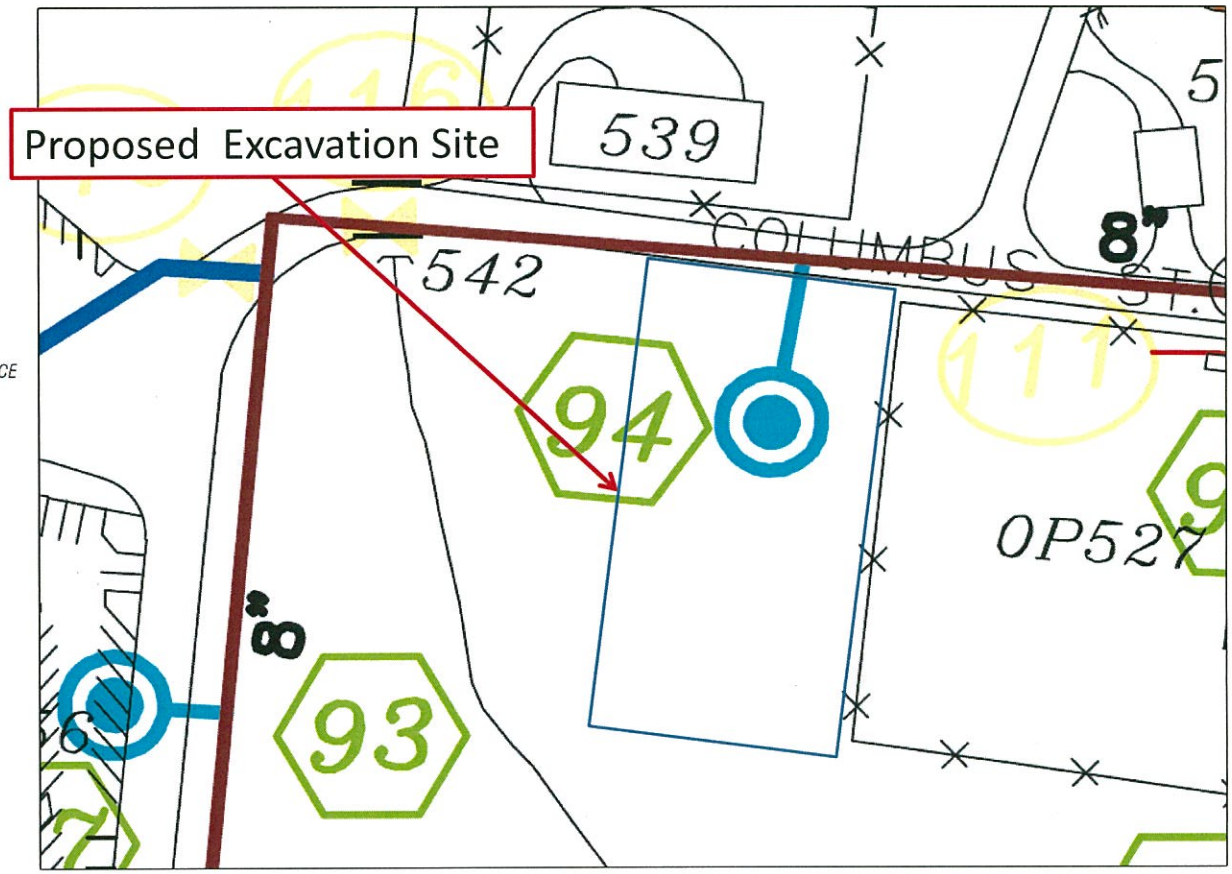
RED FEEDER



WATER MAP

LEGEND

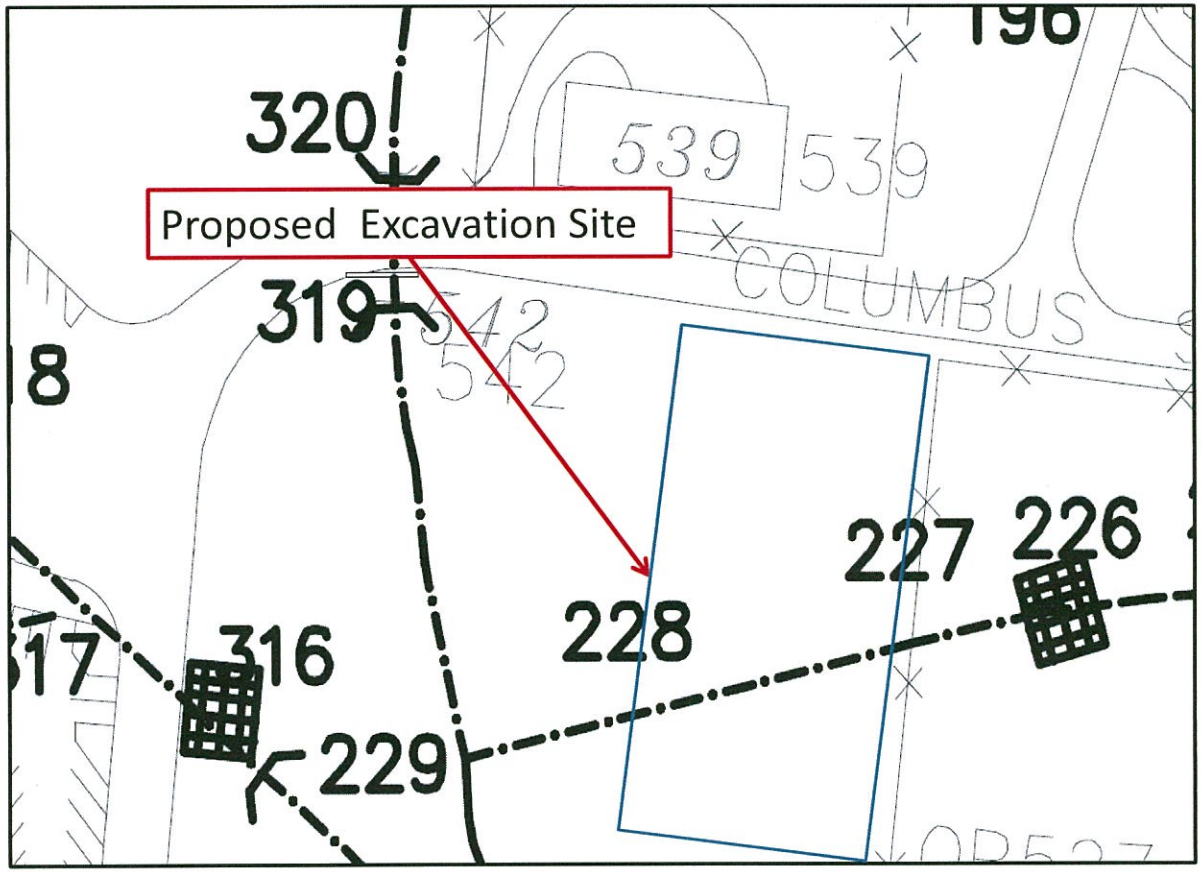
1½"	1½" WATER PIPE= 1,206 L.F.
2"	2" WATER PIPE = 2,498 L.F.
2½"	2½" WATER PIPE = 407 L.F.
4"	4" WATER PIPE = 9,585 L.F.
6"	6" WATER PIPE =35,416 L.F.
8" A.C.	WATER MAIN, SIZE =42,720 L.F. AND MATERIAL
10"	10" WATER PIPE = 6,929 L.F.
16"	16" WATER PIPE = 6,929 L.F.
	FIRE HYDRANT
	WATER METER
(R)	PIPE REPAIRS AND REPLACE WITH PVC
	STAND PIPE
	VALVE
A.C.	ASBESTOS CEMENT
G.I.	GALVANIZED IRON
C.I.	CAST IRON
C.U.	COPPER
D.I.	DUCTILE IRON
	ABANDONED IN PLACE
	66" PRASA LINE



STORM DRAINAGE MAP

LEGEND

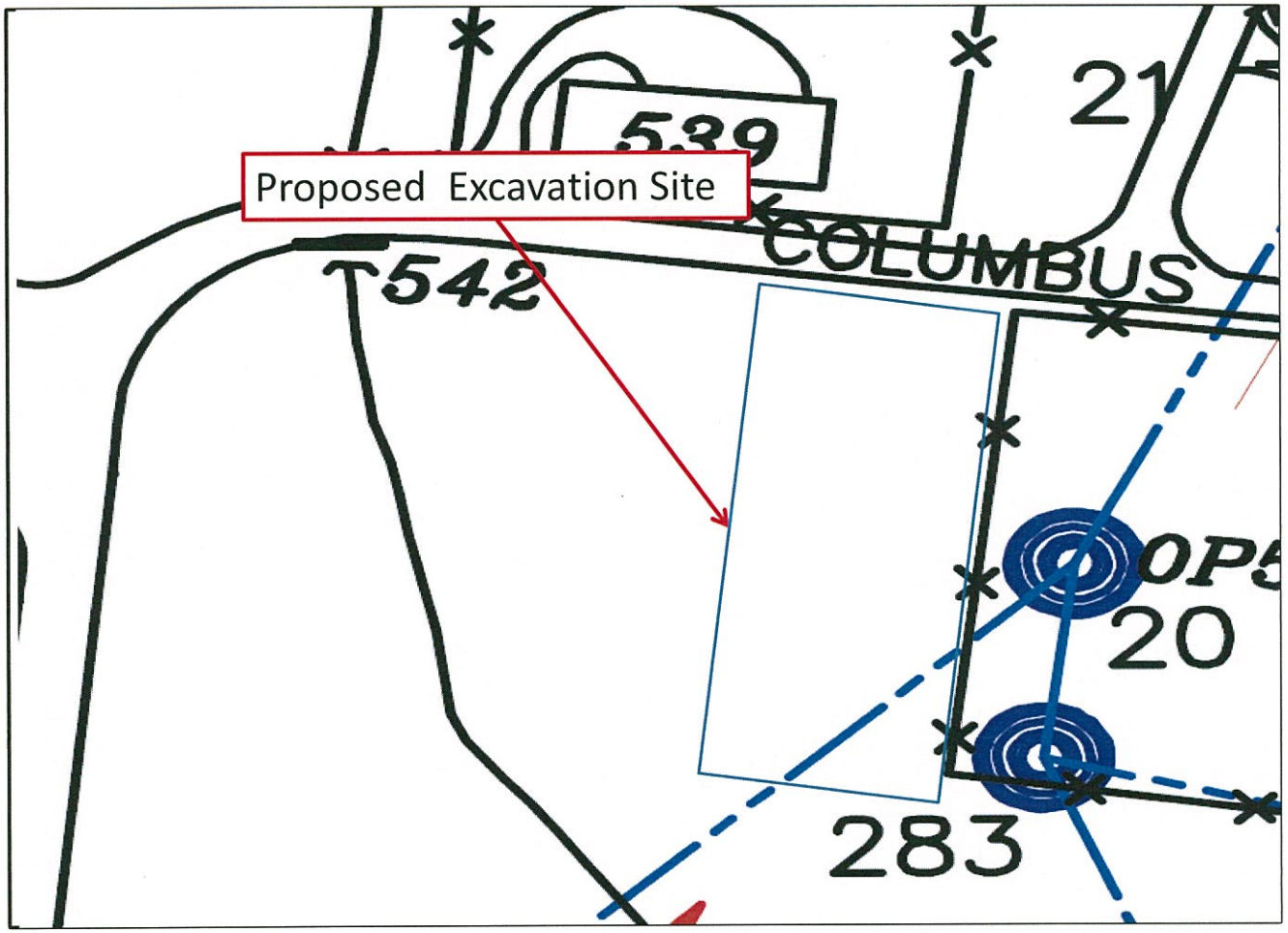
- MANHOLE
- CATCH BASIN
- STORM SEWER MAIN
- OPEN DRAINAGE
- PAVED INVERT DRAIN



WASTEWATER MAP

LEGEND

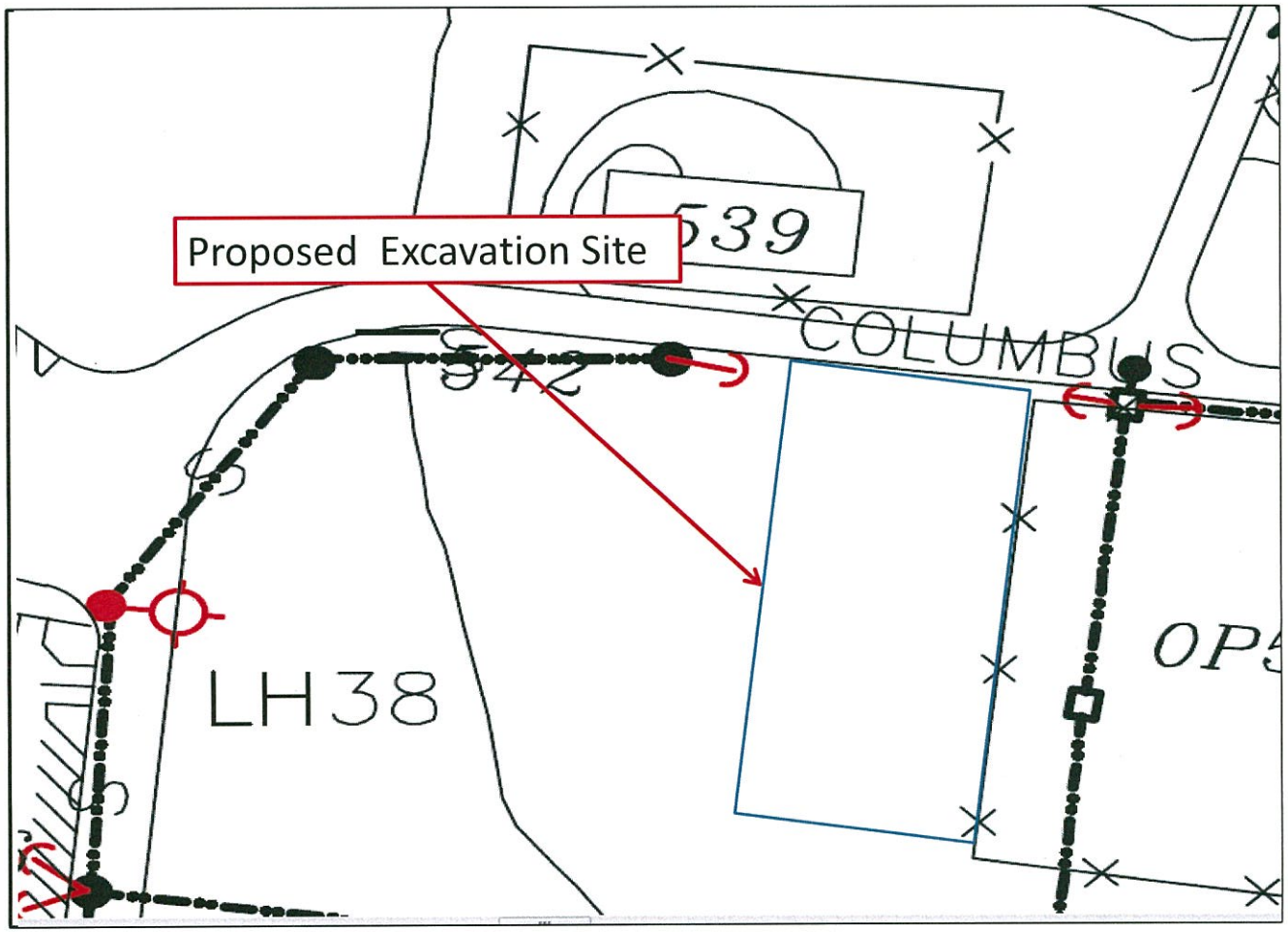
- 8" C — SANITARY SEWER, WITH SIZE AND MATERIAL
- F.M. — FORCE MAIN
- ABANDONED IN PLACE
- PLUGGED
- DIRECTION OF FLOW
- 165 — MANHOLE, WITH NUMBER
- SEPTIC TANK
- CLEANOUT
- GREASE TRAP



STREET LIGHTING

LEGEND

- OVERHEAD PRIMARY LINE – 13.2 KV
- OVERHEAD SECONDARY LINE – 3#8 ALUMINUM TRIPLEX
- UNDERGROUND CABLES FOR STREET LIGHTING IN 1" PVC CONDUIT, WIRE SIZE 3 # 10 RHH
- WOOD POLE WITH 175 M.V. FIXTURES.
- CONCRETE ORNAMENTAL POLE 33 FEET
- POLE MOUNTED TRANSFORMER, CAPACITY AS SHOWN
- SECONDARY DOWN GUY
- SERVICE DROP, LTG., FIXTURE CONNECTION
- 250 HID FLOOD LIGHT (SECURITY LIGHT)
- 40 FEET CONCRETE UTILITY POLE
- DUAL FLOOD LIGHT
- DENOTE FOG LIGHT



TELECOMMUNICATIONS MAP

LEGEND

RIGHT-OF-WAY EASEMENT

C-4, 11-22 TA
127 THRU 136+
15 X D

CABLE NUMBER
NUMBER OF PAIRS
WIRE GAUGE
TYPE OF CABLE
TELEPHONE CABLE
PAIR NUMBERS
NUMBER OF DEAD PAIRS

1-4" TRANS

NUMBER OF CONDUIT
SIZE OF DUCT
TYPE OF DUCT
UNDERGROUND DUCT

BUR

DIRECT BURIED CABLE

GRADE POINT (CHANGE IN QUANTITY OR SIZE)

UNDERGROUND CABLE RISER POLE

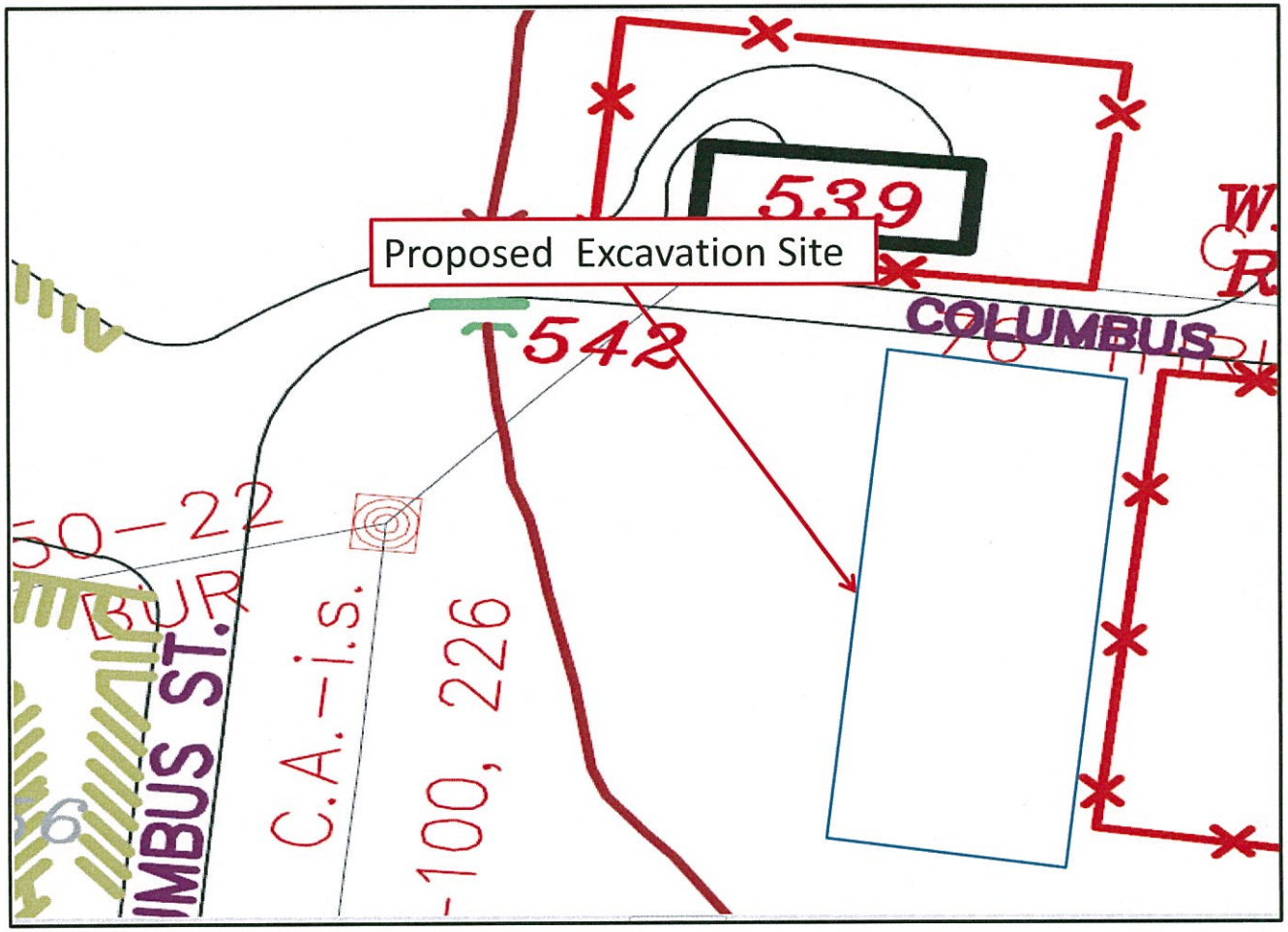
MH

MANHOLE

PEDESTAL

SPLICE

EXISTING MANHOLE TO REMAIN



CABLE TV MAP

LEGEND

EXISTING 100 — BUILDING, PERMANENT

CONCRETE, SLAB

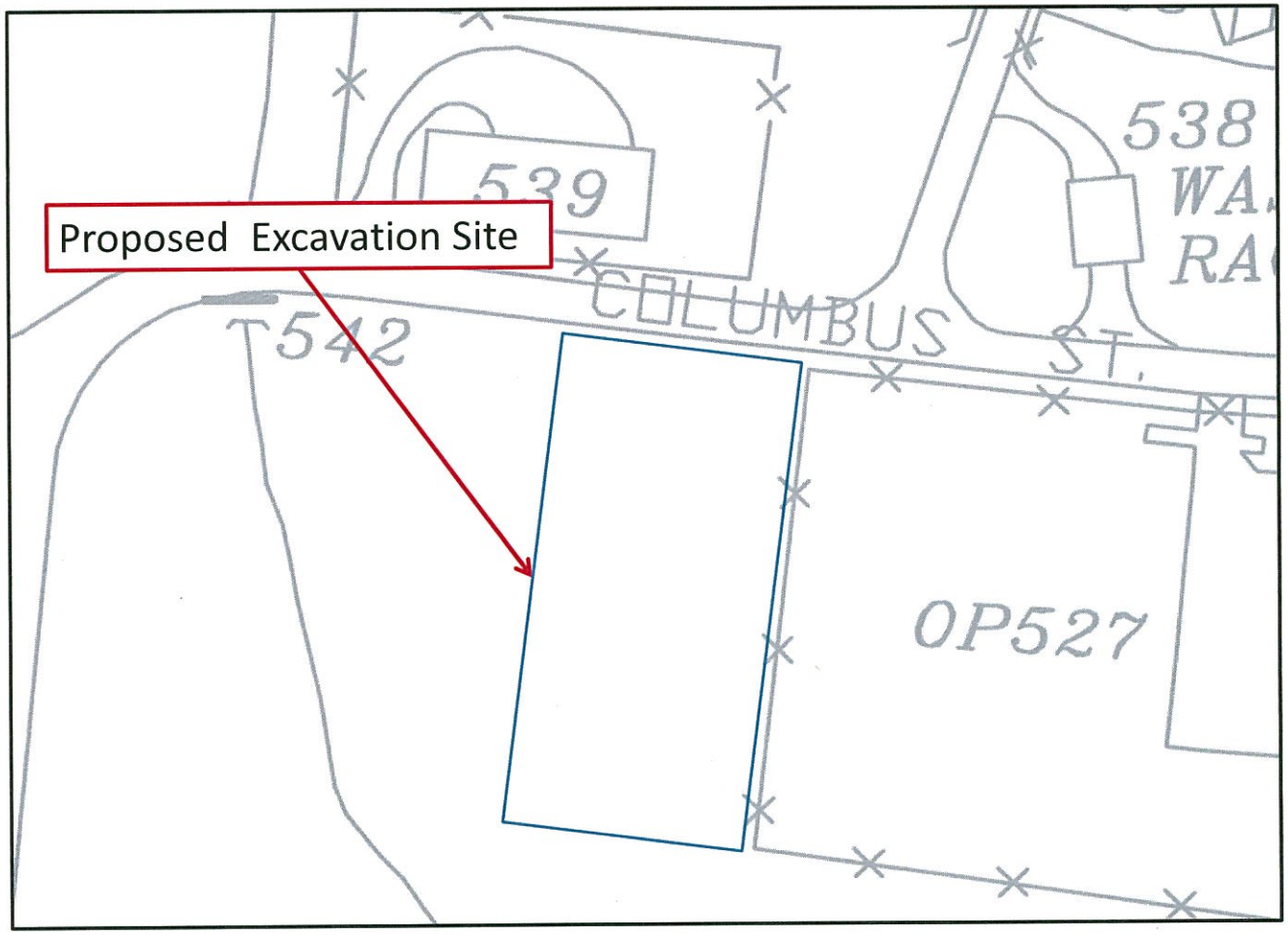
ROADS AND PARKING

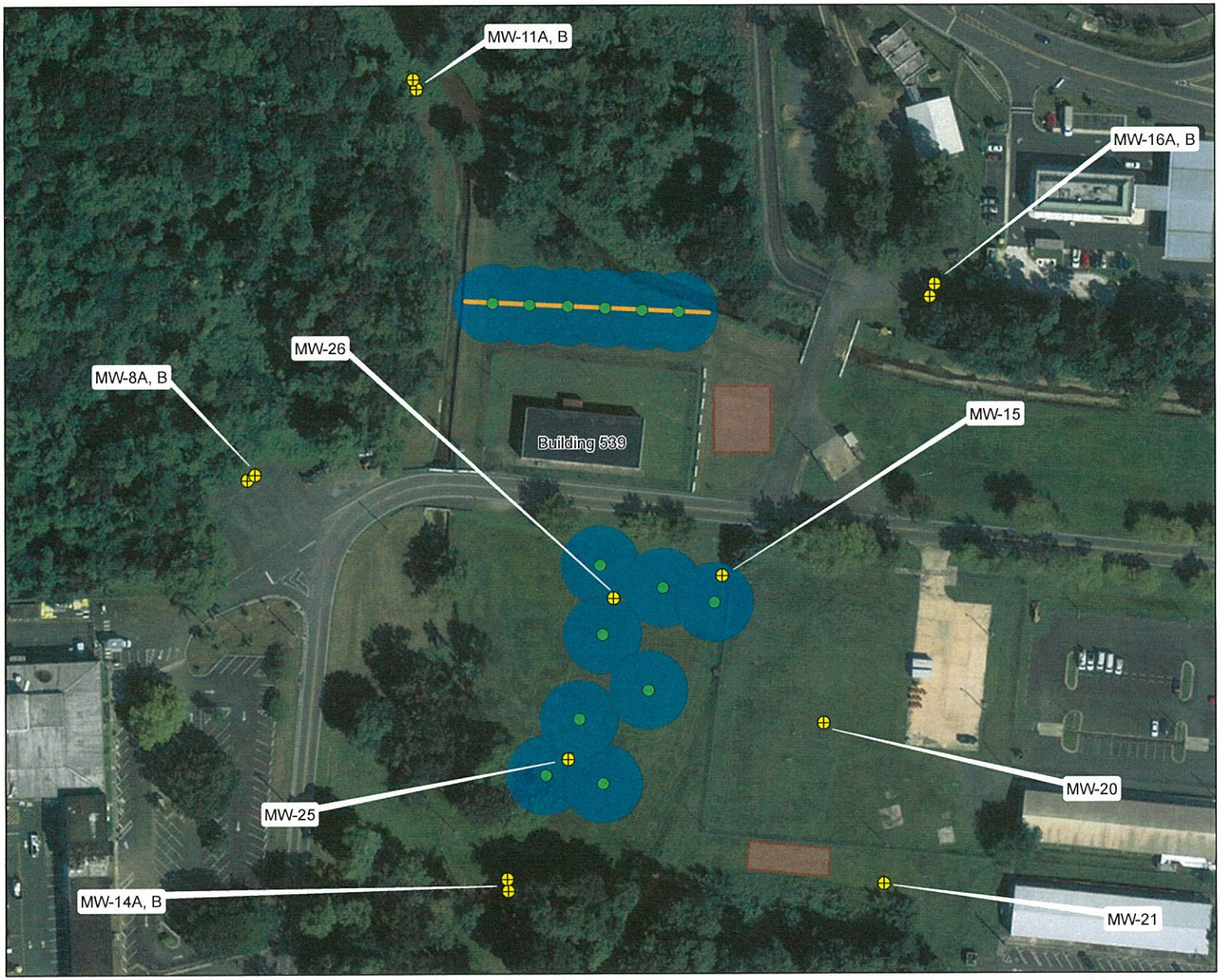
FENCE

RESERVATION BOUNDARY

RIGHT-OF-WAY EASEMENT

CABLE TV LINE





LEGEND

- Monitoring Well
- Proposed Injection/ Extraction Well
- Proposed Barrier Wall (includes 50 DPT injection points)
- Approximate Radius of Influence
- Approximate Locations of Proposed Staging Areas
- Installation Boundary

LOCATION MAP

NOTES & SOURCES

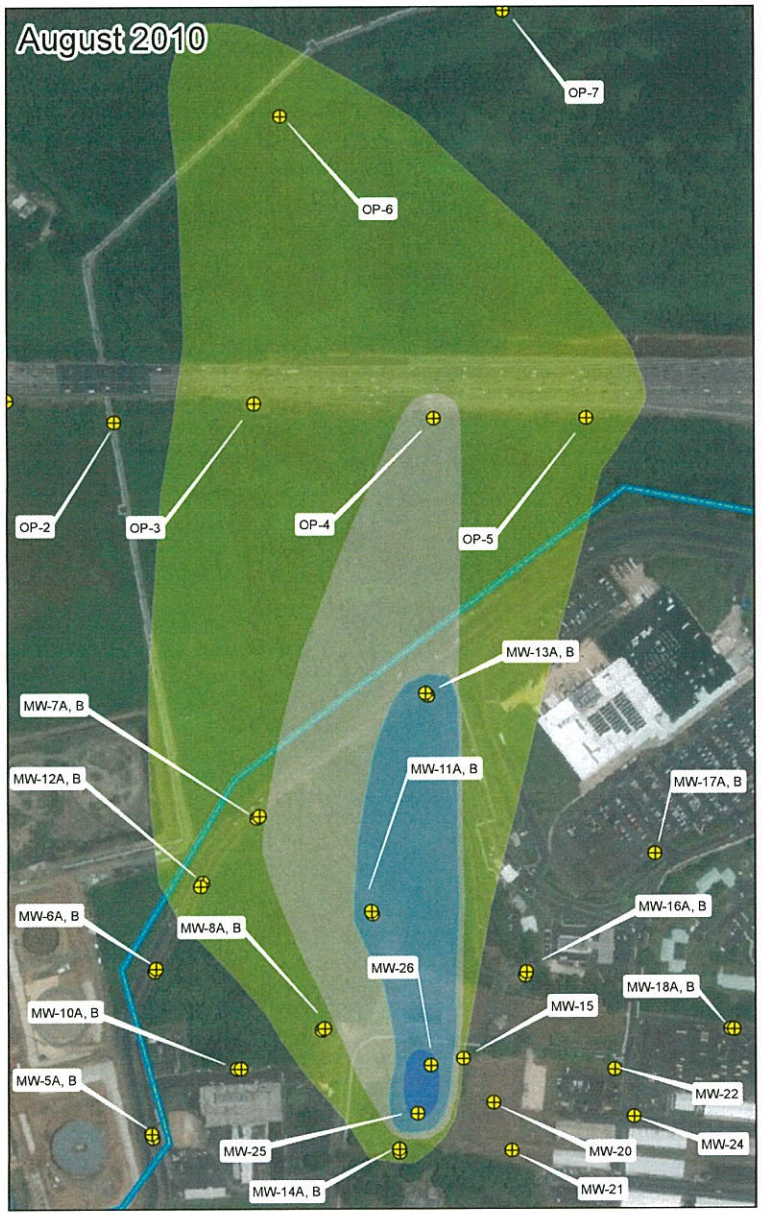
Basemap from ESRI 2013

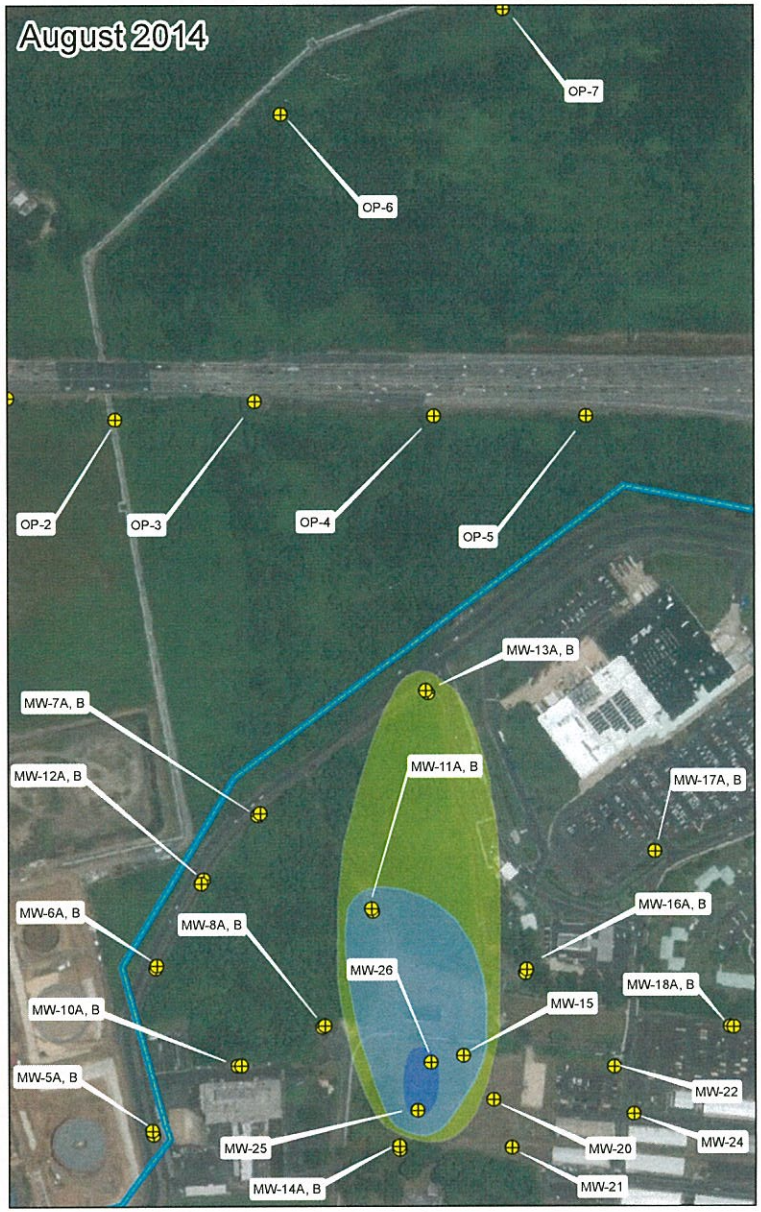
0 12.5 25 50
Meters

N W E S

United States Army Garrison
Fort Buchanan
Puerto Rico

Figure 5-1
Source Area and Barrier Wall Layout





LEGEND

- Installation Boundary
- Monitoring Well

TCE Concentrations

- >500 ug/L
- 100-500 ug/L
- 50-100 ug/L
- 5-50 ug/L

LOCATION MAP

NOTES & SOURCES

Basemap from ESRI 2013

0 50 100 200
Meters

United States Army Garrison
Fort Buchanan
Puerto Rico

Figure 3-3
TCE Plume Comparison (2010 vs 2014)

ARMY GREEN IS ARMY STRONG

Sustaining the Environment for a Secure Future

DIRECTORATE OF PUBLIC WORKS
ENVIRONMENTAL DIVISION
USAG Fort Buchanan, PR 00934
Phone: 787-707-3966
Fax: 787-707-3570

For additional information, visit the Directorate of Public Works Environmental Division at Fort Buchanan Internet Site;

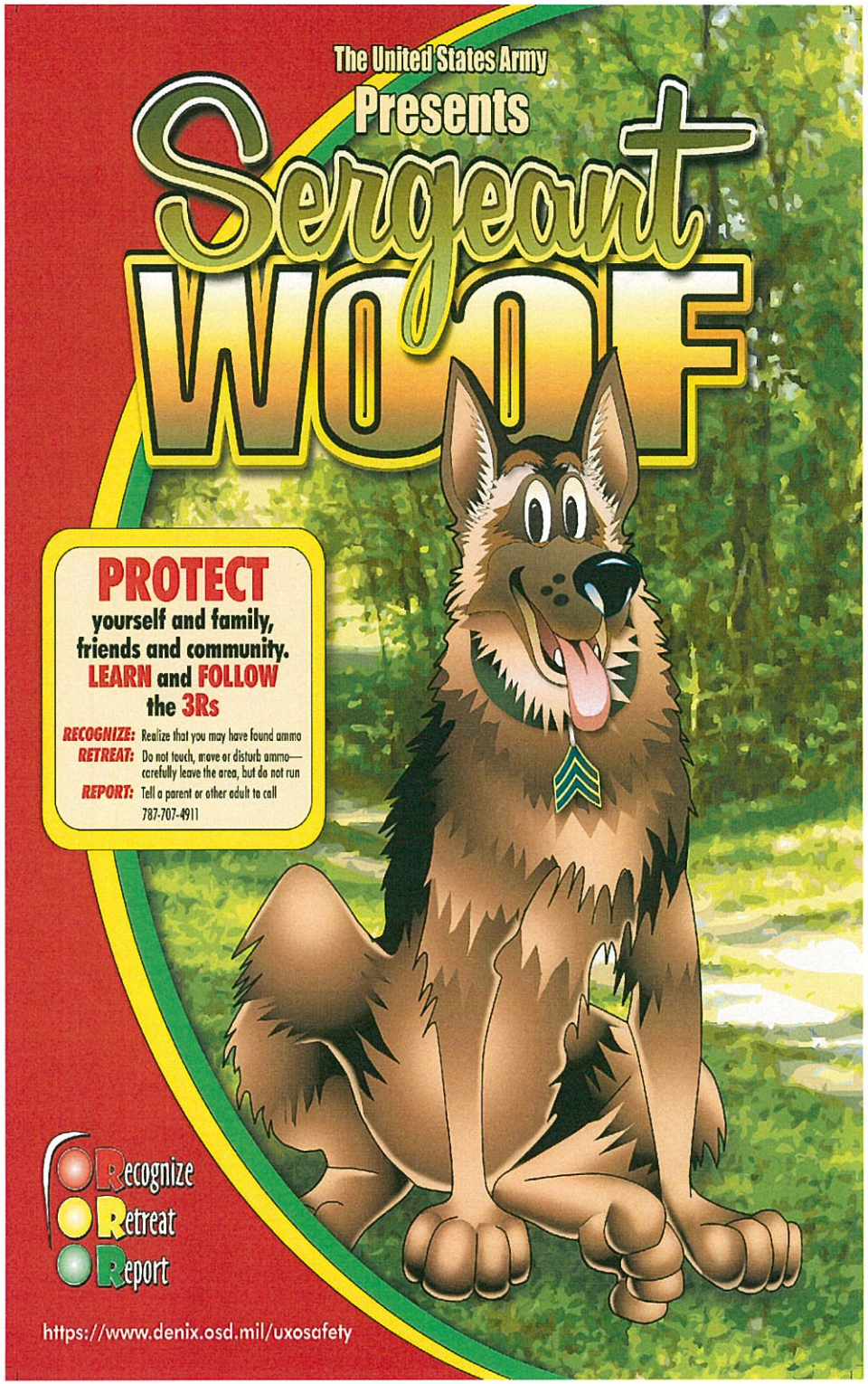
http://www.buchanan.army.mil/dpw/home.html

or access;

http://www.slideshare.net/FortBuchananEnvironment

Fort Buchanan Slideshare® Site Scan it!

13 SEP, SEMS REV, CDL #70



Munitions Explosives of Concern (MEC) Safety Guidelines for the US Army Garrison, Fort Buchanan.

History

The US Army Garrison, Fort Buchanan is an active Army Installation. In the past, munitions training took place at the Installation. The former Camp Buchanan Training Area is currently being restored under the Military Munitions Response Program (MMRP). The lead regulatory agency is the Department of Defense (DOD). The clean-up program is being implemented by the United States Army Environmental Command (USAEC) and guided by the United States Army Corps of Engineers (USACE), Baltimore District. The regulatory frame-work for clean-up is the Comprehensive Environmental Compensation Liability Act (CERCLA). It consists of one (1) Munitions Response Site (MRS) that covers thirty-two acres, inside of the (present day) Fort Buchanan Installation boundary limits. This includes the western half of the golf course, Maxie Williams Jr. Baseball Field, the 1300 Building area and the limestone hill Mogote area.

During the time frame of the 1920s through the 1940s, Camp Buchanan was used as a small arms firing range (contemporary with .30-06 Springfield rifles). According to an Archive Search Report from 1997, Chemical War Fare Materials were used in training and civil disturbances at Camp Buchanan Training Area. Mustard gas was reportedly stored within Fort Buchanan boundaries at that time.

In 1985, thirteen 3-inch Stoke Mortars were found buried in the sub-surface at two locations in the Maxi Williams Jr. Baseball field. In 2001, a post Korean-Age, M29 3.5–inch practice rocket was found on the land surface located north of the Maxi Williams Jr. Baseball Field area. The items found are classified as MEC. There have been no records found as to where these items would have been fired at Camp Buchanan. They may have been brought in during the construction era. These items have been sub-classified as Discarded Military Munitions (DMM).

In 2010, two (2) MEC items were found during construction of the New Armed Forces Reserve Center. On 27 October 2010, a practice hand grenade (M29) was found a few inches below grade. The spotting charge was spent elsewhere. On 20 December 2010, a Stoke Mortar was found a few inches below grade at the same site. The mortar reportedly had a charge and was blown-up in place.

On 27 January 2011, a body of a practice hand-grenade (M-69) was recovered in the grass area adjacent to the Pee Wee Track Field (area 575). This item was described as DMM.

In June 2012, a smoke hand-grenade was found in the subsurface at the construction site of the new DPW Building. In March 2013, an M-15 White Phosphorous hand-grenade was found in subsurface along South Gate Rd. near the Aquatic Park. In October 2013, suspected multiple white-phosphorous hand-grenades were found in the west parking lot of the new DPW Bldg 34.

December 2013 ,3 canon balls found at Bldg.167; and April 2014 a 3-inch Stoke Mortar found in 600 Area.

MEC items may still exist in the sub-surface and may still contain an explosive charge.

Proposed Construction or Excavation Work:

Before any proposed construction or excavation work can begin, the work needs to be coordinated with the Department of Public Works (DPW) at Fort Buchanan and obtain :

- approval from the Master Planner at Fort Buchanan,
- receive construction support materials from the Environmental Division at DPW
- approved excavation permit from DPW and DOIM

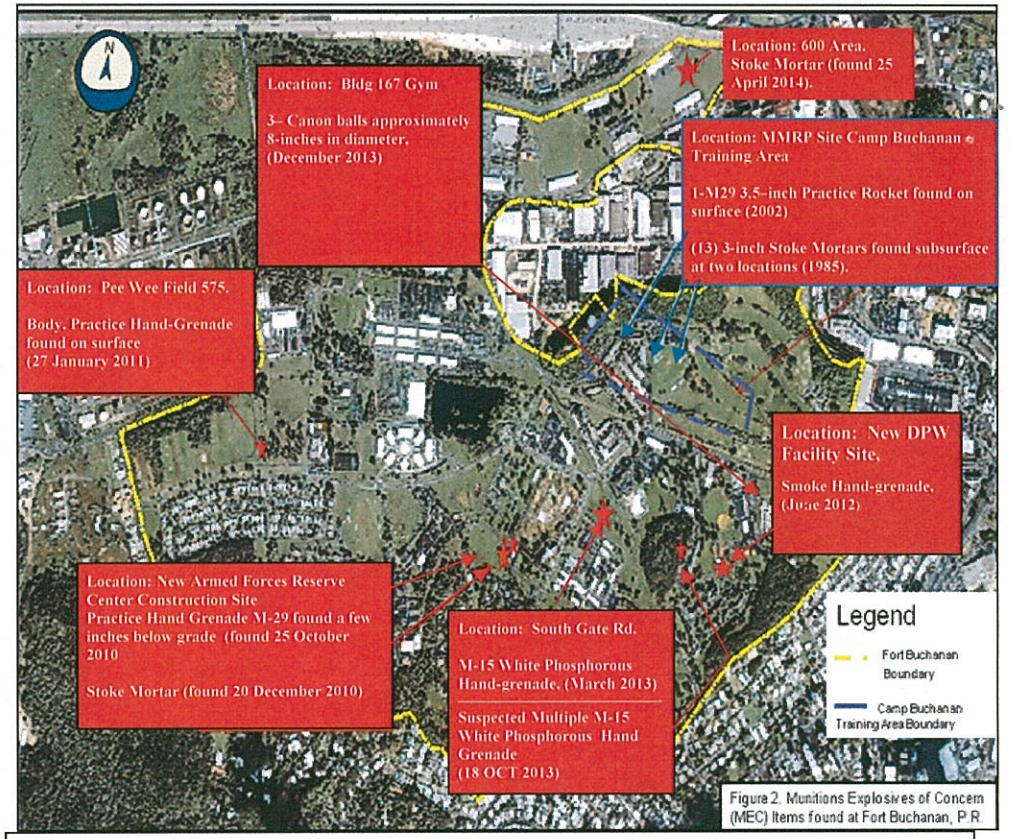
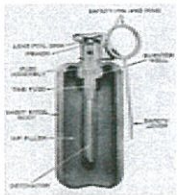


Figura 2. Munitions Explosives of Concern (MEC) Items found at Fort Buchanan, P.R.

3.5 inch Rocket M29 ;Practice Hand Grenade–M29; body of practice hand grenade(M69); Stoke Mortar; CWM Glass Ampule

Canon ball



M-15 White Phosphorous Hand-grenade

What to do if you find a Munitions Explosives of Concern (MEC) item:

Recognize: Recognize you have a possible MEC item (hand grenade, Stoke Mortar, Rockets, Chemical War fare-Glass ampules).

Retreat: Retreat to a safe area (at least 300-feet). Cell phones may activate the MEC.

Report: (Call: 787-707-4911-Fort Buchanan Security)

Do not touch or move the item

Puerto Rican Boa Sightings Reporting Actions

BOA SIGHTINGS MUST BE REPORTED

REPORT TO:

DIRECTORATE OF PUBLIC WORKS
(REGULAR WORKING / BUSINESS HOURS)

ENVIRONMENTAL DIVISION
787-707-3508 / 3575 / 3966
PEST CONTROL
787-407-6800 / 787-707-3894

DIRECTORATE OF EMERGENCY SERVICES
(AFTER REGULAR WORKING / BUSINESS HOURS)

FIRE DEPARTMENT
787-707-3410
POLICE
787-707-3337

BOA SNAKES ARE NON-VENOMOUS AND USUALLY DO NOT BITE HUMANS UNLESS THEY HAVE BEEN DISTURBED. THESE SNAKE-BITES SHOULD BE TREATED IN THE SAME WAY AS ANY OTHER ANIMAL BITE. FIRST CLEAN AND THEN DRESS THE WOUND, AND SEEK PROMPT MEDICAL ATTENTION.

To Report, Use Boa Sighting Form; they can be requested at the DPW Environmental Office, or call 707-3508

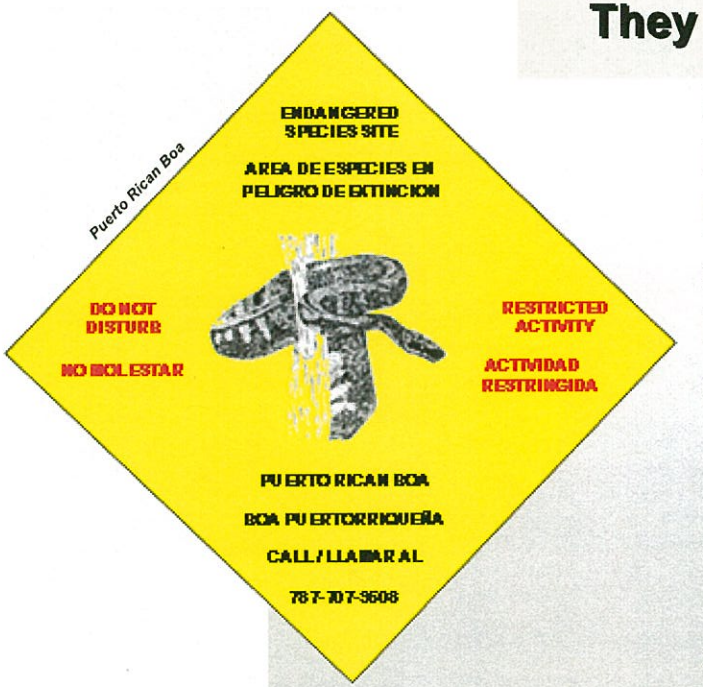
REPORT BOA SIGHTINGS... EVERY TIME !!!

Environmental Division, Directorate of Public Works, Fort Buchanan, P.R. 00934

Fort Buchanan Endangered Species Protection

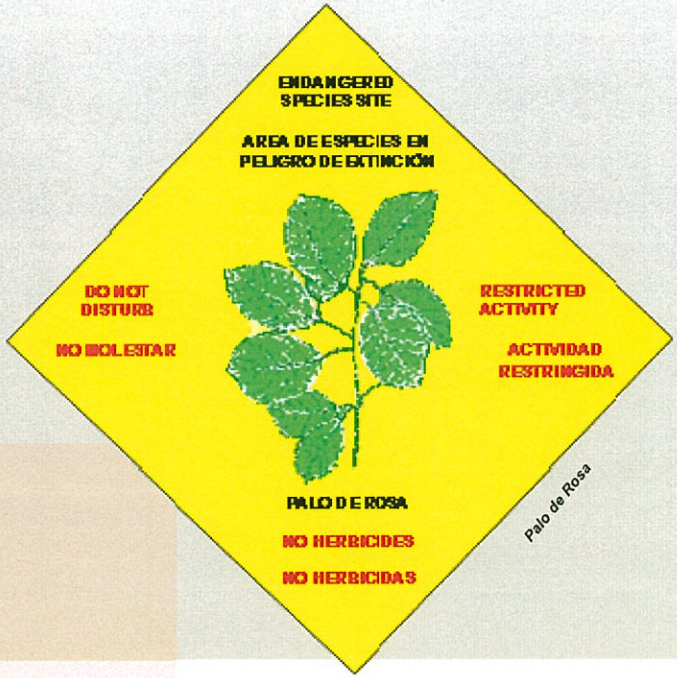
Have You Seen These Signs?

They do Serve a Conservation Purpose!



In accordance with the United States Federal Endangered Species Act, it is illegal to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect any endangered species. Both the Puerto Rican Boa and the Palo de Rosa are listed endangered species found at Fort Buchanan.

Everyone on Fort Buchanan must ensure that their actions do not jeopardize the species or adversely modify their critical habitats.



For additional information call the Environmental Conservation Manager at DPW Environmental Division

Telephone: 787.707.3575 / 3508 / 3966

Directorate of Public Works, Environmental Division, Fort Buchanan, P.R. 00934

DIRECTORATE OF PUBLIC WORKS
ENVIRONMENTAL DIVISION

PUERTO RICAN BOA SIGHTING FORM

FORT BUCHANAN, PR 00934

Name/Phone of person reporting:

Date & Time:

Weather conditions:

Location:

Description of area:

Size of boa/snake (foot):

Condition of Boa: ☐ Healthy ☐ Injured ☐ Dead

Position: ☐ Tree ☐ Ground ☐ Other

Activity: ☐ Moving ☐ Resting ☐ Nesting

☐ Feeding

Comments:

When completed, please forward to:

DPW Environmental Division, Miles Loop 81, Fort Buchanan, PR 00934

Phones: 787-707-3508 Fax: 787-707-3570

For additional information,
visit the Directorate of Public Works Environmental Division at Fort Buchanan Internet Site ;
http://www.buchanan.army.mil/dpw/home.html

FOR OFFICIAL USE ONLY

Type of sighting: ☐ General ☐ Nuisance call ☐ Construction

If nuisance call or construction sighting: ☐ Captured ☐ Escaped

Gender (If identified) ☐ Female ☐ Male

If captured, location of release:

Representative receiving report:

Comments:

– Intentionally Left Blank –

APPENDIX B
FIELD NOTES

– Intentionally Left Blank –

Location _____ Date May 4, 2015

Project / Client _____

0700 - @ Visitor Center Charlie Taylor getting Pass
- Jesus Manuel From MGV waiting for Derick.

0830 - Jesus Manuel Installs Base with Derick
- Delivery from Wet Two Boxes

0900 - Crew building Decon setting up Site
0930 - H&S. Talk. full crew on Site
- Charlie Taylor - Kenron
- Joel Montes - Kenron
- Jesus Santiago - MGV
- Luis Santiago - MGV
- Orlando Manero - MGV
- Derick Stephenson - Sol. (Base)
- Leandro - MGV

10:00 - Start Hand Augering.

10:30 - MRAE - 06 - S/N 592-909274
Calibration with ISO BUTYLENE (C_4H_8)
@ 100ppm

Location _____ Date May 5, 2015

Project / Client _____

11:00 - @ 6'
11:40 - CAT Delivered a 226B3
Serial RSL-148
12:00 - Lunch stop @ 10'
12:30 - Back from lunch
- Drilling
- Filled with water Truck took from
water Court near ~~[illegible]~~ 53rd Bldg.

1600 - @ 40', Decide to go 1 more
split spoon. Stop at 41 Refusal.
- Derick on Site.

19:00 - Finish Initially the Bentonite in well

5/8/15

CT/JM

0700 - On-site to continue mobilization of injection wells.
- MGV / Derek on-site
- Review HASP / JM conduct meeting.

0745 - MGV continues construction of down pad splash walls 3 sides by approx. 6' height
- Mini Rae 3000 calibrated w/ 100 ppm isobutylene gas
Mini RAE 3000
S/N 592-901274

0850 - steam cleaning HSA.
- Checking depth of Bentonite plug. 20.7"

10:00 - Grout IW-01
- started the IW-02 - HA
- offset approx 4" to the SE due to large rock in proposed borehole at approx 6" bgs

1120 - drilling started

1145 - IW-02 hammer refused @ 31 ft bgs will auger to 38 ft and send split spoon sampler for assess

Location _____ Date 5/6/15

Project / Client _____

CT/JM

1530 - split spoon reached @ 40 ft
- MOV begins to send the spoon and remove augers
1000 - clean up / off site

Location _____ Date 5/6/15

Project / Client _____

CT JM PC 80's

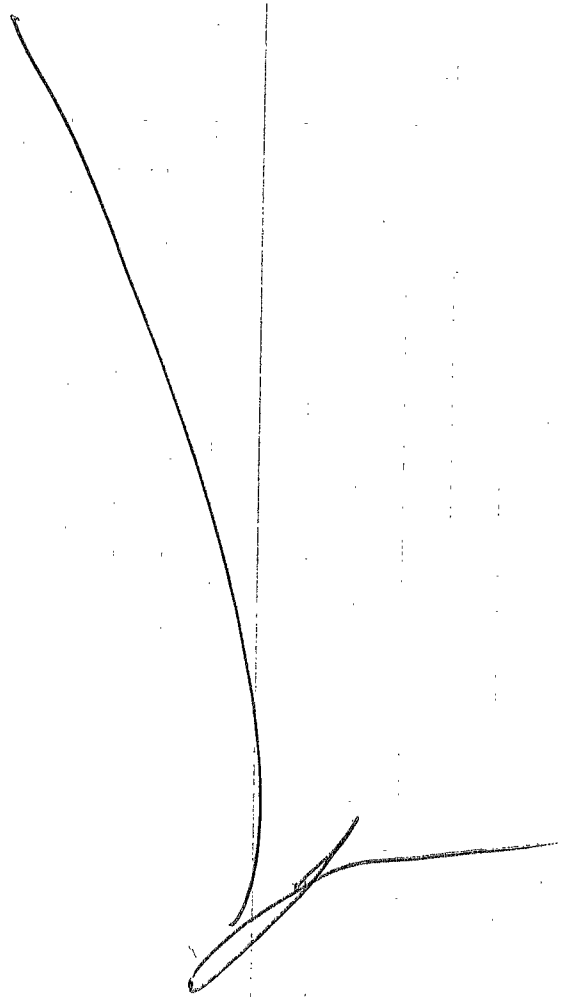
0700 - on-site.
- ~~MOV~~ HASP.
- MOV begins removing the rest of the augers and clean.
1000 - Hand auger begins at IW-3 while crew continues clean.
- site visitors J. Gaestro Ft. BAD and event planners for July 4th celebration. Handled by J. Morales and Derek Stepanof.
1100 - drill mobilized to begin drilling @ IW-03.
- see logs -
1200 - off-site for lunch
1300 - return from lunch.
- continue on IW-03
IW-03 Hammer refusal @ 28 ft bgs will auger to 30 and hammer 30-34 for sample.
1500 - Call from office - Jesses Pass denied.
15:15 - out of site

5/7/15

0700 - @ Sub H&S
0730 - start drilling @ IW-3 from 30'
0830 - start installing well, drilled to 41'
- Sand inside Auger.
130 - Lunch.
1230 - return MGV crew resumes clean
UP ~~[illegible]~~ tooling and begin grouting
IW-03 using tremmie pipes.
1450 - MGV - begin hand auger @ IW-04
IW-4 - grass / organic 0-8" (fill)
6" granite coarse gravel (fill)
and limestone gravel
w/ strong brown silt
w/ well sorted limestone gravel
fly ash, non plastic, non cohesive
dry.
2' native silty clay dark gray and
strong brown mottled fly ash
very stiff, non-cohesive.
4' native silty clay w/ light strong brown
and dark gray mottled fly ash,
very stiff, cohesive, low ~~med~~ plasticity,
dry, no odor.

5/7/15

15:30 - out of site after securing the site.
- left Machine on top of Boring.



5/9/15

0700 - @ Site
0730. Dillons @ Site - Luis Santiago not on Site
had car accident last night.
0800 - start drilling.

5/11/15

CT/JM

DC 803 [illegible]

0700 - on-site.
- MGV on site.
- HASP/ Safety Meeting
0730 - MGV begins to remove remaining augers @ IW-04 and grout the well.
0800 - MGV begins hand auger at IW-05 - very thick rock/ gravel at 1 foot bogs
0900 - Auger decon while MGV continues to Hand auger @ IW-05.
1030. MGV - steam washer non operational.
1120 -

Location _____ Date 5/12/13

Project / Client _____

CT/JM

0700 - on-site
- HASP -
MGU fishes IW-05 Drilling and gave to pursuant in well
1130 - sand complete - bentonite, pred in well.
1150 - lunch
1230 - return from lunch
IW-05 ~~grouted~~ grouted.
- begin breakdown and remob. to IW-08
1430 - begin drilling on IW-08, hydraulic hammer malfunction, forced to use cat-head hammer
1500 - W.E.T. on-site to clean delivered roll-off container and repair tent lid on 2nd container.
- W.E.T. claims contaminated box was used to store molasses prior to Kemron. Odor of sewage came from box.

Location _____ Date 5/13/13

Project / Client _____

0700 - on-site
- HASP
- complete Drilling on IW-08
1000 - sand / bentonite pored.
- while removing augers, bentonite bridged causing PVC to be pulled w/ the well.
- casing removed and hole was re drilled using a plugged lead auger
~~1150~~ - 1130 - lunch (MGU) (KES)
1220 - KES returns and sets up for Well Dev. and grout.
1250 - MGU returns from lunch. sand continues.
1500 - sand is mixing w/ water to form a thick mix of sand + water approx. 15 bags of sand added and sand at 33 ft. bgs.
1900 - off-site

5-14-15

CT/JM

0700 on-site.
- HASP-
J. Morales to security for pulm for driller pass
- MGV pops for day.
- Hand Auger @ IW-07
- gather water needed for day

IW-01 - DTW 13.62 TOC
DTB 40.00 TOC
1WV 4.29 gal
3WV 12.87 gal

11:08 - 40 gal, Turbidity 107 NTU
11:30 - Lunch
12:30 - Back from Lunch
- Crew Drilling IW-07 total Depth 41'
-
1700 - left site, set IW-07 with Bentonite to set all night

5/15/15

0630 - Start taking Augers out of IW-07
- Bentonite at 13'6"
0730 - Grating IW-07, 3 bags of cement
0830 - Start IW-06 hand Auger
only 2 drillers - Kevin and Joel
- Sent controller for bladder pump to Geotech
1200 - Lunch MGV/KGS
1230 - KGS return dump water collected during development
1300 - MGV return
1310 - MGV Ring hydraulic hammer jammed. must use cat head and slide hammer.

18:00 out of site IW-6 set with Bentonite, Decon Empty Augers covered with Plastic

Location _____ Date 5/18/15

Project / Client _____

0700 - Remove Augers from IW-6
Bentonite Top 17.10"

IW-02 - DTW - 11.63
TD - 40ft. w/ 2-3 ft sediment in bottom of well

11:00 - Setting up IW-08 - 15' screen 25 Riser
- lc

11:30 - lunch

12:30 - Continue with sand placement

14:00 - Set up Bentonite @ IW-08, move Decon

15:45 - Start pulling Augers, To start grouting.

17:20 - finish grouting IW-08, and old IW-08, and IW-6.

Location _____ Date 5/19/15

Project / Client _____

CT/JM

0030 - on-site
- HASP.
- MCV begins decon of augers / building in prep for IW-09.

0710 - begin hand auger of IW-09
- 2 drillers + Leandro on-site building

10:37 - Start setting well on IW-9.

12:30 - Place sand pack and Bentonite on IW-9
- lunch

1:30 - Back from lunch, grout on well
- Pick Pump for Development of wells
Hydrolift 2 from Rino

15:00 - Start developing IW-2 with Waterra & Hydrolift 2

17:30 - left site.

5/20/15

CT/JM

0700 - HASP
- MGV begins set-up for drilling @ IW-10.
0710 - Drilling begins @ IW-10
0830 - Drilling complete. begin well set-up.
- Charlie start development of IW-3
0925 - start raining stop drilling and stop well development.
1000 - MGV begins to hand auger to keep progress while raining
1145 - Lunch.
1245 - Back from Lunch
1530 - still raining, finish all the Hand Augers post at IW-11, 12, 13, 14.
- Continue to place Sand on IW-10
- 11 bags of Sand - 15' Screen to 12'.6"
1600 - Left Well placed with Bentonite 1 bag of Bentonite
- close all containers / roll offs
- Empty Decon Pad
16:30 - Out of Site

5/21/15

0630 - HASP
- MGV - getting water and removing Augers
- Measure IW-10, Bentonite @ 10'.5"
0700 - Charlie to get supplies
0800 - finish Decon of Augers
- Start Drilling IW-11
12:00 - Lunch - Well set with Bentonite, Augers @ 8', Bentonite @ 10'3"

13:00 - Remove 10' of Augers from IW-10
- Move to IW-12
13:30 - start IW-12

15:06 - Set well 15' Screen, 15 Riser
- Charlie developing wells
18:00 - @ Site ~~settle~~ installing well
- 10.5' Bags of ~~Bentonite~~ Sand / Bentonite.

IW-3 developed ≈ 110 gallons 128 ntu achieved
IW-4 developed ≈ 110 gallons 83 ntu achieved.

18:30 - left Site

Location _____ Date 5/22/15

Project / Client _____

(T/J M) MGV

0700 - MGV arrives
- HASP -
0730 - Drilling of IW-13 begins,
0815 - J, Morales offsite,
0900 - 30ft reached
- MGV begins to setup
well materials (PVC, sand,)
1100 - well complete offsite.

Location _____ Date 5/26/15

Project / Client _____

0630 - @ site with Orlando and Kevin
- Crew to Decon Augers.

10:40 - Decon Augers, Julio started develop
IW-5

10:45 - Start drilling IW-14
11:30 - Lunch
12:30 - Back from lunch 16'
15:30 - Placing sand to 12'9"
Placing bentonite to 15'-6" 3/4 Bags
16:00 - Place grout on IW-13 & 12
16:30 - Develop wells with Julio IW-7/8
17:00 - left site

Location: 5/27/15

Project Client:

0630 - @ Site

Location: 5/28/15

Project Client:

0630 - @ Site
- Crew at Site.
0700 - Crew installing manholes
J. Rodriguez and J. Morales - out of Site to Coozal
11:00 - Back at Site.
11:30 - Lunch
12:00 - Back from Lunch
- Developing wells
13:30 - Start at IW-6
15:30 - Continue developing wells.
16:30 - Crew out of Site
18:00 - finish developing well / Raining

Location _____ Date 5/29/15

Project / Client _____

05:45 - @ Site Setting to Start Developing wells
06:00 - IW-09 Barrier wall, Water level
8.40'
start developing with Waterra hydrolift 2

0919 - Continue pumping IW-09
0945 - Start Developing IW-10 with Waterra
- Continue Develop IW-09 with water pump

10:51 Calibrat. T-100 - OAKTON
- Crew working on Manhole
IW-09 - Turbidity 78.7 NTU
after 60 gal development.

11:45 - Object found @ IW-5, stopp work
Call Derrick, Stop for lunch

12:10 - Derrick @ Site, check object
no problem, can continue.
15:12 - More Rain, GMU crew out of Site
16:19 - Development continue
IW-10 - ~~[illegible]~~ 65.4 NTU

Location _____ Date 6/1/15

Project / Client _____

@ 5:30 on Site
6:30 - Cleaning Site
0200 - Crew on Site to continue
working on concrete Pads

0900 - Left Site to Airport
- CAT Eq. to be picked up @
Site

6/3/15

@ 1300 - met with Orig @ Carolina
- picking tools.

1300 - @ Site setting up

1600 - Out of Site.

Location _____ Date 6/4/15

Project / Client _____

0630 - @ Site
- 0700 Orin on Site
- Setting up equipment on trailers

0930 - Went to Pickup supplies and check on AEE for Coroval site

1300 - Back to Site, Derrick around
- Went out to Pick up supplies and coordinate AEE

15:00 - Dropping Letter and working on expenses.
- Delivery of Totes, set for Tomorrow AM.

16:30 - Crew out of Site.
- Trailers set.

Location _____ Date 6/5/15

Project / Client _____

0545 - @ Site
- Start setting up for Development
- IW-14 WL @ 9.20.

0630 - Start purging @ 620 with watterra waterlift 2.

08:15 - Finish development of well
IW-14 - 65 NTU

- Orin to Continue Set up

13:00 At Site continue Set up
- 17:00 - Out of Site, Everything set for Monday

6/8/15

0600 — @ Site
0700 — Orin on Site
0830 — GeoEnviro tech on Site
0900 - H&S. - for Orin / GET, Derrick on Site.
1000 - Start drilling with first port East of Barrier wall
10:30 - Start IP-1
11:00 - start IP-2
12:00 - Lunch
12:30 - Back from lunch, IP-1 slow
IP-2 fast
15:30 - IP-2 ~~started~~ finish
- IP-3 Started.
- Continue injects
16:30 - ~~Issues with pumps~~ from
- finish with IP-7 Total

6/9/15

0600 - @ Site setting up
0700 - Crew on site - with Orin
- Continue injecting
0800 - Start @ SP-8
10:30 - Jim out of Set to Concord
12:00 - Lunch
12:30 - Back from lunch
- Continue Injects
- Changing water and injects
1600 - Issues with pumps.
- Complete injection Points.
IP-8, 9, 10, 11, 12, 13, 14
15, 16, 17, 18, 19,
1700 - Replace 3 powell pumps and change motors
- GET - Abraham out of Set
17:30 - William out of Set
16:30 - Orin and Kenyon out of Site after filling ~~[illegible]~~ from Water tanks.

Location _____ Date 6/10/15

Project / Client _____

0630 - ~~Start drilling and for~~ H&S.
- Started on IP-20
- Pumps working Correct
12:00 - Lunch
12:30 - Back to Inject.
- Aníbal Negrón and Derick on Site.
14:25 - Starting IP-31.
15:30 - IP-33 rod broke @ 10' connection.
16:00 - IP-30 completed
16:10 - IP-32 - Started
17:00 - finished IP-32.

out of Site

Location _____ Date 6/11/15

Project / Client _____

0600 - GET on Site trying to remove broken rods.
0630 - Orim on Site H&S meeting.

0721 - Calibrate Horiba U-10
Error on DO.
- from IW-9
Sal - 0.04
PH - 5.23
Cond - 0.94
Turb - 10
DO - 1.70 mg/L
Temp - 27.8°C

Turbidity Oakton - Calibrated
0720 → 5.28 NTU

0800 → 1.46
0810 → IP-34 finished.
0930 EPA personnel arrive
David Cuevas
Jesse Aviles
Derick Stepanof onsite
Jose from PAO

Location _____ Date 6/11/15

Project / Client Ft. Buchanan NWBR

- give a tour of injection trailer site - discuss process, goals of amendment

1200 offsite for lunch
- installed and injected

IP-35 injected 0733-817

IP-36 injected 0834-9:31
IP-37 injected 0843-929
IP-38 injected 1036-1115
IP-39 injected 953-1043
IP-40 injected 1133-1215
IP-41 injected 1105-1151
IP-42 injected 1345-1426
IP-43 injected 1317-1349
IP-46 injected 1508-1537
IP-47 injected 1507-1537
IP-33 injected

1600 finishing injecting for the day - begin clean up

Location Ft. Buchanan Date 6/11/15

Project / Client _____

1700 empty truck into trailer
take Joel to Hertz to rent a car to go to Aquadella
- finish securing site
1800 - offsite for the day

82

Location Ft. Buchanan Date 6/12/15

Project / Client NWBA

0715 arrive onsite Health & Safety meeting
- quick health & safety meeting / sign in
- 4 injection points to advance today then relocate mixing & equipment to source area side

0800 Start IP-33 @ finished injecting to 833

start IP-48 finished injecting to 835

- 360 gallons total per well 180 gallons RBC + lactoil 10% concentration into each injection point plus 180 gallons 2VI into each injection point
- several IPs bordering canal are refusing at limestone at 25-28 feet bgs sticky, thick clay weathered

Location Ft. Buchanan Date 6/12/15

Project / Client NWBA injection

limestone encountered in many borings - clay is 40-70% clay content

IP49 & IP-50 start injecting 0910 finish injecting 0935

0945 all IP wells plugged start to pack up and move to source area
- move all equipment / tanks to source area -

1215 Greenmotech offsite
1300 - Derrick onsite
- spot location for trench and trench
1335 offsite to PX for lunch
1430 back onsite call Greenmotech to see if we can get 2" well riser
- yes Cone pickup
1445 - JH offsite to Greenmotech office

Location _____ Date _____

Project / Client _____

1615 JH back onsite
- ORIN filling tanks w/water
- setting up for injection

1630 Swap to tank 3 for water
2000 gallons extracted

1645 JH offsite
ORIN offsite

JH

Location _____ Date 6/15/15

Project / Client _____

CT/JH

0630 - CT / JH on-site
0645 - ORIN on-site to begin injection on source area.
- Safety Meeting / plan sign off
- ORIN begins set-up of hoses/ pumps/ etc. and gw extraction
0900 - chemical inj begins
JH off site D.S. on-site.
1130 - Injection completed at IWS-8 w/ 4,000 gallons total being injected.
1200 - off site for lunch.
- ORIN to get diesel
- ct to fed-ex to pln control box from gen-enviro / fuel for truck.
1300 - CT / ORIN on-site to resume injection.
- ORIN will move to IW-2 / IW-3
- eye-wash bottles placed in each box truck per request of D.S.

Location _____ Date 6/15/15

Project / Client _____

CT

1340 - injection resumes

1515 - Equipment removed from IW-2 (complete) and moved to IW-4

1530 - IW-2 complete - will move inj apparatus to IW-1 to complete.

IW-1 / IW-4 remain.

1700 - 800 Gal into IW-4 / 400 gal into
- no water remains to use IW-1
- ORIN begin breakdown for evening

6/16 - 200 gal into IW-4
600 gal into IW-1
Sample roll-offs (TCLP VOCs / RCRA Metals)
GPS DPT Points

1740 - offsite

Location _____ Date 6/16/15

Project / Client _____

0645 - on-site
0700 - ORIN onsite
- HASP
- ORIN will complete injection today on IW-1 / IW-4
0730 - CT to barrier wall to GPS DPT points
- D.S. on-site
0800 - D.S. off site
0830 - CT complete w/ GPS
0900 - ORIN injection complete
- begin breakdown.

Location _____ Date 7/13/15

Project / Client

CT/JR

1330 - on-site to set up for gw sampling and pass info

1400 - JR at visitors center to reprint base pass. CT to AN's office to get completed 369 form

1430 - CT to security to drop off signed 369 form.

1500 - at KES trailer go through coolers and make sure sampling is set-up.

1700 - off site.

Location _____ Date 7/14/15

Project / Client

CT/JR

0700 - At AN's office to obtain completed profile for rolloff filled during drilling activities

0830 - sampling begins. Horiba calibrated - see logs

all wells peristaltic pumped and sampled for.

1100 - lunch

1145 - continue sampling see logs

Location _____ Date 7/15/16

Project / Client _____

CT/JR

0700 - On site
- HASP
- CT/JR searching for copy of El Nuevo Dia to verify advertisement for public meeting on Aug. 6.
- 5 copies obtained at gas station outside of the base. Pictures sent to JH
- Continue sampling - Horiba calibrated using auto cal
- see logs

1200 - Lunch
1230 - return and continue sampling
- see logs
1630 - sampling complete
- begin cooler prep
1730 - @ Fed-ex to ship samples

Location _____ Date 7/16/16

Project / Client _____

CT/JR

0700 - on site to continue sampling
07 - HASP - Horiba calibrated
0715 - at telecom. office to obtain access to MW-20
- lock cut at MW-20 will replace ASAP
- 2/3 bollards are rusted thigh and fallen. will call MGU to replace bollards.
Continue sampling.
- see logs.
1030 - offsite to get lock/supplies/lunch.
1200 - on site - move ice and replace lock @ MW-20
- keys placed on site keyring
1215 - continue sampling
- see logs
1630 - sampling complete
- begin cooler prep
1745 - @ Fed ex to ship.

Location 7/13/15

Project

CT/JR

0700 CT/JR on site for GWM @ FTB-034
- to AN's office to check on CT pass.
- pass is ready. DPW personnel sent to retrieve and go to VCC.

0740 - CT pass obtained @ VCC ~~war~~
- go to gate to wait for Geo enviro tech for keys.

0800 - Geo enviro drops off keys at VCC

0815 - begin sample prep
- Horiba calibrated w/ auto-cal solution

0900 - begin sampling
- see logs

- MW-13B - excessive auto/truck exhaust.

1100 - lunch

1130 - return to continue sample
OP-5 lock did not work, had to cut

1330 - peri-pump issues at OP-4
pump cord re-wired and operational

1340 - sampling continues.

1450 - sampling complete - to store to buggy locks for OP-wells and ep-lic bags.

1610 - On-site for ship prep.

Location _____ Date 7/18/15

Project / Client _____

LT/JR

1720 - Fed-ex
1800 - coolers @ Fed-ex for shipment
- heads to OP - Wells to replace lab

Location _____ Date 7/20/15

Project / Client _____

0700 - Ch-site to complete
Comm
- HASP - 1 pers
Horiba calibrated.
0730 - peri pump cord issues.
0800 - hgm sampling -
- see logs
1130 - sampling complete
-
1130 - Lunch
1215 - return from lunch.
- at trailer
GB 1230 QCGB-072017
FB 1240 QCFB-072017

1240 - at trailer beginning clean-up for de-mob.
1330 - call from SIRGM about barbara shipment. Still delayed but expected to be cleared tonight.
1530 - cooler pep

7/20/11

Items in trailer to check about:
carbon bags
carbon vessell
water pumps
old harbor.
PPE
printer

1600- of fed ex to drop off cooler
- Call from SIRIUM shipment released and will be delivered tuesday, Will call Robert once received for training call.
1610 - off-site

7/21/11

0700- on site
- HASP
Meet Leandro (MOV) to unload remaining drums
- back to trailer to finish Loading

0830- leave for Salinas to unload 1st truck load at JR's house.
1145- trip complete - arrive on base
- Lunch.
1215- return from lunch.
- continue to clean out trailer/ truck coolers from 7/20.
- coolers were held up in Memphis, TN. Call to fed ex to request earliest delivery.
- continue to clean trailer and prep for de-mob
- no word of bacteria delivery to MOV.
1800- off-site

Location _____ Date 7/22/15

Project / Client
CT/JR

0700 - on-site to continue cleaning trailer
- call Joel Morales to term to dispose of Carbon vessell in trailer.
- Samuel Morin is where vessel came from - Sanagua - Bayamon.
- Carbon will not pour out of the vessel.

0815 - to fed-ex to ship herman supplies:
1 toolbox
2 plastic tubs
1 Horbu (in case)

0900 - return to base.
- will return carbon filter and carbon to Samuel Martinez of Sanagua Tinagua

1000 - at Linde to get Nitrogen tank for Bacteria injection.
- OP-3 / MW-1C will need to be resampled for 9056-A due to fed-ex mishap

1100 - Lunch

1130 - move to OP-3 to resample.

Location _____ Date 7/22/15

Project / Client
CT/JR

1400 - Sampling complete
- Head to MGV to p/u bacteria and have conf. call w/ SIREM.

1500 - Bacteria arrives @ MGV unpack / assess and call Jeff at Sirem

1600 - term call complete.

1630 - depart MGV for hotel.

Location _____ Date 7/23/15

Project / Client _____

0700 - On-site
- HASP.
begin KB1 inj. set-up.
MW-1 - 41 ft TD
inj @ 35 ft. @ 20 psi
Vessel 35.6 kg.

20 L vessel refilled w/ 20 L

IW-2 - 20 L injected @ 35 ft.
39 ft TD @ 20 psi

IW-3 43 ft TD
well begin to overlaw w/ bacteria solution. will wait for wl to settle.
20 L injected @ 36 ft. @ 20 psi

1110 - lunch.
- aramsco run for gloves
1200. on-site - begin 20 L refill for
IW-4 TD - 38.64
20 L KB-1 injected @ 36' @ 20 psi

Location _____ Date 7/23/15

Project / Client _____

IW-5 - 37.5 20 L KB-1 Injected
at 32' @ 20 psi

IW-8 - 39' TD 20 L injected @
34' @ 20 psi

IW-7 20 L KB1
39' TD pumped @ 34' @ 20 psi

IW-6 20 L KB1
39' TD pumped @ 34' @ 20 psi

IW-9 10 L @ 28' @ 15 PSI
TD 29.6

IW-10 10 L @ 28' @ 15 PSI
TD 29.7

1700 - Begin breakdown for the day.

Location _____ Date 7/24

Project / Client _____

CJ/JR

0700 - on-site to complete KB-1 Back injection in barrier wall area
- HASP.

Continue chemical injection.
IW-11 - 30' 10 L KB-1 injected @ 25' @ 15 psi
32 kg → 22 kg

IW-12 TD - 30'
10 L KB-1 injected @ 25' @ 15 PSI

IW-13 TD - 28.9' 31.6 → 21.6
10 L KB-1 Injected @ 24'
@ 15 PSI

IW-14 TD - 29'
10 L KB-1 Injected @ 24'
@ 15 PSI

~~IW-14~~ TD - KB-1 inj. complete.
0915 Will fill 20 L vessel w/ remaining KB-1 and inject in source area

Location _____ Date 7/24

Project / Client _____

CJ/JR

Remaining vessel head 2.5 L of KB-1 backwash and will be placed in IW-1

- 0930 - continue clean-up.
- 1000 - off site to MGV to deliver KB-1 injection equipment to Leandro for return shipping
1100 - on-site to continue clean-up
1430 - off site

Location _____ Date 7/23/15

Project / Client _____

0700- Onsite
- HASP.

begin KB1 inj. set-up.

MW-1 - 41 ft TD
inj @ 35ft. @ 20 psi
Vessel 35.6 kg.

20L vessel refilled w/ 20L

IW-2 - 20L injected @ 35ft.
39ft TD @ 20psi

IW-3 43 ft TD
well begin to overflow w/ bentonite solution. wait until for well to settle.
20 L injected @ 36 ft. @ 20psi

1110 - lunch.
- aramsco run for gloves

1200. on-site - begin 20L refill for
IW-4 TD - 38-41
20 L KB1 injected @ 36' @ 20 psi

Location _____ Date 7/23/15

Project / Client _____

IW-5 - 37.5 20 L KB-1 Injected
at 30' @ 20 psi

IW-8 - 39' TD 20L injected @
34' @ 20 psi

IW-7 20L KB1
39' TD pumped @ 34' @ 20 psi

IW-6 20 L KB1
39' TD pumped @ 34' @ 20 psi

IW-9 10 L @ 25' @ 15 PSI
TD 29.6

IW-10 10L @ 25' @ 15 PSI
TD 29.7

1700- Begin breakdown for the day.

Location _____ Date 7/24

Project / Client _____

CT/JR

0700 - on-site to complete KB-1 Bach injection in barrier wall area
- HASP.

Continue chemical injection.
IW-11 - 30' 10 L KB-1 injected @ 25' @ 15 psi
32 kg → 22 kg

IW-12 TD - 30'
10 L KB-1 injected @ 25' @ 15 PSI

IW-13 TD - 28.9' 31.6 → 21.6
10 L KB-1 Injected @ 24'
@ 15 PSI

IW-14 TD - 29'
10 L KB-1 Injected @ 24'
@ 15 PSI

~~IW-14~~ ~~TD~~ KB-1 inj. complete.
0915 Will fill 20 L vessel w/ remaining KB-1 and inject in source area

Location _____ Date 7/24

Project / Client _____

CT/JR

Remaining vessel had 2.5 L of KB-1 bacteria and will be place in IW-1

- 0930 - continue clean-up.
- 1000 - off site to MGV to deliver KB-1 injection equipment to Leandro for return shipping
1100 - on-site to continue clean-up
1430 - off site

APPENDIX C
BORING LOGs / WELL DIAGRAMs

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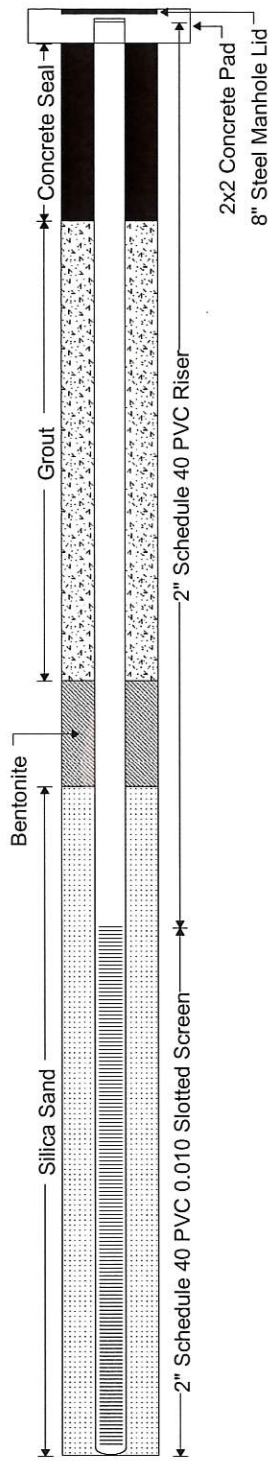
Borehole Number: IW-01

Project No: SH4906
Project: Fort Buchanan
Client: US Army Garrison - Fort Buchanan
Site Location: Bayamon, PR
Drill Date: May 4, 2015
Latitude / Longitude: NA

Drilled By: MGV Geotechnical
Drill Method: HSA
Sampling Method: Split Spoon
Bore Hole Diameter: 8"
Geologist: Charlie Taylor / Joel Morales

KEMRON ENVIRONMENTAL SERVICES
1359 Ellsworth Ind. Blvd
Atlanta, GA 30318

Depth (ft)	Lithologic Symbol	Soil Classification	PID (ppm)
0		Ground Surface	
		Fill 5/4 7.5YR gravely clay backfill material, dry, no odor.	0.0
		3/3 10YR dark brown silty clay with some sand, dry, no odor.	0.0
		Residuum 3/4 10YR dark brown silty clay with some sand dry, no odor.	0.0
5		7/6 7.5YR reddish yellow sandy clay, dry, no odor.	0.0
		4/6 10YR dark yellowish brown clayey sand, dry, no odor.	0.0
		5/1 10YR grey sand, moist, no odor.	0.0
10		7/1 grey sand, wet, no odor.	0.0
		5/6 7.5YR brown sandy clay, moist, no odor.	0.0
		5/1 10YR grey sand, uniform, moist, no odor.	0.0
15		6/1 2.5YR grey sandy silt, moist, no odor.	0.0
		5/6 10YR silty clay with black marbeling throughout, moist, no odor.	6.3
20		5/6 10YR clayey silt with black marbeling throughout, moist, no odor.	6.3
25		5/6 10YR clayey silt with medium gravel, moist, no odor.	1.1
		5/6 10YR silty clay with medium gravel angular limestone throughout, moist, no odor.	0.1
30		6/4 7.5YR silty sand, uniform, moist, no odor.	0.1
		6/6 7.5YR reddish yellow silt, wet, no odor.	0.0
35		6/6 7.5YR reddish yellow clayey silt with fine grained angular limestone gravel throughout, moist, no odor.	0.0
		6/6 7.5YR clayey silt with small gravel, moist, no odor.	0.0
		8/6 10YR yellow sandy silt with medium angular limestone gravel throughout, moist, no odor.	0.0
40		End of Borehole	



Depth (ft): 0, 5, 10, 15, 20, 25, 30, 35, 40

Borehole Number: IW-02

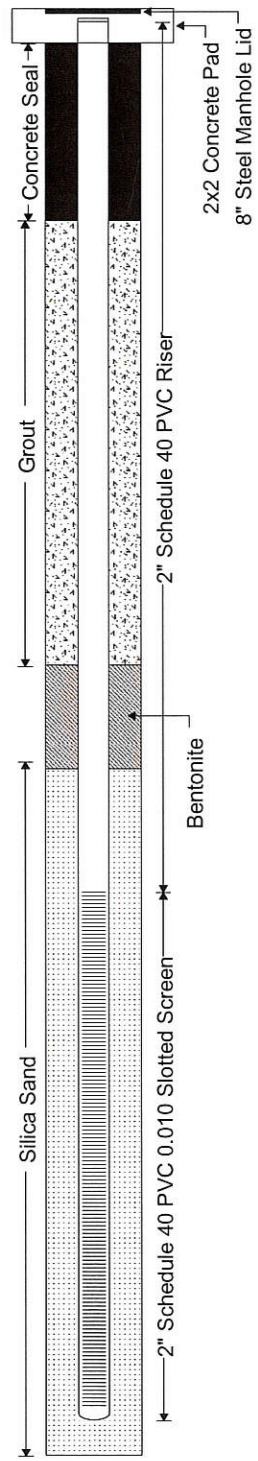
Project No: SH4906
Project: Fort Buchanan
Client: US Army Garrison - Fort Buchanan
Site Location: Bayamon, PR
Drill Date: May 5, 2015
Latitude / Longitude: NA

Drilled By: MGV Geotechnical
Drill Method: HSA
Sampling Method: Split Spoon
Bore Hole Diameter: 8"
Geologist: Charlie Taylor / Joel Morales

KEMRON ENVIRONMENTAL SERVICES
1359 Ellsworth Ind. Blvd
Atlanta, GA 30318

Depth (ft)	Lithologic Symbol	Soil Classification	PID (ppm)
0		Ground Surface	
		Fill Organic layer, grass, fill, dry, no odor.	0.0
		6/6 7.5YR reddish yellow sandy silt with large well graded limestone gravel, dry, no odor.	0.0
		3/4 7.5YR dark brown sandy silt,non-plastic, non-cohesive, dry, no odor.	0.0
5		***Residuum*** 4/3 7.5YR brown silty clay, low plasticity, cohesive, dry, no odor.	0.1
		4/3 7.5YR brown silty clay with 6/1 2.5yr grey 1 low plasticity, cohesive, dry, no odor.	0.8
10		6/1 grey clayey silt with 4/3 7.5YR brown silty clay throughout, medium plasticity, cohesive, dry, no odor.	0.9
		4/3 7.5YR brown silt with 6/1 2.5YR clayey silt and medium angular limestone gravel throughout, medium plasticity, cohesive, dry, no odor.	0.9
15		4/3 7.5YR brown silty clay with 6/1 2.5YR grey sandy silt and and well graded medium gravel throughout, low plasticity, cohesive, dry, no odor.	0.2
		4/6 brown clayey silt with 6/1 grey mottling throughout, low plasticity, cohesive, dry, no odor.	0.4
		5/6 7.5YR brown clayey silt, with grey 1 mottled thrghout, non-plastic, non-cohesive, dry, no odor.	0.5
20		5/6 7.5YR brown clayey silt with black mottled throughout, non-plastic, non-cohesive, dry, no odor.	0.4
		5/6 7.5YR brown clayey silt with 6/1 grey 1 silt throughout, medium plasticity, cohesive, moist, no odor.	0.1
		5/6 7.5YR brown clayey silt with 3/2 7.5YRdark brown mottled throughout, medium plasticity, cohesive, moist, no odor.	
25		No recovery.	
30		6/8 10YR brownish yellow silty clay, medium plasticity, moist, no odor.	0.9
		8/2 2.5YR pale yellow stiff weathered limestone.	1.5
		Hammer refusal.	
		6/8 7.5YR reddish yellow silty clay, moist, no odor.	0.4
35		8/2 2.5YR pale yellow stiff weathered limestone, wet, no odor.	0.4
		8/2 2.5YR pale yellow stiff weathered limestone with non-uniform angular limestone gravel throughout, wet, no odor.	0.5
40		End of Borehole	

Well Construction



Borehole Number: IW-03

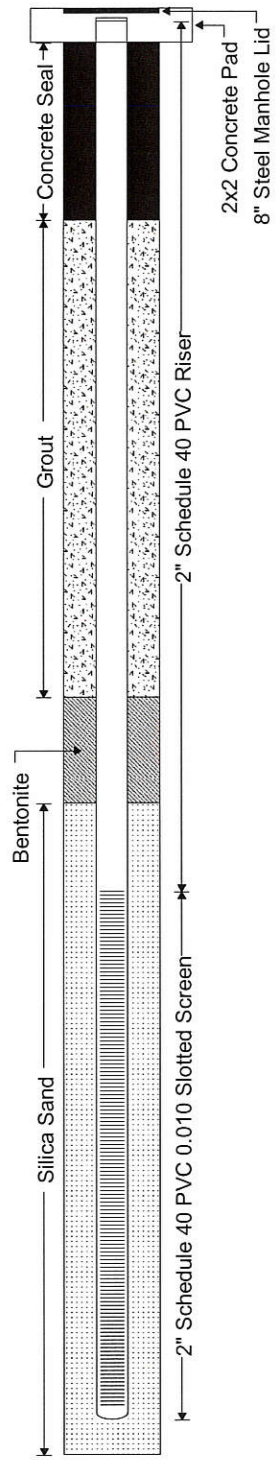
Project No: SH4906
Project: Fort Buchanan
Client: US Army Garrison - Fort Buchanan
Site Location: Bayamon, PR
Drill Date: May 6, 2015
Latitude / Longitude: NA

Drilled By: MGV Geotechnical
Drill Method: HSA
Sampling Method: Split Spoon
Bore Hole Diameter: 8"
Geologist: Charlie Taylor / Joel Morales

KEMRON ENVIRONMENTAL SERVICES
1359 Ellsworth Ind. Blvd
Atlanta, GA 30318

Depth (ft)	Lithologic Symbol	Soil Classification	PID (ppm)
0		Ground Surface	
		Fill Organic, grass layer, fill 6/6 7.5YR reddish yellow sandy silt with coarse angular limestone gravel, dry, no odor.	0.0
		3/3 7.5YR dark brown clayey silt, non-plastic, non-cohesive, dry, no odor.	0.0
5		***Residuum*** 4/6 7.5YR brown clayey silt, low plasticity, cohesive, dry, no odor.	0.1
		4/6 7.5YR brown stiff silty sand with 6/3 grey 2 silty sand mottled throughout, non-plastic, non-cohesive, dry, no odor.	0.3 0.1
10		4/6 7.5YR brown stiff silty sand non-plastic, non-cohesive, dry, no odor.	0.3 0.5
		4/3 10YR brown very stiff silty clay, medium plasticity, cohesive, dry, no odor.	0.0
		4/4 10YR dark yellowish brownsilty sand, non-plastic, wet, no odor.	0.8
15		7/1 grey 2 light greenish grey silty sand with brown clay, very stiff, low plasticity, cohesive, dry, no odor.	0.3
		4/4 7.5YR brownvery stiff clayey silt, low plasticity, cohesive, dry, no odor.	0.6
		7/1grey 1 light grey and 3/8 7.5YR brown silty clay, medium plasticity, cohesive, dry, no odor.	0.2
20		4/4 7.5YR brown clayey silt, high plasticity, cohesive, wet, no odor.	0.8
		5/6 7.5YR brown clayey silt with 6/1 grey 1 silt throughout, medium plasticity, cohesive, moist, no odor.	3.8
		5/4 7.5YR yellowish brown stiff silty sand with 7/1 grey 1 light grey mottled throughout non-plastic non-cohesive, moist, no odor.	6.1
25		4/2 7.5YR dark greyish brown silt, non-plastic, non-cohesive, moist, no odor.	6.7
		No recovery.	
		5/4 7.5YR yellowish brown stiff silty clay with 7/1 grey 1 light grey mottled throughout, , medium plasticity, moist, no odor.	0.8
30		3/1 dark grey very stiff silt with 7/1 5.6YR light greenish grey mottled throughout, non-plastic, non-cohesive, moist, no odor.	
		8/2 10YR very pale brown well sorted dense weathered limestone gravel, moist, no odor.	
		6/4 7.5YR light brown stiff silty sand with brown clay throughout, low plasticity, cohesive, moist, no odor	0.2
35		8/6 7.5YR medium stiff brown silty clay with 7/5 5yr light grey silty clay mottled throughout, medium plasticity, cohesive, moist, no odor.	0.1
		8/2 10yr very pale brown, well sorted, medium to coarse, weathered limestone gravel, wet, no odor.	0.0
40		End of Borehole	

Well Construction



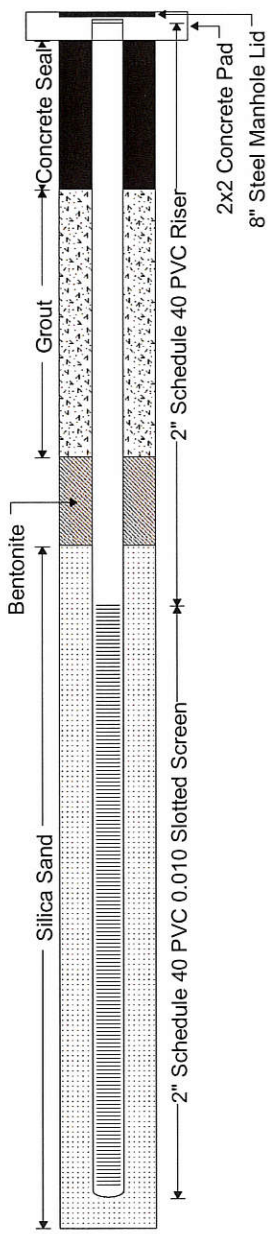
Borehole Number: IW-04

Project No: SH4906
Project: Fort Buchanan
Client: US Army Garrison - Fort Buchanan
Site Location: Bayamon, PR
Drill Date: May 8, 2015
Latitude / Longitude: NA

Drilled By: MGV Geotechnical
Drill Method: HSA
Sampling Method: Split Spoon
Bore Hole Diameter: 8"
Geologist: Charlie Taylor / Joel Morales

KEMRON ENVIRONMENTAL SERVICES
1359 Ellsworth Ind. Blvd
Atlanta, GA 30318

Depth (ft)	Lithologic Symbol	Soil Classification	PID (ppm)
0		Ground Surface	
		Fill Organic, grass layer, fill, dry, no odor.	0.0
		Coarse angular granite gravel and well graded angular limestone gravel with brown silt, dry, no odor.	0.0
		Stiff dark grey silty clay, non-cohesive, non-plastic, dry, no odor	
5		**Residuum** 5/1 2.5YR grey with 5/6 10YR yellowish brown stiff silty clay, medium plasticity, cohesive, dry, no odor.	0.0
		4/4 10YR dark yellowish brown stiff clay with 5/6 2.5YR grey mottled throughout medium plasticity, cohesive, dry, no odor.	9.5
10		7/1 5PB and 4/6 10YR dark yellowish brown silty clay, low plasticity, cohesive, dry, no odor.	0.0
15		8/2 10YR pale brown sand, wet, no odor.	2.6
		8/2 2.5YR pale yellow stiff weathered limestone with weathered angular well sorted limestone gravel throughout, non-plastic, non-cohesive, moist, no odor.	
20			0.0
25		6/8 5YR reddish yellow medium dense silty clay, medium plasticity, cohesive, moist, no odor.	1.4
		8/2 2.5YR pale yellow stiff weathered limestone with weathered angular well sorted limestone gravel throughout, non-plastic, non-cohesive, moist, no odor..	2.6 1.1
30		5/8 7.5YR brown silty clay with medium angular well sorted weathered limestone gravel throughout, medium plasticity, cohesive, wet, no odor.	1.6 2.1
		8/2 2.5YR pale yellow stiff weathered limestone with weathered angular well sorted limestone gravel throughout, non-plastic, non-cohesive, moist, no odor.	2.5 2.3
35		5/4 10YR yellowish brown silty clay with medium angular weathered limestone gravel troughout, medium palsticity, cohesive, moist, no odor.	2.2
		5/8 7.5YR brown silty clay with fine limestone gravel throughout, high plasticity, cohesive,moist, no odor.	2.5 1.9
40		8/2 2.5YR pale yellow stiff weathered limestone with weathered angular well sorted limestone gravel throughout, non-plastic, non-cohesive, moist, no odor.	1.1
		8/2 2.5YR pale yellow stiff weathered limestone , non-plastic, non-cohesive, dry, no odor.	
		8/2 7YR pinkish white silty sand, low plasticity, cohesive, moist, no odor.	
45		5/8 7YR brown silty clay with medium angular limestone gravel throughout, medium plasticity, cohesive, dry, no odor	
		8/2 2.5YR pale yellow stiff weathered limestone , non-plastic, non-cohesive, dry, no odor. End of Borehole	
50		End of Borehole.	



Borehole Number: IW-05

Project No: SH4906
Project: Fort Buchanan
Client: US Army Garrison - Fort Buchanan
Site Location: Bayamon, PR
Drill Date: May 11, 2015
Latitude / Longitude: NA

Drilled By: MGV Geotechnical
Drill Method: HSA
Sampling Method: Split Spoon
Bore Hole Diameter: 8"
Geologist: Charlie Taylor / Joel Morales

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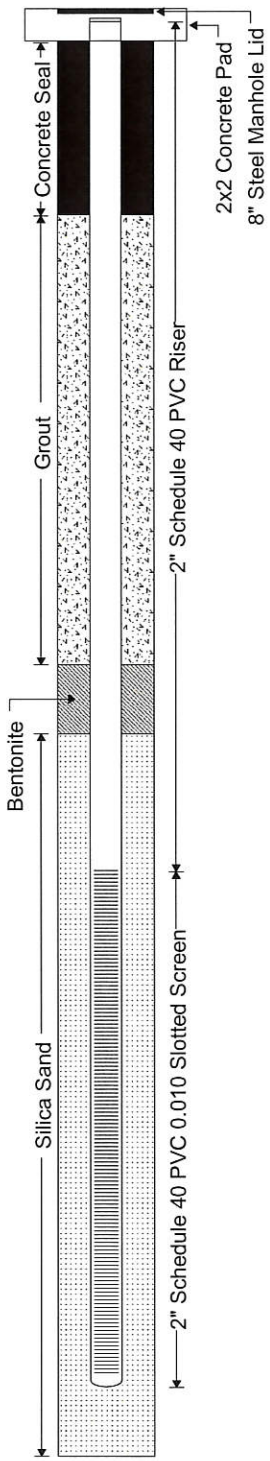
Atlanta, GA 30318

Depth (ft)	Lithologic Symbol	Soil Classification	PID (ppm)
0		Ground Surface	
		Organic, grass layer, fill, dry, no odor.	0.0
		Fill Brown sandy silt with charcoal gravel and well sorted coarse gravel, non-plastic, non-cohesive, dry, no odor.	0.0
		Coarse brown sand with well sorted angular limestone gravel throughout, non-cohesive, non-plastic, dry, no odor	0.0
5		***Residuum*** 4/4 2.5YR stiff brown silty clay with 5/1 7.5YR grey silty clay mottled throughout, high plasticity, cohesive, dry, no odor.	0.3
10		4/6 7.5YR stiff brown silty clay with 8/1 10G light greenish grey clayey silt grey mottled throughout, low plasticity, cohesive, dry, no odor.	0.1
		4/8 2.5YR red silt, non-plastic, non-cohesive, dry, no odor.	0.0
15		3/2 10YR very dark greyish brown and 4/6 5YR yellowish red silty clay, high plasticity, cohesive, dry, no odor.	0.5
		3/6 dark red and 8/1 10GB light greenish grey clayey silt, low plasticity, cohesive, dry, no odor.	0.0
		7/1 10G light greenish grey clayey silt, low plasticity, cohesive, dry, no odor.	0.1
20		6/8 7.5YR reddish yellow clayey silt, low plasticity, cohesive, dry, no odor.	0.2
		6/8 7.5YR reddish yellow clayey silt with 2.5/1 10YR greenish black mottled throughout, low plasticity, cohesive, dry, no odor., medium plasticity, cohesive, wet, no odor.	0.1
		No recovery.	0.0
25		6/8 7.5YR reddish yellow clayey silt with 2.5/1 10YR greenish black mottled throughout, low plasticity, cohesive, dry, no odor.	0.1
		6/8 7.5YR reddish yellow clayey silt , medium plasticity, cohesive,moist, no odor.	0.5
		8/6 5Y yellow medium silt, non-plastic, non-cohesive, moist, no odor.	1.3
30		5/6 2.5YR red clayey silt with well sorted angular limestone gravel throughout, medium plasticity, cohesive, moist, no odor.	0.8
		8/2 2.5YR pale yellow stiff weathered limestone with angular limestone gravel throughout, non-plastic, non-cohesive, wet, no odor.	
		5/6 5YR yellowish red stiff silty clay with 2.5/1 10y greenish black mottled throughout, high plasticity, cohesive, moist, no odor	0.0
35		7/8 10YR yellow clayey silt with medium angular limestone gravel throughout, low plasticity, cohesive, moist, no odor	0.0
		8/2 2.5YR pale yellow stiff weathered limestone, non-plastic, non-cohesive, dry, no odor..	0.0
		6/3 2.5Y light yellowish brown clayey silt with traces of fine sand, low plasticity, cohesive, moist, no odor.	0.0
40		8/1 10GY silty clay, medium plasticity, cohesive, moist, no odor.	0.0
		End of Borehole	

Well Construction



Borehole Number: IW-06

Project No: SH4906
Project: Fort Buchanan
Client: US Army Garrison - Fort Buchanan
Site Location: Bayamon, PR
Drill Date: May 15, 2015
Latitude / Longitude: NA

Drilled By: MGV Geotechnical
Drill Method: HSA
Sampling Method: Split Spoon
Bore Hole Diameter: 8"
Geologist: Charlie Taylor / Joel Morales

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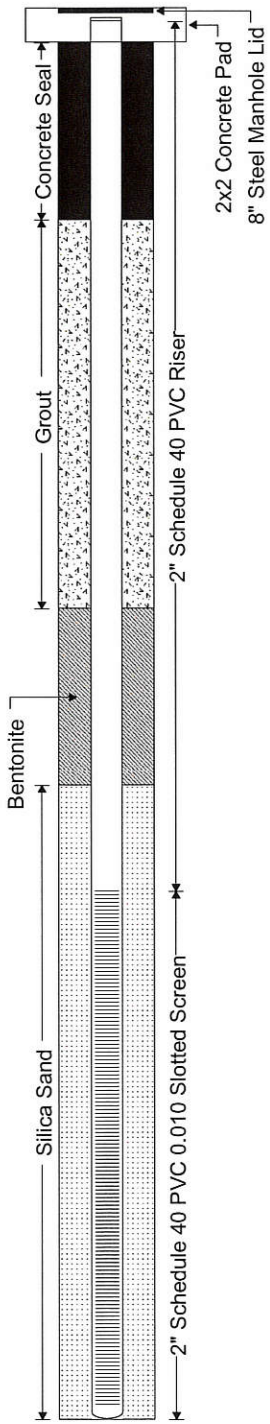
Depth (ft)	Lithologic Symbol	Soil Classification	PID (ppm)
0		Ground Surface	
		Organic, grass layer	0.0
		Fill 5/6 7.5YR dense sandy silty with large granite and limestone boulders throughout, non plastic, non cohesive, dry, no odor.	0.0
5		***Residuum*** 3/4 10R dusty red silt with fine grain sand throughout and 5/1 SP13 bluish grey clayey silt mottled throughout, medium plasticity, cohesive, dry, no odor.	0.0
		5/1 5PB bluish grey clayey silt , high plasticity, cohesive, dry, no odor.	0.0
10		3/4 10R dusty red silt with fine grain sand throughout and 5/1 SP13 bluish grey clayey silt mottled throughout, medium plasticity, cohesive, dry, no odor.	0.0
15		4/6 5YR yellowish red stiff silty clay with 6/1 5yr grey clay mottled throughout, cohesive, dry, no odor.	0.5
		3/6 10R dark red dense silt, non-cohesive, dry, no odor.	0.1
20		4/8 10R dense red silt, non-plastic, non-cohesive, dry, no odor.	0.1
25		4/6 5YR yellowish red dense silt with 5/1 5B6 greenish grey dense silty clay mottld throughout, non-plastic, non-cohesive, dry, no odor.	0.1
30		5/6 7.5YR brown and 2.5/2 7.5YR very dark brown silt, non-plastic, non-cohesive, dry, no odor.	0.2
35		6/6 7.5YR reddish yellow medium dense silt with angular limestone gravel throughout, low plasticity, cohesive, dry, no odor.	0.4
		6/6 7.5YR reddish yellow medium dense silt with coarse limestone gravel throughout, moist, no odor.	0.0
40		8/2 2.5YR pale yellow weathered limestone, non-sohesive, dry, no odor.	0.1
		End of Borehole	

Well Construction



Borehole Number: IW-07

Project No: SH4906
Project: Fort Buchanan
Client: US Army Garrison - Fort Buchanan
Site Location: Bayamon, PR
Drill Date: May 14, 2015
Latitude / Longitude: NA

Drilled By: MGV Geotechnical
Drill Method: HSA
Sampling Method: Split Spoon
Bore Hole Diameter: 8"
Geologist: Charlie Taylor / Joel Morales

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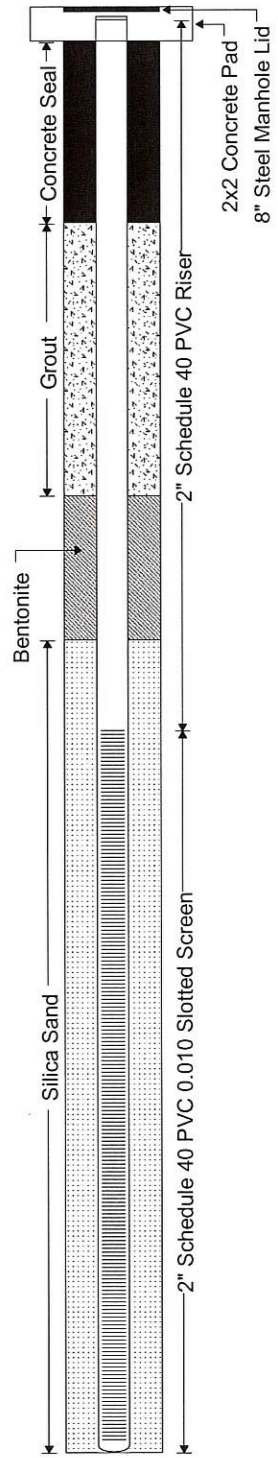
Depth (ft)	Lithologic Symbol	Soil Classification	PID (ppm)
0		Ground Surface	
		Fill 3/6 10YR dark yellowish brown clayey silt with 5/1 5PB bluish grey clayey silt mottled throughout, dry, no odor.	
		Coarse sandy silt with well sorted limestone gravel throughout.	
		Residuum 3/6 10yr dark yellowish brown clayey silt with 5/1 SPB bluish grey clayey silt mottled throughout, dry, no odor.	0.0
5		4/6 7.5YR brown clayey silt with 5/1 5PB bluish grey clayey silt mottled throughout, dry, no odor.	0.0
10		4/4 5YR reddish brown clayey sand with 7/1 5GB light greenish grey silty clay mottled throughout, medium plasticity, cohesive, dry, no odor.	0.5
15		5/6 7.5YR brown hard clayey sand with 7/1GB light greenish grey silty clay mottled throughout, medium plasticity, cohesive, dry, no odor.	0.1
		5/6 5YR yellowish red hard clayey silt, medium plasticity, cohesive, dry, no odor.	0.0
20			
		7/6 2.5Y yellow clayey silt with trace amounts of coarse angular weathered limestone gravel, cohesive, wet, no odor.	0.2
25			
		7/4 2.5Y pale yellow clayey silt with angular weathered limestone gravel throughout, wet, no odor.	0.0
30			
		7/6 2.5Y yellow clayey silt with light grey mottled throughout, moist, no odor.	1.7
35			
		7/6 2.5Y yellow clayey silt with 8/3 10YR yellow clayey silt mottled throughout, medium plasticity, cohesive, moist, no odor.	0.5
40		End of Borehole	

Well Construction



Borehole Number: IW-08

Project No: SH4906
Project: Fort Buchanan
Client: US Army Garrison - Fort Buchanan
Site Location: Bayamon, PR
Drill Date: May 13, 2015
Latitude / Longitude: NA

Drilled By: MGV Geotechnical
Drill Method: HSA
Sampling Method: Split Spoon
Bore Hole Diameter: 8"
Geologist: Charlie Taylor / Joel Morales

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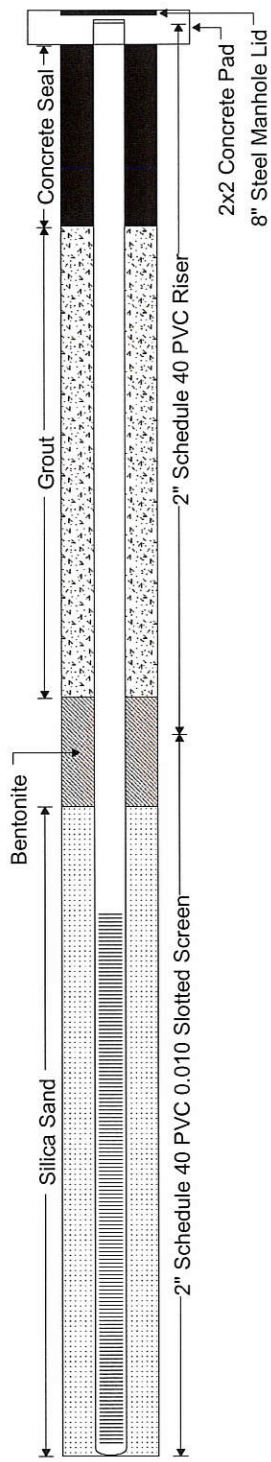
Depth (ft)	Lithologic Symbol	Soil Classification	PID (ppm)
0		Ground Surface	
		Fill	0.0
		Grass, organic layer.	0.0
		Coarse sandy silt with well sorted limestone gravel throughout.	
		Residuum	0.0
		6/8 7.5YR sandy silt, low plasticity, cohesive, dry, no odor.	
5		4/4 5YR stiff reddish brown silt, non-plastic, non-cohesive, dry, no odor.	0.0
		4/6 7.5YR brown clayey silt with 8/10 10GB light greenish grey mottled throughout, low plasticity, cohesive, dry, no odor.	0.1
10			
		3/4 2.5YR dark reddish brown clayey silt with 8/1 10GB light greenish grey mottled throughout, low plasticity, cohesive, dry, no odor.	0.1
15			
		4/6 5YRyellowish red silty clay, high plasticity, cohesive, dry, no odor.	0.0
			0.0
		4/6 5YR yellowish red silt with 8/1 10GB light greenish grey clayey silt throughout, lnon-plastic, non-cohesive, dry, no odor.	0.0
20		3/6 2.5YR dark red silt, non-plastic, non-cohesive, dry, no odor.	0.2
		3/6 2.5YR red silt with 8/1 10GB light greenish grey silty clay mottled throughout, non-cohesive, non-plastic, dry, no odor.	
		4/6 2.5YR stiff clayey silt, non-plastic, non-cohesive, dry, no odor.	0.1
25		5/8 7.5YR brown stiff clayey silt with 2.5/3 7.5Y brown silty clay mottled throughout, low plasticity, cohesive, dry, no odor.	0.7
		5/8 7.5YR brown stiff clayey silt with 7/1 10GY light greenish grey silty clay mottled throughout, low plasticity, cohesive, dry, no odor.	0.9
30		5/8 7.5yr brown stiff clayey silt with 3/3 dark reddish brown stiff clayey silt mottled throughout, low plasticity, cohesive, moist, no odor.	0.4
35		8/6 10yr pale yellow clayey silt with medium coarse angular limestone gravel throughout, medium plasticity, cohesive, wet, no odor.	0.4
			0.4
		7/6 10yr yellow silty clay with medium coarse angular limestone gravel throughout, medium plasticity, cohesive, wet, no odor.	
		Hammer Refusal at 36.5. Augured to depth.	
40		End of Borehole	



Borehole Number: IW-09

Project No: SH4906
Project: Fort Buchanan
Client: US Army Garrison - Fort Buchanan
Site Location: Bayamon, PR
Drill Date: May 19, 2015
Latitude / Longitude: NA

Drilled By: MGV Geotechnical
Drill Method: HSA
Sampling Method: Split Spoon
Bore Hole Diameter: 8"
Geologist: Charlie Taylor / Joel Morales

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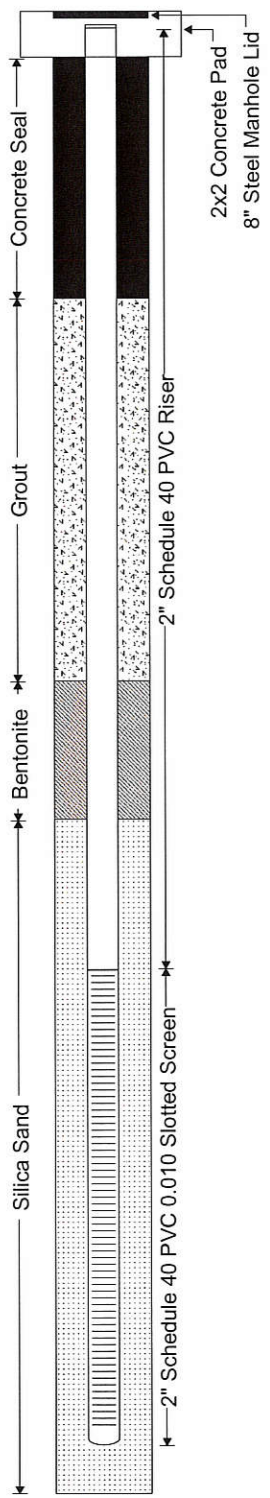
Atlanta, GA 30318

Depth (ft)	Lithologic Symbol	Soil Classification	PID (ppm)
0		Ground Surface	
		Fill Grass, organic layer	0.0
		5/6 7.5 yr strong brown dense sandy silt with large granite and limestone boulders throughout, non-plastic, non-cohesive, dry, no odor.	0.0
		Residuum 5/8 7.5 yr strong brown dense clayey silt with 7/1 10y light greenish gray clayer silt throughout, medium plasticity, cohesive, dry, no odor.	0.4
5		Little Recovery - 5/8 7.5 yr strong brown dense clayey silt with 7/1 10y light greenish gray clayer silt throughout, medium plasticity, cohesive, dry, no odor.	0.4
		4/4 10R dense weak red silt with 8/1 10B light bluish gray silty clay throughout, low plasticity, cohesive, dry, no odor.	0.7
10		8/1 10Y dense light greenish gray silty clay with 4/4 10R weak red silt mottled throughout. high plasticity, cohesive, dry, no odor.	0.4
		Low recovery from 12-14 ft. 5/8 10R dense red silt with 8/1 10B light bluish gray silty clay throughout, high plasticity, cohesive, dry, no odor.	0.2
15		5/6 10YR dense yellowish brown clayey silt, medium plasticity, cohesive, dry, no odor.	0.3
		5/6 10YR dense yellowish brown clayey silt with 7/1 10B light bluish gray and 2.5/1 10B bluish black silty clay mottled throughout, medium plasticity, cohesive, dry, no odor.	0.4
		6/8 7/5YR reddish yellow clayey silt with 3/3 7.5YR dark brown clayey silt throughout, medium plasticity, cohesive, dry, no odor.	0.2
20		6/8 7.5YR reddish yellow medium dense clayes silty with trace fine throughout, medium plasticity, cohesive, dry, no odor. Moist at 20 feet	0.1
		8/6 10YR yellow medium dense weathered limestone with medium grained, poorly sorted, angular limestone gravel throughout, non plastic, non cohesive, dry, no odor.	0.0
		8/6 10YR yellow medium dense weathered limestone with medium grained, poorly sorted, angular limestone gravel throughout, non plastic, non cohesive, wet, no odor. Hammer refusal at 24.5 ft.	0.0
25		8/6 10YR very dense yellow weathered limestone and medium to coarse grained angular limestone gravel throughout, non plastic, non cohesive, wet, no odor.	0.0
30		End of Borehole	



Borehole Number: IW-10

Project No: SH4906
Project: Fort Buchanan
Client: US Army Garrison - Fort Buchanan
Site Location: Bayamon, PR
Drill Date: May 20, 2015
Latitude / Longitude: NA

Drilled By: MGV Geotechnical
Drill Method: HSA
Sampling Method: Split Spoon
Bore Hole Diameter: 8"
Geologist: Charlie Taylor / Joel Morales

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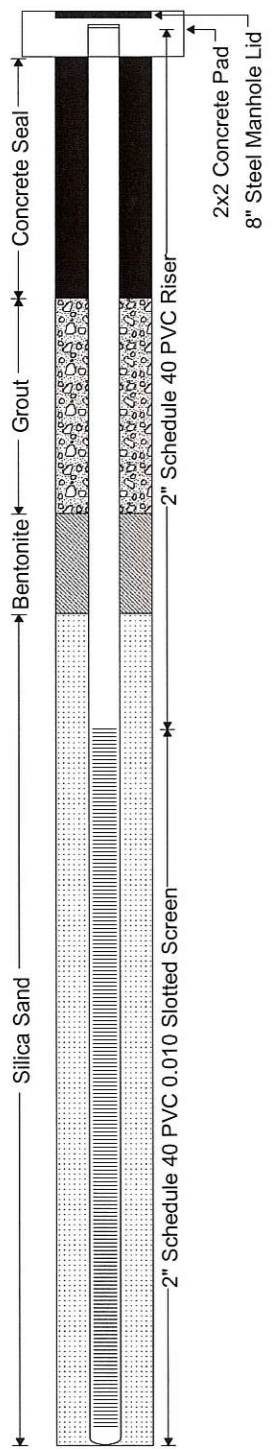
Atlanta, GA 30318

Depth (ft)	Lithologic Symbol	Soil Classification	PID (ppm)
		Ground Surface	
0		***Fill*** Grass, organic layer	0.0
		5/6 7.5YR dense sandy silt with large granite and limestone boulders throughout, non plastic, non cohesive, dry, no odor.	0.0
5		***Residuum*** 4/6 2/5YR medium dense red silt, low plasticity, cohesive, dry, no odor.	0.1
		No Recovery	
10		5/8 5YR dense yellowish red clayey silt with 8/1 5B light bluish gray clayey silt throughout, low plasticity, cohesive, dry, no odor.	0.3
15		8/1 5B dense light bluish gray silty clay with 4/8 10R red clayey silty thoughout, high plasticity, cohesive, dry, no odor.	0.2
		5/8 10YR dense yellowish brown and 3/3 10YR dark brown mottled clayey silt, low plasticity, cohesive, dry, no odor.	0.1
		Low Recovery. 6/6 7.5YR reddish yellow silt with trace fine grain sand and coarse grained angular, well sorted limestone boulders throughout, wet, no odor.	0.2
20			
		8/4 10YR very pale brown weathered limestone (caliche), very stiff, non plastic, non cohesive, dry, no odor	0.0
25			
		No Recovery	
30		End of Borehole	

Well Construction



Depth (ft): 0, 5, 10, 15, 20, 25, 30

Borehole Number: IW-11

Project No: SH4906
Project: Fort Buchanan
Client: US Army Garrison - Fort Buchanan
Site Location: Bayamon, PR
Drill Date: May 21, 2015
Latitude / Longitude: NA

Drilled By: MGV Geotechnical
Drill Method: HSA
Sampling Method: Split Spoon
Bore Hole Diameter: 8"
Geologist: Charlie Taylor / Joel Morales

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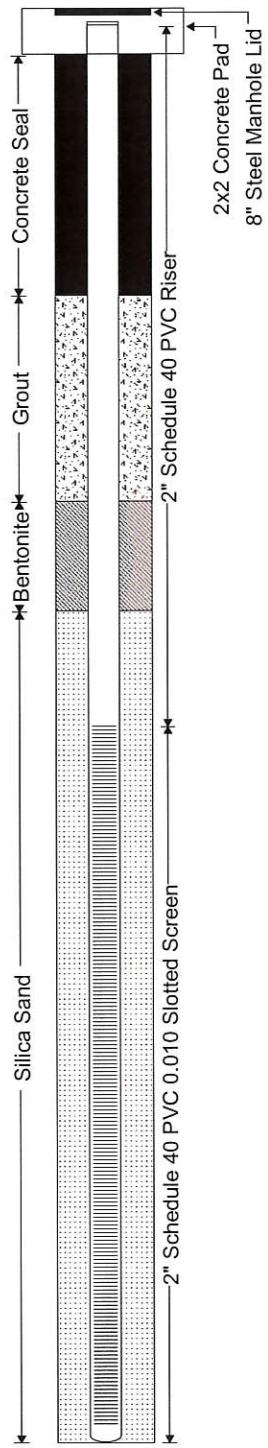
Atlanta, GA 30318

Depth (ft)	Lithologic Symbol	Soil Classification	PID (ppm)
		Ground Surface	
0		***Fill*** Grass, organic layer	0.0
		5/6 7.5YR dense sandy silt with large granite and limestone boulders throughout, non plastic, non cohesive, dry, no odor.	0.0
		Residuum 4/6 2.5YR dense red clayey silt with 5/1 10B bluish gray silty clay throughout, low plasticity, non cohesive, moist, no odor.	0.0
5		4/8 2.5YR dense red clayey silt, low plasticity, cohesive, moist, no odor.	0.0
		No recovery	0.0
10		4/8 2.5YR dense red clayey silt with 8/1 10G light greenish gray silty clay throughout, medium plasticity, cohesive, dry, no odor.	0.0
		4/6 2.5YR dense red clayey silt with 8/1 2.5YR white clay mottled throughout, medium plasticity, cohesive, moist, no odor.	0.0
15		4/6 10YR dark yelowish brown clayey silt with black mottling throughout, low plasticity, cohesive, moist, no odor.	0.0
		7/6 10YR loose yellow weathered limestone with fine grained silt throughout, large angular limestone boulders throughout, non plastic, non cohesive, wet, no odor.	0.0
		5/8 10YR dense yellowish brown silt, low plasticity, cohesive, dry, no odor.	
20			0.0
		No recovery	
25			
		7/6 10YR yellow weathered limestone with fine grained silty throughout, medium to coarse well sorted angular limestone gravel throughout, low plasticity, cohesive, wet, no odor.	0.0
30		End of Borehole	

Well Construction



Depth (ft): 0, 5, 10, 15, 20, 25, 30

Borehole Number: IW-12

Project No: SH4906
Project: Fort Buchanan
Client: US Army Garrison - Fort Buchanan
Site Location: Bayamon, PR
Drill Date: May 21, 2015
Latitude / Longitude: NA

Drilled By: MGV Geotechnical
Drill Method: HSA
Sampling Method: Split Spoon
Bore Hole Diameter: 8"
Geologist: Charlie Taylor / Joel Morales

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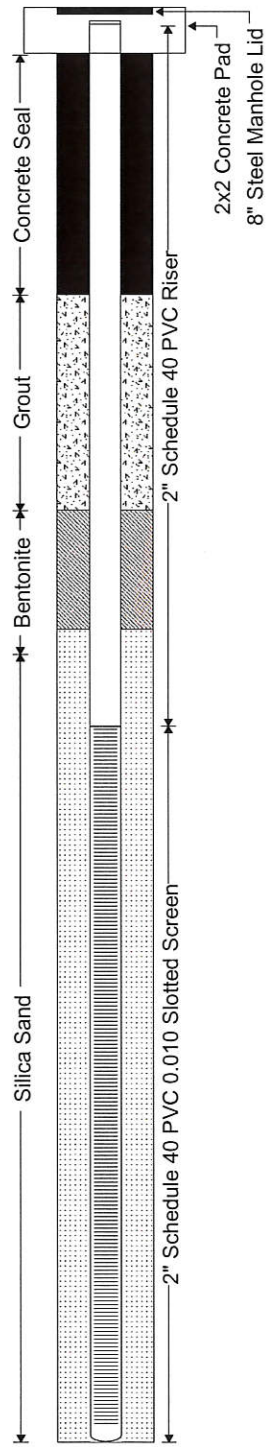
Atlanta, GA 30318

Depth (ft)	Lithologic Symbol	Soil Classification	PID (ppm)
0		Ground Surface	
		Fill Organic, grass layer	0.0
		4/6 2/5YR dense clayes silt with 5/1 10B bluish hray silty clay throughout, low plasticity, cohesive, dry, no odor.	0.0
5		***Residuum*** 4/8 2.5YR dense red clayey silt, low plasticity, cohesive, moist, no odor.	0.0
		4/8 2.5YR dense red clayey silt with 6/5 GY greenish gray, high plasticity, cohesive, dry, no odor	0.0
10		5/6 7.5YR dense strong brown clayey silt mottled with gray clayey silt, low plasticity, cohesive, dry, no odor.	0.0
		5/8 10YR dense yellowish brown silty clay with orgainc material mottled throughout, high plasticity, cohesive, moist, no odor.	0.0
15		5/4 10YR dense yellowish brown silty clay with 7/5BG gray silty clay mottled throughout, high plasticity, cohesive, dry, no odor	0.4
		7/6 10YR yellow weathered limestone with fine gravel and silt throughout, large limestone fragments throughout, non plastic, non cohesive, wet, no odor.	1.0
20			
		7/6 10YR yellow weathered limestone with fine gravel and silt throughout, large limestone fragments throughout, non plastic, non cohesive, wet, no odor.	0.0
25			
		7/6 10YR yellow weathered limestone with fine gravel and silt throughout, large limestone fragments throughout, non plastic, non cohesive, wet, no odor.	0.0
30		End of Borehole	

Well Construction



Borehole Number: IW-13

Project No: SH4906
Project: Fort Buchanan
Client: US Army Garrison - Fort Buchanan
Site Location: Bayamon, PR
Drill Date: May 22, 2015
Latitude / Longitude: NA

Drilled By: MGV Geotechnical
Drill Method: HSA
Sampling Method: Split Spoon
Bore Hole Diameter: 8"
Geologist: Charlie Taylor / Joel Morales

KEMRON ENVIRONMENTAL SERVICES
1359 Ellsworth Ind. Blvd
Atlanta, GA 30318

Depth (ft)	Lithologic Symbol	Soil Classification	PID (ppm)	Well Construction	Depth (ft)
		Ground Surface			
0		***Fill*** Grass, organic layer			0
		4/6 2.5YR dense clayey silt with 5/6 10B bluish gray silty clay throughout, low plasticity, cohesive, dry, no odor.			
		Residuum 5/1 5PB loose bluish gray silty sand, non plastic, non cohesive, moist, no odor.7			
5					5
		4/1 5GY dense dark greenish gray silty clay, high plasticity, cohesive, moist, no odor.			
		4/4 2.5YR dense reddish brown clayey silt, medium plasticity, cohesive, dry, no odor.			
10		4/4 2/5 YR dense reddish brown silty clay, medium plasticity, cohesinve, with 8/1 10GY light greenish gray and 6/8 5YR reddish yellow silty clay mottled throughout, high plasticity, cohesive, dry, no odor			10
		5/8 10R dense red clayey silt, medium plasticity, cohesive, dry, no odor.			
15		8/1 5BG dense light greenish gray silty sand, non plastic, non cohesive, dry, no odor.			15
		5/6 5YR dense yellowish red clayey silty with 8/1 10GY light greenish gray silty clay throughout, medium plasticity, cohesive, dry, no odor.			
		6/6 5YR dense reddish yellow silty with 2.5/2 5YR dark reddish brown silt throughou, non plastic, non cohesive, dry, no odor.			
20		7/6 10YR dense weathered limestone with medium to coarse angular limestone gravel throughout, dry, no odor.			20
		7/6 10YR dense weathered limestone with medium to coarse angular limestone gravel throughout, dry, no odor.			
25					25
		7/6 10YR dense weathered limestone with medium to coarse angular limestone gravel throughout, dry, no odor.			
30		End of Borehole			30

Borehole Number: IW-14

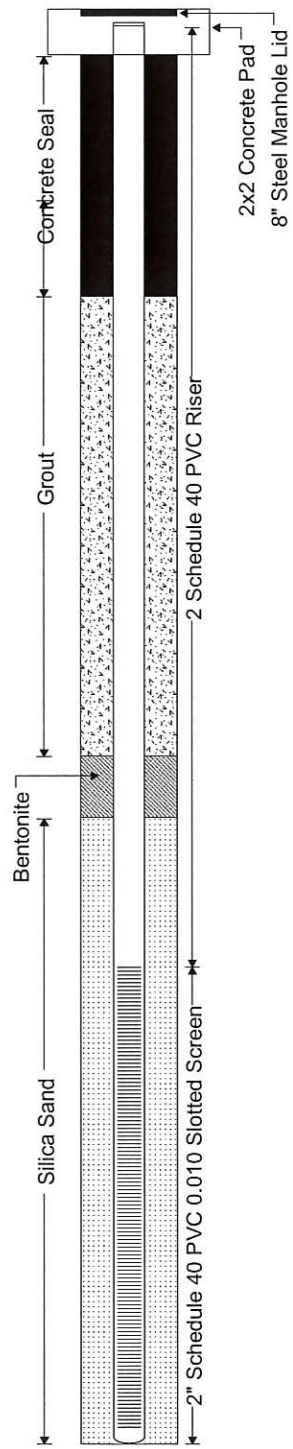
Project No: SH4906
Project: Fort Buchanan
Client: US Army Garrison - Fort Buchanan
Site Location: Bayamon, PR
Drill Date: May 26, 2015
Latitude / Longitude: NA

Drilled By: MGV Geotechnical
Drill Method: HSA
Sampling Method: Split Spoon
Bore Hole Diameter: 8"
Geologist: Charlie Taylor / Joel Morales

KEMRON ENVIRONMENTAL SERVICES
1359 Ellsworth Ind. Blvd
Atlanta, GA 30318

Depth (ft)	Lithologic Symbol	Soil Classification	PID (ppm)
		Ground Surface	
0		**Fill** Grass, organic layer	0.0
		5/6 7.5YR dense sandy silt with large granite and limestone boulders throughout, non plastic, non cohesive, dry, no odor.	0.0
5		**Residuum** 4/6 2.5YR dense brown sandy silt with 5/1 10R bluish gray silty clay throughout, low plasticity, cohesive, dry, no odor	0.4
		4/6 2.5YR dense brown sandy silt with 5/1 10R bluish gray silty clay throughout, low plasticity, cohesive, moist, no odor	0.5
		No recovery	
10		5/5 6B dense bluish gray silty clay, medium plasticity, cohesive,moist with traces of 4/6 5YR dense yellowish red silty clay, medium plasticity, cohesive, dry, no odor.	0.0
			0.0
15		7/1 10B loose light bluish gray clayey silt, medium plasticity, cohesive, dry, no odor.	1.2
		5/6 5YR dense yellowish brown sitly clay, medium plasticity, cohesive, with traces of of light bluish gray silt throughout.	0.0
		5/4 10YR dense yellowish brown silty clay, medium plasticity, cohesive, dry, no odor with black organic matter mottled throughtout.	0.5
20			
		Low recovery, 5/4 10YR dense yellowish brown silty clay, medium plasticity, cohesive, wet, no odor with black organic matter mottled throughtout.	0.5
25			
		Low Recovery, 7/6 10YR yellow weathered limestone with loose clayey silt throughout, wet, no odor.	2.5
30		End of Borehole	

Well Construction



APPENDIX D
SAMPLING LOGS

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KEMRON ENVIRONMENTAL SERVICES

1359-A Ellsworth Industrial Boulevard Atlanta, GA 30318 Telephone (404) 636-0928 FAX (404) 636-7162 http://www.kemron.com

Site Name: Ft. Buchanan

Site Location: Bayamon PR

Date: 7/16/15

Well ID: MW-7A

Sample ID: FTB034-GM-MW-7A-071615

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Well Diameter: 2"

Well Capacity (gal/ft): 0.163

Total Depth of Well (ft): 36'

Static Depth to Water (ft): 5.25

Water Column (ft):

Well Volume (gal):

Purge Volume (Well Volume x 3):

Sampled By (Sign & Print): Charlie Pugh / Julio Rodriguez

Purge Method: Peristaltic

Purge Initiated At: 1358

Purge Ended At: 1435

Sampling Method: Peristaltic

Sampling Initiated At: 1436

Sampling Ended At:

Field Decontaminated: (Yes) No

Field Filtered: Yes (No)

Duplicate: Yes (No)

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
1400	0.00	0.00	0.06	6.24	30'	6.02	28.65	0.074	0.84	10.7	clear	no
1405	0.30	0.30	0.06	6.24	30'	6.32	29.43	0.155	1.28	0.00	clear	no
1410	0.30	0.60	0.06	6.24	30'	6.43	29.49	0.255	1.16	0.00	clear	no
1415	0.30	0.90	0.06	6.24	30'	6.46	29.42	0.276	1.10	0.00	clear	no
1420	0.30	1.20	0.06	6.24	30'	6.47	29.46	0.296	0.74	0.00	clear	no
1425	0.30	1.50	0.06	6.24	30'	6.47	29.46	0.302	0.30	0.00	clear	no
1430	0.30	1.80	0.06	6.24	30'	6.47	29.42	0.307	0.29	0.00	clear	no
1435	0.30	2.10	0.06	6.24	30'	6.48	29.40	0.309	0.29	0.00	clear	no

Sample and Container Information

Analysis	Container Type	Volume (mL)	Preservation	No. of Containers	Remarks
Anions	P	250	4°	1	90628A
Cations	P	500	HNO_3	1	6010C
TOC	P	250	H_2SO_4	1	9060A
Dr. Gas	V	20	HCL	3	RSK175
VOC	V	40	HCL	3	8260B

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

KEMRON ENVIRONMENTAL SERVICES

1359-A Ellsworth Industrial Boulevard Atlanta, GA 30318 Telephone (404) 636-0928 FAX (404) 636-7162 http://www.kemron.com

Site Name: Ft. Buchanan

Site Location: Bayamon, PR

Date: 7/16/15

Well ID: MW-7B

Sample ID: FTB034-GM-MW-7B 071615

Page: 1

Well Diameter: 2"

Well Capacity (gal/ft): 0.163

Total Depth of Well (ft): 73.67

Static Depth to Water (ft): 5.14

Water Column (ft): 68.53

Well Volume (gal): 11.17

Purge Volume (Well Volume x 3): 33.51

Sampled By (Sign & Print): Charlie Tagh / Jake Redman

Purge Method: peristaltic

Purge Initiated At: 1263

Purge Ended At: 1340

Sampling Method: peristaltic

Sampling Initiated At: 1341

Sampling Ended At:

Field Decontaminated: (Yes) No

Field Filtered: Yes (No)

Duplicate: Yes (No)

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
1265	0.00	0.00	0.12	5.21	65'	7.74	32.70	0.033	3.18	1.85	clear	no
1300	0.60	0.60	0.12	5.21	65'	7.10	30.43	0.030	2.06	0.00	clear	no
1305	0.60	1.20	0.12	6.21	65'	6.12	28.74	0.026	0.64	0.00	clear	no
1310	0.60	1.80	0.12	6.21	65'	5.71	28.38	0.024	~~0.024~~ 1.34	0.00	clear	no
1315	0.60	2.40	0.12	6.21	65'	5.63	28.24	0.024	0.33	1.34	clear	no
1320	0.60	3.00	0.12	5.21	65'	5.55	28.15	0.024	0.30	0.49	clear	no
1325	0.60	3.60	0.12	5.21	65'	5.49	28.06	0.024	0.30	0.00	clear	no
1330	0.60	4.20	0.12	6.21	66'	5.50	28.04	0.024	0.28	1.62	clear	no
1335	0.60	4.80	0.12	5.21	65'	5.51	28.01	0.025	0.28	0.08	clear	no
1340	0.60	5.40	0.12	6.21	65'	5.50	28.02	0.024	0.29	0.00	clear	no

Sample and Container Information

Analysis	Container Type	Volume mL	Preservation	No. of Containers	Remarks
Anions	P	250	4°	1	9056A
Cations	P	500	HNO_3	1	6010C
TOC	P	250	H_2SO_4	1	9060A
D. Gas	V	20	HCl	3	RSK175
VOC	V	40	HCl	3	8260B

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

KEMRON ENVIRONMENTAL SERVICES
1359-A Ellsworth Industrial Boulevard Atlanta, GA 30318 Telephone (404) 636-0928 FAX (404) 636-7162 http://www.kemron.com

Site Name: Ft. Buchanan
Site Location: Bayamon, PR
Date: 7/15/15

Well ID: MW-8A
Sample ID: FTB034-GW-MW-8A 071515
Page: 1/

Well Diameter: 2"
Well Capacity (gal/ft): 0.163
Total Depth of Well (ft): 28
Static Depth to Water (ft): 17.7
Water Column (ft): 10.3
Well Volume (gal): 1.68
Purge Volume (Well Volume x 3): 5.04
Sampled By (Sign & Print): Charlie Taylor / Julio Rodriguez

Purge Method: Peristaltic
Purge Initiated At: 1247
Purge Ended At: 1315
Sampling Method: peristaltic
Sampling Initiated At: 1316
Sampling Ended At:
Field Decontaminated: Yes No
Field Filtered: Yes No
Duplicate: Yes No

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
1250	0.00	0.00	0.03	17.91	25	6.97	30.80	0.245	1.75	14.6	clear	no
1255	0.15	0.15	0.03	18.35	25	6.92	30.68	0.235	1.22	13.4	clear	no
1300	0.15	0.30	0.03	18.81	25	6.81	30.57	0.228	2.52	13.6	clear	no
1305	0.15	0.45	0.03	19.25	25	6.80	30.55	0.226	2.16	13.7	clear	no
1310	0.15	0.60	0.03	19.60	25	6.81	30.55	0.226	2.14	13.7	clear	no
1315	0.15	0.75	0.03		25	6.81	30.56	0.225	2.11	13.8	clear	no

Sample and Container Information

Analysis	Container Type	Volume (mL)	Preservation	No. of Containers	Remarks
Anions	P	250	4°C	1	9056A
Cations	P	500	HNO_3	1	6010C
TOC	P	250	H_2SO_4	1	9060A
D. Gas	V	20	HCL	3	RSK 175
VOC	V	40	HCL	3	8260B

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

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1359-A Ellsworth Industrial Boulevard Atlanta, GA 30318 Telephone (404) 636-0928 FAX (404) 636-7162 http://www.kemron.com

Site Name: Fort Buchanan

Site Location: Bayamon, PR

Date: 7/15/15

Well ID: MW-8B

Sample ID: FTB034-GM-MW-8B 071515

Page: 1/

Well Diameter: 2"

Well Capacity (gal/ft): 0.163

Total Depth of Well (ft): 52'

Static Depth to Water (ft): 15.79

Water Column (ft): 36.21

Well Volume (gal): 5.90

Purge Volume (Well Volume x 3): 17.71

Sampled By (Sign & Print): Charlie Tayh / Julio Rodriguez

Purge Method: peristaltic

Purge Initiated At: 1343

Purge Ended At: 1450

Sampling Method: peristaltic

Sampling Initiated At: 1451

Sampling Ended At:

Field Decontaminated: (Yes) No

Field Filtered: Yes (No)

Duplicate: (Yes) No ID: FTB034-GM-MW1C-071515

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
1345	0.00	0.00	0.08	15.85	45'	6.89	30.68	0.261	2.65	44.6	Hazy	no
1350	0.40	0.40	0.08	15.85	45'	6.95	30.26	0.306	1.92	39.1	Hazy	no
1355	0.40	0.80	0.08	15.85	45'	6.91	29.64	0.318	0.22	34.8	Hazy	no
1400	0.40	1.20	0.08	15.85	45'	6.90	29.51	0.323	0.19	30.2	Hazy	no
1405	0.40	1.60	0.08	15.85	45'	6.89	29.46	0.325	0.15	28.7	Hazy	no
1410	0.40	2.00	0.08	15.85	45'	6.97	29.63	0.288	0.88	23.6	Hazy	no
1415	0.40	2.40	0.08	15.85	45'	7.08	29.87	0.250	0.71	14.3	Hazy	no
1420	0.40	2.80	0.08	15.85	45'	7.02	29.85	0.245	0.67	11.1	Hazy	no
1425	0.40	3.20	0.08	15.85	45'	6.93	29.88	0.289	0.20	10.0	clear	no
1430	0.40	3.60	0.08	15.85	45'	6.90	29.87	0.302	0.04	9.23	clear	no
1435	0.40	4.00	0.08	15.85	45'	6.88	29.74	0.313	0.00	8.77	clear	no
1440	0.40	4.40	0.08	15.85	45'	6.86	29.68	0.322	0.00	7.86	clear	no
1445	0.40	4.80	0.08	15.85	45'	6.85	29.64	0.323	0.00	7.48	clear	no
1450	0.40	5.20	0.08	15.85	45'	6.84	29.65	0.324	0.00	7.01	clear	no

Sample and Container Information

Analysis	Container Type	Volume (mL)	Preservation	No. of Containers	Remarks
Carbons	P	250	4°	1	9056A
cations	P	500	HNO_3	1	6010C
TOC	P	250	H_2SO_4	1	9060A
D-Gas	V	20	HCL	3	125.2/175
VOC	V	40	HCL	3	8260B

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

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Resample

1359-A Ellsworth Industrial Boulevard Atlanta, GA 30318 Telephone (404) 636-0928 FAX (404) 636-7162 http://www.kemron.com

Site Name: Ft. Buchanan
Site Location: Bayamon PR
Date: 7/17/20

Well ID: MW-8B
Sample ID: FTB-034-GM-MW-1C 072015
Page:

Well Diameter: 2"
Well Capacity (gal/ft): 0.163
Total Depth of Well (ft): ~~88~~ 52'
Static Depth to Water (ft): 15.82
Water Column (ft): 36.18
Well Volume (gal): 5.90
Purge Volume (Well Volume x 3): 17.7
Sampled By (Sign & Print): Charlie Tagle

Purge Method: peristaltic
Purge Initiated At: 1038
Purge Ended At: 1120
Sampling Method: peristaltic
Sampling Initiated At: 1121
Sampling Ended At:
Field Decontaminated: Yes No
Field Filtered: Yes No
Duplicate: Yes No FTB034-GM-MW1C 071715

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
1040	0.00	0.00	0.10	15.87	47	6.99	31.08	0.318	3.66	12.9	clear	no
1045	0.50	0.50	0.10	15.87	47	6.95	30.10	0.323	2.44	7.81	clear	no
1050	0.50	1.00	0.10	15.87	47	6.88	29.57	0.331	0.85	1.18	clear	no
1055	0.50	1.50	0.10	15.87	47	6.88	29.56	0.335	0.36	0.00	clear	no
1100	0.50	2.00	0.10	15.87	47	6.88	29.61	0.335	0.16	0.00	clear	no
1105	0.50	2.50	0.10	15.87	47	6.87	29.64	0.335	0.06	0.00	clear	no
1110	0.50	3.00	0.10	15.87	47	~~X~~ 6.86	29.61	0.335	0.00	0.00	clear	no
1115	0.50	3.50	0.10	15.87	47	6.87	29.61	0.335	0.00	0.00	clear	no
1120	0.50	4.00	0.10	15.87	47	6.88	29.60	0.335	0.00	0.00	clear	no

Sample and Container Information

Analysis	Container Type	Volume	Preservation	No. of Containers	Remarks
Anions	V	20ml	HCl	3	9056A

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

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ENVIRONMENTAL SERVICES
1359-A Ellsworth Industrial Boulevard Atlanta, GA 30318 Telephone (404) 636-0928 FAX (404) 636-7162 http://www.kemron.com

Site Name: Ft. Buchanan
Site Location: Bayamon, PR
Date: 7/22/15

Well ID: MW-8B
Sample ID: FTB034-GM-MW8B 072215
Page: 1/

Well Diameter: 2"
Well Capacity (gal/ft): 0.163
Total Depth of Well (ft): 52'
Static Depth to Water (ft): 15.80
Water Column (ft): 36.20
Well Volume (gal): 5.90
Purge Volume (Well Volume x 3): 17.70
Sampled By (Sign & Print): [illegible]

Purge Method: peristaltic
Purge Initiated At: 1233
Purge Ended At: 1305
Sampling Method: peristaltic
Sampling Initiated At: 1306
Sampling Ended At: 1308
Field Decontaminated: Yes No
Field Filtered: Yes No
Duplicate: (Yes) No FTB034-GM-MW-C 072215

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
1235	0.60	0.60	0.12	15.84	47'	7.34	30.90	0.327	1.46	3.77	clear	no
1240	0.60	0.60	0.12	15.84	47'	7.20	30.57	0.329	1.06	0.00	clear	no
1245	0.60	1.20	0.12	15.84	47'	6.97	29.92	0.330	0.00	0.00	clear	no
1250	0.60	1.80	0.12	15.84	47'	6.95	29.81	0.330	0.00	0.00	clear	no
1255	0.60	2.40	0.12	15.84	47'	6.92	29.70	0.331	0.00	0.00	clear	no
1300	0.60	3.00	0.12	15.84	47'	6.91	29.68	0.331	0.00	0.00	clear	no
1305	0.60	3.60	0.12	15.84	47'	6.90	29.68	0.331	0.00	0.00	clear	no

Sample and Container Information

Analysis	Container Type	Volume	Preservation	No. of Containers	Remarks
Anions	P	250mL	4°	1	9056A

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

KEMRON
ENVIRONMENTAL SERVICES
1359-A Ellsworth Industrial Boulevard Atlanta, GA 30318 Telephone (404) 636-0928 FAX (404) 636-7162 http://www.kemron.com

Site Name: Ft. Buchanan
Site Location: Bayamon, PR
Date: 7/16/15

Well ID: MW-11A
Sample ID: FTB034-GM-MW-11A 071515
Page: 1

Well Diameter: 2"
Well Capacity (gal/ft): 0.163
Total Depth of Well (ft): 30'
Static Depth to Water (ft): 7.84
Water Column (ft): 22.16
Well Volume (gal): 3.41
Purge Volume (Well Volume x 3): 10.84
Sampled By (Sign & Print): Charlie Tayh / Julio Rodriguez

Purge Method: Peristaltic
Purge Initiated At: 0918
Purge Ended At: 0950
Sampling Method: Peristaltic
Sampling Initiated At: 0951
Sampling Ended At:
Field Decontaminated: (Yes) No
Field Filtered: Yes (No)
Duplicate: Yes (No)

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
0920	0.00	0.00	0.13	8.02	25'	5.52	28.26	0.368	4.62	1.73	clear	no
0925	0.65	0.65	0.13	8.02	25'	5.93	27.60	0.361	3.24	0.55	clear	no
0930	0.65	1.30	0.13	8.02	25'	6.48	27.10	0.361	0.99	0.00	clear	no
0935	0.65	1.95	0.13	8.02	25'	6.62	26.97	0.372	0.20	0.03	clear	no
0940	0.65	2.60	0.13	8.02	25'	6.64	26.98	0.376	0.09	0.00	clear	no
0945	0.65	3.25	0.13	8.02	25'	6.64	26.97	0.375	0.09	0.00	clear	no
0950	0.65	3.90	0.13	8.02	25'	6.64	26.99	0.375	0.09	0.00	clear	no

Sample and Container Information					
Analysis	Container Type	Volume mL	Preservation	No. of Containers	Remarks
Anions	P	250	4°	1	9056A
Cations	P	~~125~~ 500	HNO_3	1	6010C
TOC	P	250	H_2SO_4	1	9060A
DGAS	V	20	HCL	3	RSK175
VOC	V	40	HCL	3	8260B

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

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ENVIRONMENTAL SERVICES

1359-A Ellsworth Industrial Boulevard Atlanta, GA 30318 Telephone (404) 636-0928 FAX (404) 636-7162 http://www.kemron.com

Site Name: Ft. Buchanan
Site Location: Bayamon, PR
Date: 7/15/15

Well ID: MW-11B
Sample ID: FTB034-GM-MW-11B 071515
Page: 1

Well Diameter: 2"
Well Capacity (gal/ft): 0.163
Total Depth of Well (ft): 52'
Static Depth to Water (ft): 8.14
Water Column (ft): 43.86
Well Volume (gal): 7.15
Purge Volume (Well Volume x 3): 21.45
Sampled By (Sign & Print): Charlie Taylor / Julio Rodriguez

Purge Method: ~~Bladder~~ Peristaltic
Purge Initiated At: 1055
Purge Ended At: 1125
Sampling Method: Bladder Peristaltic
Sampling Initiated At: 1126
Sampling Ended At:
Field Decontaminated: (Yes) No
Field Filtered: Yes (No)
Duplicate: Yes (No)

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
1055	0.00	0.00	0.13	8.16	45	6.89	29.10	0.331	6.91	18.6	clear	no
1100	0.65	0.65	0.13	8.16	45	6.83	28.38	0.325	6.83	15.1	clear	no
1105	0.65	1.30	0.13	8.16	45	6.72	27.59	0.322	6.72	18.6	clear	no
1110	0.65	1.95	0.13	8.16	45	6.71	27.53	0.326	5.96	19.0	clear	no
1115	0.65	2.60	0.13	8.16	45	6.71	28.50	0.327	5.70	7.66	clear	no
1120	0.65	3.25	0.13	8.16	45	6.70	27.48	0.327	5.71	3.96	clear	no
1125	0.65	3.90	0.13	8.16	45	6.70	27.44	0.325	5.68	2.88	clear	no

Sample and Container Information

Analysis	Container Type	Volume mL	Preservation	No. of Containers	Remarks
Anions	P	250	4°	1	9056A
Cations	P	500	HNO_3	1	6010C
TOC	P	250	H_2SO_4	1	9060A
D. Gas	V	20	HCL	3	RSK175
VOC	V	40	HCL	3	8260B

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

* Well pad loose

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Site Name: Ft. Buchanan
Site Location: Bayamon, PR
Date: 7/17/15

Well ID: MW-13B
Sample ID: FTB034-GM-MW-13B 071715
Page: 11

Well Diameter: 2"
Well Capacity (gal/ft): 0.163
Total Depth of Well (ft): 64'
Static Depth to Water (ft): 6.20
Water Column (ft): 57.80
Well Volume (gal): 9.42
Purge Volume (Well Volume x 3): 28.26
Sampled By (Sign & Print): Charlie Taylor / Jaime Rodriguez

Purge Method: peristaltic
Purge Initiated At: 0913
Purge Ended At: ~~0943~~ 1015
Sampling Method: peristaltic
Sampling Initiated At: 1016
Sampling Ended At: 1036
Field Decontaminated: (Yes) No
Field Filtered: Yes (No)
Duplicate: (Yes) No FTB034-GM-MWQC 071715

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
0915	0.00	0.00	0.12	6.23	60'	3.68	29.81	0.002	9.86	12.9	clear	no
0920	0.60	0.60	0.12	6.23	60'	3.99	29.61	0.002	9.68	16.3	clear	no
0925	1.20	0.60	0.12	6.23	60'	4.10	29.96	0.001	9.37	9.57	clear	no
0930	1.80	0.60	0.12	6.23	60'	4.13	30.02	0.001	8.91	11.3	clear	no
0935	2.40	0.60	0.12	6.23	60'	4.24	30.03	0.001	8.46	10.4	clear	no
0940	3.00	0.60	0.12	6.23	60'	4.23	30.00	0.001	8.13	8.7	clear	no
0945	3.60	0.60	0.12	6.23	60'	4.25	29.98	0.001	7.49	8.2	clear	no
0950	4.20	0.60	0.12	6.23	60'	4.35	29.91	0.001	7.44	8.0	clear	no
0955	4.80	0.60	0.12	6.23	60'	4.40	29.80	0.001	6.91	10.4	clear	no
1000	5.40	0.60	0.12	6.23	60'	4.49	29.71	0.001	6.53	11.3	clear	no
1005	6.00	0.60	0.12	6.23	60'	4.72	29.72	0.001	6.52	10.8	clear	no
1010	6.60	0.60	0.12	6.23	60'	4.73	29.70	0.001	6.55	10.8	clear	no
1015	7.20	0.60	0.12	6.23	60'	4.75	29.69	0.001	6.56	10.7	clear	no

Sample and Container Information

Analysis	Container Type	Volume mL	Preservation	No. of Containers	Remarks
Anions	P	250	4°	1	9056A
Cations	P	500	HNO_3	1	6010C
TOC	P	250	H_2SO_4	1	9060A
D. Gas	V	20	HCL	3	RSK175
VOC	V	40	HCL	3	8260B

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

* right against entrance to base. lots of car/truck exhaust

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Site Name: Fort Buchanan
Site Location: Bayamon, PR
Date: 7/14/15

Well ID: MW-14A
Sample ID: FTB034-GM-MW-14A 071415
Page: 1/

Well Diameter: 2"
Well Capacity (gal/ft): 0.163
Total Depth of Well (ft): 44'
Static Depth to Water (ft): 11.00
Water Column (ft): 33
Well Volume (gal): 5.38
Purge Volume (Well Volume x 3): 16.14
Sampled By (Sign & Print): Charlie Taylor / Julio. Rodriguez

Purge Method: peristaltic
Purge Initiated At: 1352
Purge Ended At: 1425
Sampling Method: peristaltic
Sampling Initiated At: 1426
Sampling Ended At:
Field Decontaminated: ~~Yes~~ No
Field Filtered: Yes ~~No~~
Duplicate: Yes ~~No~~

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
1355	0.00	0.00	~~0.12~~ 0.03		30'	7.31	30.13	0.265	7.29	4.36	clear	yes, sulfur
1400	0.15	0.15	0.03	13.65	30'	7.37	29.12	0.264	6.77	0.00	clear	yes, sulfur
1405	0.15	~~0.23~~ 0.30	0.03	13.83	30'	7.39	28.66	0.258	4.99	0.00	clear	yes, sulfur
1410	0.15	0.45	0.03	14.07	30'	7.39	28.65	0.259	4.83	0.00	clear	yes, sulfur
1415	0.15	0.60	0.03	14.28	30'	7.39	28.70	0.259	4.85	0.00	clear	yes, sulfur
1420	0.15	0.75	0.03	14.48	30'	7.40	28.73	0.259	4.88	0.00	clear	yes, sulfur
1425	0.15	0.90	0.03	14.69	30'	7.39	28.76	0.261	4.88	0.00	clear	yes, sulfur.

Sample and Container Information

Analysis	Container Type	Volume (mL)	Preservation	No. of Containers	Remarks
VOC	V	40	HCl	3	322013
Anions	P	250	4°	1	9056A
D. Gas	V	20	HCl	3	RSK175
TOC	P	250	H_2SO_4	1	9060A
Cabons	P	500	HNO_3	1	6010C

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

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Site Name: Ft. Buchanan

Site Location: Bayamon, PR

Date: 7/14/15

Well ID: MW-14B

Sample ID: FPB 034-CM-MW-14B 071415

Page: 1

Well Diameter: 2"

Well Capacity (gal/ft): 0.163

Total Depth of Well (ft): 62

Static Depth to Water (ft): artesian

Water Column (ft): 62'

Well Volume (gal): 10.11

Purge Volume (Well Volume x 3): 30.33

Sampled By (Sign & Print): Charlie Tagh / Julio Rodriguez

Purge Method: Peristaltic

Purge Initiated At: 1458

Purge Ended At:

Sampling Method: peristaltic

Sampling Initiated At: 1524

Sampling Ended At:

Field Decontaminated: Yes (Yes) No

Field Filtered: Yes No (No)

Duplicate: Yes No (No)

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
1500	0.00	0.00	0.12	TOC	30'	7.37	28.88	0.284	3.10	4.23	clear	yes, sulfur
1505	0.60	0.60	0.12	TOC	30'	7.21	28.71	0.327	1.25	4.21	clear	yes, sulfur
1510	0.60	1.20	0.12	TOC	30'	6.98	28.15	0.332	1.34	3.26	clear	yes, sulfur
1515	0.60	1.80	0.12	TOC	30'	6.93	28.14	0.333	1.43	2.96	clear	yes, sulfur
1520	0.60	2.40	0.12	TOC	30'	6.93	28.12	0.333	1.45	2.59	clear	yes, sulfur
1525	0.60	3.00	0.12	TOC	30'	6.94	28.11	0.333	1.45	2.58	clear	yes, sulfur

Sample and Container Information

Analysis	Container Type	Volume (ml)	Preservation	No. of Containers	Remarks
VOC	V	40	HCL	3	526003
Anions	P	250	4°	1	9056A
D. Gas	V	20	HCL	3	RSK175
TOC	P	250	H_2SO_4	1	9060A
Cations	P	500	HNO_3	1	6010C

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

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Site Name: Ft. Buchanan
Site Location: FTB-034
Date: 7/14/15

Well ID: MW-15 A
Sample ID: FTB034-GM-MW15A-071415
Page: 1/1

Well Diameter: 2"
Well Capacity (gal/ft):
Total Depth of Well (ft): 40.00
Static Depth to Water (ft): 15.69
Water Column (ft): 24.31
Well Volume (gal): 3.96
Purge Volume (Well Volume x 3): 11.89
Sampled By (Sign & Print): Charlie Taylor / Julio Rodriguez

Purge Method: peristaltic
Purge Initiated At: 0815
Purge Ended At: 0930
Sampling Method: rflow/ peristaltic
Sampling Initiated At: 0931
Sampling Ended At:
Field Decontaminated: (Yes) No
Field Filtered: Yes (No)
Duplicate: Yes No

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
0820	0.00	0.00	0.11	15.70	30'	6.37	28.08	0.508	16.26	25.4	clear	yes, sulfur
0825	0.55	0.55	0.11	15.70	30'	6.41	28.05	0.497	11.23	47	clear	yes, sulfur
0830	0.55	1.10	0.11	15.70	30'	6.48	28.02	0.485	12.32	29.1	clear	yes, sulfur
0835	0.55	1.65	0.11	15.70	30'	6.61	28.04	0.483	11.48	26.9	clear	yes, sulfur
0840	0.55	2.20	0.11	15.70	30'	6.53	28.05	0.481	10.03	19.1	clear	yes, sulfur
0845	0.55	2.75	0.11	15.70	30'	6.55	28.05	0.481	8.84	22.6	clear	yes, sulfur
0850	0.55	3.30	0.11	15.70	30'	6.57	28.09	0.481	7.43	29.1	clear	yes, sulfur
0855	0.55	3.85	0.11	15.70	30'	6.59	28.13	0.483	6.63	15.2	clear	yes, sulfur
0900	0.55	4.40	0.11	15.70	30'	6.57	28.21	0.483	6.61	5.5	clear	yes, sulfur
0905	0.55	4.95	0.11	15.70	30'	6.49	28.30	0.533	6.45	31.6	clear	yes, sulfur
0910	0.55	5.50	0.11	15.70	30'	6.58	28.32	0.534	6.58	23.8	clear	yes, sulfur
0915	0.55	6.05	0.11	15.70	30'	6.59	28.36	0.534	6.59	66.5	clear	yes, sulfur
0920	0.55	6.60	0.11	15.70	30'	6.58	28.37	0.539	6.52	76.1	clear	yes, sulfur
0925	0.55	7.15	0.11	15.70	30'	6.58	28.39	0.532	6.53	29.3	clear	yes, sulfur
0930	0.55	7.70	0.11	15.70	30'	6.58	28.39	0.541	6.59	16.7	clear	yes, sulfur

Sample and Container Information					
Analysis	Container Type	Volume	Preservation	No. of Containers	Remarks
VOC	VOA	40ml	HCL	3	8260B
Anions	P	250 ml	4C	1	9056A
D. Gas	V	20ml	HCL	3	RSK175
TOC	P	250ml	H_2SO_4	1	9060A
Metals Cations	P	500ml	HNO_3	1	6010C

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

Notes - suspect malfunction of turbidity probe in Horiba U-53

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Site Name: Ft. Buchanan
Site Location: Bayamon, PR
Date: 7/15/15

Well ID: MW-16A
Sample ID: FTB034-GM-MW-16A 071515
Page: 11

Well Diameter: 2"
Well Capacity (gal/ft): 0.163
Total Depth of Well (ft): 45'
Static Depth to Water (ft): 16.57
Water Column (ft): 29.43
Well Volume (gal): 4.80
Purge Volume (Well Volume x 3): 14.40
Sampled By (Sign & Print): Charlie Tagh / Jaime Rodriguez

Purge Method: Peristaltic
Purge Initiated At: 1543
Purge Ended At: 1615
Sampling Method: Peristaltic
Sampling Initiated At: 1616
Sampling Ended At:
Field Decontaminated: Yes No
Field Filtered: Yes No
Duplicate: Yes No

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
1345	0.00	0.00	0.12	15.60	40'	7.13	30.60	0.308	3.74	7.99	clear	no
1350	0.60	0.60	0.12	16.60	40'	6.99	30.05	0.312	2.28	0.00	clear	no
1355	0.60	1.20	0.12	16.60	40'	6.72	29.37	0.321	0.88	0.00	clear	no
1600	0.60	1.80	0.12	15.60	40'	6.64	29.09	0.326	0.08	0.00	clear	no
1605	0.60	2.40	0.12	15.60	40'	6.63	29.03	0.328	0.00	0.00	clear	no
1610	0.60	3.00	0.12	15.60	40'	6.62	29.00	0.329	0.00	0.00	clear	no
1615	0.60	3.60	0.12	15.60	40'	6.61	29.01	0.328	0.00	0.00	clear	no

Sample and Container Information

Analysis	Container Type	Volume mL	Preservation	No. of Containers	Remarks
~~Total~~ Anions	P	250	4C	1	9056A
Cations	P	500	HNO_3	1	6010C
TOC	P	250	H_2SO_4	1	9060A
D. Gas	V	20	HCL	3	RSK175
VOC	V	40	HCL	3	8260B

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

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Site Name: Ft. Buchanan
Site Location: Bayamon, PR
Date: 7/16/15

Well ID: MW-16B
Sample ID: FTB034-GW-MW-16B 07 16 15
Page: 1

Well Diameter: 2"
Well Capacity (gal/ft): 0.163
Total Depth of Well (ft): 62'
Static Depth to Water (ft): 16.45
Water Column (ft): 45.55
Well Volume (gal): 7.42
Purge Volume (Well Volume x 3): 22.27
Sampled By (Sign & Print): Charlie Tagl / Julio Rodriguez

Purge Method: peristaltic
Purge Initiated At: 0903
Purge Ended At: 0950
Sampling Method: peristaltic
Sampling Initiated At: 0961
Sampling Ended At: 1020
Field Decontaminated: (Yes) No
Field Filtered: Yes (No)
Duplicate: Yes (No)

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
0905	0.60	0.60	0.12	16.51	55'	7.36	30.17	0.234	3.14	2.66	clear	no
0910	0.60	0.60	0.12	16.51	55'	7.43	29.48	0.235	2.28	0.00	clear	no
0915	0.60	1.20	0.12	16.51	55'	7.31	28.99	0.237	0.19	0.00	clear	no
0920	0.60	1.80	0.12	16.51	55'	7.28	28.85	0.240	0.58	0.00	clear	no
0925	0.60	2.40	0.12	16.51	55'	7.08	28.65	0.261	0.05	0.00	clear	no
0930	0.60	3.00	0.12	16.51	55'	6.93	28.58	0.281	0.00	0.00	clear	no
0935	0.60	3.60	0.12	16.51	55'	6.84	28.51	0.301	0.02	0.00	clear	no
0940	0.60	4.20	0.12	16.51	55'	6.83	28.49	0.310	0.00	0.00	clear	no
0945	0.60	4.80	0.12	16.51	55'	6.83	28.48	0.313	0.00	0.00	clear	no
0950	0.60	5.40	0.12	16.51'	55'	6.84	28.47	0.314	0.00	0.00	clear	no

Sample and Container Information

Analysis	Container Type	Volume	Preservation	No. of Containers		Remarks
Anions	P	250	4°	4	3	9056A
Cations	P	500	HNO_3	1	3	6010C
TOC	P	250	H_2SO_4	1	3	9060A
D. Cons	V	40	HCl	3	1	RSK175
VOC	V	40	HCl	3	1	8260B

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

* extra sample for MS/MSD

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Site Name: Ft. Buchanan
Site Location: Bayamon, PR
Date: 7/16/15

Well ID: MW-20
Sample ID: AB034-GM-MW-20 071615
Page:

Well Diameter: 2"
Well Capacity (gal/ft): 0.163
Total Depth of Well (ft): 50'
Static Depth to Water (ft): 15.95
Water Column (ft): 34.05
Well Volume (gal): 5.55
Purge Volume (Well Volume x 3): 16.65
Sampled By (Sign & Print): Charle Taylor / Julio Rodriguez

Purge Method: peristaltic
Purge Initiated At: 0755
Purge Ended At: 0825
Sampling Method: peristaltic
Sampling Initiated At: 0826
Sampling Ended At:
Field Decontaminated: (Yes) No
Field Filtered: Yes (No)
Duplicate: Yes (No)

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
0755	0.00	0.00	0.05	16.51	45	5.39	29.04	0.362	2.73	2.44	clear	no
0800	0.25	0.25	0.05	16.51	45	6.01	28.56	0.357	1.84	0.00	clear	no
0805	0.25	0.50	0.05	16.51	45	6.76	28.23	0.355	0.77	0.00	clear	no
0810	0.25	0.75	0.05	16.51	45	6.87	28.18	0.361	0.29	0.00	clear	no
0815	0.25	1.00	0.05	16.51	45	6.86	28.18	0.364	0.15	0.00	clear	no
0820	0.25	1.25	0.05	16.51	45	6.86	28.20	0.364	0.14	0.00	clear	no
0825	0.25	1.50	0.05	16.51	45'	6.86	28.20	0.365	0.13	0.00	clear	no

Sample and Container Information

Analysis	Container Type	Volume	Preservation	No. of Containers	Remarks
anions	P	250	4°	1	9056A
cations	P	600	HNO_3	1	6010C
TOC	P	250	H_2SO_4	1	9060A
Pr. Gas	V	20	HCL	3	RSK175
VOC	V	40	HCL	3	8260B

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

* had to cut lock
2 bollards about to fall.

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Site Name: Fort Buchanan
Site Location: Bayamon, PR
Date: 7/14/15

Well ID: MW-25
Sample ID: FTB034-GM-MW25 071415
Page: 1

Well Diameter: 2"
Well Capacity (gal/ft): 0.163
Total Depth of Well (ft): 35'
Static Depth to Water (ft): 15.70
Water Column (ft): ~~3.14~~ 19.4
Well Volume (gal): ~~9.44~~ 3.14
Purge Volume (Well Volume x 3): 9.44
Sampled By (Sign & Print): Charlie Taylor / Julio Rodriguez

Purge Method: peristaltic
Purge Initiated At: ~~1256~~ 1238
Purge Ended At: 1310
Sampling Method: rfpp/ peristaltic
Sampling Initiated At: 1311
Sampling Ended At:
Field Decontaminated: (Yes) No
Field Filtered: Yes (No)
Duplicate: Yes (No)

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
1246	0.00	0.00	0.12	15.75	28	6.97	30.42	0.383	3.15	12.7	clear	yes, sulfur
1255	0.60	0.60	0.12	15.75	28	6.86	29.29	0.386	1.74	9.63	clear	yes, sulfur
1250	0.60	1.20	0.12	15.75	28	6.70	28.41	0.397	1.13	8.13	clear	yes, sulfur
1255	0.60	1.80	0.12	15.75	28	6.64	28.16	0.420	1.32	7.37	clear	yes, sulf
1300	0.60	2.40	0.12	15.75	28	6.63	28.07	0.429	1.41	6.81	clear	yes, sulfur
1305	0.60	3.00	0.12	15.75	28	6.63	28.06	0.431	1.43	6.19	clear	yes, sulfur
1310	0.60	3.60	0.12	15.75	28	6.62	28.05	0.434	1.44	6.05	clear	yes, sulfur

Sample and Container Information

Analysis	Container Type	Volume	Preservation	No. of Containers	Remarks
VOC	V	40mL	HCL	3	82603
Anions	P	250ml	4C	1	9056A
D. Gas	V	20ml	HCL	3	RSK175
TOC	P	250ml	H_2SO_4	1	9060A
Cations	P	500ml	HNO_3	1	6010C

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

KEMRON ENVIRONMENTAL SERVICES

1359-A Ellsworth Industrial Boulevard Atlanta, GA 30318 Telephone (404) 636-0928 FAX (404) 636-7162 http://www.kemron.com

Site Name: Fort Buchanan

Site Location: Bayamon, PR

Date: 7/14/15

Well ID: MW-2L

Sample ID: FTBC34-GW-MW-2L 071415

Page: 1

Well Diameter: 2"

Well Capacity (gal/ft): 0.163

Total Depth of Well (ft): 40.00

Static Depth to Water (ft): 15.70

Water Column (ft): 22.3

Well Volume (gal): 3.63

Purge Volume (Well Volume x 3): 10.90

Sampled By (Sign & Print): Charlie Tough / Julio Rodriguez

Purge Method: peristaltic

Purge Initiated At: 1010

Purge Ended At: 1055

Sampling Method: rflow / peristaltic

Sampling Initiated At: 1056

Sampling Ended At:

Field Decontaminated: Yes No

Field Filtered: Yes No

Duplicate: Yes No

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
1015	0.60	0.60	0.12	15.78	30'	5.78	29.99	0.436	3.15	33.9	clear	yes, sulfur
1020	0.60	0.60	0.12	15.78	30'	6.23	29.25	0.424	3.93	21.9	clear	yes, sulfur
1025	0.60	1.20	0.12	15.78	30'	6.69	28.62	0.420	5.78	17.3	clear	yes, sulfur
1030	0.60	1.80	0.12	15.78	30'	6.70	28.51	0.441	6.29	14.7	clear	yes, sulfur
1035	0.60	2.40	0.12	15.78	30'	6.67	28.46	0.462	6.89	13.8	clear	yes, sulfur
1040	0.60	3.00	0.12	15.78	30'	6.66	28.46	0.470	5.32	13.3	clear	yes, sulfur
1045	0.60	3.60	0.12	15.78	30'	6.65	28.46	0.473	4.78	13.5	clear	yes, sulfur
1050	0.60	4.20	0.12	15.78	30'	6.66	28.46	0.469	4.72	13.5	clear	yes, sulfur
1055	0.60	4.80	0.12	15.78	30'	6.66	28.47	0.469	4.71	13.4	clear	yes, sulfur

Sample and Container Information

Analysis	Container Type	Volume	Preservation	No. of Containers	Remarks
VOC	V	40 ml	HCL	3	8260B
Anions	P	250 ml	4°	1	9056A
D. Gas	V	20 ml	HCL	3	RSK175
TOC	P	250 ml	H_2SO_4	1	9060A
Cations	P	500 ml	HNO_3	1	6010C

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

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Site Name: Ft. Buchanan
Site Location: Bayamon PR
Date: 7/20/15

Well ID: OP-3
Sample ID: FTB034-GM-OP-3 072015
Page: 1/

Well Diameter: 2"
Well Capacity (gal/ft): ~~85~~ 0.163
Total Depth of Well (ft): 85'
Static Depth to Water (ft): 8.62
Water Column (ft): 76.38
Well Volume (gal): 12.45
Purge Volume (Well Volume x 3): 37.35
Sampled By (Sign & Print): Charlie Tedder / Julio Rodriguez

Purge Method: Peristaltic
Purge Initiated At: 0825
Purge Ended At: 0900
Sampling Method: peristaltic
Sampling Initiated At: 0901
Sampling Ended At:
Field Decontaminated: (Yes) No
Field Filtered: Yes (No)
Duplicate: Yes (No)

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
0825	0.00	0.00	0.12	9.60	75'	5.76	28.50	0.261	3.92	16.6	clear	~~yes~~ no
0830	0.60	0.60	0.12	9.60	75'	7.27	28.37	0.234	2.61	17.4	clear	no
0835	0.60	1.20	0.12	9.60	75'	7.48	28.34	0.233	2.61	13.8	clear	no
0840	0.60	1.80	0.12	9.60	75'	7.72	28.32	0.232	2.50	11.9	clear	no
0845	0.60	2.40	0.12	9.60	75'	7.86	28.33	0.232	2.31	10.8	clear	no
0850	0.60	3.00	0.12	9.60	75'	7.88	28.29	0.233	2.28	10.1	clear	no
0855	0.60	3.60	0.12	9.60	75'	7.85	28.27	0.234	2.24	10.2	clear	no
0900	0.60	4.20	0.12	9.60	75'	7.87	28.28	0.234	2.23	10.1	clear	no

Sample and Container Information

Analysis	Container Type	Volume mL	Preservation	No. of Containers	Remarks
Anions	P	250	4°	1	9056A
Cations	P	600	HNO3	1	6010C
TOC	P	250	H2SO4	1	9060A
D.Gas	✓	20	RSK175 HCL	3	RSK175
VOC	✓	40	HCL	3	8260B

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

Name 1800-463-3334 x 271517

* Hinge broken on back. Lock replaced.

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Presample

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Site Name: Ft. Buchanan
Site Location: Bayamon, PR
Date: 7/22/15

Well ID: FTB034-GM-OP-3 072215
Sample ID:
Page:

Well Diameter: 2"
Well Capacity (gal/ft): 0.163
Total Depth of Well (ft): 85'
Static Depth to Water (ft): 9.50
Water Column (ft): 75.5
Well Volume (gal): 12.31
Purge Volume (Well Volume x 3): 36.93
Sampled By (Sign & Print): Charlie Taylor Julio Rodr

Purge Method: peristaltic.
Purge Initiated At: 1153
Purge Ended At: 1220
Sampling Method: peristaltic
Sampling Initiated At: 1221
Sampling Ended At: 1225
Field Decontaminated: Yes No
Field Filtered: Yes No
Duplicate: Yes No

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
1155	0.00	0.00	0.12	9.50	80'	8.13	29.26	0.235	3.08	7.04	clear	no
1200	0.60	0.60	0.12	9.50	80'	8.10	29.11	0.234	2.91	6.22	clear	no
1205	0.60	1.20	0.12	9.50	80'	7.91	28.99	0.234	2.61	5.48	clear	no
1210	0.60	1.80	0.12	9.50	80'	7.87	28.88	0.234	2.39	5.46	clear	no
1215	0.60	2.40	0.12	9.50	80'	7.86	28.85	0.234	2.39	5.45	clear	no
1220	0.60	3.00	0.12	9.50	80'	7.85	28.86	0.234	2.38	5.45	clear	no

Sample and Container Information

Analysis	Container Type	Volume	Preservation	No. of Containers	Remarks
Anions	P	250	4°	1	9056A

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

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Site Name: Ft. Buchanan
Site Location: Bayamon, PR
Date: 7/16/15

Well ID: OP-4
Sample ID: FT3034-GM-OP-4 071615
Page: 1/1

Well Diameter: 2"
Well Capacity (gal/ft): 0.163
Total Depth of Well (ft): 80'
Static Depth to Water (ft): 5.85
Water Column (ft): 74.15
Well Volume (gal): 12.09
Purge Volume (Well Volume x 3): 36.27
Sampled By (Sign & Print): Charlie Taylor / Julio Rodriguez

Purge Method: peristaltic
Purge Initiated At: 1328
Purge Ended At: 1435
Sampling Method: peristaltic
Sampling Initiated At: 1436
Sampling Ended At:
Field Decontaminated: (Yes) No
Field Filtered: Yes (No)
Duplicate: Yes (No)

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
1330	0.00	0.00	0.12	5.90	75'	7.35	31.31	0.286	13.15	9.03	clear	no
1335	0.60	0.60	0.12	5.90	75'	7.45	30.09	0.285	8.27	5.55	clear	no
1340	0.60	1.20	0.12	5.90	75'	7.55	29.21	0.289	3.98	4.30	clear	no
1345	0.60	1.80	0.12	5.90	75'	7.54	28.68	0.307	1.45	3.59	clear	no
1350	0.60	2.40	0.12	5.90	75'	7.50	28.36	0.325	0.33	2.76	clear	no
1355	0.60	3.00	0.12	5.90	75'	7.47	28.18	0.342	0.45	1.88	clear	no
1400	0.60	3.60	0.12	5.90	75'	7.43	28.08	0.357	1.26	2.41	clear	no
1405	0.60	4.20	0.12	5.90	75'	7.39	28.03	0.373	2.18	2.03	clear	no
1410	0.60	4.80	0.12	5.90	75'	7.31	28.02	0.395	2.28	1.89	clear	no
1415	0.60	5.40	0.12	5.90	75'	7.22	28.00	0.412	2.43	1.28	clear	no
1420	0.60	6.00	0.12	5.90	75'	7.16	27.98	0.421	2.29	1.15	clear	no
1425	0.60	6.60	0.12	5.90	75'	7.16	27.97	0.422	2.31	0.99	clear	no
1430	0.60	7.20	0.12	5.90	75'	7.16	27.95	0.421	2.33	0.79	clear	no
1435	0.60	7.80	0.12	5.90	75'	7.15	27.96	0.423	2.30	0.60	clear	no

Sample and Container Information

Analysis	Container Type	Volume mL	Preservation	No. of Containers	Remarks
anions	P	250	4°	1	9056A
cations	P	500	HNO_3	1	6010C
TOC	P	250	H_2SO_4	1	9060A
D. Gas	V	20	HCL	3	RSK175
VOC	V	40	HCL	3	8260B

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

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Site Name: Ft. Buchanan

Site Location: Bayamon, PR

Date: 7/17/15

Well ID: OP-5

Sample ID: FTB034-GM-OP-5 071715

Page: 1

Well Diameter: 2"

Well Capacity (gal/ft): 0.163

Total Depth of Well (ft): ~~73.25~~ 73.25

Static Depth to Water (ft): 5.98

Water Column (ft): 67.27

Well Volume (gal): 10.97

Purge Volume (Well Volume x 3): 32.90

Sampled By (Sign & Print): Charlie Tobin / Julio Rodriguez

Purge Method: peristaltic

Purge Initiated At: 1205

Purge Ended At: 1250

Sampling Method: peristaltic

Sampling Initiated At: 1251

Sampling Ended At:

Field Decontaminated: (Yes) No

Field Filtered: Yes (No)

Duplicate: Yes (No)

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor
1210	0.00	0.00	0.11	6.03	68	5.82	33.37	0.296	4.74	11.6	clear	no
1215	0.55	0.55	0.11	6.03	68	6.27	31.82	0.295	4.09	8.35	clear	no
1220	0.55	1.10	0.11	6.03	68	6.99	30.65	0.298	2.26	7.12	clear	no
1225	0.55	1.65	0.11	6.03	68	7.10	29.91	0.321	5.69	5.29	clear	no
1230	0.55	2.20	0.11	6.03	68	7.08	29.64	0.337	~~0.38~~ 0.38	5.58	clear	no
1235	0.55	2.75	0.11	6.03	68	7.06	29.45	0.345	0.03	4.47	clear	no
1240	0.55	3.30	0.11	6.03	68	7.03	29.30	0.348	0.00	3.87	clear	no
1245	0.55	3.85	0.11	6.03	68	7.02	29.29	0.349	0.00	3.86	clear	no
1250	0.55	4.40	0.11	6.03	68	7.00	29.28	0.349	0.00	3.75	clear	no

Sample and Container Information

Analysis	Container Type	Volume mL	Preservation	No. of Containers	Remarks
Anions	P	250	4°	1	9056A
Cations	P	500	HNO_3	1	6010C
TOC	P	250	H_2SO_4	1	9060A
D. Gas	V	20	HCL	3	RSK175
VOC	V	40	HCL	3	8260B

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

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Site Name: A. Buchanan
Site Location: Bayamon, PR
Date: 7/2015 @ 1240

Well ID: Field Blank
Sample ID: QCFB-072015
Page: 1/1

Well Diameter:
Well Capacity (gal/ft):
Total Depth of Well (ft):
Static Depth to Water (ft):
Water Column (ft):
Well Volume (gal):
Purge Volume (Well Volume x 3):
Sampled By (Sign & Print):

Purge Method:
Purge Initiated At:
Purge Ended At:
Sampling Method:
Sampling Initiated At:
Sampling Ended At:
Field Decontaminated: Yes No
Field Filtered: Yes No
Duplicate: Yes No

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor

Sample and Container Information

Analysis	Container Type	Volume mL	Preservation	No. of Containers	Remarks
Anions	P	250	40	1	9056A
Cations	P	500	HNO_3	1	6010C
TOC	P	250	H_2SO_4	1	9060A
D. Gas	V	20	HCl ~~RSK175~~	3	RSK175
VOC	V	40	HCl ~~8260~~ 13	3	826013

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

KEMRON
ENVIRONMENTAL SERVICES

1359-A Ellsworth Industrial Boulevard Atlanta, GA 30318 Telephone (404) 636-0928 FAX (404) 636-7162 http://www.kemron.com

Site Name: Ft. Buchanan
Site Location: Bayamon, PR
Date: 7/20/15 @ 1230

Well ID: Equipment Blank
Sample ID: QCGB-072015
Page: 1/1

Well Diameter:
Well Capacity (gal/ft):
Total Depth of Well (ft):
Static Depth to Water (ft):
Water Column (ft):
Well Volume (gal):
Purge Volume (Well Volume x 3):
Sampled By (Sign & Print): Charlie Taught
Julio Rodriguez

Purge Method:
Purge Initiated At:
Purge Ended At:
Sampling Method:
Sampling Initiated At:
Sampling Ended At:
Field Decontaminated: Yes No
Field Filtered: Yes No
Duplicate: Yes No

Time	Purge Volume (gallons)	Cumul. Purge Volume (gallons)	Purge Rate (gpm)	Depth to Water	Depth to Pump Inlet	pH	Temp (°C)	Cond. (ms/sec)	D.O. (mg/L)	Turbitidy (NTUs)	Color	Odor

Sample and Container Information

Analysis	Container Type	Volume	Preservation	No. of Containers	Remarks
Anions	P	250	4C	1	9056A
Cations	P	500	HNO_3	1	6010C
TOC	P	250	H_2SO_4	1	9060A
D. Gas	V	20	HCL	3	RSK175
VOC	V	40	HCL	3	8260B

Well Capacity: 1" = 0.041 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.469 gal/ft

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APPENDIX E
LABORATORY ANALYTICAL REPORTS

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Maryland Office
8600 Snowden River Parkway
Suite 300
Columbia, MD 21045
410-312-3535 office
410-312-3544 fax

Virginia Office
402 North West Street
Culpeper, Virginia 22701
540-829-5642 Office
540-829-5641 Fax

DATA CERTIFICATION

The attached laboratory report L15061031 consisting of 475 pages, has been certified by David E. Vandenberg, Managing Director, Microbac Laboratories. The data contained herein was completed in accordance with the requirements of the DoD QSM and other applicable contract terms and conditions.

I hereby certify that this laboratory report and associated documentation has been reviewed and approved.

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A 1448787
Ralph Abbondanza III
Zemaitis
Lic.#3803
QUIMICO LICENCIADO

Ralph Abbondanza, REM
Vice President, Special Projects
PR Chemist's License #3803

Microbac

Laboratory Report Number: L15061031

Jeanette Hamm
Kemron Environmental Services
1359 Ellsworth Industrial Blvd.
Atlanta, GA 30082

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Stephanie Mossburg – Team Chemist/Data Specialist
(740) 373-4071
Stephanie.Mossburg@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on July 01 2015

David Vandenberg – Managing Director

State of Origin: PR
Accrediting Authority: N/A ID:N/A
QAPP: DOD Ver 4.2 without flagging

Microbac

Lab Report #: L15061031
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

There were no discrepancies.

Discrepancy	Resolution

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
00112797	I	1.0		1004161152410004575000807642548902	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	NA
11	Were pH ranges acceptable? (voa's excluded)	NA
12	Were VOA samples free of headspace (less than 6mm)?	NA

Microbac Laboratories ● Ohio Valley Division
158 Starlite Drive, Marietta, OH 45750 ● T: (740)373-4071 F: (740)373-4835
www.microbac.com

Microbac

Lab Report #: L15061031
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
FT. BUCHANAN SERVICE AREA	L15061031-01	06/16/2015 16:30	06/17/2015 09:57
FT. BUCHANAN BARRIER WALL	L15061031-02	06/16/2015 16:45	06/17/2015 09:57

Login Number: L15061031
Department: Volatiles
Analyst: Tiffany Bailey

METHOD

Preparation SW-846 5030C/5035A

Analysis SW-846 8260B

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC prescribed MS/MSD. Microbac Laboratories recommends site specific MS/MSD samples to avoid possible data qualifications.

SAMPLES

Internal Standards: All acceptance criteria were met.

Surrogates: All acceptance criteria were met.

Other: Samples 01, 02, were ran at a dilution.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak. In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak. This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

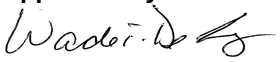
Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline. There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous. Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Managing Director or the QAO will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 100893
Approved By: Wade DeLong



Login Number: L15061031
Department: Metals
Analyst: Kim Rhodes

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG528157 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

Narrative ID: 100767
Approved By: Brendan Torrence

Login Number: L15061031
Department: Metals - AA
Analyst: Pierce Morris

METHOD

Preparation: SW-846 7470

Analysis: SW-846 7470

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG528599 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

Narrative ID: 100792
Approved By: Brendan Torrence

Certificate of Analysis

Microbac

Lab Report #: L15061031
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Certificate of Analysis

Sample #:	L15061031-01	**PrePrep Method:**		**Instrument:**	HPMS8
Client ID:	FT. BUCHANAN SERVICE AREA	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	TCLP Leach	**Analytical Method:**	8260B	**Cal Date:**	06/03/2015 22:09
Workgroup #:	WG528590	**Analyst:**	TMB	**Run Date:**	06/23/2015 15:41
Collect Date:	06/16/2015 16:30	**Dilution:**	10	**File ID:**	8M405678
Sample Tag:	DL01	**Units:**	ug/L		

Analyte	Result	Qual	LOQ	DL	EPA HW#	Reg. Limit
Benzene		U	50.0	1.25	D018	500
Carbon tetrachloride		U	50.0	2.50	D019	500
Chlorobenzene		U	50.0	1.25	D021	100000
Chloroform		U	50.0	1.25	D022	6000
1,2-Dichloroethane		U	50.0	2.50	D028	500
1,1-Dichloroethene		U	50.0	5.00	D029	700
Methyl Ethyl Ketone		U	100	25.0	D035	200000
Tetrachloroethene		U	50.0	2.50	D039	700
Trichloroethene		U	50.0	2.50	D040	500
Vinyl chloride		U	100	2.50	D043	200

Surrogate	Recovery	Lower Limit	Upper Limit	Q
Dibromofluoromethane	91.0	85	115	
1,2-Dichloroethane-d4	104	70	120	
Toluene-d8	108	85	120	
4-Bromofluorobenzene	97.5	75	120	

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15061031-01	**PrePrep Method:**		**Instrument:**	PE-ICP2
Client ID:	FT. BUCHANAN SERVICE AREA	**Prep Method:**	3015	**Prep Date:**	06/18/2015 10:00
Matrix:	TCLP Leach	**Analytical Method:**	6010C	**Cal Date:**	06/23/2015 08:57
Workgroup #:	WG528157	**Analyst:**	KHR	**Run Date:**	06/23/2015 09:42
Collect Date:	06/16/2015 16:30	**Dilution:**	1	**File ID:**	P2.062315.094226
Sample Tag:	01	**Units:**	mg/L		

Analyte	Result	Qual	LOQ	DL	EPA HW#	Reg. Limit
Arsenic, TCLP		U	1.00	0.500	D004	5
Barium, TCLP	0.452		0.100	0.0500	D005	100
Cadmium, TCLP		U	0.100	0.0500	D006	1
Chromium, TCLP		U	0.200	0.100	D007	5
Lead, TCLP		U	1.00	0.500	D008	5
Selenium, TCLP		U	0.800	0.400	D010	1

Certificate of Analysis

Analyte	Result	Qual	LOQ	DL	EPA HW#	Reg. Limit
Silver, TCLP		U	0.100	0.0500	D011	5

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15061031-01	**PrePrep Method:**		**Instrument:**	CVAA1
Client ID:	FT. BUCHANAN SERVICE AREA	**Prep Method:**	7470A	**Prep Date:**	06/18/2015 13:15
Matrix:	TCLP Leach	**Analytical Method:**	7470A	**Cal Date:**	06/23/2015 13:10
Workgroup #:	WG528599	**Analyst:**	PDM	**Run Date:**	06/23/2015 14:09
Collect Date:	06/16/2015 16:30	**Dilution:**	1	**File ID:**	M7.062315.140943
Sample Tag:	01	**Units:**	mg/L		

Analyte	Result	Qual	LOQ	DL	EPA HW#	Reg. Limit
Mercury		U	0.00200	0.00100	D009	0.2

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15061031-02	**PrePrep Method:**		**Instrument:**	HPMS8
Client ID:	FT. BUCHANAN BARRIER WALL	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	TCLP Leach	**Analytical Method:**	8260B	**Cal Date:**	06/03/2015 22:09
Workgroup #:	WG528590	**Analyst:**	TMB	**Run Date:**	06/23/2015 16:09
Collect Date:	06/16/2015 16:45	**Dilution:**	10	**File ID:**	8M405679
Sample Tag:	DL01	**Units:**	ug/L		

Analyte	Result	Qual	LOQ	DL	EPA HW#	Reg. Limit
Benzene		U	50.0	1.25	D018	500
Carbon tetrachloride		U	50.0	2.50	D019	500
Chlorobenzene		U	50.0	1.25	D021	100000
Chloroform		U	50.0	1.25	D022	6000
1,2-Dichloroethane		U	50.0	2.50	D028	500
1,1-Dichloroethene		U	50.0	5.00	D029	700
Methyl Ethyl Ketone		U	100	25.0	D035	200000
Tetrachloroethene		U	50.0	2.50	D039	700
Trichloroethene		U	50.0	2.50	D040	500
Vinyl chloride		U	100	2.50	D043	200

Surrogate	Recovery	Lower Limit	Upper Limit	Q
Dibromofluoromethane	91.3	85	115	
1,2-Dichloroethane-d4	103	70	120	
Toluene-d8	108	85	120	
4-Bromofluorobenzene	95.5	75	120	

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L15061031-02	**PrePrep Method:**		**Instrument:**	PE-ICP2
Client ID:	FT. BUCHANAN BARRIER WALL	**Prep Method:**	3015	**Prep Date:**	06/18/2015 10:00
Matrix:	TCLP Leach	**Analytical Method:**	6010C	**Cal Date:**	06/23/2015 08:57
Workgroup #:	WG528157	**Analyst:**	KHR	**Run Date:**	06/23/2015 09:54
Collect Date:	06/16/2015 16:45	**Dilution:**	1	**File ID:**	P2.062315.095420
Sample Tag:	01	**Units:**	mg/L		

Analyte	Result	Qual	LOQ	DL	EPA HW#	Reg. Limit
Arsenic, TCLP		U	1.00	0.500	D004	5
Barium, TCLP	0.237		0.100	0.0500	D005	100
Cadmium, TCLP		U	0.100	0.0500	D006	1
Chromium, TCLP		U	0.200	0.100	D007	5
Lead, TCLP		U	1.00	0.500	D008	5
Selenium, TCLP		U	0.800	0.400	D010	1
Silver, TCLP		U	0.100	0.0500	D011	5

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15061031-02	**PrePrep Method:**		**Instrument:**	CVAA1
Client ID:	FT. BUCHANAN BARRIER WALL	**Prep Method:**	7470A	**Prep Date:**	06/18/2015 13:15
Matrix:	TCLP Leach	**Analytical Method:**	7470A	**Cal Date:**	06/23/2015 13:10
Workgroup #:	WG528599	**Analyst:**	PDM	**Run Date:**	06/23/2015 14:12
Collect Date:	06/16/2015 16:45	**Dilution:**	1	**File ID:**	M7.062315.141214
Sample Tag:	01	**Units:**	mg/L		

Analyte	Result	Qual	LOQ	DL	EPA HW#	Reg. Limit
Mercury		U	0.00200	0.00100	D009	0.2

U	Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15061031
Blank File ID: 8M405675
Prep Date: 06/23/15 14:15
Analyzed Date: 06/23/15 14:15
Analyst: TMB

Work Group: WG528590
Blank Sample ID: WG528590-01
Instrument ID: HPMS8
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG528590-02	8M405676	06/23/15 14:44	01
LCS2	WG528590-03	8M405677	06/23/15 15:12	01
FT. BUCHANAN SERVICE AREA	L15061031-01	8M405678	06/23/15 15:41	DL01
FT. BUCHANAN BARRIER WALL	L15061031-02	8M405679	06/23/15 16:09	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 4252759
Report generated 06/25/2015 16:54

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15061031 Prep Date: 06/23/15 14:15 Sample ID: WG528590-01
Instrument ID: HPMS8 Run Date: 06/23/15 14:15 Prep Method: 5030B/5030C/503
File ID: 8M405675 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG528590 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS8-03-JUN-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Benzene	0.125	5.00	0.125	1	U
Carbon tetrachloride	0.250	5.00	0.250	1	U
Chlorobenzene	0.125	5.00	0.125	1	U
Chloroform	0.125	5.00	0.125	1	U
1,2-Dichloroethane	0.250	5.00	0.250	1	U
1,1-Dichloroethene	0.500	5.00	0.500	1	U
Methyl Ethyl Ketone	2.50	10.0	2.50	1	U
Tetrachloroethene	0.250	5.00	0.250	1	U
Trichloroethene	0.250	5.00	0.250	1	U
Vinyl chloride	0.250	10.0	0.250	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	91.5	85 - 115	PASS
1,2-Dichloroethane-d4	101	70 - 120	PASS
Toluene-d8	105	85 - 120	PASS
4-Bromofluorobenzene	100	75 - 120	PASS

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4252760
25-JUN-2015 16:54

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15061031 Analyst: TMB Prep Method: 5030B/5030C/503
Instrument ID: HPMS8 Matrix: TCLP Leach Method: 8260B
Workgroup (AAB#): WG528590 Units: ug/L
QC Key: DOD4 Lot #: STD71076

Sample ID: WG528590-02 LCS File ID: 8M405676 Run Date: 06/23/2015 14:44
Sample ID: WG528590-03 LCS2 File ID: 8M405677 Run Date: 06/23/2015 15:12

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
1,1-Dichloroethene	20.0	19.0	95.0	20.0	18.8	94.2	0.897	70 - 130	30	
1,2-Dichloroethane	20.0	19.5	97.3	20.0	19.2	96.1	1.27	70 - 130	30	
Methyl Ethyl Ketone	20.0	17.5	87.7	20.0	16.7	83.7	4.65	30 - 150	30	
Benzene	20.0	22.0	110	20.0	22.7	113	2.96	80 - 120	30	
Carbon tetrachloride	20.0	20.2	101	20.0	19.7	98.7	2.31	65 - 140	30	
Chlorobenzene	20.0	20.1	101	20.0	20.2	101	0.265	80 - 120	30	
Chloroform	20.0	20.1	101	20.0	20.3	101	0.873	65 - 135	30	
Tetrachloroethene	20.0	21.4	107	20.0	20.7	104	3.38	45 - 150	30	
Trichloroethene	20.0	20.3	101	20.0	20.2	101	0.498	70 - 125	30	
Vinyl chloride	20.0	19.7	98.3	20.0	19.9	99.3	1.02	50 - 145	30	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	95.4	92.3	70 - 120	PASS
Dibromofluoromethane	90.7	89.1	85 - 115	PASS
4-Bromofluorobenzene	92.1	93.0	75 - 120	PASS
Toluene-d8	104	103	85 - 120	PASS

* EXCEEDS %REC LIMIT

\# EXCEEDS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4252761
Report generated: 06/25/2015 16:54

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15061031
Blank File ID: P2.062315.092541
Prep Date: 06/18/15 10:00
Analyzed Date: 06/23/15 09:25
Analyst: KHR

Work Group: WG528157
Blank Sample ID: WG528119-02
Instrument ID: PE-ICP2
Method: 6010C

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG528119-03	P2.062315.092802	06/23/15 09:28	01
FT. BUCHANAN SERVICE AREA	L15061031-01	P2.062315.094226	06/23/15 09:42	01
FT. BUCHANAN BARRIER WALL	L15061031-02	P2.062315.095420	06/23/15 09:54	01

Report Name: BLANK_SUMMARY
PDF File ID: 4248494
Report generated 06/23/2015 11:39

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15061031 Prep Date: 06/18/15 10:00 Sample ID: WG528119-02
Instrument ID: PE-ICP2 Run Date: 06/23/15 09:25 Prep Method: 3015
File ID: P2.062315.092541 Analyst: KHR Method: 6010C
Workgroup (AAB#): WG528157 Matrix: Water Units: mg/L
Contract #: Cal ID: PE-ICP-23-JUN-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Arsenic, TCLP	0.0500	0.100	0.0500	1	U
Barium, TCLP	0.00500	0.0100	0.00500	1	U
Cadmium, TCLP	0.00500	0.0100	0.00500	1	U
Chromium, TCLP	0.0100	0.0200	0.0100	1	U
Lead, TCLP	0.0500	0.100	0.0500	1	U
Selenium, TCLP	0.0400	0.0800	0.0400	1	U
Silver, TCLP	0.00500	0.0100	0.00500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4248495
23-JUN-2015 11:37

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15061031 Run Date: 06/23/2015 Sample ID: WG528119-03
Instrument ID: PE-ICP2 Run Time: 09:28 Prep Method: 3015
File ID: P2.062315.092802 Analyst: KHR Method: 6010C
Workgroup (AAB#): WG528157 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD70867 Cal ID: PE-ICP-23-JUN-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Arsenic, TCLP	0.250	0.240	95.9	80 - 120	
Barium, TCLP	0.625	0.630	101	80 - 120	
Cadmium, TCLP	0.0313	0.0305	97.7	80 - 120	
Chromium, TCLP	0.313	0.315	101	80 - 120	
Lead, TCLP	0.313	0.314	100	80 - 120	
Selenium, TCLP	0.250	0.244	97.7	80 - 120	
Silver, TCLP	0.250	0.258	103	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 4248496
Report generated: 06/23/2015 11:37

Microbac Laboratories Inc.
MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum: L15061031 Cal ID: PE-ICP2- Worknum: WG528157
Instrument ID: PE-ICP2 Contract #: Method: 6010C
Parent ID: WG528119-01 File ID: P2.062315.093514 Dil: 1 Matrix: WATER
Sample ID: WG528119-04 MS File ID: P2.062315.093737 Dil: 1 Units: mg/L
Sample ID: WG528119-05 MSD File ID: P2.062315.094001 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Arsenic, TCLP	ND	2.00	1.99	99.4	2.00	1.94	97.0	2.46	80 - 120	20	
Barium, TCLP	0.0797	5.00	5.06	99.6	5.00	5.03	99.0	0.555	80 - 120	20	
Cadmium, TCLP	ND	0.250	0.242	97.0	0.250	0.241	96.5	0.457	80 - 120	20	
Chromium, TCLP	ND	2.50	2.54	101	2.50	2.52	101	0.671	80 - 120	20	
Lead, TCLP	ND	2.50	2.47	98.9	2.50	2.45	98.2	0.749	80 - 120	20	
Selenium, TCLP	ND	2.00	1.96	98.2	2.00	2.01	101	2.41	80 - 120	20	
Silver, TCLP	ND	2.00	2.09	104	2.00	2.07	104	0.595	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 05/26/2011
PDF File ID: 4248497
Report generated 06/23/2015 11:37

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15061031
Blank File ID: M7.062315.133433
Prep Date: 06/18/15 13:15
Analyzed Date: 06/23/15 13:34
Analyst: PDM

Work Group: WG528599
Blank Sample ID: WG528158-02
Instrument ID: CVAA1
Method: 7470A

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG528158-03	M7.062315.133913	06/23/15 13:39	01
FT. BUCHANAN SERVICE AREA	L15061031-01	M7.062315.140943	06/23/15 14:09	01
FT. BUCHANAN BARRIER WALL	L15061031-02	M7.062315.141214	06/23/15 14:12	01
DUP	WG528158-04	M7.062315.141715	06/23/15 14:17	01

Report Name: BLANK_SUMMARY
PDF File ID: 4249305
Report generated 06/23/2015 15:25

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15061031 Prep Date: 06/18/15 13:15 Sample ID: WG528158-02
Instrument ID: CVAA1 Run Date: 06/23/15 13:34 Prep Method: 7470A
File ID: M7.062315.133433 Analyst: PDM Method: 7470A
Workgroup (AAB#): WG528599 Matrix: Water Units: mg/L
Contract #: Cal ID: CVAA1-23-JUN-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Mercury	0.000100	0.000200	0.000100	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4249306
23-JUN-2015 15:25

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15061031 Run Date: 06/23/2015 Sample ID: WG528158-03
Instrument ID: CVAA1 Run Time: 13:39 Prep Method: 7470A
File ID: M7.062315.133913 Analyst: PDM Method: 7470A
Workgroup (AAB#): WG528599 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD71062 Cal ID: CVAA1-23-JUN-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Mercury	0.00400	0.00434	108	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 4249307
Report generated: 06/23/2015 15:25

Microbac Laboratories Inc.
MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum: L15061031 Cal ID: CVAA1 - Worknum: WG528599
Instrument ID: CVAA1 Contract #: Method: 7470A
Parent ID: WG528158-01 File ID: M7.062315.141444 Dil: 1 Matrix: WATER
Sample ID: WG528158-05 MS File ID: M7.062315.141946 Dil: 1 Units: mg/L
Sample ID: WG528158-06 MSD File ID: M7.062315.142218 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Mercury	ND	0.00444	0.00474	107	0.00444	0.00478	108	0.724	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 05/26/2011
PDF File ID: 4249308
Report generated 06/23/2015 15:25

Microbac Laboratories Inc.
Ohio Valley Division Analyst List
July 1, 2015

001 - BIO-CHEM TESTING WVDEP 220
002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental
004 - MICROBAC PITTSBURGH
005 - ES LABORATORIES
006 - ALCOSAN LABORATORIES
007 - ALS LABORATORIES
008 - BENCHMARK LABORATORIES
010 - MICROBAC CHICAGOLAND
AC - AMBER R. CARMICHAEL
ADC - ANTHONY D. CANTER
ADG - APRIL D. GREENE
AED - ALLEN E. DAVIS
ALS - ADRIANE L. STEED
AWE - ANDREW W. ESSIG
AZH - AFTER HOURS
BJO - BRIAN J. OGDEN
BKT - BRENDAN TORRENCE
BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY
CAA - CASSIE A. AUGENSTEIN
CAF - CHERYL A. FLOWERS
CEB - CHAD E. BARNES
CJR - COURTNEY J. REXROAD
CLC - CHRYS L. CRAWFORD
CLS - CARA L. STRICKLER
CLW - CHARISSA L. WINTERS
CPD - CHAD P. DAVIS
CSH - CHRIS S. HILL
DAK - DEAN A. KETELSEN
DCM - DAVID C. MERCKLE
DEV - DAVID E. VANDENBERG
DIH - DEANNA I. HESSON
DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE
DLW - DIANA L. WRIGHT
DSM - DAVID S. MOSSOR
ECL - ERIC C. LAWSON
ENY - EMILY N. YOAK
EPT - ETHAN P. TIDD
ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN
JBK - JEREMY B. KINNEY
JDH - JUSTIN D. HESSON
JDS - JARED D. SMITH
JJS - JOHN J. STE MARIE
JKP - JACQUELINE K. PARSONS
JLL - JOHN L. LENT
JMW - JEANA M. WHITE
JTP - JOSHUA T. PEMBERTON
JWR - JOHN W. RICHARDS
JWS - JACK W. SHEAVES
JYH - JI Y. HU
KAJ - KELLIE A. JOHNSON
KAT - KATHY A. TUCKER
KDW - KATHRYN D. WELCH
KEB - KATIE E. BARNES
KHR - KIM H. RHODES
KKB - KERRI K. BUCK
KRA - KATHY R. ALBERTSON
KRB - KAELY R. BECKER
KRP - KATHY R. PARSONS
LEC - LAURA E. CARPENTER
LKN - LINDA K. NEDEFF
LLS - LARRY L. STEPHENS
LSB - LESLIE S. BUCINA
MBK - MORGAN B. KNOWLTON
MDA - MIKE D. ALBERTSON
MDC - MIKE D. COCHRAN
MES - MARY E. SCHILLING
MLB - MEGAN L. BACHE
MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR
MSW - MATT S. WILSON
PDM - PIERCE D. MORRIS
PIT - MICROBAC WARRENDALE
PRL - PAIGE R. LAMB
PSW - PEGGY S. WEBB
QX - QIN XU
RAH - ROY A. HALSTEAD
REK - BOB E. KYER
RLB - BOB BUCHANAN
RM - RAYMOND MALEKE
RNP - RICK N. PETTY
RST - ROBIN S. TURNER
SAV - SARAH A. VANDENBERG
SCB - SARAH C. BOGOLIN
SDC - SHALYN D. CONLEY
SLM - STEPHANIE L. MOSSBURG
SLP - SHERI L. PFALZGRAF
TB - TODD BOYLE
TGF - TIM G. FELTON
TMB - TIFFANY M. BAILEY
TMM - TAMMY M. MORRIS
VC - VICKI COLLIER
WJB - WILL J. BEASLEY
WRR - WESLEY R. RICHARDS
WTD - WADE T. DELONG
XXX - UNAVAILABLE OR SUBCONTRACT

Microbac Laboratories Inc.
List of Valid Qualifiers
July 01, 2015

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B,H1	Analyte present in method blank. Sample analysis performed past holding time.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	Cooler temperature at sample reciept exceeded regulatory limit.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
E,CT1	Estimated results. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
H1	Sample analysis performed past holding time.
H1,CT1	Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guidelines for reque
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value ; the analyte concentration was less than the LOQ. Cooler temperature at sample reciept exceeded regu
J,H1	Estimated value ; the analyte concentration was less than the LOQ. Sample analysis performed past holding time.
J,H1	The reported result is an estimated value. Sample was analyzed past holding time.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentativlely identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL/MDL).
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
ND,H1	Not detected; Sample analysis performed past holding time.
ND,H1,CT1	Not detected; Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guide
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
Q,H1	One or more quality control criteria failed. Sample analyzed past holding time. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
T5	Laboratory not licensed for this parameter
TIC	Library Search Compound
TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.

Qualkey: DOD

TNTC,CT1	Too numerous to count. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
TNTC,H1	Too numerous to count. Sample analysis performed past holding time.
U	Analyte was not detected. The concentration is below the reported LOD.
U,CT1	Analyte was not detected. The concentration is below the reported LOD. Cooler temperature at sample reciept exceeded
U,H1	Not detected; Sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

Microbac

Co.Name: Kenvon Environmental Services
Prj Contact: Jeanette Hamm
Prj Name: Ft. Buchanan
Location: Bayamon, PR

TAT: STD
Phone: 678-521-6135

COC No. 1

Sampler Print: Charlie Taylor

Sampler Sign: [signature]

Sample ID	Comp	Grab	Date	Time	Hold	# of Containers	T-dp VOCs 1311/8260	T-dp RCRA Metals 1311/6010/7470									Notes:
Ft. Buchanan Source Area	✓		6/16/15	1630		4	2	2									
Ft. Buchanan Barrier Wall	✓		6/16/15	1645		4	2	2									

Relinquished By: [signature]
Date/Time 6/16/15 1700

Relinquished By:
Date/Time

Received By:

Microbac OVD
Received: 06/17/2015 09:57
By: BRENDA GREGORY 221000071421

Brenda Gregory

Relinquished By
Date/Time:

Received By:
Date/Time:

Cooler Temp(s):

Comments:

TOXIC SUBSTANCE CONTROL ACT (TSCA)
CERTIFICATION

Date: June 16, 2015

(CHECK ONE SECTION ONLY)

POSITIVE CERTIFICATION

_____ "I certify that all chemical substances in this shipment comply with all applicable rules or orders under TSCA and that I am not offering a chemical substance for entry in violation of TSCA or any applicable rules order thereunder."

● OR ●

NEGATIVE CERTIFICATION

X "I certify that all chemical substances in this shipment are not subject to TSCA."

Company Name: KEMRON Environmental Services

Company Address: 1359A Ellsworth Industrial Boulevard

City/State: Atlanta, GA

Country/Zip: USA, 30318

Authorized Name: Charlie Taylor

Authorized Signature: _____

Title: Site Manager

Federal Express AWB#: _____

If the certifier is unsure if their chemical substance is subject to TSCA compliance, contact the Environmental Protection Agency, TSCA Assistance Office, Washington, D.C. (202) 554-1404 between 8:30 am and 5:00 pm EST.

Revised 04-2009

Microbac OVD
Received: 06/17/2015 09:57
By: BRENDA GREGORY 221000071421

Brenda Gregory

COMMERCIAL INVOICE (Factura Comercial)

This invoice must be completed in English (Esta factura se debe llenar en Ingles)

SHIPPED FROM (Envio de):
Tax ID/VAT No. (No de Identificación): 11-2393978
Contact Name (Nombre): Jeanette Hamm
Telephone No. (Teléfono): 404-643-2033
E-Mail (E-Mail): jhamm@kemron.com
Company Name/Address (Compania/Dirección):
KEMRON Environmental Services
1359A Ellsworth Industrial Boulevard
Atlanta, GA 30318
Country (Pais): United States
Parties to Transaction:
☑ **Related** (Vinculado) ☐ **Non-related** (No Vinculado)

Date (Fecha): 6/16/2015
Air Waybill No. (Conocimiento de Embarque):
Invoice No. (No de la Factura): Not Applicable
Purchase Order No. (No de Orden de Compra): Not Applicable
Payment Terms (Terminos de Pago): Paid when Paid
Incoterms (Incoterms): CPT=CARRIAGE PAID TO
Reason for Export:
Sold (Vendido) ✓ **Not Sold** (No Esta Vendido) **Other** (Otro)

SHIPPED TO (Destinatario):
Tax ID/VAT No. (No de Identificación): 25-1199642
Contact Name (Nombre): Stephanie Mossburg
Telephone No. (Teléfono): 1-800-373-4071
E-Mail (E-Mail): Stephanie.Mossburg@microbac.com
Company Name/Address (Compania/Dirección):
Microbac Laboratories, Inc.
158 Starlite Drive
Marietta, OH 45750
Country (Pais): USA

SOLD TO (Vendido a): **Same as SHIPPED TO (Igual que el Destinatario):**
Company Name/Address (Compania/Dirección):
Country (Pais): USA

No. of Packages (No de Paquetes)	No. of Units (No Unitario)	Unit of Measure (Unidad de Medida)	Description of Goods (Including Harmonized Tariff No.) (Descripción de la Mercancia [Con No de Clasificación Arancelaria])	Country of Origin (Pais de Origen)	Value Unit (Precio Unitario)	Total Value (Precio Total)
1	8	each	Soil Samples for analysis	PR	10.00	80.00
						0.00
						0.00

Microbac OVD
Received: 06/17/2015 09:57
By: BRENDA GREGORY 221000071421
Brenda Gregory

Total No. of Packages (Total de Paquetes): 1
Total Weight (Indicate LBS or KGS) (Peso Total [En Lbs o Kgs]): 50 LBS

Special Instructions (Instrucciones Especiales):
This package contains soil samples which will be used for destructive analysis.

Declaration Statement(s) (Declaración[es]):

Subtotal (Subtotal):	80.00
Insurance (Seguro):	0.00
Freight (Flete):	0.00
Packing (Embalaje):	0.00
Handling (Manejo):	0.00
Other (Otros):	0.00
Invoice Total (Total):	80.00
Currency Code (Tipo de Moneda):	

Signature/Title (Firma del Declarante/Puesto) 6/16/15 **Date** (Fecha)

Internal Chain of Custody Report

Login: L15061031
Account: 2820
Project: 2820.250
Samples: 2
Due Date: 26-JUN-2015

Samplenum	Container ID	Products
L15061031-01	589658	TC-EX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUN-2015 11:09	CLS		
2	PREP	W1	TCL	17-JUN-2015 13:24	RAH	CLS	
3	ANALYZ	TCL	A2	22-JUN-2015 08:58	CLS	RAH	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUN-2015 11:09	CLS		
2	PREP	W1	TCL	17-JUN-2015 13:24	RAH	CLS	
3	ANALYZ	TCL	A2	22-JUN-2015 08:58	CLS	RAH	

Samplenum	Container ID	Products
L15061031-01	589659	TC-ZHE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUN-2015 11:09	CLS		
2	PREP	W1	TCL	17-JUN-2015 13:24	RAH	CLS	
3	ANALYZ	TCL	A2	22-JUN-2015 08:59	CLS	RAH	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUN-2015 11:09	CLS		
2	PREP	W1	TCL	17-JUN-2015 13:24	RAH	CLS	
3	ANALYZ	TCL	A2	22-JUN-2015 08:59	CLS	RAH	

Samplenum	Container ID	Products
L15061031-02	589660	TC-EX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUN-2015 11:09	CLS		
2	PREP	W1	TCL	17-JUN-2015 13:24	RAH	CLS	
3	ANALYZ	TCL	A2	22-JUN-2015 08:59	CLS	RAH	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUN-2015 11:09	CLS		
2	PREP	W1	TCL	17-JUN-2015 13:24	RAH	CLS	
3	ANALYZ	TCL	A2	22-JUN-2015 08:58	CLS	RAH	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15061031
Account: 2820
Project: 2820.250
Samples: 2
Due Date: 26-JUN-2015

Samplenum	Container ID	Products
L15061031-02	589661	TC-ZHE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUN-2015 11:09	CLS		
2	PREP	W1	TCL	17-JUN-2015 13:24	RAH	CLS	
3	ANALYZ	TCL	A2	22-JUN-2015 08:58	CLS	RAH	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUN-2015 11:09	CLS		
2	PREP	W1	TCL	17-JUN-2015 13:24	RAH	CLS	
3	ANALYZ	TCL	A2	22-JUN-2015 08:59	CLS	RAH	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

ANALYTICAL SERVICES, INC.

Virginia Office
402 North West Street
Culpeper, Virginia 22701
540-829-5642 Office
540-829-5641 Fax

DATA CERTIFICATION

The attached laboratory report L15070812 consisting of 617 pages, has been certified by David E. Vandenberg, Managing Director, Microbac Laboratories. The data contained herein was completed in accordance with the requirements of the DoD QSM and other applicable contract terms and conditions.

I hereby certify that this laboratory report and associated documentation has been reviewed and approved.

Ralph Abbondanza, REM
Vice President
PR Chemist's License #3803

$1.00 $1.00
ESTADO LIBRE ASOCIADO DE PUERTO RICO
A 1448793
Ralph Abbondanza III
Zemaitis
Lic.#3803
QUIMICO LICENCIADO

Microbac

Laboratory Report Number: L15070812

Jeanette Hamm
Kemron Environmental Services
1359 Ellsworth Industrial Blvd.
Atlanta, GA 30082

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Stephanie Mossburg – Team Chemist/Data Specialist
(740) 373-4071
Stephanie.Mossburg@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on July 30 2015

David Vandenberg – Managing Director

State of Origin: PR
Accrediting Authority: N/A ID:N/A
QAPP: DOD Ver 4.2 without flagging

Microbac

Lab Report #: L15070812
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

The following discrepancies were noted:

Discrepancy	Resolution
FTB034-GM-MW-14B-071415: no time listed on the chain of custody. The sample labels have 1526 as the time sampled. CLS We logged per the time sampled listed on the sample labels per SLM. CLS	

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
00110900	I	5.0		1004161162110004575000808287338789	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	No
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	Yes

Microbac Laboratories ● Ohio Valley Division
158 Starlite Drive, Marietta, OH 45750 ● T: (740)373-4071 F: (740)373-4835
www.microbac.com

Microbac

Lab Report #: L15070812
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
FTB034-GM-MW-14B-071415	L15070812-01	07/14/2015 15:26	07/15/2015 10:29
FTB034-GM-MW-14A-071415	L15070812-02	07/14/2015 14:26	07/15/2015 10:29
FTB034-GM-MW-25-071415	L15070812-03	07/14/2015 13:11	07/15/2015 10:29
FTB034-GM-MW-26-071415	L15070812-04	07/14/2015 10:56	07/15/2015 10:29
FTB034-GM-MW-15A-071415	L15070812-05	07/14/2015 09:31	07/15/2015 10:29
TRIP BLANK	L15070812-06	07/14/2015 00:01	07/15/2015 10:29

Login Number: L15070812
Department: Volatiles
Analyst: Anthony Canter

METHOD

Preparation SW-846 5030C/5035A

Analysis SW-846 8260B

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: The percent difference was out of range for the following analytes: Carbon Disulfide, Trichlorofluoromethane. Please see the applicable QC report for a detailed presentation of the failures.

Continuing Calibration and Tune: Recoveries out of range were observed for the following analytes: 2-Butanone, 2-Hexanone, Bromomethane, Chloroethane, Dichlorodifluoromethane. Please see the applicable QC report for a detailed presentation of the failures.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: Recoveries out of range were observed for the following analytes: 2-Butanone, 2-Hexanone, Acetone. Please see the applicable QC report for a detailed presentation of the failures.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient

volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC prescribed MS/MSD. Microbac Laboratories recommends site specific MS/MSD samples to avoid possible data qualifications.

SAMPLES

Internal Standards: All acceptance criteria were met.

Surrogates: All acceptance criteria were met.

Other: Samples 03, 04, were run at a dilution.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak. In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak. This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline. There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous. Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Managing Director or the QAO will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 102149
Approved By: Franci Bolden

Login Number: L15070812
Department: Volatiles - GC
Analyst: Jared Smith

Analysis RSK-175

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes/Sample Duplicates: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. Microbac Laboratories recommends site specific MS/MSD samples to avoid possible data qualifications.

SAMPLES

Samples: Sample 05 required a dilution analysis.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

Narrative ID: 101622
Approved By: Franci Bolden

Login Number: L15070812
Department: Metals
Analyst: Kim Rhodes

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: WG531851 - The initial calibration blank analyzed on 23-JUL-2015 at 09:18 yielded a result for sodium that was between the MDL and the RDL. However, the reported sample results exceeded that of the ICB by greater than a factor of ten. With permission from the project manager, the samples were reported for sodium and no further action was taken for these samples.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG531851 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: WG531851 - Client samples 02, 03, and 05 required dilution analyses for calcium and samples 01 and 04 required dilution analyses for calcium and magnesium in order to obtain results within the calibration range.

Narrative ID: 101892
Approved By: Brendan Torrence

Login Number: L15070812
Department: General Chromatography
Analyst: Adriane Steed

METHOD

Analysis EPA300.0/SW846 9056

HOLDING TIMES

Sample Analysis: Hold times for NO2 and NO3 are 48 hours and the hold times for F, Cl, Br, and SO4 are 28 days. The hold time forms calculate the hold time based on 48 hours. All samples were analyzed in hold.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group.

SAMPLES

Samples: All acceptance criteria were met.

MANUAL INTEGRATION: No manual integration required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data

contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 101552
Approved By: Eric Lawson

Login Number: L15070812
Department: Conventionals
Analyst: Ethan Tidd

METHOD

Analysis Water: EPA 415.1/SM5310C/SW846 9060 (Total Organic Carbon)
Soil: Lloyd-Khan Methodology

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 101750
Approved By: Deanna Hesson

Microbac

Lab Report #: L15070812
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Certificate of Analysis

Sample #:	L15070812-01	**PrePrep Method:**	N/A	**Instrument:**	HPMS17
Client ID:	FTB034-GM-MW-14B-071415	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	05/18/2015 14:34
Workgroup #:	WG531929	**Analyst:**	TMB/ JDS	**Run Date:**	07/20/2015 20:13
Collect Date:	07/14/2015 15:26	**Dilution:**	1	**File ID:**	17M013834
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1	3.53	J	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	114	70	120	
4-Bromofluorobenzene	102	75	120	
Dibromofluoromethane	97.8	85	115	
Toluene-d8	102	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L15070812-01	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-14B-071415	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531312	**Analyst:**	JDS	**Run Date:**	07/15/2015 14:18
Collect Date:	07/14/2015 15:26	**Dilution:**	1	**File ID:**	16G48086
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8	21.7		5.00	1.00
Ethene	74-85-1		U	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070812-01	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-14B-071415	**Prep Method:**	3015	**Prep Date:**	07/16/2015 13:21
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG531851	**Analyst:**	KHR	**Run Date:**	07/23/2015 11:28
Collect Date:	07/14/2015 15:26	**Dilution:**	1	**File ID:**	P2.072315.112850
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Potassium, Total	7440-09-7	2.49		1.00	0.500
Sodium, Total	7440-23-5	36.9		0.500	0.250

Sample #:	L15070812-01	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-14B-071415	**Prep Method:**	3015	**Prep Date:**	07/16/2015 13:21
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG531851	**Analyst:**	KHR	**Run Date:**	07/23/2015 12:53
Collect Date:	07/14/2015 15:26	**Dilution:**	10	**File ID:**	P2.072315.125338
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	92.7		5.00	2.50
Magnesium, Total	7439-95-4	32.5		5.00	2.50

Certificate of Analysis

Sample #:	L15070812-01	**PrePrep Method:**	N/A	**Instrument:**	IC2
Client ID:	FTB034-GM-MW-14B-071415	**Prep Method:**	9056	**Prep Date:**	07/15/2015 13:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	02/17/2015 19:43
Workgroup #:	WG531408	**Analyst:**	ALS	**Run Date:**	07/15/2015 17:19
Collect Date:	07/14/2015 15:26	**Dilution:**	1	**File ID:**	I2_071515-11
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8		U	0.600	0.100
Sulfate	14808-79-8	16.6		1.00	0.500

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070812-01	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-MW-14B-071415	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG531477	**Analyst:**	EPT	**Run Date:**	07/17/2015 02:04
Collect Date:	07/14/2015 15:26	**Dilution:**	1	**File ID:**	TC07162015.037
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	0.578	J	1.00	0.500
Total Organic Carbon Rep1			U	1.00	0.500
Total Organic Carbon Rep2		0.540	J	1.00	0.500
Total Organic Carbon Rep3		0.570	J	1.00	0.500
Total Organic Carbon Rep4		1.02		1.00	0.500

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070812-02	**PrePrep Method:**	N/A	**Instrument:**	HPMS17
Client ID:	FTB034-GM-MW-14A-071415	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	05/18/2015 14:34
Workgroup #:	WG531929	**Analyst:**	TMB/ JDS	**Run Date:**	07/20/2015 20:33
Collect Date:	07/14/2015 14:26	**Dilution:**	1	**File ID:**	17M013835
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	113	70	120	
4-Bromofluorobenzene	104	75	120	
Dibromofluoromethane	98.1	85	115	
Toluene-d8	102	85	120	

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070812-02	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-14A-071415	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531312	**Analyst:**	JDS	**Run Date:**	07/15/2015 14:30
Collect Date:	07/14/2015 14:26	**Dilution:**	1	**File ID:**	16G48087
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8		U	5.00	1.00
Ethene	74-85-1		U	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

Certificate of Analysis

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070812-02	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-14A-071415	**Prep Method:**	3015	**Prep Date:**	07/16/2015 13:21
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG531851	**Analyst:**	KHR	**Run Date:**	07/23/2015 11:31
Collect Date:	07/14/2015 14:26	**Dilution:**	1	**File ID:**	P2.072315.113116
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Magnesium, Total	7439-95-4	21.1		0.500	0.250
Potassium, Total	7440-09-7	1.73		1.00	0.500
Sodium, Total	7440-23-5	40.8		0.500	0.250

Sample #:	L15070812-02	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-14A-071415	**Prep Method:**	3015	**Prep Date:**	07/16/2015 13:21
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG531851	**Analyst:**	KHR	**Run Date:**	07/23/2015 12:56
Collect Date:	07/14/2015 14:26	**Dilution:**	10	**File ID:**	P2.072315.125603
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	86.1		5.00	2.50

Sample #:	L15070812-02	**PrePrep Method:**	N/A	**Instrument:**	IC2
Client ID:	FTB034-GM-MW-14A-071415	**Prep Method:**	9056	**Prep Date:**	07/15/2015 13:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	02/17/2015 19:43
Workgroup #:	WG531408	**Analyst:**	ALS	**Run Date:**	07/15/2015 17:37
Collect Date:	07/14/2015 14:26	**Dilution:**	1	**File ID:**	I2_071515-12
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8	0.232	J	0.600	0.100
Sulfate	14808-79-8	19.6		1.00	0.500

J	Estimated value ; the analyte concentration was less than the LOQ.

Certificate of Analysis

Sample #:	L15070812-02	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-MW-14A-071415	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG531477	**Analyst:**	EPT	**Run Date:**	07/17/2015 03:07
Collect Date:	07/14/2015 14:26	**Dilution:**	1	**File ID:**	TC07162015.040
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	0.570	J	1.00	0.500
Total Organic Carbon Rep1			U	1.00	0.500
Total Organic Carbon Rep2		0.549	J	1.00	0.500
Total Organic Carbon Rep3		0.679	J	1.00	0.500
Total Organic Carbon Rep4		0.614	J	1.00	0.500

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070812-03	**PrePrep Method:**	N/A	**Instrument:**	HPMS17
Client ID:	FTB034-GM-MW-25-071415	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	05/18/2015 14:34
Workgroup #:	WG532514	**Analyst:**	ADC	**Run Date:**	07/24/2015 16:42
Collect Date:	07/14/2015 13:11	**Dilution:**	10	**File ID:**	17M013926
Sample Tag:	DL03	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	10.0	2.50
1,1,1-Trichloroethane	71-55-6		U	10.0	2.50
1,1,2,2-Tetrachloroethane	79-34-5		U	10.0	2.00
1,1,2-Trichloroethane	79-00-5	19.7		10.0	2.50
1,1-Dichloroethane	75-34-3		U	10.0	1.25
1,1-Dichloroethene	75-35-4	6.48	J	10.0	5.00
1,1-Dichloropropene	563-58-6		U	10.0	2.50
1,2,3-Trichlorobenzene	87-61-6		U	10.0	1.50
1,2,3-Trichloropropane	96-18-4		U	10.0	5.00
1,2,4-Trichlorobenzene	120-82-1		U	10.0	2.00
1,2,4-Trimethylbenzene	95-63-6		U	10.0	2.50
1,2-Dibromo-3-chloropropane	96-12-8		U	20.0	10.0
1,2-Dibromoethane	106-93-4		U	10.0	2.50
1,2-Dichlorobenzene	95-50-1		U	10.0	1.25
1,2-Dichloroethane	107-06-2		U	10.0	2.50
1,2-Dichloropropane	78-87-5		U	10.0	2.00

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
1,3,5-Trimethylbenzene	108-67-8		U	10.0	2.50
1,3-Dichlorobenzene	541-73-1		U	10.0	2.50
1,4-Dichlorobenzene	106-46-7		U	10.0	1.25
1-Chlorohexane	544-10-5		U	10.0	1.25
2,2-Dichloropropane	594-20-7		U	10.0	2.50
2-Butanone	78-93-3		U	50.0	25.0
2-Chlorotoluene	95-49-8		U	10.0	1.25
2-Hexanone	591-78-6		U	50.0	25.0
4-Chlorotoluene	106-43-4		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	50.0	25.0
Acetone	67-64-1		U	50.0	25.0
Benzene	71-43-2		U	10.0	1.25
Bromobenzene	108-86-1		U	10.0	1.25
Bromochloromethane	74-97-5		U	10.0	2.00
Bromodichloromethane	75-27-4		U	10.0	2.50
Bromoform	75-25-2		U	10.0	5.00
Bromomethane	74-83-9		U	10.0	5.00
Carbon disulfide	75-15-0		U	10.0	5.00
Carbon tetrachloride	56-23-5		U	10.0	2.50
Chlorobenzene	108-90-7		U	10.0	1.25
Chloroethane	75-00-3		U	10.0	5.00
Chloroform	67-66-3		U	10.0	1.25
Chloromethane	74-87-3		U	10.0	5.00
cis-1,2-Dichloroethene	156-59-2	154		10.0	2.50
cis-1,3-Dichloropropene	10061-01-5		U	10.0	2.50
Chlorodibromomethane	124-48-1		U	10.0	2.50
Dichlorodifluoromethane	75-71-8		U	10.0	2.50
Ethylbenzene	100-41-4		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	10.0	2.50
Isopropylbenzene	98-82-8		U	10.0	2.50
Methylene chloride	75-09-2		U	10.0	2.50
Methyl t-butyl ether (MTBE)	1634-04-4		U	10.0	5.00
n-Butylbenzene	104-51-8		U	10.0	2.50
n-Propylbenzene	103-65-1		U	10.0	1.25
Naphthalene	91-20-3		U	10.0	2.00
p-Isopropyltoluene	99-87-6		U	10.0	2.50
sec-Butylbenzene	135-98-8		U	10.0	2.50
Styrene	100-42-5		U	10.0	1.25
tert-Butylbenzene	98-06-6		U	10.0	2.50

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Tetrachloroethene	127-18-4	16.4		10.0	2.50
Toluene	108-88-3		U	10.0	2.50
trans-1,2-Dichloroethene	156-60-5	8.87	J	10.0	2.50
trans-1,3-Dichloropropene	10061-02-6		U	10.0	5.00
Trichloroethene	79-01-6	2300		10.0	2.50
Trichlorofluoromethane	75-69-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	10.0	2.50
Xylenes	1330-20-7		U	10.0	5.00

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	110	70	120	
4-Bromofluorobenzene	101	75	120	
Dibromofluoromethane	97.7	85	115	
Toluene-d8	102	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070812-03	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-25-071415	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531312	**Analyst:**	JDS	**Run Date:**	07/15/2015 14:41
Collect Date:	07/14/2015 13:11	**Dilution:**	1	**File ID:**	16G48088
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8	6.23		5.00	1.00
Ethene	74-85-1		U	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070812-03	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-25-071415	**Prep Method:**	3015	**Prep Date:**	07/16/2015 13:21
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG531851	**Analyst:**	KHR	**Run Date:**	07/23/2015 11:34
Collect Date:	07/14/2015 13:11	**Dilution:**	1	**File ID:**	P2.072315.113440
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Magnesium, Total	7439-95-4	16.7		0.500	0.250
Potassium, Total	7440-09-7	1.35		1.00	0.500
Sodium, Total	7440-23-5	50.1		0.500	0.250

Certificate of Analysis

Sample #:	L15070812-03	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-25-071415	**Prep Method:**	3015	**Prep Date:**	07/16/2015 13:21
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG531851	**Analyst:**	KHR	**Run Date:**	07/23/2015 12:59
Collect Date:	07/14/2015 13:11	**Dilution:**	10	**File ID:**	P2.072315.125924
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	167		5.00	2.50

Sample #:	L15070812-03	**PrePrep Method:**	N/A	**Instrument:**	IC2
Client ID:	FTB034-GM-MW-25-071415	**Prep Method:**	9056	**Prep Date:**	07/15/2015 13:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	02/17/2015 19:43
Workgroup #:	WG531408	**Analyst:**	ALS	**Run Date:**	07/15/2015 17:55
Collect Date:	07/14/2015 13:11	**Dilution:**	1	**File ID:**	I2_071515-13
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8		U	0.600	0.100
Sulfate	14808-79-8	74.3		1.00	0.500

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070812-03	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-MW-25-071415	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG531477	**Analyst:**	EPT	**Run Date:**	07/17/2015 03:48
Collect Date:	07/14/2015 13:11	**Dilution:**	1	**File ID:**	TC07162015.041
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	1.55		1.00	0.500
Total Organic Carbon Rep1		0.830	J	1.00	0.500
Total Organic Carbon Rep2		1.37		1.00	0.500
Total Organic Carbon Rep3		1.17		1.00	0.500
Total Organic Carbon Rep4		2.81		1.00	0.500

J	Estimated value ; the analyte concentration was less than the LOQ.

Certificate of Analysis

Sample #:	L15070812-04	**PrePrep Method:**	N/A	**Instrument:**	HPMS17
Client ID:	FTB034-GM-MW-26-071415	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	05/18/2015 14:34
Workgroup #:	WG532514	**Analyst:**	ADC	**Run Date:**	07/24/2015 17:02
Collect Date:	07/14/2015 10:56	**Dilution:**	2.5	**File ID:**	17M013927
Sample Tag:	DL03	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	2.50	0.625
1,1,1-Trichloroethane	71-55-6		U	2.50	0.625
1,1,2,2-Tetrachloroethane	79-34-5		U	2.50	0.500
1,1,2-Trichloroethane	79-00-5	5.32		2.50	0.625
1,1-Dichloroethane	75-34-3		U	2.50	0.313
1,1-Dichloroethene	75-35-4	2.79		2.50	1.25
1,1-Dichloropropene	563-58-6		U	2.50	0.625
1,2,3-Trichlorobenzene	87-61-6		U	2.50	0.375
1,2,3-Trichloropropane	96-18-4		U	2.50	1.25
1,2,4-Trichlorobenzene	120-82-1		U	2.50	0.500
1,2,4-Trimethylbenzene	95-63-6		U	2.50	0.625
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	2.50
1,2-Dibromoethane	106-93-4		U	2.50	0.625
1,2-Dichlorobenzene	95-50-1		U	2.50	0.313
1,2-Dichloroethane	107-06-2		U	2.50	0.625
1,2-Dichloropropane	78-87-5		U	2.50	0.500
1,3,5-Trimethylbenzene	108-67-8		U	2.50	0.625
1,3-Dichlorobenzene	541-73-1		U	2.50	0.625
1,4-Dichlorobenzene	106-46-7		U	2.50	0.313
1-Chlorohexane	544-10-5		U	2.50	0.313
2,2-Dichloropropane	594-20-7		U	2.50	0.625
2-Butanone	78-93-3		U	12.5	6.25
2-Chlorotoluene	95-49-8		U	2.50	0.313
2-Hexanone	591-78-6		U	12.5	6.25
4-Chlorotoluene	106-43-4		U	2.50	0.625
4-Methyl-2-pentanone	108-10-1		U	12.5	6.25
Acetone	67-64-1		U	12.5	6.25
Benzene	71-43-2		U	2.50	0.313
Bromobenzene	108-86-1		U	2.50	0.313
Bromochloromethane	74-97-5		U	2.50	0.500
Bromodichloromethane	75-27-4		U	2.50	0.625
Bromoform	75-25-2		U	2.50	1.25
Bromomethane	74-83-9		U	2.50	1.25

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Carbon disulfide	75-15-0		U	2.50	1.25
Carbon tetrachloride	56-23-5		U	2.50	0.625
Chlorobenzene	108-90-7		U	2.50	0.313
Chloroethane	75-00-3		U	2.50	1.25
Chloroform	67-66-3		U	2.50	0.313
Chloromethane	74-87-3		U	2.50	1.25
cis-1,2-Dichloroethene	156-59-2	202		2.50	0.625
cis-1,3-Dichloropropene	10061-01-5		U	2.50	0.625
Chlorodibromomethane	124-48-1		U	2.50	0.625
Dichlorodifluoromethane	75-71-8		U	2.50	0.625
Ethylbenzene	100-41-4		U	2.50	0.625
Hexachlorobutadiene	87-68-3		U	2.50	0.625
Isopropylbenzene	98-82-8		U	2.50	0.625
Methylene chloride	75-09-2		U	2.50	0.625
Methyl t-butyl ether (MTBE)	1634-04-4		U	2.50	1.25
n-Butylbenzene	104-51-8		U	2.50	0.625
n-Propylbenzene	103-65-1		U	2.50	0.313
Naphthalene	91-20-3		U	2.50	0.500
p-Isopropyltoluene	99-87-6		U	2.50	0.625
sec-Butylbenzene	135-98-8		U	2.50	0.625
Styrene	100-42-5		U	2.50	0.313
tert-Butylbenzene	98-06-6		U	2.50	0.625
Tetrachloroethene	127-18-4	1.99	J	2.50	0.625
Toluene	108-88-3		U	2.50	0.625
trans-1,2-Dichloroethene	156-60-5	2.73		2.50	0.625
trans-1,3-Dichloropropene	10061-02-6		U	2.50	1.25
Trichloroethene	79-01-6	711		2.50	0.625
Trichlorofluoromethane	75-69-4		U	2.50	0.625
Vinyl chloride	75-01-4		U	2.50	0.625
Xylenes	1330-20-7		U	2.50	1.25

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	111	70	120	
4-Bromofluorobenzene	101	75	120	
Dibromofluoromethane	97.8	85	115	
Toluene-d8	103	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L15070812-04	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-26-071415	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531312	**Analyst:**	JDS	**Run Date:**	07/15/2015 14:53
Collect Date:	07/14/2015 10:56	**Dilution:**	1	**File ID:**	16G48089
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8	28.8		5.00	1.00
Ethene	74-85-1		U	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070812-04	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-26-071415	**Prep Method:**	3015	**Prep Date:**	07/16/2015 13:21
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG531851	**Analyst:**	KHR	**Run Date:**	07/23/2015 11:37
Collect Date:	07/14/2015 10:56	**Dilution:**	1	**File ID:**	P2.072315.113705
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Potassium, Total	7440-09-7	1.47		1.00	0.500
Sodium, Total	7440-23-5	55.7		0.500	0.250

Sample #:	L15070812-04	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-26-071415	**Prep Method:**	3015	**Prep Date:**	07/16/2015 13:21
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG531851	**Analyst:**	KHR	**Run Date:**	07/23/2015 13:01
Collect Date:	07/14/2015 10:56	**Dilution:**	20	**File ID:**	P2.072315.130148
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	349		10.0	5.00
Magnesium, Total	7439-95-4	31.9		10.0	5.00

Certificate of Analysis

Sample #:	L15070812-04	**PrePrep Method:**	N/A	**Instrument:**	IC2
Client ID:	FTB034-GM-MW-26-071415	**Prep Method:**	9056	**Prep Date:**	07/15/2015 13:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	02/17/2015 19:43
Workgroup #:	WG531408	**Analyst:**	ALS	**Run Date:**	07/15/2015 18:14
Collect Date:	07/14/2015 10:56	**Dilution:**	1	**File ID:**	I2_071515-14
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8		U	0.600	0.100
Sulfate	14808-79-8	15.0		1.00	0.500

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070812-04	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-MW-26-071415	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG531477	**Analyst:**	EPT	**Run Date:**	07/17/2015 08:34
Collect Date:	07/14/2015 10:56	**Dilution:**	10	**File ID:**	TC07162015.047
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	457		10.0	5.00
Total Organic Carbon Rep1		446		10.0	5.00
Total Organic Carbon Rep2		445		10.0	5.00
Total Organic Carbon Rep3		462		10.0	5.00
Total Organic Carbon Rep4		473		10.0	5.00

Sample #:	L15070812-05	**PrePrep Method:**	N/A	**Instrument:**	HPMS17
Client ID:	FTB034-GM-MW-15A-071415	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	05/18/2015 14:34
Workgroup #:	WG531929	**Analyst:**	TMB/ JDS	**Run Date:**	07/20/2015 22:12
Collect Date:	07/14/2015 09:31	**Dilution:**	1	**File ID:**	17M013840
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4	0.639	J	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6	1.27		1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2	0.653	J	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8	0.354	J	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3	182		5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1	9.25		5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	227		1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1	0.270	J	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5	0.814	J	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6	2.15		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4	2.39		1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	110	70	120	
4-Bromofluorobenzene	99.5	75	120	
Dibromofluoromethane	96.2	85	115	
Toluene-d8	103	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070812-05	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-15A-071415	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531312	**Analyst:**	JDS	**Run Date:**	07/15/2015 15:15
Collect Date:	07/14/2015 09:31	**Dilution:**	1	**File ID:**	16G48091
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Ethene	74-85-1		U	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L15070812-05	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-15A-071415	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531312	**Analyst:**	JDS	**Run Date:**	07/15/2015 16:42
Collect Date:	07/14/2015 09:31	**Dilution:**	10	**File ID:**	16G48093
Sample Tag:	DL01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8	2580		50.0	10.0

Sample #:	L15070812-05	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-15A-071415	**Prep Method:**	3015	**Prep Date:**	07/16/2015 13:21
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG531851	**Analyst:**	KHR	**Run Date:**	07/23/2015 11:39
Collect Date:	07/14/2015 09:31	**Dilution:**	1	**File ID:**	P2.072315.113928
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Magnesium, Total	7439-95-4	19.2		0.500	0.250
Potassium, Total	7440-09-7	1.13		1.00	0.500
Sodium, Total	7440-23-5	48.7		0.500	0.250

Sample #:	L15070812-05	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-15A-071415	**Prep Method:**	3015	**Prep Date:**	07/16/2015 13:21
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG531851	**Analyst:**	KHR	**Run Date:**	07/23/2015 13:04
Collect Date:	07/14/2015 09:31	**Dilution:**	20	**File ID:**	P2.072315.130415
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	197		10.0	5.00

Certificate of Analysis

Sample #:	L15070812-05	**PrePrep Method:**	N/A	**Instrument:**	IC2
Client ID:	FTB034-GM-MW-15A-071415	**Prep Method:**	9056	**Prep Date:**	07/15/2015 13:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	02/17/2015 19:43
Workgroup #:	WG531408	**Analyst:**	ALS	**Run Date:**	07/15/2015 19:08
Collect Date:	07/14/2015 09:31	**Dilution:**	1	**File ID:**	I2_071515-17
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8		U	0.600	0.100
Sulfate	14808-79-8	0.693	J	1.00	0.500

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070812-05	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-MW-15A-071415	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG531477	**Analyst:**	EPT	**Run Date:**	07/17/2015 05:27
Collect Date:	07/14/2015 09:31	**Dilution:**	1	**File ID:**	TC07162015.043
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	32.1		1.00	0.500
Total Organic Carbon Rep1		27.2		1.00	0.500
Total Organic Carbon Rep2		32.8		1.00	0.500
Total Organic Carbon Rep3		33.6		1.00	0.500
Total Organic Carbon Rep4		34.7		1.00	0.500

Sample #:	L15070812-06	**PrePrep Method:**	N/A	**Instrument:**	HPMS17
Client ID:	TRIP BLANK	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	05/18/2015 14:34
Workgroup #:	WG531929	**Analyst:**	TMB/ JDS	**Run Date:**	07/20/2015 19:53
Collect Date:	07/14/2015 00:01	**Dilution:**	1	**File ID:**	17M013833
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	113	70	120	
4-Bromofluorobenzene	101	75	120	
Dibromofluoromethane	97.0	85	115	
Toluene-d8	103	85	120	

U	Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070812
Blank File ID: 17M013821
Prep Date: 07/20/15 15:54
Analyzed Date: 07/20/15 15:54
Analyst: TMB/ JDS

Work Group: WG531929
Blank Sample ID: WG531929-01
Instrument ID: HPMS17
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531929-02	17M013822	07/20/15 16:14	01
TRIP BLANK	L15070812-06	17M013833	07/20/15 19:53	01
FTB034-GM-MW-14B-071415	L15070812-01	17M013834	07/20/15 20:13	01
FTB034-GM-MW-14A-071415	L15070812-02	17M013835	07/20/15 20:33	01
FTB034-GM-MW-15A-071415	L15070812-05	17M013840	07/20/15 22:12	01

Report Name: BLANK_SUMMARY
PDF File ID: 4299626
Report generated 07/29/2015 17:02

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070812
Blank File ID: 17M013911
Prep Date: 07/24/15 12:03
Analyzed Date: 07/24/15 12:03
Analyst: ADC

Work Group: WG532514
Blank Sample ID: WG532514-01
Instrument ID: HPMS17
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532514-02	17M013916	07/24/15 13:23	01
LCS2	WG532514-03	17M013917	07/24/15 13:43	01
FTB034-GM-MW-25-071415	L15070812-03	17M013926	07/24/15 16:42	DL03
FTB034-GM-MW-26-071415	L15070812-04	17M013927	07/24/15 17:02	DL03

Report Name: BLANK_SUMMARY
PDF File ID: 4299626
Report generated 07/29/2015 17:02

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070812
Blank File ID: 17M013943
Prep Date: 07/24/15 22:21
Analyzed Date: 07/24/15 22:21
Analyst: ADC

Work Group: WG532514
Blank Sample ID: WG532514-04
Instrument ID: HPMS17
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532514-02	17M013916	07/24/15 13:23	01
LCS2	WG532514-03	17M013917	07/24/15 13:43	01
FTB034-GM-MW-25-071415	L15070812-03	17M013926	07/24/15 16:42	DL03
FTB034-GM-MW-26-071415	L15070812-04	17M013927	07/24/15 17:02	DL03

Report Name: BLANK_SUMMARY
PDF File ID: 4299626
Report generated 07/29/2015 17:02

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070812 Prep Date: 07/20/15 15:54 Sample ID: WG531929-01
Instrument ID: HPMS17 Run Date: 07/20/15 15:54 Prep Method: 5030B/5030C/503
File ID: 17M013821 Analyst: TMB/ JDS Method: 8260B
Workgroup (AAB#): WG531929 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS17-18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	2.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1-Chlorohexane	0.125	1.00	0.125	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
2-Butanone	2.50	5.00	2.50	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
2-Hexanone	2.50	5.00	2.50	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	5.00	2.50	1	U
Acetone	2.50	5.00	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U

Report Name: BLANK
PDF ID: 4299627
29-JUL-2015 17:02

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070812 Prep Date: 07/20/15 15:54 Sample ID: WG531929-01
Instrument ID: HPMS17 Run Date: 07/20/15 15:54 Prep Method: 5030B/5030C/503
File ID: 17M013821 Analyst: TMB/ JDS Method: 8260B
Workgroup (AAB#): WG531929 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS17 - 18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U
Isopropylbenzene	0.250	1.00	0.250	1	U
Methylene chloride	0.250	1.00	0.250	1	U
Methyl t-butyl ether (MTBE)	0.500	1.00	0.500	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Naphthalene	0.200	1.00	0.200	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	113	70 - 120	PASS
4-Bromofluorobenzene	100	75 - 120	PASS
Dibromofluoromethane	95.4	85 - 115	PASS
Toluene-d8	101	85 - 120	PASS

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4299627
29-JUL-2015 17:02

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070812 Prep Date: 07/24/15 12:03 Sample ID: WG532514-01
Instrument ID: HPMS17 Run Date: 07/24/15 12:03 Prep Method: 5030B/5030C/503
File ID: 17M013911 Analyst: ADC Method: 8260B
Workgroup (AAB#): WG532514 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS17-18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	2.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1-Chlorohexane	0.125	1.00	0.125	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
2-Butanone	2.50	5.00	2.50	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
2-Hexanone	2.50	5.00	2.50	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	5.00	2.50	1	U
Acetone	2.50	5.00	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U

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METHOD BLANK REPORT

Login Number: L15070812 Prep Date: 07/24/15 12:03 Sample ID: WG532514-01
Instrument ID: HPMS17 Run Date: 07/24/15 12:03 Prep Method: 5030B/5030C/503
File ID: 17M013911 Analyst: ADC Method: 8260B
Workgroup (AAB#): WG532514 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS17-18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U
Isopropylbenzene	0.250	1.00	0.250	1	U
Methylene chloride	0.250	1.00	0.250	1	U
Methyl t-butyl ether (MTBE)	0.500	1.00	0.500	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Naphthalene	0.200	1.00	0.200	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	109	70 - 120	PASS
4-Bromofluorobenzene	98.1	75 - 120	PASS
Dibromofluoromethane	95.0	85 - 115	PASS
Toluene-d8	100	85 - 120	PASS

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
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Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070812 Prep Date: 07/24/15 22:21 Sample ID: WG532514-04
Instrument ID: HPMS17 Run Date: 07/24/15 22:21 Prep Method: 5030B/5030C/503
File ID: 17M013943 Analyst: ADC Method: 8260B
Workgroup (AAB#): WG532514 Matrix: Water 2 Units: ug/L
Contract #: Cal ID: HPMS17-18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.751	1	*
1,2-Dibromo-3-chloropropane	1.00	2.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1-Chlorohexane	0.125	1.00	0.125	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
2-Butanone	2.50	5.00	2.50	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
2-Hexanone	2.50	5.00	2.50	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	5.00	2.50	1	U
Acetone	2.50	5.00	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U

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Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070812 Prep Date: 07/24/15 22:21 Sample ID: WG532514-04
Instrument ID: HPMS17 Run Date: 07/24/15 22:21 Prep Method: 5030B/5030C/503
File ID: 17M013943 Analyst: ADC Method: 8260B
Workgroup (AAB#): WG532514 Matrix: Water 2 Units: ug/L
Contract #: Cal ID: HPMS17-18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U
Isopropylbenzene	0.250	1.00	0.250	1	U
Methylene chloride	0.250	1.00	0.250	1	U
Methyl t-butyl ether (MTBE)	0.500	1.00	0.500	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Naphthalene	0.200	1.00	0.258	1	J
p-Isopropyltoluene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.437	1	J
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes	0.500	1.00	1.33	1	*

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	102	70 - 120	PASS
4-Bromofluorobenzene	109	75 - 120	PASS
Dibromofluoromethane	90.0	85 - 115	PASS
Toluene-d8	103	85 - 120	PASS

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 4299627
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Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070812 Run Date: 07/20/2015 Sample ID: WG531929-02
Instrument ID: HPMS17 Run Time: 16:14 Prep Method: 5030B/5030C/503
File ID: 17M013822 Analyst: TMB/ JDS Method: 8260B
Workgroup (AAB#): WG531929 Matrix: Water Units: ug/L
QC Key: DOD4 Lot#: STD71570 Cal ID: HPMS17-18-MAY-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
1,1,1,2-Tetrachloroethane	20.0	19.1	95.4	80 - 130	
1,1,1-Trichloroethane	20.0	20.3	101	65 - 130	
1,1,2,2-Tetrachloroethane	20.0	20.2	101	65 - 130	
1,1,2-Trichloroethane	20.0	20.8	104	75 - 125	
1,1-Dichloroethane	20.0	20.5	103	70 - 135	
1,1-Dichloroethene	20.0	17.7	88.4	70 - 130	
1,1-Dichloropropene	20.0	19.6	97.9	75 - 130	
1,2,3-Trichlorobenzene	20.0	19.7	98.7	55 - 140	
1,2,3-Trichloropropane	20.0	22.6	113	75 - 125	
1,2,4-Trichlorobenzene	20.0	19.3	96.7	65 - 135	
1,2,4-Trimethylbenzene	20.0	18.4	91.9	75 - 130	
1,2-Dibromo-3-chloropropane	20.0	24.2	121	50 - 130	
1,2-Dibromoethane	20.0	21.7	109	80 - 120	
1,2-Dichlorobenzene	20.0	19.2	95.9	70 - 120	
1,2-Dichloroethane	20.0	22.0	110	70 - 130	
1,2-Dichloropropane	20.0	20.1	101	75 - 125	
1,3,5-Trimethylbenzene	20.0	18.6	93.1	75 - 130	
1,3-Dichlorobenzene	20.0	19.0	95.1	75 - 125	
1,4-Dichlorobenzene	20.0	18.4	91.9	75 - 125	
1-Chlorohexane	20.0	21.7	108	80 - 127	
2,2-Dichloropropane	20.0	21.6	108	70 - 135	
2-Butanone	20.0	30.3	151	30 - 150	*
2-Chlorotoluene	20.0	19.2	96.2	75 - 125	
2-Hexanone	20.0	28.8	144	55 - 130	*
4-Chlorotoluene	20.0	19.6	97.8	75 - 130	
4-Methyl-2-pentanone	20.0	25.0	125	60 - 135	
Acetone	20.0	31.4	157	40 - 140	*
Benzene	20.0	19.3	96.4	80 - 120	
Bromobenzene	20.0	18.6	93.2	75 - 125	
Bromochloromethane	20.0	20.7	103	65 - 130	
Bromodichloromethane	20.0	20.0	100	75 - 120	
Bromoform	20.0	23.7	119	70 - 130	
Bromomethane	20.0	16.6	83.1	30 - 145	
Carbon disulfide	20.0	10.4	51.8	35 - 160	
Carbon tetrachloride	20.0	20.7	103	65 - 140	
Chlorobenzene	20.0	19.8	99.0	80 - 120	
Chloroethane	20.0	17.2	85.8	60 - 135	
Chloroform	20.0	21.2	106	65 - 135	
Chloromethane	20.0	19.7	98.6	40 - 125	
cis-1,2-Dichloroethene	20.0	19.1	95.7	70 - 125	
cis-1,3-Dichloropropene	20.0	21.0	105	70 - 130	

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Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070812 Run Date: 07/20/2015 Sample ID: WG531929-02
Instrument ID: HPMS17 Run Time: 16:14 Prep Method: 5030B/5030C/503
File ID: 17M013822 Analyst: TMB/ JDS Method: 8260B
Workgroup (AAB#): WG531929 Matrix: Water Units: ug/L
QC Key: DOD4 Lot#: STD71570 Cal ID: HPMS17-18-MAY-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Chlorodibromomethane	20.0	20.8	104	60 - 135	
Dichlorodifluoromethane	20.0	17.8	88.9	30 - 155	
Ethylbenzene	20.0	19.3	96.5	75 - 125	
Hexachlorobutadiene	20.0	16.6	82.8	50 - 140	
Isopropylbenzene	20.0	19.9	99.6	75 - 125	
Methylene chloride	20.0	19.0	95.2	55 - 140	
Methyl t-butyl ether (MTBE)	20.0	24.0	120	65 - 125	
n-Butylbenzene	20.0	19.2	96.1	70 - 135	
n-Propylbenzene	20.0	19.8	99.0	70 - 130	
Naphthalene	20.0	21.5	107	55 - 140	
p-Isopropyltoluene	20.0	18.1	90.4	75 - 130	
sec-Butylbenzene	20.0	18.7	93.6	70 - 125	
Styrene	20.0	19.8	99.0	65 - 135	
tert-Butylbenzene	20.0	18.4	92.2	70 - 130	
Tetrachloroethene	20.0	19.6	97.8	45 - 150	
Toluene	20.0	19.8	98.8	75 - 120	
trans-1,2-Dichloroethene	20.0	18.8	94.0	60 - 140	
trans-1,3-Dichloropropene	20.0	21.6	108	55 - 140	
Trichloroethene	20.0	18.9	94.5	70 - 125	
Trichlorofluoromethane	20.0	17.5	87.7	60 - 145	
Vinyl chloride	20.0	19.4	97.1	50 - 145	
Xylenes	60.0	59.5	99.1	80 - 120	

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	114	70 - 120	PASS
4-Bromofluorobenzene	101	75 - 120	PASS
Dibromofluoromethane	100	85 - 115	PASS
Toluene-d8	104	85 - 120	PASS

* EXCEEDS %REC LIMIT

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Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070812 Run Date: 07/24/2015 Sample ID: WG532514-02
Instrument ID: HPMS17 Run Time: 13:23 Prep Method: 5030B/5030C/503
File ID: 17M013916 Analyst: ADC Method: 8260B
Workgroup (AAB#): WG532514 Matrix: Water Units: ug/L
QC Key: DOD4 Lot#: STD71570 Cal ID: HPMS17-18-MAY-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
1,1,1,2-Tetrachloroethane	20.0	18.7	93.5	80 - 130	
1,1,1-Trichloroethane	20.0	19.9	99.5	65 - 130	
1,1,2,2-Tetrachloroethane	20.0	19.0	94.8	65 - 130	
1,1,2-Trichloroethane	20.0	20.2	101	75 - 125	
1,1-Dichloroethane	20.0	20.1	101	70 - 135	
1,1-Dichloroethene	20.0	17.5	87.7	70 - 130	
1,1-Dichloropropene	20.0	19.5	97.7	75 - 130	
1,2,3-Trichlorobenzene	20.0	19.0	95.0	55 - 140	
1,2,3-Trichloropropane	20.0	21.4	107	75 - 125	
1,2,4-Trichlorobenzene	20.0	18.7	93.3	65 - 135	
1,2,4-Trimethylbenzene	20.0	17.8	89.2	75 - 130	
1,2-Dibromo-3-chloropropane	20.0	22.1	110	50 - 130	
1,2-Dibromoethane	20.0	21.1	106	80 - 120	
1,2-Dichlorobenzene	20.0	18.5	92.3	70 - 120	
1,2-Dichloroethane	20.0	21.0	105	70 - 130	
1,2-Dichloropropane	20.0	19.6	98.0	75 - 125	
1,3,5-Trimethylbenzene	20.0	18.2	90.8	75 - 130	
1,3-Dichlorobenzene	20.0	18.3	91.6	75 - 125	
1,4-Dichlorobenzene	20.0	17.7	88.4	75 - 125	
1-Chlorohexane	20.0	20.9	105	80 - 127	
2,2-Dichloropropane	20.0	21.1	106	70 - 135	
2-Butanone	20.0	26.3	131	30 - 150	
2-Chlorotoluene	20.0	18.7	93.3	75 - 125	
2-Hexanone	20.0	26.3	131	55 - 130	*
4-Chlorotoluene	20.0	19.0	95.0	75 - 130	
4-Methyl-2-pentanone	20.0	22.8	114	60 - 135	
Acetone	20.0	25.9	130	40 - 140	
Benzene	20.0	18.8	93.9	80 - 120	
Bromobenzene	20.0	18.0	90.2	75 - 125	
Bromochloromethane	20.0	20.2	101	65 - 130	
Bromodichloromethane	20.0	19.6	97.8	75 - 120	
Bromoform	20.0	22.7	114	70 - 130	
Bromomethane	20.0	17.4	87.0	30 - 145	
Carbon disulfide	20.0	9.63	48.2	35 - 160	
Carbon tetrachloride	20.0	20.2	101	65 - 140	
Chlorobenzene	20.0	19.5	97.4	80 - 120	
Chloroethane	20.0	17.7	88.4	60 - 135	
Chloroform	20.0	20.7	103	65 - 135	
Chloromethane	20.0	23.3	117	40 - 125	
cis-1,2-Dichloroethene	20.0	19.0	94.8	70 - 125	
cis-1,3-Dichloropropene	20.0	20.7	103	70 - 130	

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Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070812 Run Date: 07/24/2015 Sample ID: WG532514-02
Instrument ID: HPMS17 Run Time: 13:23 Prep Method: 5030B/5030C/503
File ID: 17M013916 Analyst: ADC Method: 8260B
Workgroup (AAB#): WG532514 Matrix: Water Units: ug/L
QC Key: DOD4 Lot#: STD71570 Cal ID: HPMS17 - 18-MAY-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Chlorodibromomethane	20.0	20.5	102	60 - 135	
Dichlorodifluoromethane	20.0	27.3	137	30 - 155	
Ethylbenzene	20.0	18.9	94.5	75 - 125	
Hexachlorobutadiene	20.0	16.4	81.9	50 - 140	
Isopropylbenzene	20.0	19.5	97.5	75 - 125	
Methylene chloride	20.0	18.7	93.4	55 - 140	
Methyl t-butyl ether (MTBE)	20.0	23.3	116	65 - 125	
n-Butylbenzene	20.0	18.7	93.4	70 - 135	
n-Propylbenzene	20.0	19.0	95.0	70 - 130	
Naphthalene	20.0	20.3	102	55 - 140	
p-Isopropyltoluene	20.0	17.5	87.3	75 - 130	
sec-Butylbenzene	20.0	18.1	90.6	70 - 125	
Styrene	20.0	19.2	95.8	65 - 135	
tert-Butylbenzene	20.0	17.9	89.5	70 - 130	
Tetrachloroethene	20.0	19.2	95.9	45 - 150	
Toluene	20.0	19.3	96.7	75 - 120	
trans-1,2-Dichloroethene	20.0	18.5	92.4	60 - 140	
trans-1,3-Dichloropropene	20.0	21.2	106	55 - 140	
Trichloroethene	20.0	18.5	92.6	70 - 125	
Trichlorofluoromethane	20.0	19.2	95.9	60 - 145	
Vinyl chloride	20.0	21.3	106	50 - 145	
Xylenes	60.0	58.4	97.3	80 - 120	

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	108	70 - 120	PASS
4-Bromofluorobenzene	97.9	75 - 120	PASS
Dibromofluoromethane	96.8	85 - 115	PASS
Toluene-d8	101	85 - 120	PASS

* EXCEEDS %REC LIMIT

LCS - Modified 03/06/2008
PDF File ID: 4294366
Report generated: 07/29/2015 17:02

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070812 Analyst: ADC Prep Method: 5030B/5030C/503
Instrument ID: HPMS17 Matrix: Water Method: 8260B
Workgroup (AAB#): WG532514 Units: ug/L
QC Key: DOD4 Lot #: STD71570

Sample ID: WG532514-02 LCS File ID: 17M013916 Run Date: 07/24/2015 13:23
Sample ID: WG532514-03 LCS2 File ID: 17M013917 Run Date: 07/24/2015 13:43

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
1,1,1,2-Tetrachloroethane	20.0	18.7	93.5	20.0	19.4	97.0	3.61	80 - 130	30	
1,1,1-Trichloroethane	20.0	19.9	99.5	20.0	20.9	105	5.17	65 - 130	30	
1,1,2,2-Tetrachloroethane	20.0	19.0	94.8	20.0	19.4	97.0	2.27	65 - 130	30	
1,1,2-Trichloroethane	20.0	20.2	101	20.0	20.8	104	2.78	75 - 125	30	
1,1-Dichloroethane	20.0	20.1	101	20.0	20.9	105	3.92	70 - 135	30	
1,1-Dichloroethene	20.0	17.5	87.7	20.0	18.4	92.0	4.79	70 - 130	30	
1,1-Dichloropropene	20.0	19.5	97.7	20.0	20.4	102	4.15	75 - 130	30	
1,2,3-Trichlorobenzene	20.0	19.0	95.0	20.0	19.5	97.4	2.50	55 - 140	30	
1,2,3-Trichloropropane	20.0	21.4	107	20.0	22.0	110	2.62	75 - 125	30	
1,2,4-Trichlorobenzene	20.0	18.7	93.3	20.0	19.3	96.5	3.31	65 - 135	30	
1,2,4-Trimethylbenzene	20.0	17.8	89.2	20.0	18.9	94.7	6.00	75 - 130	30	
1,2-Dibromo-3-chloropropane	20.0	22.1	110	20.0	23.1	116	4.66	50 - 130	30	
1,2-Dibromoethane	20.0	21.1	106	20.0	21.9	109	3.51	80 - 120	30	
1,2-Dichlorobenzene	20.0	18.5	92.3	20.0	19.3	96.5	4.46	70 - 120	30	
1,2-Dichloroethane	20.0	21.0	105	20.0	21.9	110	4.42	70 - 130	30	
1,2-Dichloropropane	20.0	19.6	98.0	20.0	20.3	102	3.58	75 - 125	30	
1,3,5-Trimethylbenzene	20.0	18.2	90.8	20.0	19.2	95.9	5.48	75 - 130	30	
1,3-Dichlorobenzene	20.0	18.3	91.6	20.0	19.3	96.6	5.34	75 - 125	30	
1,4-Dichlorobenzene	20.0	17.7	88.4	20.0	18.6	92.8	4.87	75 - 125	30	
1-Chlorohexane	20.0	20.9	105	20.0	21.8	109	4.31	80 - 127	30	
2,2-Dichloropropane	20.0	21.1	106	20.0	21.9	109	3.55	70 - 135	30	
2-Butanone	20.0	26.3	131	20.0	27.1	135	2.89	30 - 150	30	
2-Chlorotoluene	20.0	18.7	93.3	20.0	19.8	99.2	6.20	75 - 125	30	
2-Hexanone	20.0	26.3	131	20.0	27.0	135	2.88	55 - 130	30	*
4-Chlorotoluene	20.0	19.0	95.0	20.0	20.1	100	5.54	75 - 130	30	
4-Methyl-2-pentanone	20.0	22.8	114	20.0	23.4	117	2.53	60 - 135	30	
Acetone	20.0	25.9	130	20.0	27.7	138	6.57	40 - 140	30	
Benzene	20.0	18.8	93.9	20.0	19.6	98.0	4.20	80 - 120	30	
Bromobenzene	20.0	18.0	90.2	20.0	19.2	95.9	6.06	75 - 125	30	
Bromochloromethane	20.0	20.2	101	20.0	21.0	105	3.52	65 - 130	30	
Bromodichloromethane	20.0	19.6	97.8	20.0	20.3	101	3.51	75 - 120	30	
Bromoform	20.0	22.7	114	20.0	23.5	117	3.10	70 - 130	30	
Bromomethane	20.0	17.4	87.0	20.0	18.8	94.2	7.96	30 - 145	30	
Carbon disulfide	20.0	9.63	48.2	20.0	10.1	50.7	5.07	35 - 160	30	
Carbon tetrachloride	20.0	20.2	101	20.0	21.3	107	5.18	65 - 140	30	
Chlorobenzene	20.0	19.5	97.4	20.0	20.2	101	3.64	80 - 120	30	
Chloroethane	20.0	17.7	88.4	20.0	18.4	92.0	3.95	60 - 135	30	
Chloroform	20.0	20.7	103	20.0	21.5	107	3.71	65 - 135	30	
Chloromethane	20.0	23.3	117	20.0	24.2	121	3.71	40 - 125	30	
cis-1,2-Dichloroethene	20.0	19.0	94.8	20.0	19.7	98.3	3.68	70 - 125	30	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4294324
Report generated: 07/29/2015 17:02

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070812 Analyst: ADC Prep Method: 5030B/5030C/503
Instrument ID: HPMS17 Matrix: Water Method: 8260B
Workgroup (AAB#): WG532514 Units: ug/L
QC Key: DOD4 Lot #: STD71570

Sample ID: WG532514-02 LCS File ID: 17M013916 Run Date: 07/24/2015 13:23
Sample ID: WG532514-03 LCS2 File ID: 17M013917 Run Date: 07/24/2015 13:43

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
cis-1,3-Dichloropropene	20.0	20.7	103	20.0	21.5	108	3.89	70 - 130	30	
Chlorodibromomethane	20.0	20.5	102	20.0	20.9	104	2.08	60 - 135	30	
Dichlorodifluoromethane	20.0	27.3	137	20.0	28.4	142	3.91	30 - 155	30	
Ethylbenzene	20.0	18.9	94.5	20.0	19.6	97.9	3.56	75 - 125	30	
Hexachlorobutadiene	20.0	16.4	81.9	20.0	17.3	86.3	5.24	50 - 140	30	
Isopropylbenzene	20.0	19.5	97.5	20.0	20.3	102	4.16	75 - 125	30	
Methyl t-butyl ether (MTBE)	20.0	23.3	116	20.0	24.0	120	3.01	65 - 125	30	
Methylene chloride	20.0	18.7	93.4	20.0	19.3	96.7	3.56	55 - 140	30	
n-Butylbenzene	20.0	18.7	93.4	20.0	19.8	98.8	5.72	70 - 135	30	
n-Propylbenzene	20.0	19.0	95.0	20.0	20.2	101	6.24	70 - 130	30	
Naphthalene	20.0	20.3	102	20.0	20.9	105	2.88	55 - 140	30	
p-Isopropyltoluene	20.0	17.5	87.3	20.0	18.6	93.1	6.42	75 - 130	30	
sec-Butylbenzene	20.0	18.1	90.6	20.0	19.3	96.5	6.27	70 - 125	30	
Styrene	20.0	19.2	95.8	20.0	19.8	99.0	3.27	65 - 135	30	
tert-Butylbenzene	20.0	17.9	89.5	20.0	19.1	95.3	6.33	70 - 130	30	
Tetrachloroethene	20.0	19.2	95.9	20.0	20.0	100	4.24	45 - 150	30	
Toluene	20.0	19.3	96.7	20.0	20.2	101	4.24	75 - 120	30	
trans-1,2-Dichloroethene	20.0	18.5	92.4	20.0	19.3	96.5	4.32	60 - 140	30	
trans-1,3-Dichloropropene	20.0	21.2	106	20.0	21.8	109	2.69	55 - 140	30	
Trichloroethene	20.0	18.5	92.6	20.0	19.7	98.3	5.92	70 - 125	30	
Trichlorofluoromethane	20.0	19.2	95.9	20.0	21.0	105	8.91	60 - 145	30	
Vinyl chloride	20.0	21.3	106	20.0	22.3	112	4.82	50 - 145	30	
Xylenes	60.0	58.4	97.3	60.0	60.9	101	4.17	80 - 120	30	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	108	108	70 - 120	PASS
Dibromofluoromethane	96.8	96.8	85 - 115	PASS
4-Bromofluorobenzene	97.9	101	75 - 120	PASS
Toluene-d8	101	101	85 - 120	PASS

* EXCEEDS %REC LIMIT

\# EXCEEDS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4294324
Report generated: 07/29/2015 17:02

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070812
Blank File ID: 16G48080
Prep Date: 07/15/15 11:25
Analyzed Date: 07/15/15 11:25
Analyst: JDS

Work Group: WG531312
Blank Sample ID: WG531312-01
Instrument ID: HP16
Method: RSK175

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531312-02	16G48081	07/15/15 11:36	01
LCS2	WG531312-03	16G48082	07/15/15 11:47	01
FTB034-GM-MW-14B-071415	L15070812-01	16G48086	07/15/15 14:18	01
FTB034-GM-MW-14A-071415	L15070812-02	16G48087	07/15/15 14:30	01
FTB034-GM-MW-25-071415	L15070812-03	16G48088	07/15/15 14:41	01
FTB034-GM-MW-26-071415	L15070812-04	16G48089	07/15/15 14:53	01
FTB034-GM-MW-15A-071415	L15070812-05	16G48091	07/15/15 15:15	01
FTB034-GM-MW-15A-071415	L15070812-05	16G48093	07/15/15 16:42	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 4286671
Report generated 07/17/2015 11:06

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070812 Prep Date: 07/15/15 11:25 Sample ID: WG531312-01
Instrument ID: HP16 Run Date: 07/15/15 11:25 Prep Method: 5021
File ID: 16G48080 Analyst: JDS Method: RSK175
Workgroup (AAB#): WG531312 Matrix: Water Units: ug/L
Contract #: Cal ID: HP16 - 03-MAR-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Methane	1.00	5.00	1.00	1	U
Ethene	1.00	5.00	1.00	1	U
Ethane	1.00	5.00	1.00	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 4286672
17-JUL-2015 11:06

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070812 Analyst: JDS Prep Method: 5021
Instrument ID: HP16 Matrix: Water Method: RSK175
Workgroup (AAB#): WG531312 Units: ug/L
QC Key: DOD4 Lot #: STD68250

Sample ID: WG531312-02 LCS File ID: 16G48081 Run Date: 07/15/2015 11:36
Sample ID: WG531312-03 LCS2 File ID: 16G48082 Run Date: 07/15/2015 11:47

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Methane	114	114	99.4	114	111	97.4	2.09	85 - 115	20	
Ethene	200	199	99.5	200	193	96.4	3.17	85 - 115	20	
Ethane	214	206	96.3	214	199	93.1	3.28	85 - 115	20	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4286673
Report generated: 07/17/2015 11:06

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070812
Blank File ID: P2.072315.112300
Prep Date: 07/16/15 13:21
Analyzed Date: 07/23/15 11:23
Analyst: KHR

Work Group: WG531851
Blank Sample ID: WG531534-02
Instrument ID: PE-ICP2
Method: 6010C

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531534-03	P2.072115.102701	07/21/15 10:27	01
LCS	WG531534-03	P2.072315.112623	07/23/15 11:26	02
FTB034-GM-MW-14B-071415	L15070812-01	P2.072315.112850	07/23/15 11:28	01
FTB034-GM-MW-14A-071415	L15070812-02	P2.072315.113116	07/23/15 11:31	01
FTB034-GM-MW-25-071415	L15070812-03	P2.072315.113440	07/23/15 11:34	01
FTB034-GM-MW-26-071415	L15070812-04	P2.072315.113705	07/23/15 11:37	01
FTB034-GM-MW-15A-071415	L15070812-05	P2.072315.113928	07/23/15 11:39	01
FTB034-GM-MW-14B-071415	L15070812-01	P2.072315.125338	07/23/15 12:53	DL01
FTB034-GM-MW-14A-071415	L15070812-02	P2.072315.125603	07/23/15 12:56	DL01
FTB034-GM-MW-25-071415	L15070812-03	P2.072315.125924	07/23/15 12:59	DL01
FTB034-GM-MW-26-071415	L15070812-04	P2.072315.130148	07/23/15 13:01	DL01
FTB034-GM-MW-15A-071415	L15070812-05	P2.072315.130415	07/23/15 13:04	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 4298929
Report generated 07/23/2015 14:29

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070812 Prep Date: 07/16/15 13:21 Sample ID: WG531534-02
Instrument ID: PE-ICP2 Run Date: 07/23/15 11:23 Prep Method: 3015
File ID: P2.072315.112300 Analyst: KHR Method: 6010C
Workgroup (AAB#): WG531851 Matrix: Water Units: mg/L
Contract #: Cal ID: PE-ICP - 23-JUL-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Calcium, Total	0.250	0.500	0.250	1	U
Magnesium, Total	0.250	0.500	0.250	1	U
Potassium, Total	0.500	1.00	0.500	1	U
Sodium, Total	0.250	0.500	0.250	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4298930
23-JUL-2015 14:29

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070812 Run Date: 07/23/2015 Sample ID: WG531534-03
Instrument ID: PE-ICP2 Run Time: 11:26 Prep Method: 3015
File ID: P2.072315.112623 Analyst: KHR Method: 6010C
Workgroup (AAB#): WG531851 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD71485 Cal ID: PE-ICP-23-JUL-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Calcium, Total	6.25	6.32	101	80 - 120	
Magnesium, Total	6.25	6.47	104	80 - 120	
Potassium, Total	31.3	32.3	103	80 - 120	
Sodium, Total	31.3	32.7	105	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 4298931
Report generated: 07/23/2015 14:29

Microbac Laboratories Inc.
MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum: L15070812 Cal ID: PE-ICP2- Worknum: WG531851
Instrument ID: PE-ICP2 Contract #: Method: 6010C
Parent ID: WG531534-01 File ID: P2.072315.123225 Dil: 1 Matrix: WATER
Sample ID: WG531534-04 MS File ID: P2.072315.123449 Dil: 1 Units: mg/L
Sample ID: WG531534-05 MSD File ID: P2.072315.123713 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Calcium	172	6.25	175	48.5	6.25	181	147	3.47	80 - 120	20	*
Magnesium	56.0	6.25	61.8	92.2	6.25	63.0	111	1.91	80 - 120	20	
Potassium	38.0	31.3	70.3	103	31.3	70.9	105	0.878	80 - 120	20	
Sodium	112	31.3	138	83.7	31.3	143	100	3.66	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 05/26/2011
PDF File ID: 4298932
Report generated 07/23/2015 14:30

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070812
Blank File ID: I2_071515-05
Prep Date: 07/15/15 13:00
Analyzed Date: 07/15/15 15:30
Analyst: ALS

Work Group: WG531408
Blank Sample ID: WG531408-01
Instrument ID: IC2
Method: 9056

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531408-02	I2_071515-06	07/15/15 15:48	01
DUP	WG531408-04	I2_071515-08	07/15/15 16:24	01
FTB034-GM-MW-14B-071415	L15070812-01	I2_071515-11	07/15/15 17:19	01
FTB034-GM-MW-14A-071415	L15070812-02	I2_071515-12	07/15/15 17:37	01
FTB034-GM-MW-25-071415	L15070812-03	I2_071515-13	07/15/15 17:55	01
FTB034-GM-MW-26-071415	L15070812-04	I2_071515-14	07/15/15 18:14	01
FTB034-GM-MW-15A-071415	L15070812-05	I2_071515-17	07/15/15 19:08	01

Report Name: BLANK_SUMMARY
PDF File ID: 4287068
Report generated 07/16/2015 15:38

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070812 Prep Date: 07/15/15 13:00 Sample ID: WG531408-01
Instrument ID: IC2 Run Date: 07/15/15 15:30 Prep Method: 9056
File ID: I2 071515-05 Analyst: ALS Method: 9056
Workgroup (AAB#): WG531408 Matrix: Water Units: mg/L
Contract #: Cal ID: IC2 - 17-FEB-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Nitrate	0.100	0.600	0.100	1	U
Sulfate	0.500	1.00	0.500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4287069
16-JUL-2015 15:38

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070812 Run Date: 07/15/2015 Sample ID: WG531408-02
Instrument ID: IC2 Run Time: 15:48 Prep Method: 9056
File ID: I2 071515-06 Analyst: ALS Method: 9056
Workgroup (AAB#): WG531408 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD69216 Cal ID: IC2 - 17-FEB-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrate	5.42	5.57	103	90 - 110	
Sulfate	40.0	42.1	105	90 - 110	

LCS - Modified 03/06/2008
PDF File ID: 4287070
Report generated: 07/16/2015 15:38

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070812
Blank File ID: TC07162015.033
Prep Date: 07/16/15 23:10
Analyzed Date: 07/16/15 23:10
Analyst: EPT

Work Group: WG531477
Blank Sample ID: WG531477-01
Instrument ID: TOC-VWP
Method: 9060A

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531477-02	TC07162015.034	07/16/15 23:46	01
LCS2	WG531477-03	TC07162015.035	07/17/15 00:36	01
FTB034-GM-MW-14B-071415	L15070812-01	TC07162015.037	07/17/15 02:04	01
FTB034-GM-MW-14A-071415	L15070812-02	TC07162015.040	07/17/15 03:07	01
FTB034-GM-MW-25-071415	L15070812-03	TC07162015.041	07/17/15 03:48	01
FTB034-GM-MW-15A-071415	L15070812-05	TC07162015.043	07/17/15 05:27	01
FTB034-GM-MW-26-071415	L15070812-04	TC07162015.047	07/17/15 08:34	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 4289580
Report generated 07/17/2015 13:02

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070812 Prep Date: 07/16/15 23:10 Sample ID: WG531477-01
Instrument ID: TOC-VWP Run Date: 07/16/15 23:10 Prep Method: 9060A
File ID: TC07162015.033 Analyst: EPT Method: 9060A
Workgroup (AAB#): WG531477 Matrix: Water Units: mg/L
Contract #: Cal ID: TOC-VW-27-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U
Total Organic Carbon Rep1	0.500	1.00	0.500	1	U
Total Organic Carbon Rep2	0.500	1.00	0.500	1	U
Total Organic Carbon Rep3	0.500	1.00	0.500	1	U
Total Organic Carbon Rep4	0.500	1.00	0.500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 4289581
17-JUL-2015 13:02

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070812 Analyst: EPT Prep Method: 9060A
Instrument ID: TOC-VWP Matrix: Water Method: 9060A
Workgroup (AAB#): WG531477 Units: mg/L
QC Key: DOD4 Lot #: STD69935

Sample ID: WG531477-02 LCS File ID: TC07162015.034 Run Date: 07/16/2015 23:46
Sample ID: WG531477-03 LCS2 File ID: TC07162015.035 Run Date: 07/17/2015 00:36

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	24.3	97.2	25.0	23.8	95.3	1.91	85 - 115	15	
Total Organic Carbon Rep1		24.1			24.0		0.549	85 - 115	15	*
Total Organic Carbon Rep2		24.8			23.5		5.07	85 - 115	15	*
Total Organic Carbon Rep3		24.3			23.9		1.98	85 - 115	15	*
Total Organic Carbon Rep4		23.9			24.0		0.0418	85 - 115	15	*

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4289582
Report generated: 07/17/2015 13:02

001 - BIO-CHEM TESTING WVDEP 220
002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental
004 - MICROBAC PITTSBURGH
005 - ES LABORATORIES
006 - ALCOSAN LABORATORIES
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JDH - JUSTIN D. HESSON
JDS - JARED D. SMITH
JJS - JOHN J. STE MARIE
JKP - JACQUELINE K. PARSONS
JLL - JOHN L. LENT
JMW - JEANA M. WHITE
JTP - JOSHUA T. PEMBERTON
JWR - JOHN W. RICHARDS
JWS - JACK W. SHEAVES
JYH - JI Y. HU
KAJ - KELLIE A. JOHNSON
KAT - KATHY A. TUCKER
KDW - KATHRYN D. WELCH
KEB - KATIE E. BARNES
KHR - KIM H. RHODES
KKB - KERRI K. BUCK
KRA - KATHY R. ALBERTSON
KRB - KAELY R. BECKER
KRP - KATHY R. PARSONS
LEC - LAURA E. CARPENTER
LKN - LINDA K. NEDEFF
LLS - LARRY L. STEPHENS
LSB - LESLIE S. BUCINA
MBK - MORGAN B. KNOWLTON
MDA - MIKE D. ALBERTSON
MDC - MIKE D. COCHRAN
MES - MARY E. SCHILLING
MLB - MEGAN L. BACHE
MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR
MSW - MATT S. WILSON
PDM - PIERCE D. MORRIS
PIT - MICROBAC WARRENDALE
PRL - PAIGE R. LAMB
PSW - PEGGY S. WEBB
QX - QIN XU
RAH - ROY A. HALSTEAD
REK - BOB E. KYER
RLB - BOB BUCHANAN
RM - RAYMOND MALEKE
RNP - RICK N. PETTY
RST - ROBIN S. TURNER
SAV - SARAH A. VANDENBERG
SCB - SARAH C. BOGOLIN
SDC - SHALYN D. CONLEY
SLM - STEPHANIE L. MOSSBURG
SLP - SHERI L. PFALZGRAF
TB - TODD BOYLE
TGF - TIM G. FELTON
TMB - TIFFANY M. BAILEY
TMM - TAMMY M. MORRIS
VC - VICKI COLLIER
WJB - WILL J. BEASLEY
WRR - WESLEY R. RICHARDS
WTD - WADE T. DELONG
XXX - UNAVAILABLE OR SUBCONTRACT

Microbac Laboratories Inc.
List of Valid Qualifiers
July 30, 2015

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B,H1	Analyte present in method blank. Sample analysis performed past holding time.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	Cooler temperature at sample reciept exceeded regulatory limit.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
E,CT1	Estimated results. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
H1	Sample analysis performed past holding time.
H1,CT1	Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guidelines for reque
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value ; the analyte concentration was less than the LOQ. Cooler temperature at sample reciept exceeded regu
J,H1	Estimated value ; the analyte concentration was less than the LOQ. Sample analysis performed past holding time.
J,H1	The reported result is an estimated value. Sample was analyzed past holding time.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentativlely identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL/MDL).
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
ND,H1	Not detected; Sample analysis performed past holding time.
ND,H1,CT1	Not detected; Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guide
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
Q,H1	One or more quality control criteria failed. Sample analyzed past holding time. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
T5	Laboratory not licensed for this parameter
TIC	Library Search Compound
TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.

Qualkey: DOD

TNTC,CT1	Too numerous to count. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
TNTC,H1	Too numerous to count. Sample analysis performed past holding time.
U	Analyte was not detected. The concentration is below the reported LOD.
U,CT1	Analyte was not detected. The concentration is below the reported LOD. Cooler temperature at sample reciept exceeded
U,H1	Not detected; Sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

L150708 12 / Revision: 0 / 78 total pages

COC No. A 46724

158 Starlite Drive
Marietta, OH 45750

MICROBAC®

CHAIN-OF-CUSTODY RECORD

Phone: 740-373-4071
Toll Free: 800-373-4071

Company Name: Kemron Environmental Services

Project Contact: Jeanette Hamm

Contact Phone #: 404-636-0928

Turn Around Requirements: STD

Location: Ft. Buchanan

Project ID: SH4906.016

Sampler (print): Charlie Tagh

Signature:

Program: ☐ CWA ☐ RCRA ☐ DOD ☐ AFCEE ☐ Other _____

ADDITIONAL REQUIREMENTS

Sample I.D. No.	Comp	Grab	Date	Time	Matrix*	NUMBER OF CONTAINERS	Hold	VOC (8260B)	Anions (Sulfate/nitrate) (9056A)	Dissolved Gas (RSK175)	TOC (9060A)	Cations - Mg, Ca, Na, K (6010C)	TOTAL # (LAB USE)
FTB034-GM-MW-14B 071415		✓	7/14/15		GW	9		✓	✓	✓	✓	✓	
FTB034-GM-MW-14A 071415		✓	7/14/15	1426	GW	9		✓	✓	✓	✓	✓	
FTB034-GM-MW-26 071415		✓	7/14/15	1311	GW	9		✓	✓	✓	✓	✓	
FTB034-GM-MW-2C 071415		✓	7/14/15	1056	GW	9		✓	✓	✓	✓	✓	
FTB034-GM-MW-15A 071415		✓	7/14/15	0931	GW	9		✓	✓	✓	✓	✓	
Trip Blank		✓	7/14/15	–	W	2		✓					

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	7/14/15	1630			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Remarks:	

Microbac OVD
Received: 07/15/2015 10:29
By: BRENDA GREENWALT 221000072636
Brenda Greenwalt

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

Page 1 of 1

Generated: 07/30/2015 10:37

COMMERCIAL INVOICE (Factura Comercial)

This invoice must be completed in English (Esta factura se debe llenar en ingles)

SHIPPED FROM (Envio de):
Tax ID/VAT No. (No de Identificación): 11-2393978
Contact Name (Nombre): Jessica Kelso
Telephone No. (Teléfono): 678-699-4006
E-Mail (E-Mail): jhkelso@kemron.com
Company Name/Address (Compania/Dirección):
KEMRON Environmental Services
1359A Ellsworth Industrial Boulevard
Atlanta, GA 30318

Country (Pais): United States
Parties to Transaction:
☑ **Related** (Vinculado) ☐ **Non-related** (No Vinculado)

Date (Fecha): 7/23/2014
Air Waybill No. (Conocimiento de Embarque):
Invoice No. (No de la Factura): Not Applicable
Purchase Order No. (No de Orden de Compra): Not Applicable
Payment Terms (Terminos de Pago): Paid when Paid
Incoterms (Incoterms): CPT=CARRIAGE PAID TO
Reason for Export:
Sold (Vendido) ✓ **Not Sold** (No Esta Vendido) **Other** (Otro)

SHIPPED TO (Destinatario):
Tax ID/VAT No. (No de Identificación): 25-1199642
Contact Name (Nombre): Stephanie Mossburg
Telephone No. (Teléfono): 1-800-373-4071
E-Mail (E-Mail): Stephanie.Mossburg@microbac.com
Company Name/Address (Compania/Dirección):
Microbac Laboratories, Inc.
158 Starlite Drive
Marietta, OH 45750

Country (Pais): USA

SOLD TO (Vendido a): **Same as SHIPPED TO (Igual que el Destinatario):**
Company Name/Address (Compania/Dirección):
Country (Pais): USA

No. of Packages (No de Paquetes)	No. of Units (No Unitario)	Unit of Measure (Unidad de Medida)	Description of Goods (Including Harmonized Tariff No.) (Descripción de la Mercancia [Con No de Clasificación Arancelaria])	Country of Origin (Pais de Origen)	Value Unit (Precio Unitario)	Total Value (Precio Total)
2	30	each	Groundwater Samples for analysis	PR	10.00	300.00
						0.00
						0.00

Total No. of Packages (Total de Paquetes): 2
Total Weight (Indicate LBS or KGS) (Peso Total [En Lbs o Kgs]): 50 LBS

Special Instructions (Instrucciones Especiales):
This package contains groundwater samples which will be used for destructive analysis.

Declaration Statement(s) (Declaración[es]):

Subtotal (Subtotal):	300.00
Insurance (Seguro):	0.00
Freight (Flete):	0.00
Packing (Embalaje):	0.00
Handling (Manejo):	0.00
Other (Otros):	0.00
Invoice Total (Total):	300.00
Currency Code (Tipo de Moneda):	

Signature/Title (Firma del Declarante/Puesto) **Date** (Fecha)

TOXIC SUBSTANCE CONTROL ACT (TSCA)
CERTIFICATION

Date: July 23, 2014

(CHECK ONE SECTION ONLY)

POSITIVE CERTIFICATION

_____ "I certify that all chemical substances in this shipment comply with all applicable rules or orders under TSCA and that I am not offering a chemical substance for entry in violation of TSCA or any applicable rules order thereunder."

● OR ●

NEGATIVE CERTIFICATION

X "I certify that all chemical substances in this shipment are not subject to TSCA."

Company Name: KEMRON Environmental Services

Company Address: 1359A Ellsworth Industrial Boulevard

City/State: Atlanta, GA

Country/Zip: USA, 30318

Authorized Name: Joel Morales

Authorized Signature:

Title: Site Manager

Federal Express AWB#: _____

If the certifier is unsure if their chemical substance is subject to TSCA compliance, contact the Environmental Protection Agency, TSCA Assistance Office, Washington, D.C. (202) 554-1404 between 8:30 am and 5:00 pm EST.

Revised 04-2009

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L15070812
Account: 2820
Project: 2820.250
Samples: 6
Due Date: 24-JUL-2015

Samplenum	Container ID	Products
L15070812-01	602440	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		
2	ANALYZ	V1	ORG4	15-JUL-2015 15:59	AWE	CLS	
3	STORE	ORG4	A2	29-JUL-2015 07:44	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		
2	ANALYZ	V1	ORG4	15-JUL-2015 15:59	AWE	CLS	
3	STORE	ORG4	A2	29-JUL-2015 07:44	CLS	AWE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		
2	ANALYZ	V1	ORG4	15-JUL-2015 15:59	AWE	CLS	
3	STORE	ORG4	A2	29-JUL-2015 07:44	CLS	AWE	

Samplenum	Container ID	Products
L15070812-01	602441	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		<2
2	ANALYZ	V1	ORG1	15-JUL-2015 13:18	JDS	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		<2
2	ANALYZ	V1	ORG1	15-JUL-2015 13:18	JDS	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		<2
2	ANALYZ	V1	ORG1	15-JUL-2015 13:18	JDS	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L15070812
Account: 2820
Project: 2820.250
Samples: 6
Due Date: 24-JUL-2015

Samplenum	Container ID	Products
L15070812-01	602442	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	15-JUL-2015 11:23	CLS		
2	PREP	L1	SEM	15-JUL-2015 11:36	ALS	CLS	
3	STORE	SEM	A2	20-JUL-2015 11:07	CLS	ALS	

Samplenum	Container ID	Products
L15070812-01	602443	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	15-JUL-2015 11:23	CLS		
2	ANALYZ	W1	WET	16-JUL-2015 09:34	EPT	CLS	
3	STORE	WET	A2	17-JUL-2015 08:50	CLS	EPT	

Samplenum	Container ID	Products
L15070812-01	602444	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	15-JUL-2015 11:23	CLS		
2	PREP	W1	DIG	15-JUL-2015 13:33	AC	CLS	
3	STORE	DIG	A2	16-JUL-2015 13:40	CLS	ERP	
4	ANALYZ*	DIG	METALS	20-JUL-2015 09:45	KHR	AC	

Sample extract/digestate/leachate

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15070812
Account: 2820
Project: 2820.250
Samples: 6
Due Date: 24-JUL-2015

Samplenum	Container ID	Products
L15070812-02	602445	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		
2	ANALYZ	V1	ORG4	15-JUL-2015 15:59	AWE	CLS	
3	STORE	ORG4	A2	29-JUL-2015 07:44	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		
2	ANALYZ	V1	ORG4	15-JUL-2015 15:59	AWE	CLS	
3	STORE	ORG4	A2	29-JUL-2015 07:44	CLS	AWE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		
2	ANALYZ	V1	ORG4	15-JUL-2015 15:58	AWE	CLS	
3	STORE	ORG4	A2	29-JUL-2015 07:44	CLS	AWE	

Samplenum	Container ID	Products
L15070812-02	602446	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		<2
2	ANALYZ	V1	ORG1	15-JUL-2015 13:18	JDS	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		<2
2	ANALYZ	V1	ORG1	15-JUL-2015 13:18	JDS	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		<2
2	ANALYZ	V1	ORG1	15-JUL-2015 13:18	JDS	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L15070812
Account: 2820
Project: 2820.250
Samples: 6
Due Date: 24-JUL-2015

Samplenum	Container ID	Products
L15070812-02	602447	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	15-JUL-2015 11:23	CLS		
2	PREP	L1	SEM	15-JUL-2015 11:36	ALS	CLS	
3	STORE	SEM	A2	20-JUL-2015 11:07	CLS	ALS	

Samplenum	Container ID	Products
L15070812-02	602448	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	15-JUL-2015 11:23	CLS		
2	ANALYZ	W1	WET	16-JUL-2015 09:34	EPT	CLS	
3	STORE	WET	A2	17-JUL-2015 08:50	CLS	EPT	

Samplenum	Container ID	Products
L15070812-02	602449	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	15-JUL-2015 11:23	CLS		
2	PREP	W1	DIG	15-JUL-2015 13:33	AC	CLS	
3	STORE	DIG	A2	16-JUL-2015 13:40	CLS	ERP	
4	ANALYZ*	DIG	METALS	20-JUL-2015 09:45	KHR	AC	

Sample extract/digestate/leachate

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15070812
Account: 2820
Project: 2820.250
Samples: 6
Due Date: 24-JUL-2015

Samplenum	Container ID	Products
L15070812-03	602450	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		
2	ANALYZ	V1	ORG4	15-JUL-2015 15:58	AWE	CLS	
3	STORE	ORG4	A2	29-JUL-2015 07:44	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		
2	ANALYZ	V1	ORG4	15-JUL-2015 15:58	AWE	CLS	
3	STORE	ORG4	A2	29-JUL-2015 07:44	CLS	AWE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		
2	ANALYZ	V1	ORG4	15-JUL-2015 15:58	AWE	CLS	
3	STORE	ORG4	A2	29-JUL-2015 07:43	CLS	AWE	

Samplenum	Container ID	Products
L15070812-03	602451	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		<2
2	ANALYZ	V1	ORG1	15-JUL-2015 13:18	JDS	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		<2
2	ANALYZ	V1	ORG1	15-JUL-2015 13:18	JDS	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		<2
2	ANALYZ	V1	ORG1	15-JUL-2015 13:18	JDS	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15070812
Account: 2820
Project: 2820.250
Samples: 6
Due Date: 24-JUL-2015

Samplenum	Container ID	Products
L15070812-03	602452	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	15-JUL-2015 11:23	CLS		
2	PREP	L1	SEM	15-JUL-2015 11:36	ALS	CLS	
3	STORE	SEM	A2	20-JUL-2015 11:07	CLS	ALS	

Samplenum	Container ID	Products
L15070812-03	602453	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	15-JUL-2015 11:23	CLS		
2	ANALYZ	W1	WET	16-JUL-2015 09:34	EPT	CLS	
3	STORE	WET	A2	17-JUL-2015 08:50	CLS	EPT	

Samplenum	Container ID	Products
L15070812-03	602454	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	15-JUL-2015 11:23	CLS		
2	PREP	W1	DIG	15-JUL-2015 13:33	AC	CLS	
3	STORE	DIG	A2	16-JUL-2015 13:40	CLS	ERP	
4	ANALYZ*	DIG	METALS	20-JUL-2015 09:45	KHR	AC	

Sample extract/digestate/leachate

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L15070812
Account: 2820
Project: 2820.250
Samples: 6
Due Date: 24-JUL-2015

Samplenum	Container ID	Products
L15070812-04	602455	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		
2	ANALYZ	V1	ORG4	15-JUL-2015 15:58	AWE	CLS	
3	STORE	ORG4	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		
2	ANALYZ	V1	ORG4	15-JUL-2015 15:58	AWE	CLS	
3	STORE	ORG4	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		
2	ANALYZ	V1	ORG4	15-JUL-2015 15:58	AWE	CLS	
3	STORE	ORG4	A2	29-JUL-2015 07:43	CLS	AWE	

Samplenum	Container ID	Products
L15070812-04	602456	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		<2
2	ANALYZ	V1	ORG1	15-JUL-2015 13:18	JDS	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		<2
2	ANALYZ	V1	ORG1	15-JUL-2015 13:18	JDS	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		<2
2	ANALYZ	V1	ORG1	15-JUL-2015 13:18	JDS	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L15070812
Account: 2820
Project: 2820.250
Samples: 6
Due Date: 24-JUL-2015

Samplenum	Container ID	Products
L15070812-04	602457	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	15-JUL-2015 11:23	CLS		
2	PREP	L1	SEM	15-JUL-2015 11:36	ALS	CLS	
3	STORE	SEM	A2	20-JUL-2015 11:07	CLS	ALS	

Samplenum	Container ID	Products
L15070812-04	602458	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	15-JUL-2015 11:23	CLS		
2	ANALYZ	W1	WET	16-JUL-2015 09:34	EPT	CLS	
3	STORE	WET	A2	17-JUL-2015 08:50	CLS	EPT	

Samplenum	Container ID	Products
L15070812-04	602459	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	15-JUL-2015 11:23	CLS		
2	PREP	W1	DIG	15-JUL-2015 13:33	AC	CLS	
3	STORE	DIG	A2	16-JUL-2015 13:40	CLS	ERP	
4	ANALYZ*	DIG	METALS	20-JUL-2015 09:45	KHR	AC	

Sample extract/digestate/leachate

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15070812
Account: 2820
Project: 2820.250
Samples: 6
Due Date: 24-JUL-2015

Samplenum	Container ID	Products
L15070812-05	602460	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		
2	ANALYZ	V1	ORG4	15-JUL-2015 15:58	AWE	CLS	
3	STORE	ORG4	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		
2	ANALYZ	V1	ORG4	15-JUL-2015 15:58	AWE	CLS	
3	STORE	ORG4	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		
2	ANALYZ	V1	ORG4	15-JUL-2015 15:58	AWE	CLS	
3	STORE	ORG4	A2	29-JUL-2015 07:43	CLS	AWE	

Samplenum	Container ID	Products
L15070812-05	602461	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		<2
2	ANALYZ	V1	ORG1	15-JUL-2015 13:18	JDS	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		<2
2	ANALYZ	V1	ORG1	15-JUL-2015 13:18	JDS	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		<2
2	ANALYZ	V1	ORG1	15-JUL-2015 13:18	JDS	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15070812
Account: 2820
Project: 2820.250
Samples: 6
Due Date: 24-JUL-2015

Samplenum	Container ID	Products
L15070812-05	602462	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	15-JUL-2015 11:23	CLS		
2	PREP	L1	SEM	15-JUL-2015 11:36	ALS	CLS	
3	STORE	SEM	A2	20-JUL-2015 11:07	CLS	ALS	

Samplenum	Container ID	Products
L15070812-05	602463	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	15-JUL-2015 11:23	CLS		
2	ANALYZ	W1	WET	16-JUL-2015 09:34	EPT	CLS	
3	STORE	WET	A2	17-JUL-2015 08:50	CLS	EPT	

Samplenum	Container ID	Products
L15070812-05	602464	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	15-JUL-2015 11:23	CLS		
2	PREP	W1	DIG	15-JUL-2015 13:33	AC	CLS	
3	STORE	DIG	A2	16-JUL-2015 13:40	CLS	ERP	
4	ANALYZ*	DIG	METALS	20-JUL-2015 09:45	KHR	AC	

Sample extract/digestate/leachate

Samplenum	Container ID	Products
L15070812-06	602465	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		
2	ANALYZ	V1	ORG4	15-JUL-2015 15:58	AWE	CLS	
3	STORE	ORG4	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	15-JUL-2015 11:23	CLS		
2	ANALYZ	V1	ORG4	15-JUL-2015 15:58	AWE	CLS	
3	STORE	ORG4	A2	29-JUL-2015 07:43	CLS	AWE	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

ANALYTICAL SERVICES, INC.

Virginia Office
402 North West Street
Culpeper, Virginia 22701
540-829-5642 Office
540-829-5641 Fax

DATA CERTIFICATION

The attached laboratory report L15070893 consisting of 611 pages, has been certified by David E. Vandenberg, Managing Director, Microbac Laboratories. The data contained herein was completed in accordance with the requirements of the DoD QSM and other applicable contract terms and conditions.

I hereby certify that this laboratory report and associated documentation has been reviewed and approved.

Ralph Abbondanza, REM
Vice President
PR Chemist's License #3803

$1.00 $1.00
A 1448794
Ralph Abbondanza III
Zemaitis
Lic.#3803
QUIMICO LICENCIADO ASOCIADO DE PUERTO RICO

Microbac

Laboratory Report Number: L15070893

Jeanette Hamm
Kemron Environmental Services
1359 Ellsworth Industrial Blvd.
Atlanta, GA 30082

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Stephanie Mossburg – Team Chemist/Data Specialist
(740) 373-4071
Stephanie.Mossburg@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on July 29 2015

David Vandenberg – Managing Director

State of Origin: PR
Accrediting Authority: N/A ID:N/A
QAPP: DOD Ver 4.2 without flagging

Microbac

Lab Report #: L15070893
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

There were no discrepancies.

Discrepancy	Resolution

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
00110907	I	1.0		1004161162260004575000808287338804	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	Yes

Microbac

Lab Report #: L15070893
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
FTB034-GM-MW-11B-071515	L15070893-01	07/15/2015 11:26	07/16/2015 10:26
FTB034-GM-MW-11A-071515	L15070893-02	07/15/2015 09:51	07/16/2015 10:26
FTB034-GM-MW-16A-071515	L15070893-03	07/15/2015 16:16	07/16/2015 10:26
TRIP BLANK	L15070893-04	07/15/2015 00:01	07/16/2015 10:26

Login Number: L15070893
Department: Volatiles
Analyst: Tiffany Bailey

METHOD

Preparation SW-846 5030C/5035A

Analysis SW-846 8260B

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: The percent difference was out of range for the following analytes: Carbon Disulfide, Trichlorofluoromethane. Please see the applicable QC report for a detailed presentation of the failures.

Continuing Calibration and Tune: Recoveries out of range were observed for the following analytes: 2-Butanone, 2-Hexanone, Bromomethane, Chloroethane. Please see the applicable QC report for a detailed presentation of the failures.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC prescribed MS/MSD. Microbac Laboratories recommends site specific MS/MSD samples to avoid possible data

qualifications.

SAMPLES

Internal Standards: All acceptance criteria were met.

Surrogates: All acceptance criteria were met.

Other: None.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak. In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak. This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline. There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous. Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Managing Director or the QAO will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 102038
Approved By: Franci Bolden

Login Number: L15070893
Department: Volatiles - GC
Analyst: Jared Smith

Analysis RSK-175

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes/Sample Duplicates: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. Microbac Laboratories recommends site specific MS/MSD samples to avoid possible data qualifications.

SAMPLES

Samples: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

Narrative ID: 101896
Approved By: Franci Bolden

Login Number: L15070893
Department: Metals
Analyst: Kim Rhodes

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: WG531851 - The initial calibration blank analyzed on 23-JUL-2015 at 09:18 yielded a result for sodium that was between the MDL and the RDL. However, the reported sample results exceeded that of the ICB by greater than a factor of ten. With permission from the project manager, the samples were reported for sodium and no further action was taken for these samples.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: WG531851 - The continuing calibration blank analyzed on 23-JUL-2015 at 12:42 yielded noncompliant results for potassium, sodium and magnesium. Client samples 02 and 03 were reanalyzed for potassium, sodium, and magnesium later in the sequence where potassium, sodium, and magnesium were compliant.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG531851 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: WG531851 - Client samples 01, 02, and 03 required dilution analyses in order to obtain results for calcium within the calibration range.

Narrative ID: 101894
Approved By: Brendan Torrence

Login Number: L15070893
Department: General Chromatography
Analyst: Adriane Steed

METHOD

Analysis EPA300.0/SW846 9056

HOLDING TIMES

Sample Analysis: Hold times for NO2 and NO3 are 48 hours and the hold times for F, Cl, Br, and SO4 are 28 days. The hold time forms calculate the hold time based on 48 hours. All samples were analyzed in hold.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group.

SAMPLES

Samples: All acceptance criteria were met.

MANUAL INTEGRATION: No manual integration required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data

contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 101594
Approved By: Wade DeLong

Login Number: L15070893
Department: Conventionals
Analyst: Ethan Tidd

METHOD

Analysis Water: EPA 415.1/SM5310C/SW846 9060 (Total Organic Carbon)
Soil: Lloyd-Khan Methodology

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 101951
Approved By: Deanna Hesson

Microbac

Lab Report #: L15070893
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Certificate of Analysis

Sample #:	L15070893-01	**PrePrep Method:**	N/A	**Instrument:**	HPMS17
Client ID:	FTB034-GM-MW-11B-071515	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	05/18/2015 14:34
Workgroup #:	WG531954	**Analyst:**	TMB/ JDS	**Run Date:**	07/21/2015 01:51
Collect Date:	07/15/2015 11:26	**Dilution:**	1	**File ID:**	17M013851
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	2.11		1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4	0.670	J	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6	30.9		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	112	70	120	
4-Bromofluorobenzene	103	75	120	
Dibromofluoromethane	98.7	85	115	
Toluene-d8	103	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L15070893-01	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-11B-071515	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531679	**Analyst:**	JDS	**Run Date:**	07/17/2015 14:36
Collect Date:	07/15/2015 11:26	**Dilution:**	1	**File ID:**	16G48104
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8	2.04	J	5.00	1.00
Ethene	74-85-1		U	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070893-01	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-11B-071515	**Prep Method:**	3015	**Prep Date:**	07/16/2015 13:21
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG531851	**Analyst:**	KHR	**Run Date:**	07/23/2015 12:18
Collect Date:	07/15/2015 11:26	**Dilution:**	1	**File ID:**	P2.072315.121828
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Magnesium, Total	7439-95-4	12.0		0.500	0.250
Potassium, Total	7440-09-7	1.20		1.00	0.500
Sodium, Total	7440-23-5	23.0		0.500	0.250

Sample #:	L15070893-01	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-11B-071515	**Prep Method:**	3015	**Prep Date:**	07/16/2015 13:21
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG531851	**Analyst:**	KHR	**Run Date:**	07/23/2015 13:06
Collect Date:	07/15/2015 11:26	**Dilution:**	10	**File ID:**	P2.072315.130639
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	138		5.00	2.50

Certificate of Analysis

Sample #:	L15070893-01	**PrePrep Method:**	N/A	**Instrument:**	IC2
Client ID:	FTB034-GM-MW-11B-071515	**Prep Method:**	9056	**Prep Date:**	07/16/2015 10:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	02/17/2015 19:43
Workgroup #:	WG531529	**Analyst:**	ALS	**Run Date:**	07/16/2015 20:25
Collect Date:	07/15/2015 11:26	**Dilution:**	1	**File ID:**	I2_071615-31
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8	2.29		0.600	0.100
Sulfate	14808-79-8	43.2		1.00	0.500

Sample #:	L15070893-01	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-MW-11B-071515	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG532335	**Analyst:**	EPT	**Run Date:**	07/23/2015 14:56
Collect Date:	07/15/2015 11:26	**Dilution:**	1	**File ID:**	TC07232015.018
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	2.11		1.00	0.500
Total Organic Carbon Rep1		2.21		1.00	0.500
Total Organic Carbon Rep2		1.75		1.00	0.500
Total Organic Carbon Rep3		2.24		1.00	0.500
Total Organic Carbon Rep4		2.24		1.00	0.500

Sample #:	L15070893-02	**PrePrep Method:**	N/A	**Instrument:**	HPMS17
Client ID:	FTB034-GM-MW-11A-071515	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	05/18/2015 14:34
Workgroup #:	WG531954	**Analyst:**	TMB/ JDS	**Run Date:**	07/21/2015 02:11
Collect Date:	07/15/2015 09:51	**Dilution:**	1	**File ID:**	17M013852
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5	0.508	J	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1	0.162	J	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3	0.305	J	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	14.7		1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250

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Analyte	CAS #	Result	Qual	LOQ	DL
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4	5.31		1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5	0.606	J	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6	123		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	113	70	120	
4-Bromofluorobenzene	101	75	120	
Dibromofluoromethane	97.6	85	115	
Toluene-d8	101	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070893-02	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-11A-071515	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531679	**Analyst:**	JDS	**Run Date:**	07/17/2015 14:48
Collect Date:	07/15/2015 09:51	**Dilution:**	1	**File ID:**	16G48105
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8		U	5.00	1.00
Ethene	74-85-1		U	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L15070893-02	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-11A-071515	**Prep Method:**	3015	**Prep Date:**	07/16/2015 13:21
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG531851	**Analyst:**	KHR	**Run Date:**	07/23/2015 13:24
Collect Date:	07/15/2015 09:51	**Dilution:**	1	**File ID:**	P2.072315.132459
Sample Tag:	02	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Magnesium, Total	7439-95-4	19.0		0.500	0.250
Potassium, Total	7440-09-7	1.45		1.00	0.500
Sodium, Total	7440-23-5	52.6		0.500	0.250

Sample #:	L15070893-02	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-11A-071515	**Prep Method:**	3015	**Prep Date:**	07/16/2015 13:21
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG531851	**Analyst:**	KHR	**Run Date:**	07/23/2015 13:10
Collect Date:	07/15/2015 09:51	**Dilution:**	10	**File ID:**	P2.072315.131000
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	112		5.00	2.50

Sample #:	L15070893-02	**PrePrep Method:**	N/A	**Instrument:**	IC2
Client ID:	FTB034-GM-MW-11A-071515	**Prep Method:**	9056	**Prep Date:**	07/16/2015 10:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	02/17/2015 19:43
Workgroup #:	WG531529	**Analyst:**	ALS	**Run Date:**	07/16/2015 20:43
Collect Date:	07/15/2015 09:51	**Dilution:**	1	**File ID:**	I2_071615-32
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8	0.475	J	0.600	0.100
Sulfate	14808-79-8	42.3		1.00	0.500

J	Estimated value ; the analyte concentration was less than the LOQ.

Certificate of Analysis

Sample #:	L15070893-02	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-MW-11A-071515	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG532335	**Analyst:**	EPT	**Run Date:**	07/23/2015 15:44
Collect Date:	07/15/2015 09:51	**Dilution:**	1	**File ID:**	TC07232015.019
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	3.64		1.00	0.500
Total Organic Carbon Rep1		1.02		1.00	0.500
Total Organic Carbon Rep2		3.45		1.00	0.500
Total Organic Carbon Rep3		3.44		1.00	0.500
Total Organic Carbon Rep4		6.64		1.00	0.500

Sample #:	L15070893-03	**PrePrep Method:**	N/A	**Instrument:**	HPMS17
Client ID:	FTB034-GM-MW-16A-071515	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	05/18/2015 14:34
Workgroup #:	WG531954	**Analyst:**	TMB/ JDS	**Run Date:**	07/21/2015 02:31
Collect Date:	07/15/2015 16:16	**Dilution:**	1	**File ID:**	17M013853
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6	0.267	J	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250

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Analyte	CAS #	Result	Qual	LOQ	DL
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	1.75		1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4	0.588	J	1.00	0.250

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Analyte	CAS #	Result	Qual	LOQ	DL
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6	3.85		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	114	70	120	
4-Bromofluorobenzene	102	75	120	
Dibromofluoromethane	98.1	85	115	
Toluene-d8	101	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070893-03	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-16A-071515	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531679	**Analyst:**	JDS	**Run Date:**	07/17/2015 15:11
Collect Date:	07/15/2015 16:16	**Dilution:**	1	**File ID:**	16G48107
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8		U	5.00	1.00
Ethene	74-85-1		U	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070893-03	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-16A-071515	**Prep Method:**	3015	**Prep Date:**	07/16/2015 13:21
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG531851	**Analyst:**	KHR	**Run Date:**	07/23/2015 13:28
Collect Date:	07/15/2015 16:16	**Dilution:**	1	**File ID:**	P2.072315.132822
Sample Tag:	02	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Magnesium, Total	7439-95-4	16.8		0.500	0.250
Potassium, Total	7440-09-7	2.08		1.00	0.500

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Analyte	CAS #	Result	Qual	LOQ	DL
Sodium, Total	7440-23-5	59.6		0.500	0.250

Sample #:	L15070893-03	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-16A-071515	**Prep Method:**	3015	**Prep Date:**	07/16/2015 13:21
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG531851	**Analyst:**	KHR	**Run Date:**	07/23/2015 13:13
Collect Date:	07/15/2015 16:16	**Dilution:**	10	**File ID:**	P2.072315.131322
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	92.9		5.00	2.50

Sample #:	L15070893-03	**PrePrep Method:**	N/A	**Instrument:**	IC2
Client ID:	FTB034-GM-MW-16A-071515	**Prep Method:**	9056	**Prep Date:**	07/16/2015 10:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	02/17/2015 19:43
Workgroup #:	WG531529	**Analyst:**	ALS	**Run Date:**	07/16/2015 21:01
Collect Date:	07/15/2015 16:16	**Dilution:**	1	**File ID:**	I2_071615-33
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8		U	0.600	0.100
Sulfate	14808-79-8	77.4		1.00	0.500
U	Analyte was not detected. The concentration is below the reported LOD.				

Sample #:	L15070893-03	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-MW-16A-071515	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG532335	**Analyst:**	EPT	**Run Date:**	07/23/2015 16:33
Collect Date:	07/15/2015 16:16	**Dilution:**	1	**File ID:**	TC07232015.020
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	1.78		1.00	0.500
Total Organic Carbon Rep1		0.600	J	1.00	0.500
Total Organic Carbon Rep2		1.82		1.00	0.500
Total Organic Carbon Rep3		2.16		1.00	0.500
Total Organic Carbon Rep4		2.55		1.00	0.500
J	Estimated value ; the analyte concentration was less than the LOQ.				

Certificate of Analysis

Sample #:	L15070893-04	**PrePrep Method:**	N/A	**Instrument:**	HPMS17
Client ID:	TRIP BLANK	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	05/18/2015 14:34
Workgroup #:	WG531954	**Analyst:**	TMB/ JDS	**Run Date:**	07/21/2015 00:12
Collect Date:	07/15/2015 00:01	**Dilution:**	1	**File ID:**	17M013846
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	112	70	120	
4-Bromofluorobenzene	101	75	120	
Dibromofluoromethane	95.6	85	115	
Toluene-d8	102	85	120	

U	Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070893
Blank File ID: 17M013842
Prep Date: 07/20/15 22:52
Analyzed Date: 07/20/15 22:52
Analyst: TMB/ JDS

Work Group: WG531954
Blank Sample ID: WG531954-01
Instrument ID: HPMS17
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531954-02	17M013843	07/20/15 23:12	01
LCS2	WG531954-03	17M013844	07/20/15 23:32	01
TRIP BLANK	L15070893-04	17M013846	07/21/15 00:12	01
FTB034-GM-MW-11B-071515	L15070893-01	17M013851	07/21/15 01:51	01
FTB034-GM-MW-11A-071515	L15070893-02	17M013852	07/21/15 02:11	01
FTB034-GM-MW-16A-071515	L15070893-03	17M013853	07/21/15 02:31	01

Report Name: BLANK_SUMMARY
PDF File ID: 4299618
Report generated 07/27/2015 15:56

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070893 Prep Date: 07/20/15 22:52 Sample ID: WG531954-01
Instrument ID: HPMS17 Run Date: 07/20/15 22:52 Prep Method: 5030B/5030C/503
File ID: 17M013842 Analyst: TMB/ JDS Method: 8260B
Workgroup (AAB#): WG531954 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS17-18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	2.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1-Chlorohexane	0.125	1.00	0.125	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
2-Butanone	2.50	5.00	2.50	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
2-Hexanone	2.50	5.00	2.50	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	5.00	2.50	1	U
Acetone	2.50	5.00	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U

Report Name: BLANK
PDF ID: 4299619
27-JUL-2015 15:56

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070893 Prep Date: 07/20/15 22:52 Sample ID: WG531954-01
Instrument ID: HPMS17 Run Date: 07/20/15 22:52 Prep Method: 5030B/5030C/503
File ID: 17M013842 Analyst: TMB/ JDS Method: 8260B
Workgroup (AAB#): WG531954 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS17-18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U
Isopropylbenzene	0.250	1.00	0.250	1	U
Methylene chloride	0.250	1.00	0.250	1	U
Methyl t-butyl ether (MTBE)	0.500	1.00	0.500	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Naphthalene	0.200	1.00	0.200	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	115	70 - 120	PASS
4-Bromofluorobenzene	102	75 - 120	PASS
Dibromofluoromethane	97.5	85 - 115	PASS
Toluene-d8	101	85 - 120	PASS

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4299619
27-JUL-2015 15:56

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070893 Analyst: TMB/ JDS Prep Method: 5030B/5030C/503
Instrument ID: HPMS17 Matrix: Water Method: 8260B
Workgroup (AAB#): WG531954 Units: ug/L
QC Key: DOD4 Lot #: STD71570

Sample ID: WG531954-02 LCS File ID: 17M013843 Run Date: 07/20/2015 23:12
Sample ID: WG531954-03 LCS2 File ID: 17M013844 Run Date: 07/20/2015 23:32

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
1,1,1,2-Tetrachloroethane	20.0	19.0	94.8	20.0	19.2	96.0	1.26	80 - 130	30	
1,1,1-Trichloroethane	20.0	20.4	102	20.0	20.5	102	0.419	65 - 130	30	
1,1,2,2-Tetrachloroethane	20.0	16.9	84.5	20.0	19.7	98.5	15.4	65 - 130	30	
1,1,2-Trichloroethane	20.0	20.6	103	20.0	20.8	104	1.10	75 - 125	30	
1,1-Dichloroethane	20.0	20.2	101	20.0	20.5	103	1.46	70 - 135	30	
1,1-Dichloroethene	20.0	17.7	88.4	20.0	17.8	89.0	0.655	70 - 130	30	
1,1-Dichloropropene	20.0	19.7	98.4	20.0	19.9	99.5	1.09	75 - 130	30	
1,2,3-Trichlorobenzene	20.0	18.0	90.2	20.0	18.9	94.3	4.43	55 - 140	30	
1,2,3-Trichloropropane	20.0	21.7	109	20.0	22.0	110	1.48	75 - 125	30	
1,2,4-Trichlorobenzene	20.0	17.6	87.9	20.0	18.5	92.7	5.32	65 - 135	30	
1,2,4-Trimethylbenzene	20.0	18.1	90.3	20.0	18.8	93.8	3.78	75 - 130	30	
1,2-Dibromo-3-chloropropane	20.0	21.4	107	20.0	22.0	110	2.81	50 - 130	30	
1,2-Dibromoethane	20.0	21.3	106	20.0	21.6	108	1.47	80 - 120	30	
1,2-Dichlorobenzene	20.0	18.7	93.7	20.0	19.3	96.6	3.10	70 - 120	30	
1,2-Dichloroethane	20.0	21.7	109	20.0	21.8	109	0.300	70 - 130	30	
1,2-Dichloropropane	20.0	19.7	98.7	20.0	20.1	100	1.75	75 - 125	30	
1,3,5-Trimethylbenzene	20.0	18.5	92.4	20.0	19.0	95.2	2.97	75 - 130	30	
1,3-Dichlorobenzene	20.0	18.6	92.8	20.0	19.1	95.5	2.91	75 - 125	30	
1,4-Dichlorobenzene	20.0	17.9	89.5	20.0	18.5	92.7	3.56	75 - 125	30	
1-Chlorohexane	20.0	20.9	105	20.0	21.2	106	1.09	80 - 127	30	
2,2-Dichloropropane	20.0	18.2	90.9	20.0	18.2	91.2	0.268	70 - 135	30	
2-Butanone	20.0	26.2	131	20.0	25.4	127	3.20	30 - 150	30	
2-Chlorotoluene	20.0	19.2	96.2	20.0	19.8	99.1	2.95	75 - 125	30	
2-Hexanone	20.0	25.4	127	20.0	25.5	128	0.224	55 - 130	30	
4-Chlorotoluene	20.0	19.5	97.4	20.0	20.2	101	3.82	75 - 130	30	
4-Methyl-2-pentanone	20.0	21.6	108	20.0	21.5	108	0.352	60 - 135	30	
Acetone	20.0	27.4	137	20.0	25.7	128	6.58	40 - 140	30	
Benzene	20.0	19.0	95.2	20.0	19.4	97.1	1.94	80 - 120	30	
Bromobenzene	20.0	18.6	93.0	20.0	19.1	95.7	2.86	75 - 125	30	
Bromochloromethane	20.0	20.3	102	20.0	20.4	102	0.605	65 - 130	30	
Bromodichloromethane	20.0	19.9	99.5	20.0	20.1	101	1.16	75 - 120	30	
Bromoform	20.0	22.9	115	20.0	23.0	115	0.315	70 - 130	30	
Bromomethane	20.0	15.4	77.1	20.0	16.1	80.7	4.53	30 - 145	30	
Carbon disulfide	20.0	10.3	51.6	20.0	10.3	51.5	0.249	35 - 160	30	
Carbon tetrachloride	20.0	20.5	102	20.0	21.0	105	2.55	65 - 140	30	
Chlorobenzene	20.0	19.8	98.8	20.0	20.0	100	1.34	80 - 120	30	
Chloroethane	20.0	17.1	85.3	20.0	17.3	86.5	1.39	60 - 135	30	
Chloroform	20.0	21.1	106	20.0	21.3	106	0.603	65 - 135	30	
Chloromethane	20.0	18.9	94.4	20.0	18.9	94.7	0.395	40 - 125	30	
cis-1,2-Dichloroethene	20.0	19.0	94.8	20.0	19.3	96.5	1.78	70 - 125	30	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4294376
Report generated: 07/27/2015 15:56

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070893 Analyst: TMB/ JDS Prep Method: 5030B/5030C/503
Instrument ID: HPMS17 Matrix: Water Method: 8260B
Workgroup (AAB#): WG531954 Units: ug/L
QC Key: DOD4 Lot #: STD71570

Sample ID: WG531954-02 LCS File ID: 17M013843 Run Date: 07/20/2015 23:12
Sample ID: WG531954-03 LCS2 File ID: 17M013844 Run Date: 07/20/2015 23:32

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
cis-1,3-Dichloropropene	20.0	20.3	101	20.0	20.4	102	0.798	70 - 130	30	
Chlorodibromomethane	20.0	20.6	103	20.0	20.8	104	1.26	60 - 135	30	
Dichlorodifluoromethane	20.0	17.3	86.7	20.0	17.7	88.7	2.27	30 - 155	30	
Ethylbenzene	20.0	19.0	94.9	20.0	19.5	97.4	2.66	75 - 125	30	
Hexachlorobutadiene	20.0	15.2	76.0	20.0	16.2	80.8	6.13	50 - 140	30	
Isopropylbenzene	20.0	19.5	97.4	20.0	20.0	99.9	2.56	75 - 125	30	
Methyl t-butyl ether (MTBE)	20.0	23.5	117	20.0	23.5	117	0.0934	65 - 125	30	
Methylene chloride	20.0	18.8	94.1	20.0	19.0	94.9	0.830	55 - 140	30	
n-Butylbenzene	20.0	18.4	91.8	20.0	19.3	96.4	4.93	70 - 135	30	
n-Propylbenzene	20.0	19.3	96.7	20.0	20.2	101	4.23	70 - 130	30	
Naphthalene	20.0	19.5	97.7	20.0	20.1	101	3.02	55 - 140	30	
p-Isopropyltoluene	20.0	17.6	88.0	20.0	18.3	91.6	4.02	75 - 130	30	
sec-Butylbenzene	20.0	18.3	91.7	20.0	19.3	96.3	4.91	70 - 125	30	
Styrene	20.0	19.5	97.5	20.0	19.8	99.0	1.58	65 - 135	30	
tert-Butylbenzene	20.0	18.2	90.8	20.0	19.0	95.1	4.59	70 - 130	30	
Tetrachloroethene	20.0	19.2	95.9	20.0	19.8	98.9	3.01	45 - 150	30	
Toluene	20.0	19.6	97.9	20.0	20.0	99.9	2.03	75 - 120	30	
trans-1,2-Dichloroethene	20.0	18.9	94.4	20.0	18.8	93.9	0.575	60 - 140	30	
trans-1,3-Dichloropropene	20.0	20.7	104	20.0	20.8	104	0.241	55 - 140	30	
Trichloroethene	20.0	20.6	103	20.0	19.3	96.7	6.15	70 - 125	30	
Trichlorofluoromethane	20.0	19.6	98.1	20.0	20.1	101	2.54	60 - 145	30	
Vinyl chloride	20.0	18.9	94.5	20.0	19.2	95.9	1.41	50 - 145	30	
Xylenes	60.0	58.4	97.3	60.0	59.5	99.2	1.86	80 - 120	30	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	113	111	70 - 120	PASS
Dibromofluoromethane	100	99.1	85 - 115	PASS
4-Bromofluorobenzene	101	102	75 - 120	PASS
Toluene-d8	103	103	85 - 120	PASS

* EXCEEDS %REC LIMIT

\# EXCEEDS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4294376
Report generated: 07/27/2015 15:56

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070893
Blank File ID: 16G48096
Prep Date: 07/17/15 11:34
Analyzed Date: 07/17/15 11:34
Analyst: JDS

Work Group: WG531679
Blank Sample ID: WG531679-01
Instrument ID: HP16
Method: RSK175

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531679-02	16G48097	07/17/15 11:45	01
LCS2	WG531679-03	16G48098	07/17/15 11:57	01
FTB034-GM-MW-11B-071515	L15070893-01	16G48104	07/17/15 14:36	01
FTB034-GM-MW-11A-071515	L15070893-02	16G48105	07/17/15 14:48	01
FTB034-GM-MW-16A-071515	L15070893-03	16G48107	07/17/15 15:11	01

Report Name: BLANK_SUMMARY
PDF File ID: 4293577
Report generated 07/23/2015 12:38

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070893 Prep Date: 07/17/15 11:34 Sample ID: WG531679-01
Instrument ID: HP16 Run Date: 07/17/15 11:34 Prep Method: 5021
File ID: 16G48096 Analyst: JDS Method: RSK175
Workgroup (AAB#): WG531679 Matrix: Water Units: ug/L
Contract #: Cal ID: HP16 - 03-MAR-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Methane	1.00	5.00	1.00	1	U
Ethene	1.00	5.00	1.00	1	U
Ethane	1.00	5.00	1.00	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 4293578
23-JUL-2015 12:38

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070893 Analyst: JDS Prep Method: 5021
Instrument ID: HP16 Matrix: Water Method: RSK175
Workgroup (AAB#): WG531679 Units: ug/L
QC Key: DOD4 Lot #: STD68250

Sample ID: WG531679-02 LCS File ID: 16G48097 Run Date: 07/17/2015 11:45
Sample ID: WG531679-03 LCS2 File ID: 16G48098 Run Date: 07/17/2015 11:57

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Methane	114	112	98.3	114	112	97.7	0.597	85 - 115	20	
Ethene	200	197	98.6	200	194	97.1	1.55	85 - 115	20	
Ethane	214	205	95.7	214	202	94.4	1.34	85 - 115	20	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4293579
Report generated: 07/23/2015 12:38

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070893
Blank File ID: P2.072315.112300
Prep Date: 07/16/15 13:21
Analyzed Date: 07/23/15 11:23
Analyst: KHR

Work Group: WG531851
Blank Sample ID: WG531534-02
Instrument ID: PE-ICP2
Method: 6010C

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531534-03	P2.072115.102701	07/21/15 10:27	01
LCS	WG531534-03	P2.072315.112623	07/23/15 11:26	02
FTB034-GM-MW-11B-071515	L15070893-01	P2.072315.121828	07/23/15 12:18	01
FTB034-GM-MW-11A-071515	L15070893-02	P2.072315.122638	07/23/15 12:26	01
FTB034-GM-MW-16A-071515	L15070893-03	P2.072315.123000	07/23/15 12:30	01
FTB034-GM-MW-11B-071515	L15070893-01	P2.072315.130639	07/23/15 13:06	DL01
FTB034-GM-MW-11A-071515	L15070893-02	P2.072315.131000	07/23/15 13:10	DL01
FTB034-GM-MW-16A-071515	L15070893-03	P2.072315.131322	07/23/15 13:13	DL01
FTB034-GM-MW-11A-071515	L15070893-02	P2.072315.132459	07/23/15 13:24	02
FTB034-GM-MW-16A-071515	L15070893-03	P2.072315.132822	07/23/15 13:28	02

Report Name: BLANK_SUMMARY
PDF File ID: 4298945
Report generated 07/23/2015 14:42

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070893 Prep Date: 07/16/15 13:21 Sample ID: WG531534-02
Instrument ID: PE-ICP2 Run Date: 07/23/15 11:23 Prep Method: 3015
File ID: P2.072315.112300 Analyst: KHR Method: 6010C
Workgroup (AAB#): WG531851 Matrix: Water Units: mg/L
Contract #: Cal ID: PE-ICP - 23-JUL-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Calcium, Total	0.250	0.500	0.250	1	U
Magnesium, Total	0.250	0.500	0.250	1	U
Potassium, Total	0.500	1.00	0.500	1	U
Sodium, Total	0.250	0.500	0.250	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4298946
23-JUL-2015 14:42

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070893 Run Date: 07/23/2015 Sample ID: WG531534-03
Instrument ID: PE-ICP2 Run Time: 11:26 Prep Method: 3015
File ID: P2.072315.112623 Analyst: KHR Method: 6010C
Workgroup (AAB#): WG531851 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD71485 Cal ID: PE-ICP-23-JUL-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Calcium, Total	6.25	6.32	101	80 - 120	
Magnesium, Total	6.25	6.47	104	80 - 120	
Potassium, Total	31.3	32.3	103	80 - 120	
Sodium, Total	31.3	32.7	105	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 4298947
Report generated: 07/23/2015 14:42

Microbac Laboratories Inc.
MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum: L15070893 Cal ID: PE-ICP2 - Worknum: WG531851
Instrument ID: PE-ICP2 Contract #: Method: 6010C
Parent ID: WG531534-01 File ID: P2.072315.123225 Dil: 1 Matrix: WATER
Sample ID: WG531534-04 MS File ID: P2.072315.123449 Dil: 1 Units: mg/L
Sample ID: WG531534-05 MSD File ID: P2.072315.123713 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Calcium	172	6.25	175	48.5	6.25	181	147	3.47	80 - 120	20	*
Magnesium	56.0	6.25	61.8	92.2	6.25	63.0	111	1.91	80 - 120	20	
Potassium	38.0	31.3	70.3	103	31.3	70.9	105	0.878	80 - 120	20	
Sodium	112	31.3	138	83.7	31.3	143	100	3.66	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 05/26/2011
PDF File ID: 4298948
Report generated 07/23/2015 14:42

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070893
Blank File ID: I2_071615-05
Prep Date: 07/16/15 10:00
Analyzed Date: 07/16/15 12:31
Analyst: ALS

Work Group: WG531529
Blank Sample ID: WG531529-01
Instrument ID: IC2
Method: 9056

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531529-02	I2_071615-06	07/16/15 12:50	01
DUP	WG531529-04	I2_071615-18	07/16/15 16:28	01
FTB034-GM-MW-11B-071515	L15070893-01	I2_071615-31	07/16/15 20:25	01
FTB034-GM-MW-11A-071515	L15070893-02	I2_071615-32	07/16/15 20:43	01
FTB034-GM-MW-16A-071515	L15070893-03	I2_071615-33	07/16/15 21:01	01

Report Name: BLANK_SUMMARY
PDF File ID: 4288121
Report generated 07/17/2015 14:23

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070893 Prep Date: 07/16/15 10:00 Sample ID: WG531529-01
Instrument ID: IC2 Run Date: 07/16/15 12:31 Prep Method: 9056
File ID: I2 071615-05 Analyst: ALS Method: 9056
Workgroup (AAB#): WG531529 Matrix: Water Units: mg/L
Contract #: Cal ID: IC2 - 17-FEB-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Nitrate	0.100	0.600	0.100	1	U
Sulfate	0.500	1.00	0.500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4288122
17-JUL-2015 14:23

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070893 Run Date: 07/16/2015 Sample ID: WG531529-02
Instrument ID: IC2 Run Time: 12:50 Prep Method: 9056
File ID: I2 071615-06 Analyst: ALS Method: 9056
Workgroup (AAB#): WG531529 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD69216 Cal ID: IC2 - 17-FEB-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrate	5.42	5.63	104	90 - 110	
Sulfate	40.0	42.4	106	90 - 110	

LCS - Modified 03/06/2008
PDF File ID: 4288123
Report generated: 07/17/2015 14:23

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070893
Blank File ID: TC07232015.013
Prep Date: 07/23/15 12:14
Analyzed Date: 07/23/15 12:14
Analyst: EPT

Work Group: WG532335
Blank Sample ID: WG532335-01
Instrument ID: TOC-VWP
Method: 9060A

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532335-02	TC07232015.016	07/23/15 13:13	01
LCS2	WG532335-03	TC07232015.017	07/23/15 14:06	01
FTB034-GM-MW-11B-071515	L15070893-01	TC07232015.018	07/23/15 14:56	01
FTB034-GM-MW-11A-071515	L15070893-02	TC07232015.019	07/23/15 15:44	01
FTB034-GM-MW-16A-071515	L15070893-03	TC07232015.020	07/23/15 16:33	01
DUP	WG532335-08	TC07232015.041	07/24/15 04:54	01

Report Name: BLANK_SUMMARY
PDF File ID: 4300604
Report generated 07/24/2015 10:27

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070893 Prep Date: 07/23/15 12:14 Sample ID: WG532335-01
Instrument ID: TOC-VWP Run Date: 07/23/15 12:14 Prep Method: 9060A
File ID: TC07232015.013 Analyst: EPT Method: 9060A
Workgroup (AAB#): WG532335 Matrix: Water Units: mg/L
Contract #: Cal ID: TOC-VW-27-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U
Total Organic Carbon Rep1	0.500	1.00	0.500	1	U
Total Organic Carbon Rep2	0.500	1.00	0.500	1	U
Total Organic Carbon Rep3	0.500	1.00	0.500	1	U
Total Organic Carbon Rep4	0.500	1.00	0.500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4300605
24-JUL-2015 10:27

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070893 Analyst: EPT Prep Method: 9060A
Instrument ID: TOC-VWP Matrix: Water Method: 9060A
Workgroup (AAB#): WG532335 Units: mg/L
QC Key: DOD4 Lot #: STD69935

Sample ID: WG532335-02 LCS File ID: TC07232015.016 Run Date: 07/23/2015 13:13
Sample ID: WG532335-03 LCS2 File ID: TC07232015.017 Run Date: 07/23/2015 14:06

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	26.7	107	25.0	25.7	103	3.93	85 - 115	15	
Total Organic Carbon Rep1		24.8			25.6		3.21	85 - 115	15	*
Total Organic Carbon Rep2		25.6			25.7		0.702	85 - 115	15	*
Total Organic Carbon Rep3		25.2			25.5		0.868	85 - 115	15	*
Total Organic Carbon Rep4		31.3			25.9		18.7	85 - 115	15	*#

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4300606
Report generated: 07/24/2015 10:27

001 - BIO-CHEM TESTING WVDEP 220
002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental
004 - MICROBAC PITTSBURGH
005 - ES LABORATORIES
006 - ALCOSAN LABORATORIES
007 - ALS LABORATORIES
008 - BENCHMARK LABORATORIES
010 - MICROBAC CHICAGOLAND
AC - AMBER R. CARMICHAEL
ADC - ANTHONY D. CANTER
ADG - APRIL D. GREENE
AED - ALLEN E. DAVIS
ALS - ADRIANE L. STEED
AWE - ANDREW W. ESSIG
AZH - AFTER HOURS
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JDS - JARED D. SMITH
JJS - JOHN J. STE MARIE
JKP - JACQUELINE K. PARSONS
JLL - JOHN L. LENT
JMW - JEANA M. WHITE
JTP - JOSHUA T. PEMBERTON
JWR - JOHN W. RICHARDS
JWS - JACK W. SHEAVES
JYH - JI Y. HU
KAJ - KELLIE A. JOHNSON
KAT - KATHY A. TUCKER
KDW - KATHRYN D. WELCH
KEB - KATIE E. BARNES
KHR - KIM H. RHODES
KKB - KERRI K. BUCK
KRA - KATHY R. ALBERTSON
KRB - KAELY R. BECKER
KRP - KATHY R. PARSONS
LEC - LAURA E. CARPENTER
LKN - LINDA K. NEDEFF
LLS - LARRY L. STEPHENS
LSB - LESLIE S. BUCINA
MBK - MORGAN B. KNOWLTON
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MDC - MIKE D. COCHRAN
MES - MARY E. SCHILLING
MLB - MEGAN L. BACHE
MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR
MSW - MATT S. WILSON
PDM - PIERCE D. MORRIS
PIT - MICROBAC WARRENDALE
PRL - PAIGE R. LAMB
PSW - PEGGY S. WEBB
QX - QIN XU
RAH - ROY A. HALSTEAD
REK - BOB E. KYER
RLB - BOB BUCHANAN
RM - RAYMOND MALEKE
RNP - RICK N. PETTY
RST - ROBIN S. TURNER
SAV - SARAH A. VANDENBERG
SCB - SARAH C. BOGOLIN
SDC - SHALYN D. CONLEY
SLM - STEPHANIE L. MOSSBURG
SLP - SHERI L. PFALZGRAF
TB - TODD BOYLE
TGF - TIM G. FELTON
TMB - TIFFANY M. BAILEY
TMM - TAMMY M. MORRIS
VC - VICKI COLLIER
WJB - WILL J. BEASLEY
WRR - WESLEY R. RICHARDS
WTD - WADE T. DELONG
XXX - UNAVAILABLE OR SUBCONTRACT

Microbac Laboratories Inc.
List of Valid Qualifiers
July 29, 2015

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B,H1	Analyte present in method blank. Sample analysis performed past holding time.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	Cooler temperature at sample reciept exceeded regulatory limit.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
E,CT1	Estimated results. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
H1	Sample analysis performed past holding time.
H1,CT1	Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guidelines for reque
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value ; the analyte concentration was less than the LOQ. Cooler temperature at sample reciept exceeded regu
J,H1	Estimated value ; the analyte concentration was less than the LOQ. Sample analysis performed past holding time.
J,H1	The reported result is an estimated value. Sample was analyzed past holding time.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentativlely identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL/MDL).
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
ND,H1	Not detected; Sample analysis performed past holding time.
ND,H1,CT1	Not detected; Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guide
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
Q,H1	One or more quality control criteria failed. Sample analyzed past holding time. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
T5	Laboratory not licensed for this parameter
TIC	Library Search Compound
TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.

Qualkey: DOD

TNTC,CT1	Too numerous to count. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
TNTC,H1	Too numerous to count. Sample analysis performed past holding time.
U	Analyte was not detected. The concentration is below the reported LOD.
U,CT1	Analyte was not detected. The concentration is below the reported LOD. Cooler temperature at sample reciept exceeded
U,H1	Not detected; Sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

COC No. A 46722

158 Starlite Drive
Marietta, OH 45750

MICROBAC®

CHAIN-OF-CUSTODY RECORD

Phone: 740-373-4071
Toll Free: 800-373-4071

Company Name: Kemron Environmental Services

Project Contact: Jeanette Hamm

Contact Phone #: 404-686-0928

Turn Around Requirements: STD

Location: Ft. Buchanan

Project ID: 5H4906.0012

Sampler (print): Charlie Taylor

Signature:

Program: ☐ CWA ☐ RCRA ☐ DOD ☐ AFCEE ☐ Other _____

ADDITIONAL REQUIREMENTS

Sample I.D. No.	Comp	Grab	Date	Time	Matrix*	NUMBER OF CONTAINERS	Hold	Anions - Sulfate, Nitrate, Nitrite 9056A	Cations - Mg, Ca, Na, K	TOC 9060A	Dis Gas RSK 175	VOC 8260B										TOTAL # (LAB USE)
FTB034-GM-MW-11B 071515		✓	7/15/15	1126	GW	9		✓	✓	✓	✓	✓										
FTB034-GM-MW-11A 071515		✓	7/15/15	0951	GW	9		✓	✓	✓	✓	✓										
FTB034-GM-MW-16A 071515		✓	7/15/15	1616	GW	9		✓	✓	✓	✓	✓										
Trip Blank		✓	7/15/15	na	W	2						✓										

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	7/15/15	1710			
Relinquished by: (Signature)	Date	Time	Remarks:		

Microbac OVD
Received: 07/16/2015 10:26
By: BRENDA GREENWALT 221000072692
Brenda Greenwalt

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

Page _____ of _____

TOXIC SUBSTANCE CONTROL ACT (TSCA) CERTIFICATION

Date: July 15 2015

(CHECK ONE SECTION ONLY)

POSITIVE CERTIFICATION

_____

"I certify that all chemical substances in this shipment comply with all applicable rules or orders under TSCA and that I am not offering a chemical substance for entry in violation of TSCA or any applicable rules order thereunder."

● OR ●

NEGATIVE CERTIFICATION

X

"I certify that all chemical substances in this shipment are not subject to TSCA."

Company Name: KEMRON Environmental Services

Company Address: 1359A Ellsworth Industrial Boulevard

City/State: Atlanta, GA

Country/Zip: USA, 30318

Authorized Name: Charlie Taylor

Authorized Signature:

Title: Site Manager

Federal Express AWB#:

If the certifier is unsure if their chemical substance is subject to TSCA compliance, contact the Environmental Protection Agency, TSCA Assistance Office, Washington, D.C. (202) 554-1404 between 8:30 am and 5:00 pm EST.

Revised 04-2009

COMMERCIAL INVOICE (Factura Comercial)

This invoice must be completed in English (Esta factura se debe llenar en ingles)

SHIPPED FROM (Envio de):
Tax ID/VAT No. (No de Identificación): 11-2393978
Contact Name (Nombre): Jeanette Hamm
Telephone No. (Teléfono): 404-643-2033
E-Mail (E-Mail): jhamm@kemron.com
Company Name/Address (Compania/Dirección):
KEMRON Environmental Services
1359A Ellsworth Industrial Boulevard
Atlanta, GA 30318

Country (Pais): United States
Parties to Transaction:
☑ **Related** (Vinculado) ☐ **Non-related** (No Vinculado)

Date (Fecha): 07/ /2015
Air Waybill No. (Conocimiento de Embarque):
Invoice No. (No de la Factura): Not Applicable
Purchase Order No. (No de Orden de Compra): Not Applicable
Payment Terms (Terminos de Pago): Paid when Paid
Incoterms (Incoterms): CPT=CARRIAGE PAID TO
Reason for Export:
Sold (Vendido) ✓ **Not Sold** (No Esta Vendido) **Other** (Otro)

SHIPPED TO (Destinatario):
Tax ID/VAT No. (No de Identificación): 25-1199642
Contact Name (Nombre): Stephanie Mossburg
Telephone No. (Teléfono): 1-800-373-4071
E-Mail (E-Mail): Stephanie.Mossburg@microbac.com
Company Name/Address (Compania/Dirección):
Microbac Laboratories, Inc.
158 Starlite Drive
Marietta, OH 45750

Country (Pais): USA

SOLD TO (Vendido a): **Same as SHIPPED TO (Igual que el Destinatario):**

Company Name/Address (Compania/Dirección):

Country (Pais): USA

No. of Packages (No de Paquetes)	No. of Units (No Unitario)	Unit of Measure (Unidad de Medida)	Description of Goods (Including Harmonized Tariff No.) (Descripción de la Mercancia [Con No de Clasificación Arancelaria])	Country of Origin (Pais de Origen)	Value Unit (Precio Unitario)	Total Value (Precio Total)
1	8	each	Groundwater Samples for analysis	PR	10.00	80.00
						0.00
						0.00

Total No. of Packages (Total de Paquetes): 1

Total Weight (Indicate LBS or KGS) (Peso Total [En Lbs o Kgs]): 50 LBS

Special Instructions (Instrucciones Especiales):
This package contains soil samples which will be used for destructive analysis.

Declaration Statement(s) (Declaración[es]):

Subtotal (Subtotal):	80.00
Insurance (Seguro):	0.00
Freight (Flete):	0.00
Packing (Embalaje):	0.00
Handling (Manejo):	0.00
Other (Otros):	0.00
Invoice Total (Total):	80.00
Currency Code (Tipo de Moneda):	

Signature/Title (Firma del Declarante/Puesto)

Date (Fecha)

Internal Chain of Custody Report

Login: L15070893
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 27-JUL-2015

Samplenum	Container ID	Products
L15070893-01	602965	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		
2	ANALYZ	V1	ORG4	16-JUL-2015 16:28	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		
2	ANALYZ	V1	ORG4	16-JUL-2015 16:28	AWE	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		
2	ANALYZ	V1	ORG4	16-JUL-2015 16:28	AWE	CLS	

Samplenum	Container ID	Products
L15070893-01	602966	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		<2
2	ANALYZ	V1	ORG1	16-JUL-2015 16:26	AWE	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		<2
2	ANALYZ	V1	ORG1	16-JUL-2015 16:26	AWE	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		<2
2	ANALYZ	V1	ORG1	16-JUL-2015 16:26	AWE	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

Samplenum	Container ID	Products
L15070893-01	602967	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	16-JUL-2015 11:35	CLS		
2	PREP	L1	SEM	16-JUL-2015 11:40	ALS	CLS	
3	STORE	SEM	A2	20-JUL-2015 11:07	CLS	ALS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15070893
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 27-JUL-2015

Samplenum	Container ID	Products
L15070893-01	602968	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	16-JUL-2015 11:35	CLS		
2	ANALYZ	W1	WET	20-JUL-2015 08:25	EPT	CLS	
3	STORE	WET	A2	21-JUL-2015 08:25	BRG	EPT	
4	ANALYZ	A2	WET	22-JUL-2015 08:07	EPT	BRG	
5	STORE	WET	A2	24-JUL-2015 08:25	BRG	EPT	

Samplenum	Container ID	Products
L15070893-01	602969	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	16-JUL-2015 11:35	CLS		
2	PREP	W1	DIG	16-JUL-2015 13:13	ERP	CLS	
3	STORE	DIG	A2	16-JUL-2015 13:40	CLS	ERP	
4	ANALYZ*	DIG	METALS	20-JUL-2015 09:45	KHR	ERP	

Sample extract/digestate/leachate

Samplenum	Container ID	Products
L15070893-02	602970	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		
2	ANALYZ	V1	ORG4	16-JUL-2015 16:28	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		
2	ANALYZ	V1	ORG4	16-JUL-2015 16:28	AWE	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		
2	ANALYZ	V1	ORG4	16-JUL-2015 16:28	AWE	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15070893
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 27-JUL-2015

Samplenum	Container ID	Products
L15070893-02	602971	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		<2
2	ANALYZ	V1	ORG1	16-JUL-2015 16:26	AWE	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		<2
2	ANALYZ	V1	ORG1	16-JUL-2015 16:26	AWE	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		<2
2	ANALYZ	V1	ORG1	16-JUL-2015 16:26	AWE	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

Samplenum	Container ID	Products
L15070893-02	602972	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	16-JUL-2015 11:35	CLS		
2	PREP	L1	SEM	16-JUL-2015 11:40	ALS	CLS	
3	STORE	SEM	A2	20-JUL-2015 11:07	CLS	ALS	

Samplenum	Container ID	Products
L15070893-02	602973	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	WET	16-JUL-2015 11:35	CLS		
2	STORE	WET	A2	21-JUL-2015 08:25	BRG	EPT	
3	ANALYZ	A2	WET	22-JUL-2015 08:07	EPT	BRG	
4	STORE	WET	A2	24-JUL-2015 08:25	BRG	EPT	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15070893
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 27-JUL-2015

Samplenum	Container ID	Products
L15070893-02	602974	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	16-JUL-2015 11:35	CLS		
2	PREP	W1	DIG	16-JUL-2015 13:13	ERP	CLS	
3	STORE	DIG	A2	16-JUL-2015 13:40	CLS	ERP	
4	ANALYZ*	DIG	METALS	20-JUL-2015 09:45	KHR	ERP	

Sample extract/digestate/leachate

Samplenum	Container ID	Products
L15070893-03	602975	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		
2	ANALYZ	V1	ORG4	16-JUL-2015 16:28	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		
2	ANALYZ	V1	ORG4	16-JUL-2015 16:28	AWE	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		
2	ANALYZ	V1	ORG4	16-JUL-2015 16:28	AWE	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L15070893
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 27-JUL-2015

Samplenum	Container ID	Products
L15070893-03	602976	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		<2
2	ANALYZ	V1	ORG1	16-JUL-2015 16:26	AWE	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		<2
2	ANALYZ	V1	ORG1	16-JUL-2015 16:26	AWE	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		<2
2	ANALYZ	V1	ORG1	16-JUL-2015 16:26	AWE	CLS	
3	STORE	ORG1	A2	29-JUL-2015 07:43	CLS	AWE	

Samplenum	Container ID	Products
L15070893-03	602977	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	16-JUL-2015 11:35	CLS		
2	PREP	L1	SEM	16-JUL-2015 11:40	ALS	CLS	
3	STORE	SEM	A2	20-JUL-2015 11:07	CLS	ALS	

Samplenum	Container ID	Products
L15070893-03	602978	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	16-JUL-2015 11:35	CLS		
2	ANALYZ	W1	WET	20-JUL-2015 08:25	EPT	CLS	
3	STORE	WET	A2	21-JUL-2015 08:25	BRG	EPT	
4	ANALYZ	A2	WET	22-JUL-2015 08:07	EPT	BRG	
5	STORE	WET	A2	24-JUL-2015 08:25	BRG	EPT	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15070893
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 27-JUL-2015

Samplenum	Container ID	Products
L15070893-03	602979	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	16-JUL-2015 11:35	CLS		
2	PREP	W1	DIG	16-JUL-2015 13:13	ERP	CLS	
3	STORE	DIG	A2	16-JUL-2015 13:40	CLS	ERP	
4	ANALYZ*	DIG	METALS	20-JUL-2015 09:45	KHR	ERP	

Sample extract/digestate/leachate

Samplenum	Container ID	Products
L15070893-04	602980	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		
2	ANALYZ	V1	ORG4	16-JUL-2015 16:28	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	16-JUL-2015 11:35	CLS		
2	ANALYZ	V1	ORG4	16-JUL-2015 16:28	AWE	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

ANALYTICAL SERVICES, INC.

Virginia Office
402 North West Street
Culpeper, Virginia 22701
540-829-5642 Office
540-829-5641 Fax

DATA CERTIFICATION

The attached laboratory report L15070974 consisting of 583 pages, has been certified by David E. Vandenberg, Managing Director, Microbac Laboratories. The data contained herein was completed in accordance with the requirements of the DoD QSM and other applicable contract terms and conditions.

I hereby certify that this laboratory report and associated documentation has been reviewed and approved.

Ralph Abbondanza, REM
Vice President
PR Chemist's License #3803

ESTADO LIBRE ASOCIADO DE PUERTO RICO
A 1448795
Ralph Abbondanza III
Zemaitis
Lic.#3803
QUIMICO LICENCIADO

Microbac

Laboratory Report Number: L15070974

Jeanette Hamm
Kemron Environmental Services
1359 Ellsworth Industrial Blvd.
Atlanta, GA 30082

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Stephanie Mossburg – Team Chemist/Data Specialist
(740) 373-4071
Stephanie.Mossburg@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on July 28 2015

David Vandenberg – Managing Director

State of Origin: PR
Accrediting Authority: N/A ID:N/A
QAPP: DOD Ver 4.2 without flagging

Microbac

Lab Report #: L15070974
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

There were no discrepancies.

Discrepancy	Resolution

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
0012178	H	1.0		1016065962410004575000780993942639	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	Yes

Microbac

Lab Report #: L15070974
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
FTB034-GM-MW-16B-071615	L15070974-01	07/16/2015 09:51	07/17/2015 10:17
FTB034-GM-MW-16B-071615	L15070974-02	07/16/2015 09:51	07/17/2015 10:17
FTB034-GM-MW-16B-071615	L15070974-03	07/16/2015 09:51	07/17/2015 10:17
TRIP BLANK	L15070974-04	07/16/2015 00:01	07/17/2015 10:17

Login Number: L15070974
Department: Volatiles
Analyst: Tiffany Bailey

METHOD

Preparation SW-846 5030C/5035A

Analysis SW-846 8260B

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: The percent difference was out of range for the following analytes: Dichlorodifluoromethane. Please see the applicable QC report for a detailed presentation of the failures.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Internal Standards: All acceptance criteria were met.

Surrogates: All acceptance criteria were met.

Other: None.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak. In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak. This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline. There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous. Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Managing Director or the QAO will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 102000
Approved By: Franci Bolden

Login Number: L15070974
Department: Volatiles - GC
Analyst: Jared Smith

Analysis RSK-175

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes/Sample Duplicates: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. Microbac Laboratories recommends site specific MS/MSD samples to avoid possible data qualifications.

SAMPLES

Samples: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

Narrative ID: 101897
Approved By: Franci Bolden

Login Number: L15070974
Department: Metals
Analyst: Kim Rhodes

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG531894 - All acceptance criteria were met.

Matrix Spikes: WG531894 - Sample 01 was chosen by the client for MS/MSD analysis. Samples 02(MS) and 03(MSD) yielded a noncompliant recovery for calcium.

SAMPLES

Samples: WG531894 - Client samples 01, 02, and 03 required dilution analyses in order to obtain results for calcium within the calibration range. A linear range check for magnesium was analyzed with the client samples.

Narrative ID: 101999
Approved By: Brendan Torrence

Login Number: L15070974
Department: General Chromatography
Analyst: Adriane Steed

METHOD

Analysis EPA300.0/SW846 9056

HOLDING TIMES

Sample Analysis: Hold times for NO2 and NO3 are 48 hours and the hold times for F, Cl, Br, and SO4 are 28 days. The hold time forms calculate the hold time based on 48 hours. All samples were analyzed in hold.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

MANUAL INTEGRATION: No manual integration required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data

contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 101706
Approved By: Wade DeLong

Login Number: L15070974
Department: Conventionals
Analyst: Ethan Tidd

METHOD

Analysis Water: EPA 415.1/SM5310C/SW846 9060 (Total Organic Carbon)
Soil: Lloyd-Khan Methodology

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: Recoveries out of range were observed for the following analytes: Total Organic Carbon. Please see the applicable QC report for a detailed presentation of the failures.

Sample #	Analyte	Date	Result	Lower	Upper	Type
L15070974-02	Total Organic Carbon	2015-07-23 18:03:09	120	85	115	Recovery
L15070974-03	Total Organic Carbon	2015-07-23 18:47:20	116	85	115	Recovery

SAMPLES

Samples: All acceptance criteria were met.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 101954
Approved By: Deanna Hesson

Deanna Hesson

Microbac

Lab Report #: L15070974
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Certificate of Analysis

Sample #:	L15070974-01	**PrePrep Method:**	N/A	**Instrument:**	HPMS8
Client ID:	FTB034-GM-MW-16B-071615	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	07/20/2015 15:10
Workgroup #:	WG532018	**Analyst:**	TMB	**Run Date:**	07/21/2015 17:01
Collect Date:	07/16/2015 09:51	**Dilution:**	1	**File ID:**	8M406238
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6	0.231	J	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	3.62		1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4	1.30		1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6	7.52		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	105	70	120	
4-Bromofluorobenzene	102	75	120	
Dibromofluoromethane	107	85	115	
Toluene-d8	102	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L15070974-01	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-16B-071615	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531679	**Analyst:**	JDS	**Run Date:**	07/17/2015 16:49
Collect Date:	07/16/2015 09:51	**Dilution:**	1	**File ID:**	16G48111
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8	2.23	J	5.00	1.00
Ethene	74-85-1		U	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070974-01	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	FTB034-GM-MW-16B-071615	**Prep Method:**	3015	**Prep Date:**	07/17/2015 13:35
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/24/2015 09:29
Workgroup #:	WG531894	**Analyst:**	KHR	**Run Date:**	07/24/2015 12:01
Collect Date:	07/16/2015 09:51	**Dilution:**	1	**File ID:**	T3.072415.120154
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Magnesium, Total	7439-95-4	23.7		0.500	0.250
Potassium, Total	7440-09-7	2.62		1.00	0.500
Sodium, Total	7440-23-5	50.9		0.500	0.250

Sample #:	L15070974-01	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	FTB034-GM-MW-16B-071615	**Prep Method:**	3015	**Prep Date:**	07/17/2015 13:35
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/24/2015 09:29
Workgroup #:	WG531894	**Analyst:**	KHR	**Run Date:**	07/24/2015 13:48
Collect Date:	07/16/2015 09:51	**Dilution:**	10	**File ID:**	T3.072415.134836
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	86.3		5.00	2.50

Certificate of Analysis

Sample #:	L15070974-01	**PrePrep Method:**	N/A	**Instrument:**	IC3
Client ID:	FTB034-GM-MW-16B-071615	**Prep Method:**	9056	**Prep Date:**	07/17/2015 12:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	06/30/2015 12:33
Workgroup #:	WG531706	**Analyst:**	ALS	**Run Date:**	07/17/2015 14:25
Collect Date:	07/16/2015 09:51	**Dilution:**	1	**File ID:**	I3_071715-07
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8	0.303	J	0.600	0.100
Sulfate	14808-79-8	51.6		1.00	0.500

J	Estimated value ; the analyte concentration was less than the LOQ.

Sample #:	L15070974-01	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-MW-16B-071615	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG532335	**Analyst:**	EPT	**Run Date:**	07/23/2015 17:19
Collect Date:	07/16/2015 09:51	**Dilution:**	1	**File ID:**	TC07232015.021
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	1.73		1.00	0.500
Total Organic Carbon Rep1			U	1.00	0.500
Total Organic Carbon Rep2		1.33		1.00	0.500
Total Organic Carbon Rep3		2.25		1.00	0.500
Total Organic Carbon Rep4		2.91		1.00	0.500

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070974-02	**PrePrep Method:**	N/A	**Instrument:**	HPMS8
Client ID:	FTB034-GM-MW-16B-071615	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	07/20/2015 15:10
Workgroup #:	WG532018	**Analyst:**	TMB	**Run Date:**	07/21/2015 12:11
Collect Date:	07/16/2015 09:51	**Dilution:**	1	**File ID:**	8M406228
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6	20.0		1.00	0.250
1,1,1-Trichloroethane	71-55-6	21.8		1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5	19.4		1.00	0.200
1,1,2-Trichloroethane	79-00-5	19.9		1.00	0.250

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
1,1-Dichloroethane	75-34-3	20.8		1.00	0.125
1,1-Dichloroethene	75-35-4	19.0		1.00	0.500
1,1-Dichloropropene	563-58-6	20.7		1.00	0.250
1,2,3-Trichlorobenzene	87-61-6	19.2		1.00	0.150
1,2,3-Trichloropropane	96-18-4	19.7		1.00	0.500
1,2,4-Trichlorobenzene	120-82-1	19.4		1.00	0.200
1,2,4-Trimethylbenzene	95-63-6	21.1		1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8	19.6		2.00	1.00
1,2-Dibromoethane	106-93-4	20.0		1.00	0.250
1,2-Dichlorobenzene	95-50-1	21.8		1.00	0.125
1,2-Dichloroethane	107-06-2	21.0		1.00	0.250
1,2-Dichloropropane	78-87-5	21.8		1.00	0.200
1,3,5-Trimethylbenzene	108-67-8	21.3		1.00	0.250
1,3-Dichlorobenzene	541-73-1	20.2		1.00	0.250
1,4-Dichlorobenzene	106-46-7	19.4		1.00	0.125
1-Chlorohexane	544-10-5	21.9		1.00	0.125
2,2-Dichloropropane	594-20-7	22.6		1.00	0.250
2-Butanone	78-93-3	20.8		5.00	2.50
2-Chlorotoluene	95-49-8	20.8		1.00	0.125
2-Hexanone	591-78-6	20.4		5.00	2.50
4-Chlorotoluene	106-43-4	22.2		1.00	0.250
4-Methyl-2-pentanone	108-10-1	21.0		5.00	2.50
Acetone	67-64-1	24.1		5.00	2.50
Benzene	71-43-2	21.3		1.00	0.125
Bromobenzene	108-86-1	19.9		1.00	0.125
Bromochloromethane	74-97-5	21.8		1.00	0.200
Bromodichloromethane	75-27-4	20.9		1.00	0.250
Bromoform	75-25-2	20.5		1.00	0.500
Bromomethane	74-83-9	20.1		1.00	0.500
Carbon disulfide	75-15-0	19.1		1.00	0.500
Carbon tetrachloride	56-23-5	21.8		1.00	0.250
Chlorobenzene	108-90-7	21.1		1.00	0.125
Chloroethane	75-00-3	22.0		1.00	0.500
Chloroform	67-66-3	21.6		1.00	0.125
Chloromethane	74-87-3	17.1		1.00	0.500
cis-1,2-Dichloroethene	156-59-2	23.9		1.00	0.250
cis-1,3-Dichloropropene	10061-01-5	22.7		1.00	0.250
Chlorodibromomethane	124-48-1	19.8		1.00	0.250
Dichlorodifluoromethane	75-71-8	12.0		1.00	0.250

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Ethylbenzene	100-41-4	19.6		1.00	0.250
Hexachlorobutadiene	87-68-3	19.4		1.00	0.250
Isopropylbenzene	98-82-8	22.4		1.00	0.250
Methylene chloride	75-09-2	21.0		1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4	21.7		1.00	0.500
n-Butylbenzene	104-51-8	21.4		1.00	0.250
n-Propylbenzene	103-65-1	22.1		1.00	0.125
Naphthalene	91-20-3	19.4		1.00	0.200
p-Isopropyltoluene	99-87-6	21.0		1.00	0.250
sec-Butylbenzene	135-98-8	22.3		1.00	0.250
Styrene	100-42-5	21.1		1.00	0.125
tert-Butylbenzene	98-06-6	20.9		1.00	0.250
Tetrachloroethene	127-18-4	20.7		1.00	0.250
Toluene	108-88-3	21.1		1.00	0.250
trans-1,2-Dichloroethene	156-60-5	19.8		1.00	0.250
trans-1,3-Dichloropropene	10061-02-6	19.8		1.00	0.500
Trichloroethene	79-01-6	26.6		1.00	0.250
Trichlorofluoromethane	75-69-4	19.6		1.00	0.250
Vinyl chloride	75-01-4	18.2		1.00	0.250
Xylenes	1330-20-7	64.1		1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	97.7	70	120	
4-Bromofluorobenzene	102	75	120	
Dibromofluoromethane	103	85	115	
Toluene-d8	102	85	120	

Sample #:	L15070974-02	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-16B-071615	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531679	**Analyst:**	JDS	**Run Date:**	07/17/2015 17:00
Collect Date:	07/16/2015 09:51	**Dilution:**	1	**File ID:**	16G48112
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8	116		5.00	1.00
Ethene	74-85-1	198		5.00	1.00
Ethane	74-84-0	205		5.00	1.00

Certificate of Analysis

Sample #:	L15070974-02	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	FTB034-GM-MW-16B-071615	**Prep Method:**	3015	**Prep Date:**	07/17/2015 13:35
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/24/2015 09:29
Workgroup #:	WG531894	**Analyst:**	KHR	**Run Date:**	07/24/2015 12:05
Collect Date:	07/16/2015 09:51	**Dilution:**	1	**File ID:**	T3.072415.120554
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Magnesium, Total	7439-95-4	29.3		0.500	0.250
Potassium, Total	7440-09-7	33.3		1.00	0.500
Sodium, Total	7440-23-5	80.9		0.500	0.250

Sample #:	L15070974-02	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	FTB034-GM-MW-16B-071615	**Prep Method:**	3015	**Prep Date:**	07/17/2015 13:35
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/24/2015 09:29
Workgroup #:	WG531894	**Analyst:**	KHR	**Run Date:**	07/24/2015 13:52
Collect Date:	07/16/2015 09:51	**Dilution:**	10	**File ID:**	T3.072415.135236
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	90.5		5.00	2.50

Sample #:	L15070974-02	**PrePrep Method:**	N/A	**Instrument:**	IC3
Client ID:	FTB034-GM-MW-16B-071615	**Prep Method:**	9056	**Prep Date:**	07/17/2015 12:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	06/30/2015 12:33
Workgroup #:	WG531706	**Analyst:**	ALS	**Run Date:**	07/17/2015 15:06
Collect Date:	07/16/2015 09:51	**Dilution:**	1	**File ID:**	I3_071715-09
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8	5.25		0.600	0.100
Sulfate	14808-79-8	90.2		1.00	0.500

Certificate of Analysis

Sample #:	L15070974-02	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-MW-16B-071615	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG532335	**Analyst:**	EPT	**Run Date:**	07/23/2015 18:03
Collect Date:	07/16/2015 09:51	**Dilution:**	1	**File ID:**	TC07232015.022
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	13.8		1.00	0.500
Total Organic Carbon Rep1		10.8		1.00	0.500
Total Organic Carbon Rep2		10.9		1.00	0.500
Total Organic Carbon Rep3		11.7		1.00	0.500
Total Organic Carbon Rep4		21.6		1.00	0.500

Sample #:	L15070974-03	**PrePrep Method:**	N/A	**Instrument:**	HPMS8
Client ID:	FTB034-GM-MW-16B-071615	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	07/20/2015 15:10
Workgroup #:	WG532018	**Analyst:**	TMB	**Run Date:**	07/21/2015 12:39
Collect Date:	07/16/2015 09:51	**Dilution:**	1	**File ID:**	8M406229
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6	19.5		1.00	0.250
1,1,1-Trichloroethane	71-55-6	22.2		1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5	20.6		1.00	0.200
1,1,2-Trichloroethane	79-00-5	19.3		1.00	0.250
1,1-Dichloroethane	75-34-3	20.5		1.00	0.125
1,1-Dichloroethene	75-35-4	18.7		1.00	0.500
1,1-Dichloropropene	563-58-6	20.5		1.00	0.250
1,2,3-Trichlorobenzene	87-61-6	19.2		1.00	0.150
1,2,3-Trichloropropane	96-18-4	20.2		1.00	0.500
1,2,4-Trichlorobenzene	120-82-1	19.4		1.00	0.200
1,2,4-Trimethylbenzene	95-63-6	21.3		1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8	18.7		2.00	1.00
1,2-Dibromoethane	106-93-4	19.4		1.00	0.250
1,2-Dichlorobenzene	95-50-1	21.9		1.00	0.125
1,2-Dichloroethane	107-06-2	20.8		1.00	0.250
1,2-Dichloropropane	78-87-5	21.7		1.00	0.200
1,3,5-Trimethylbenzene	108-67-8	21.5		1.00	0.250

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
1,3-Dichlorobenzene	541-73-1	20.8		1.00	0.250
1,4-Dichlorobenzene	106-46-7	19.9		1.00	0.125
1-Chlorohexane	544-10-5	21.4		1.00	0.125
2,2-Dichloropropane	594-20-7	22.1		1.00	0.250
2-Butanone	78-93-3	20.8		5.00	2.50
2-Chlorotoluene	95-49-8	21.5		1.00	0.125
2-Hexanone	591-78-6	20.2		5.00	2.50
4-Chlorotoluene	106-43-4	21.9		1.00	0.250
4-Methyl-2-pentanone	108-10-1	21.6		5.00	2.50
Acetone	67-64-1	21.9		5.00	2.50
Benzene	71-43-2	21.4		1.00	0.125
Bromobenzene	108-86-1	20.4		1.00	0.125
Bromochloromethane	74-97-5	21.2		1.00	0.200
Bromodichloromethane	75-27-4	21.3		1.00	0.250
Bromoform	75-25-2	20.3		1.00	0.500
Bromomethane	74-83-9	20.4		1.00	0.500
Carbon disulfide	75-15-0	18.6		1.00	0.500
Carbon tetrachloride	56-23-5	21.4		1.00	0.250
Chlorobenzene	108-90-7	20.6		1.00	0.125
Chloroethane	75-00-3	21.5		1.00	0.500
Chloroform	67-66-3	21.4		1.00	0.125
Chloromethane	74-87-3	16.5		1.00	0.500
cis-1,2-Dichloroethene	156-59-2	24.0		1.00	0.250
cis-1,3-Dichloropropene	10061-01-5	22.8		1.00	0.250
Chlorodibromomethane	124-48-1	19.9		1.00	0.250
Dichlorodifluoromethane	75-71-8	12.0		1.00	0.250
Ethylbenzene	100-41-4	19.4		1.00	0.250
Hexachlorobutadiene	87-68-3	18.8		1.00	0.250
Isopropylbenzene	98-82-8	21.9		1.00	0.250
Methylene chloride	75-09-2	21.0		1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4	21.7		1.00	0.500
n-Butylbenzene	104-51-8	21.3		1.00	0.250
n-Propylbenzene	103-65-1	22.4		1.00	0.125
Naphthalene	91-20-3	20.2		1.00	0.200
p-Isopropyltoluene	99-87-6	21.4		1.00	0.250
sec-Butylbenzene	135-98-8	22.8		1.00	0.250
Styrene	100-42-5	21.0		1.00	0.125
tert-Butylbenzene	98-06-6	20.7		1.00	0.250
Tetrachloroethene	127-18-4	20.1		1.00	0.250

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Toluene	108-88-3	20.7		1.00	0.250
trans-1,2-Dichloroethene	156-60-5	19.6		1.00	0.250
trans-1,3-Dichloropropene	10061-02-6	19.6		1.00	0.500
Trichloroethene	79-01-6	25.6		1.00	0.250
Trichlorofluoromethane	75-69-4	19.5		1.00	0.250
Vinyl chloride	75-01-4	18.3		1.00	0.250
Xylenes	1330-20-7	63.0		1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	99.4	70	120	
4-Bromofluorobenzene	106	75	120	
Dibromofluoromethane	104	85	115	
Toluene-d8	101	85	120	

Sample #:	L15070974-03	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-16B-071615	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531679	**Analyst:**	JDS	**Run Date:**	07/17/2015 17:11
Collect Date:	07/16/2015 09:51	**Dilution:**	1	**File ID:**	16G48113
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8	112		5.00	1.00
Ethene	74-85-1	189		5.00	1.00
Ethane	74-84-0	197		5.00	1.00

Sample #:	L15070974-03	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	FTB034-GM-MW-16B-071615	**Prep Method:**	3015	**Prep Date:**	07/17/2015 13:35
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/24/2015 09:29
Workgroup #:	WG531894	**Analyst:**	KHR	**Run Date:**	07/24/2015 12:09
Collect Date:	07/16/2015 09:51	**Dilution:**	1	**File ID:**	T3.072415.120942
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Magnesium, Total	7439-95-4	28.9		0.500	0.250
Potassium, Total	7440-09-7	33.1		1.00	0.500
Sodium, Total	7440-23-5	78.8		0.500	0.250

Certificate of Analysis

Sample #:	L15070974-03	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	FTB034-GM-MW-16B-071615	**Prep Method:**	3015	**Prep Date:**	07/17/2015 13:35
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/24/2015 09:29
Workgroup #:	WG531894	**Analyst:**	KHR	**Run Date:**	07/24/2015 13:56
Collect Date:	07/16/2015 09:51	**Dilution:**	10	**File ID:**	T3.072415.135635
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	85.8		5.00	2.50

Sample #:	L15070974-03	**PrePrep Method:**	N/A	**Instrument:**	IC3
Client ID:	FTB034-GM-MW-16B-071615	**Prep Method:**	9056	**Prep Date:**	07/17/2015 12:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	06/30/2015 12:33
Workgroup #:	WG531706	**Analyst:**	ALS	**Run Date:**	07/17/2015 15:26
Collect Date:	07/16/2015 09:51	**Dilution:**	1	**File ID:**	I3_071715-10
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8	5.23		0.600	0.100
Sulfate	14808-79-8	90.2		1.00	0.500

Sample #:	L15070974-03	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-MW-16B-071615	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG532335	**Analyst:**	EPT	**Run Date:**	07/23/2015 18:47
Collect Date:	07/16/2015 09:51	**Dilution:**	1	**File ID:**	TC07232015.023
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	13.3		1.00	0.500
Total Organic Carbon Rep1		10.7		1.00	0.500
Total Organic Carbon Rep2		11.0		1.00	0.500
Total Organic Carbon Rep3		11.6		1.00	0.500
Total Organic Carbon Rep4		19.8		1.00	0.500

Certificate of Analysis

Sample #:	L15070974-04	**PrePrep Method:**	N/A	**Instrument:**	HPMS8
Client ID:	TRIP BLANK	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	07/20/2015 15:10
Workgroup #:	WG532018	**Analyst:**	TMB	**Run Date:**	07/21/2015 16:02
Collect Date:	07/16/2015 00:01	**Dilution:**	1	**File ID:**	8M406236
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	99.4	70	120	
4-Bromofluorobenzene	105	75	120	
Dibromofluoromethane	106	85	115	
Toluene-d8	102	85	120	

U	Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070974
Blank File ID: 8M406226
Prep Date: 07/21/15 11:14
Analyzed Date: 07/21/15 11:14
Analyst: TMB

Work Group: WG532018
Blank Sample ID: WG532018-01
Instrument ID: HPMS8
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532018-02	8M406227	07/21/15 11:42	01
FTB034-GM-MW-16B-071615	L15070974-02	8M406228	07/21/15 12:11	01
FTB034-GM-MW-16B-071615	L15070974-03	8M406229	07/21/15 12:39	01
LCS	WG532018-03	8M406230	07/21/15 13:08	02
TRIP BLANK	L15070974-04	8M406236	07/21/15 16:02	01
FTB034-GM-MW-16B-071615	L15070974-01	8M406238	07/21/15 17:01	01

Report Name: BLANK_SUMMARY
PDF File ID: 4302198
Report generated 07/27/2015 09:14

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070974 Prep Date: 07/21/15 11:14 Sample ID: WG532018-01
Instrument ID: HPMS8 Run Date: 07/21/15 11:14 Prep Method: 5030B/5030C/503
File ID: 8M406226 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG532018 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS8-20-JUL-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	2.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1-Chlorohexane	0.125	1.00	0.125	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
2-Butanone	2.50	5.00	2.50	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
2-Hexanone	2.50	5.00	2.50	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	5.00	2.50	1	U
Acetone	2.50	5.00	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U

Report Name: BLANK
PDF ID: 4302199
27-JUL-2015 09:14

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070974 Prep Date: 07/21/15 11:14 Sample ID: WG532018-01
Instrument ID: HPMS8 Run Date: 07/21/15 11:14 Prep Method: 5030B/5030C/503
File ID: 8M406226 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG532018 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS8-20-JUL-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U
Isopropylbenzene	0.250	1.00	0.250	1	U
Methylene chloride	0.250	1.00	0.250	1	U
Methyl t-butyl ether (MTBE)	0.500	1.00	0.500	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Naphthalene	0.200	1.00	0.200	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	105	70 - 120	PASS
4-Bromofluorobenzene	105	75 - 120	PASS
Dibromofluoromethane	105	85 - 115	PASS
Toluene-d8	104	85 - 120	PASS

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4302199
27-JUL-2015 09:14

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070974 Run Date: 07/21/2015 Sample ID: WG532018-02
Instrument ID: HPMS8 Run Time: 11:42 Prep Method: 5030B/5030C/503
File ID: 8M406227 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG532018 Matrix: Water Units: ug/L
QC Key: DOD4 Lot#: STD71469 Cal ID: HPMS8-20-JUL-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
1,1,1,2-Tetrachloroethane	20.0	20.3	101	80 - 130	
1,1,1-Trichloroethane	20.0	22.1	111	65 - 130	
1,1,2,2-Tetrachloroethane	20.0	19.4	96.9	65 - 130	
1,1,2-Trichloroethane	20.0	20.3	101	75 - 125	
1,1-Dichloroethane	20.0	21.0	105	70 - 135	
1,1-Dichloroethene	20.0	18.7	93.7	70 - 130	
1,1-Dichloropropene	20.0	20.9	105	75 - 130	
1,2,3-Trichlorobenzene	20.0	19.3	96.3	55 - 140	
1,2,3-Trichloropropane	20.0	20.5	103	75 - 125	
1,2,4-Trichlorobenzene	20.0	18.9	94.7	65 - 135	
1,2,4-Trimethylbenzene	20.0	21.4	107	75 - 130	
1,2-Dibromo-3-chloropropane	20.0	17.7	88.6	50 - 130	
1,2-Dibromoethane	20.0	20.6	103	80 - 120	
1,2-Dichlorobenzene	20.0	21.3	106	70 - 120	
1,2-Dichloroethane	20.0	20.8	104	70 - 130	
1,2-Dichloropropane	20.0	21.9	110	75 - 125	
1,3,5-Trimethylbenzene	20.0	21.6	108	75 - 130	
1,3-Dichlorobenzene	20.0	20.7	104	75 - 125	
1,4-Dichlorobenzene	20.0	19.7	98.3	75 - 125	
1-Chlorohexane	20.0	22.3	112	80 - 127	
2,2-Dichloropropane	20.0	22.0	110	70 - 135	
2-Butanone	20.0	21.4	107	30 - 150	
2-Chlorotoluene	20.0	22.2	111	75 - 125	
2-Hexanone	20.0	20.9	105	55 - 130	
4-Chlorotoluene	20.0	21.3	106	75 - 130	
4-Methyl-2-pentanone	20.0	21.4	107	60 - 135	
Acetone	20.0	22.2	111	40 - 140	
Benzene	20.0	21.9	110	80 - 120	
Bromobenzene	20.0	20.3	102	75 - 125	
Bromochloromethane	20.0	21.3	107	65 - 130	
Bromodichloromethane	20.0	21.0	105	75 - 120	
Bromoform	20.0	20.6	103	70 - 130	
Bromomethane	20.0	19.5	97.5	30 - 145	
Carbon disulfide	20.0	19.0	95.2	35 - 160	
Carbon tetrachloride	20.0	22.0	110	65 - 140	
Chlorobenzene	20.0	21.3	106	80 - 120	
Chloroethane	20.0	22.4	112	60 - 135	
Chloroform	20.0	21.4	107	65 - 135	
Chloromethane	20.0	17.2	86.0	40 - 125	
cis-1,2-Dichloroethene	20.0	20.8	104	70 - 125	
cis-1,3-Dichloropropene	20.0	22.6	113	70 - 130	

LCS - Modified 03/06/2008
PDF File ID: 4295688
Report generated: 07/27/2015 09:14

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070974 Run Date: 07/21/2015 Sample ID: WG532018-02
Instrument ID: HPMS8 Run Time: 11:42 Prep Method: 5030B/5030C/503
File ID: 8M406227 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG532018 Matrix: Water Units: ug/L
QC Key: DOD4 Lot#: STD71469 Cal ID: HPMS8-20-JUL-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Chlorodibromomethane	20.0	20.5	103	60 - 135	
Dichlorodifluoromethane	20.0	12.0	59.8	30 - 155	
Ethylbenzene	20.0	20.2	101	75 - 125	
Hexachlorobutadiene	20.0	19.2	95.9	50 - 140	
Isopropylbenzene	20.0	22.8	114	75 - 125	
Methylene chloride	20.0	20.1	101	55 - 140	
Methyl t-butyl ether (MTBE)	20.0	21.9	109	65 - 125	
n-Butylbenzene	20.0	21.5	107	70 - 135	
n-Propylbenzene	20.0	22.4	112	70 - 130	
Naphthalene	20.0	20.0	99.9	55 - 140	
p-Isopropyltoluene	20.0	21.5	107	75 - 130	
sec-Butylbenzene	20.0	22.8	114	70 - 125	
Styrene	20.0	21.8	109	65 - 135	
tert-Butylbenzene	20.0	21.2	106	70 - 130	
Tetrachloroethene	20.0	20.2	101	45 - 150	
Toluene	20.0	21.4	107	75 - 120	
trans-1,2-Dichloroethene	20.0	19.6	98.2	60 - 140	
trans-1,3-Dichloropropene	20.0	20.7	103	55 - 140	
Trichloroethene	20.0	21.1	106	70 - 125	
Trichlorofluoromethane	20.0	19.8	99.0	60 - 145	
Vinyl chloride	20.0	18.6	93.2	50 - 145	
Xylenes	60.0	65.5	109	80 - 120	

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	97.9	70 - 120	PASS
4-Bromofluorobenzene	104	75 - 120	PASS
Dibromofluoromethane	103	85 - 115	PASS
Toluene-d8	103	85 - 120	PASS

* EXCEEDS %REC LIMIT

LCS - Modified 03/06/2008
PDF File ID: 4295688
Report generated: 07/27/2015 09:14

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum: L15070974 Cal ID: HPMS8- 20-JUL-15 Worknum: WG532018

Instrument ID: HPMS8 Contract #: Prep Method: 5030B/5030C/

Parent ID: L15070974-01 File ID: 8M406238 Dil: 1 Method: 5035A

Sample ID: L15070974-02 MS File ID: 8M406228 Dil: 1 Matrix: 8260B

Sample ID: L15070974-03 MSD File ID: 8M406229 Dil: 1 Units: Water ug/L

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
1,1,1,2-Tetrachloroethane	U	20.0	20.0	99.8	20.0	19.5	97.6	2.29	80 - 130	30	
1,1,1-Trichloroethane	U	20.0	21.8	109	20.0	22.2	111	1.41	65 - 130	30	
1,1,2,2-Tetrachloroethane	U	20.0	19.4	97	20.0	20.6	103	5.97	65 - 130	30	
1,1,2-Trichloroethane	U	20.0	19.9	99.4	20.0	19.3	96.5	2.91	75 - 125	30	
1,1-Dichloroethane	U	20.0	20.8	104	20.0	20.5	102	1.67	70 - 135	30	
1,1-Dichloroethene	U	20.0	19.0	94.8	20.0	18.7	93.6	1.26	70 - 130	30	
1,1-Dichloropropene	U	20.0	20.7	103	20.0	20.5	103	0.759	75 - 130	30	
1,2,3-Trichlorobenzene	0.231	20.0	19.2	95.1	20.0	19.2	94.6	0.510	55 - 140	30	
1,2,3-Trichloropropane	U	20.0	19.7	98.4	20.0	20.2	101	2.77	75 - 125	30	
1,2,4-Trichlorobenzene	U	20.0	19.4	97.2	20.0	19.4	96.8	0.397	65 - 135	30	
1,2,4-Trimethylbenzene	U	20.0	21.1	106	20.0	21.3	107	0.880	75 - 130	30	
1,2-Dibromo-3-chloropropane	U	20.0	19.6	97.8	20.0	18.7	93.6	4.39	50 - 130	30	
1,2-Dibromoethane	U	20.0	20.0	100	20.0	19.4	97	3.11	80 - 120	30	
1,2-Dichlorobenzene	U	20.0	21.8	109	20.0	21.9	109	0.578	70 - 120	30	
1,2-Dichloroethane	U	20.0	21.0	105	20.0	20.8	104	0.964	70 - 130	30	
1,2-Dichloropropane	U	20.0	21.8	109	20.0	21.7	108	0.819	75 - 125	30	
1,3,5-Trimethylbenzene	U	20.0	21.3	107	20.0	21.5	107	0.637	75 - 130	30	
1,3-Dichlorobenzene	U	20.0	20.2	101	20.0	20.8	104	3.26	75 - 125	30	
1,4-Dichlorobenzene	U	20.0	19.4	96.8	20.0	19.9	99.5	2.71	75 - 125	30	
1-Chlorohexane	U	20.0	21.9	109	20.0	21.4	107	2.45	80 - 127	30	
2,2-Dichloropropane	U	20.0	22.6	113	20.0	22.1	110	2.38	70 - 135	30	
2-Butanone	U	20.0	20.8	104	20.0	20.8	104	0.150	30 - 150	30	
2-Chlorotoluene	U	20.0	20.8	104	20.0	21.5	108	3.25	75 - 125	30	
2-Hexanone	U	20.0	20.4	102	20.0	20.2	101	1.18	55 - 130	30	
4-Chlorotoluene	U	20.0	22.2	111	20.0	21.9	110	1.01	75 - 130	30	
4-Methyl-2-pentanone	U	20.0	21.0	105	20.0	21.6	108	2.96	60 - 135	30	
Acetone	U	20.0	24.1	121	20.0	21.9	110	9.52	40 - 140	30	
Benzene	U	20.0	21.3	106	20.0	21.4	107	0.595	80 - 120	30	
Bromobenzene	U	20.0	19.9	99.6	20.0	20.4	102	2.35	75 - 125	30	
Bromochloromethane	U	20.0	21.8	109	20.0	21.2	106	3.17	65 - 130	30	
Bromodichloromethane	U	20.0	20.9	105	20.0	21.3	107	1.92	75 - 120	30	
Bromoform	U	20.0	20.5	102	20.0	20.3	102	0.784	70 - 130	30	
Bromomethane	U	20.0	20.1	101	20.0	20.4	102	1.05	30 - 145	30	
Carbon disulfide	U	20.0	19.1	95.7	20.0	18.6	93.2	2.59	35 - 160	30	
Carbon tetrachloride	U	20.0	21.8	109	20.0	21.4	107	1.87	65 - 140	30	
Chlorobenzene	U	20.0	21.1	106	20.0	20.6	103	2.36	80 - 120	30	
Chloroethane	U	20.0	22.0	110	20.0	21.5	107	2.39	60 - 135	30	
Chloroform	U	20.0	21.6	108	20.0	21.4	107	0.727	65 - 135	30	
Chloromethane	U	20.0	17.1	85.5	20.0	16.5	82.4	3.70	40 - 125	30	
cis-1,2-Dichloroethene	3.62	20.0	23.9	101	20.0	24.0	102	0.567	70 - 125	30	
cis-1,3-Dichloropropene	U	20.0	22.7	114	20.0	22.8	114	0.396	70 - 130	30	

MS_MSD - Modified 03/06/2008
PDF File ID: 4295689
Report generated 07/27/2015 09:14

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum: L15070974 Cal ID: HPMS8 20-JUL-15 Worknum: WG532018

Instrument ID: HPMS8 Contract #: Prep Method: 5030B/5030C/

Parent ID: L15070974-01 File ID: 8M406238 Dil: 1 Method: 5035A

Sample ID: L15070974-02 MS File ID: 8M406228 Dil: 1 Matrix: 8260B

Sample ID: L15070974-03 MSD File ID: 8M406229 Dil: 1 Units: Water

ug/L

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Chlorodibromomethane	U	20.0	19.8	99.2	20.0	19.9	99.5	0.342	60 - 135	30	
Dichlorodifluoromethane	U	20.0	12.0	60.1	20.0	12.0	59.8	0.611	30 - 155	30	
Ethylbenzene	U	20.0	19.6	98.1	20.0	19.4	97.2	0.854	75 - 125	30	
Hexachlorobutadiene	U	20.0	19.4	97	20.0	18.8	94.1	3.00	50 - 140	30	
Isopropylbenzene	U	20.0	22.4	112	20.0	21.9	109	2.26	75 - 125	30	
Methylene chloride	U	20.0	21.0	105	20.0	21.0	105	0.344	55 - 140	30	
Methyl t-butyl ether (MTBE)	U	20.0	21.7	108	20.0	21.7	108	0.138	65 - 125	30	
n-Butylbenzene	U	20.0	21.4	107	20.0	21.3	107	0.521	70 - 135	30	
n-Propylbenzene	U	20.0	22.1	110	20.0	22.4	112	1.42	70 - 130	30	
Naphthalene	U	20.0	19.4	97	20.0	20.2	101	3.85	55 - 140	30	
p-Isopropyltoluene	U	20.0	21.0	105	20.0	21.4	107	2.02	75 - 130	30	
sec-Butylbenzene	U	20.0	22.3	112	20.0	22.8	114	2.00	70 - 125	30	
Styrene	U	20.0	21.1	106	20.0	21.0	105	0.506	65 - 135	30	
tert-Butylbenzene	U	20.0	20.9	104	20.0	20.7	103	1.12	70 - 130	30	
Tetrachloroethene	1.30	20.0	20.7	96.9	20.0	20.1	93.9	2.94	45 - 150	30	
Toluene	U	20.0	21.1	106	20.0	20.7	103	2.09	75 - 120	30	
trans-1,2-Dichloroethene	U	20.0	19.8	99.1	20.0	19.6	97.8	1.40	60 - 140	30	
trans-1,3-Dichloropropene	U	20.0	19.8	99.1	20.0	19.6	98.1	0.971	55 - 140	30	
Trichloroethene	7.52	20.0	26.6	95.3	20.0	25.6	90.6	3.64	70 - 125	30	
Trichlorofluoromethane	U	20.0	19.6	97.8	20.0	19.5	97.5	0.369	60 - 145	30	
Vinyl chloride	U	20.0	18.2	91.2	20.0	18.3	91.3	0.105	50 - 145	30	
Xylenes	U	60.0	64.1	107	60.0	63.0	105	1.72	80 - 120	30	

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 4295689
Report generated 07/27/2015 09:14

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070974
Blank File ID: 16G48096
Prep Date: 07/17/15 11:34
Analyzed Date: 07/17/15 11:34
Analyst: JDS

Work Group: WG531679
Blank Sample ID: WG531679-01
Instrument ID: HP16
Method: RSK175

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531679-02	16G48097	07/17/15 11:45	01
LCS2	WG531679-03	16G48098	07/17/15 11:57	01
FTB034-GM-MW-16B-071615	L15070974-01	16G48111	07/17/15 16:49	01
FTB034-GM-MW-16B-071615	L15070974-02	16G48112	07/17/15 17:00	01
FTB034-GM-MW-16B-071615	L15070974-03	16G48113	07/17/15 17:11	01

Report Name: BLANK_SUMMARY
PDF File ID: 4293608
Report generated 07/23/2015 12:40

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070974 Prep Date: 07/17/15 11:34 Sample ID: WG531679-01
Instrument ID: HP16 Run Date: 07/17/15 11:34 Prep Method: 5021
File ID: 16G48096 Analyst: JDS Method: RSK175
Workgroup (AAB#): WG531679 Matrix: Water Units: ug/L
Contract #: Cal ID: HP16 - 03-MAR-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Methane	1.00	5.00	1.00	1	U
Ethene	1.00	5.00	1.00	1	U
Ethane	1.00	5.00	1.00	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 4293609
23-JUL-2015 12:40

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070974 Analyst: JDS Prep Method: 5021
Instrument ID: HP16 Matrix: Water Method: RSK175
Workgroup (AAB#): WG531679 Units: ug/L
QC Key: DOD4 Lot #: STD68250

Sample ID: WG531679-02 LCS File ID: 16G48097 Run Date: 07/17/2015 11:45
Sample ID: WG531679-03 LCS2 File ID: 16G48098 Run Date: 07/17/2015 11:57

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Methane	114	112	98.3	114	112	97.7	0.597	85 - 115	20	
Ethene	200	197	98.6	200	194	97.1	1.55	85 - 115	20	
Ethane	214	205	95.7	214	202	94.4	1.34	85 - 115	20	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4293610
Report generated: 07/23/2015 12:40

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070974
Blank File ID: T3.072415.115401
Prep Date: 07/17/15 13:35
Analyzed Date: 07/24/15 11:54
Analyst: KHR

Work Group: WG531894
Blank Sample ID: WG531726-02
Instrument ID: ICP-THERMO3
Method: 6010C

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531726-03	T3.072415.115806	07/24/15 11:58	01
FTB034-GM-MW-16B-071615	L15070974-01	T3.072415.120154	07/24/15 12:01	01
FTB034-GM-MW-16B-071615	L15070974-02	T3.072415.120554	07/24/15 12:05	01
FTB034-GM-MW-16B-071615	L15070974-03	T3.072415.120942	07/24/15 12:09	01
FTB034-GM-MW-16B-071615	L15070974-01	T3.072415.134836	07/24/15 13:48	DL01
FTB034-GM-MW-16B-071615	L15070974-02	T3.072415.135236	07/24/15 13:52	DL01
FTB034-GM-MW-16B-071615	L15070974-03	T3.072415.135635	07/24/15 13:56	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 4302037
Report generated 07/27/2015 08:49

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070974 Prep Date: 07/17/15 13:35 Sample ID: WG531726-02
Instrument ID: ICP-THERMO3 Run Date: 07/24/15 11:54 Prep Method: 3015
File ID: T3.072415.115401 Analyst: KHR Method: 6010C
Workgroup (AAB#): WG531894 Matrix: Water Units: mg/L
Contract #: Cal ID: ICP-TH-24-JUL-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Calcium, Total	0.250	0.500	0.250	1	U
Magnesium, Total	0.250	0.500	0.250	1	U
Potassium, Total	0.500	1.00	0.500	1	U
Sodium, Total	0.250	0.500	0.250	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 4302038
27-JUL-2015 08:49

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070974 Run Date: 07/24/2015 Sample ID: WG531726-03
Instrument ID: ICP-THERMO3 Run Time: 11:58 Prep Method: 3015
File ID: T3.072415.115806 Analyst: KHR Method: 6010C
Workgroup (AAB#): WG531894 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD71485 Cal ID: ICP-TH-24-JUL-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Calcium, Total	6.25	6.13	98.1	80 - 120	
Magnesium, Total	6.25	6.17	98.7	80 - 120	
Potassium, Total	31.3	30.7	98.3	80 - 120	
Sodium, Total	31.3	30.4	97.4	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 4302039
Report generated: 07/27/2015 08:49

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum: L15070974 Cal ID: ICP-THERMO3- 24-JUL-15 Worknum: WG531894

Instrument ID: ICP-THERMO3 Contract #: Prep Method: 3015

Parent ID: L15070974-01 File ID: T3.072415.120154 Dil: 1 Method: 6010B

Sample ID: L15070974-02 MS File ID: T3.072415.120554 Dil: 1 Matrix: Water

Sample ID: L15070974-03 MSD File ID: T3.072415.120942 Dil: 1 Units: mg/L

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Magnesium, Total	23.7	6.25	29.3	89.9	6.25	28.9	83.5	1.38	80 - 120	20	
Potassium, Total	2.62	31.3	33.3	98.3	31.3	33.1	97.7	0.602	80 - 120	20	
Sodium, Total	50.9	31.3	80.9	95.9	31.3	78.8	89.5	2.52	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 4302040
Report generated 07/27/2015 08:49

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum: L15070974 Cal ID: ICP-THERMO3- 24-JUL-15 Worknum: WG531894

Instrument ID: ICP-THERMO3 Contract #: Prep Method: 3015

Parent ID: L15070974-01 File ID: T3.072415.134836 Dil: 10 Method: 6010B

Sample ID: L15070974-02 MS File ID: T3.072415.135236 Dil: 10 Matrix: Water

Sample ID: L15070974-03 MSD File ID: T3.072415.135635 Dil: 10 Units: mg/L

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Calcium, Total	86.3	6.25	90.5	67.8	6.25	85.8	-6.96	5.30	80 - 120	20	*

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 4302040
Report generated 07/27/2015 08:49

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070974
Blank File ID: I3_071715-05
Prep Date: 07/17/15 12:00
Analyzed Date: 07/17/15 13:45
Analyst: ALS

Work Group: WG531706
Blank Sample ID: WG531706-01
Instrument ID: IC3
Method: 9056

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531706-02	I3_071715-06	07/17/15 14:05	01
FTB034-GM-MW-16B-071615	L15070974-01	I3_071715-07	07/17/15 14:25	01
DUP	WG531706-04	I3_071715-08	07/17/15 14:46	01
FTB034-GM-MW-16B-071615	L15070974-02	I3_071715-09	07/17/15 15:06	01
FTB034-GM-MW-16B-071615	L15070974-03	I3_071715-10	07/17/15 15:26	01

Report Name: BLANK_SUMMARY
PDF File ID: 4291086
Report generated 07/20/2015 13:16

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070974 Prep Date: 07/17/15 12:00 Sample ID: WG531706-01
Instrument ID: IC3 Run Date: 07/17/15 13:45 Prep Method: 9056
File ID: I3 071715-05 Analyst: ALS Method: 9056
Workgroup (AAB#): WG531706 Matrix: Water Units: mg/L
Contract #: Cal ID: IC3-30-JUN-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Nitrate	0.100	0.600	0.100	1	U
Sulfate	0.500	1.00	0.500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4291087
20-JUL-2015 13:16

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070974 Run Date: 07/17/2015 Sample ID: WG531706-02
Instrument ID: IC3 Run Time: 14:05 Prep Method: 9056
File ID: I3 071715-06 Analyst: ALS Method: 9056
Workgroup (AAB#): WG531706 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD69216 Cal ID: IC3-30-JUN-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrate	5.42	5.05	93.2	90 - 110	
Sulfate	40.0	37.0	92.6	90 - 110	

LCS - Modified 03/06/2008
PDF File ID: 4291088
Report generated: 07/20/2015 13:16

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum: L15070974 Cal ID: IC3- 30-JUN-15 Worknum: WG531706

Instrument ID: IC3 Contract #: Prep Method: 9056

Parent ID: L15070974-01 File ID: I3_071715-07 Dil: 1 Method: 9056

Sample ID: L15070974-02 MS File ID: I3_071715-09 Dil: 1 Matrix: Water

Sample ID: L15070974-03 MSD File ID: I3_071715-10 Dil: 1 Units: mg/L

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Nitrate	0.303	5.42	5.25	91.4	5.42	5.23	91	0.401	90 - 110	20	
Sulfate	51.6	40.0	90.2	96.3	40.0	90.2	96.5	0.0787	90 - 110	20	

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 4291109
Report generated 07/20/2015 13:16

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070974
Blank File ID: TC07232015.013
Prep Date: 07/23/15 12:14
Analyzed Date: 07/23/15 12:14
Analyst: EPT

Work Group: WG532335
Blank Sample ID: WG532335-01
Instrument ID: TOC-VWP
Method: 9060A

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532335-02	TC07232015.016	07/23/15 13:13	01
LCS2	WG532335-03	TC07232015.017	07/23/15 14:06	01
FTB034-GM-MW-16B-071615	L15070974-01	TC07232015.021	07/23/15 17:19	01
FTB034-GM-MW-16B-071615	L15070974-02	TC07232015.022	07/23/15 18:03	01
FTB034-GM-MW-16B-071615	L15070974-03	TC07232015.023	07/23/15 18:47	01
DUP	WG532335-08	TC07232015.041	07/24/15 04:54	01

Report Name: BLANK_SUMMARY
PDF File ID: 4300595
Report generated 07/24/2015 10:26

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070974 Prep Date: 07/23/15 12:14 Sample ID: WG532335-01
Instrument ID: TOC-VWP Run Date: 07/23/15 12:14 Prep Method: 9060A
File ID: TC07232015.013 Analyst: EPT Method: 9060A
Workgroup (AAB#): WG532335 Matrix: Water Units: mg/L
Contract #: Cal ID: TOC-VW-27-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U
Total Organic Carbon Rep1	0.500	1.00	0.500	1	U
Total Organic Carbon Rep2	0.500	1.00	0.500	1	U
Total Organic Carbon Rep3	0.500	1.00	0.500	1	U
Total Organic Carbon Rep4	0.500	1.00	0.500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 4300596
24-JUL-2015 10:26

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070974 Analyst: EPT Prep Method: 9060A
Instrument ID: TOC-VWP Matrix: Water Method: 9060A
Workgroup (AAB#): WG532335 Units: mg/L
QC Key: DOD4 Lot #: STD69935

Sample ID: WG532335-02 LCS File ID: TC07232015.016 Run Date: 07/23/2015 13:13
Sample ID: WG532335-03 LCS2 File ID: TC07232015.017 Run Date: 07/23/2015 14:06

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	26.7	107	25.0	25.7	103	3.93	85 - 115	15	
Total Organic Carbon Rep1		24.8			25.6		3.21	85 - 115	15	*
Total Organic Carbon Rep2		25.6			25.7		0.702	85 - 115	15	*
Total Organic Carbon Rep3		25.2			25.5		0.868	85 - 115	15	*
Total Organic Carbon Rep4		31.3			25.9		18.7	85 - 115	15	*#

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4300597
Report generated: 07/24/2015 10:26

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum: L15070974 Cal ID: TOC-VWP- 27-MAY-15 Worknum: WG532335

Instrument ID: TOC-VWP Contract #: Prep Method: 9060A

Parent ID: L15070974-01 File ID: TC07232015.021 Dil: 1 Method: 9060A

Sample ID: L15070974-02 MS File ID: TC07232015.022 Dil: 1 Matrix: Water

Sample ID: L15070974-03 MSD File ID: TC07232015.023 Dil: 1 Units: mg/L

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Total Organic Carbon	1.73	10.0	13.8	120	10.0	13.3	116	3.40	85 - 115	15	*

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 4300598
Report generated 07/24/2015 10:26

001 - BIO-CHEM TESTING WVDEP 220
002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental
004 - MICROBAC PITTSBURGH
005 - ES LABORATORIES
006 - ALCOSAN LABORATORIES
007 - ALS LABORATORIES
008 - BENCHMARK LABORATORIES
010 - MICROBAC CHICAGOLAND
AC - AMBER R. CARMICHAEL
ADC - ANTHONY D. CANTER
ADG - APRIL D. GREENE
AED - ALLEN E. DAVIS
ALS - ADRIANE L. STEED
AWE - ANDREW W. ESSIG
AZH - AFTER HOURS
BJO - BRIAN J. OGDEN
BKT - BRENDAN TORRENCE
BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY
CAA - CASSIE A. AUGENSTEIN
CAF - CHERYL A. FLOWERS
CEB - CHAD E. BARNES
CJR - COURTNEY J. REXROAD
CLC - CHRYS L. CRAWFORD
CLS - CARA L. STRICKLER
CLW - CHARISSA L. WINTERS
CPD - CHAD P. DAVIS
CSH - CHRIS S. HILL
DAK - DEAN A. KETELSEN
DCM - DAVID C. MERCKLE
DEV - DAVID E. VANDENBERG
DIH - DEANNA I. HESSON
DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE
DLW - DIANA L. WRIGHT
DSM - DAVID S. MOSSOR
ECL - ERIC C. LAWSON
ENY - EMILY N. YOAK
EPT - ETHAN P. TIDD
ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN
JBK - JEREMY B. KINNEY
JDH - JUSTIN D. HESSON
JDS - JARED D. SMITH
JJS - JOHN J. STE MARIE
JKP - JACQUELINE K. PARSONS
JLL - JOHN L. LENT
JMW - JEANA M. WHITE
JTP - JOSHUA T. PEMBERTON
JWR - JOHN W. RICHARDS
JWS - JACK W. SHEAVES
JYH - JI Y. HU
KAJ - KELLIE A. JOHNSON
KAT - KATHY A. TUCKER
KDW - KATHRYN D. WELCH
KEB - KATIE E. BARNES
KHR - KIM H. RHODES
KKB - KERRI K. BUCK
KRA - KATHY R. ALBERTSON
KRB - KAELY R. BECKER
KRP - KATHY R. PARSONS
LEC - LAURA E. CARPENTER
LKN - LINDA K. NEDEFF
LLS - LARRY L. STEPHENS
LSB - LESLIE S. BUCINA
MBK - MORGAN B. KNOWLTON
MDA - MIKE D. ALBERTSON
MDC - MIKE D. COCHRAN
MES - MARY E. SCHILLING
MLB - MEGAN L. BACHE
MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR
MSW - MATT S. WILSON
PDM - PIERCE D. MORRIS
PIT - MICROBAC WARRENDALE
PRL - PAIGE R. LAMB
PSW - PEGGY S. WEBB
QX - QIN XU
RAH - ROY A. HALSTEAD
REK - BOB E. KYER
RLB - BOB BUCHANAN
RM - RAYMOND MALEKE
RNP - RICK N. PETTY
RST - ROBIN S. TURNER
SAV - SARAH A. VANDENBERG
SCB - SARAH C. BOGOLIN
SDC - SHALYN D. CONLEY
SLM - STEPHANIE L. MOSSBURG
SLP - SHERI L. PFALZGRAF
TB - TODD BOYLE
TGF - TIM G. FELTON
TMB - TIFFANY M. BAILEY
TMM - TAMMY M. MORRIS
VC - VICKI COLLIER
WJB - WILL J. BEASLEY
WRR - WESLEY R. RICHARDS
WTD - WADE T. DELONG
XXX - UNAVAILABLE OR SUBCONTRACT

Microbac Laboratories Inc.
List of Valid Qualifiers
July 28, 2015

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B,H1	Analyte present in method blank. Sample analysis performed past holding time.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	Cooler temperature at sample reciept exceeded regulatory limit.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
E,CT1	Estimated results. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
H1	Sample analysis performed past holding time.
H1,CT1	Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guidelines for reque
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value ; the analyte concentration was less than the LOQ. Cooler temperature at sample reciept exceeded regu
J,H1	Estimated value ; the analyte concentration was less than the LOQ. Sample analysis performed past holding time.
J,H1	The reported result is an estimated value. Sample was analyzed past holding time.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentativlely identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL/MDL).
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
ND,H1	Not detected; Sample analysis performed past holding time.
ND,H1,CT1	Not detected; Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guide
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
Q,H1	One or more quality control criteria failed. Sample analyzed past holding time. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
T5	Laboratory not licensed for this parameter
TIC	Library Search Compound
TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.

Qualkey: DOD

TNTC,CT1	Too numerous to count. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
TNTC,H1	Too numerous to count. Sample analysis performed past holding time.
U	Analyte was not detected. The concentration is below the reported LOD.
U,CT1	Analyte was not detected. The concentration is below the reported LOD. Cooler temperature at sample reciept exceeded
U,H1	Not detected; Sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

Microbac

Co.Name: Kemron Environmental Services
Prj Contact: Jeanette Hamm
Prj Name: Ft. Buchanan
Location: Bayamon, PR

TAT: STD
Phone: 404-636-0858

COC No. 1

Sampler Print: Charlie Taylor

Sampler Sign:

Sample ID	Comp	Grab	Date	Time	Hold	# of Containers	Anions (Sulfate/Nitrate) 9056A	Cations (Mg, Ca, Na, K) 6010C	TOC 9060A	Diss Gas RSK175	VOC 8260B						Notes:
FTBC04-GM-MW-16B 071615		✓	7/16/15	0951		27	✓	✓	✓	✓	✓						MS/MSD
Trip Blank		✓	7/16/15			2					✓						

Relinquished By: [signature]
Date/Time 7/16/15 1710

Received By:

Microbac OVD
Received: 07/17/2015 10:17
By: CARA STRICKLER
221000072770

Relinquished By:
Date/Time

Cara Strickler

Relinquished By
Date/Time:

Received By:
Date/Time:

Cooler Temp(s):

Comments:

COMMERCIAL INVOICE (Factura Comercial)

This invoice must be completed in English (Esta factura se debe llenar en ingles)

SHIPPED FROM (Envio de):
Tax ID/VAT No. (No de Identificación): 11-2393978
Contact Name (Nombre): Jeanette Hamm
Telephone No. (Teléfono): 404-643-2033
E-Mail (E-Mail): jhamm@kemron.com
Company Name/Address (Compania/Dirección):
KEMRON Environmental Services
1359A Ellsworth Industrial Boulevard
Atlanta, GA 30318

Country (Pais): United States
Parties to Transaction:
☑ **Related** (Vinculado) ☐ **Non-related** (No Vinculado)

Date (Fecha): 07/16/2015
Air Waybill No. (Conocimiento de Embarque):
Invoice No. (No de la Factura): Not Applicable
Purchase Order No. (No de Orden de Compra): Not Applicable
Payment Terms (Terminos de Pago): Paid when Paid
Incoterms (Incoterms): CPT=CARRIAGE PAID TO
Reason for Export:
Sold (Vendido) ✓ **Not Sold** (No Esta Vendido) **Other** (Otro)

SHIPPED TO (Destinatario):
Tax ID/VAT No. (No de Identificación): 25-1199642
Contact Name (Nombre): Stephanie Mossburg
Telephone No. (Teléfono): 1-800-373-4071
E-Mail (E-Mail): Stephanie.Mossburg@microbac.com
Company Name/Address (Compania/Dirección):
Microbac Laboratories, Inc.
158 Starlite Drive
Marietta, OH 45750

Country (Pais): USA

SOLD TO (Vendido a): **Same as SHIPPED TO (Igual que el Destinatario):**
Company Name/Address (Compania/Dirección):
Country (Pais): USA

No. of Packages (No de Paquetes)	No. of Units (No Unitario)	Unit of Measure (Unidad de Medida)	Description of Goods (Including Harmonized Tariff No.) (Descripción de la Mercancia [Con No de Clasificación Arancelaria])	Country of Origin (Pais de Origen)	Value Unit (Precio Unitario)	Total Value (Precio Total)
1	8	each	Groundwater Samples for analysis	PR	10.00	80.00
						0.00
						0.00

Total No. of Packages (Total de Paquetes): 1
Total Weight (Indicate LBS or KGS) (Peso Total [En Lbs o Kgs]): 50 LBS

Special Instructions (Instrucciones Especiales):
This package contains soil samples which will be used for destructive analysis.

Declaration Statement(s) (Declaración[es]):

Subtotal (Subtotal):	80.00
Insurance (Seguro):	0.00
Freight (Flete):	0.00
Packing (Embalaje):	0.00
Handling (Manejo):	0.00
Other (Otros):	0.00
Invoice Total (Total):	80.00
Currency Code (Tipo de Moneda):	

Signature/Title (Firma del Declarante/Puesto)
Date (Fecha)

TOXIC SUBSTANCE CONTROL ACT (TSCA) CERTIFICATION

Date: July 6, 2015

(CHECK ONE SECTION ONLY)

POSITIVE CERTIFICATION

_____ "I certify that all chemical substances in this shipment comply with all applicable rules or orders under TSCA and that I am not offering a chemical substance for entry in violation of TSCA or any applicable rules order thereunder."

● OR ●

NEGATIVE CERTIFICATION

X "I certify that all chemical substances in this shipment are not subject to TSCA."

Company Name: KEMRON Environmental Services

Company Address: 1359A Ellsworth Industrial Boulevard

City/State: Atlanta, GA

Country/Zip: USA, 30318

Authorized Name: Charlie Taylor

Authorized Signature: _____

Title: Site Manager

Federal Express AWB#: _____

If the certifier is unsure if their chemical substance is subject to TSCA compliance, contact the Environmental Protection Agency, TSCA Assistance Office, Washington, D.C. (202) 554-1404 between 8:30 am and 5:00 pm EST.

Revised 04-2009

Internal Chain of Custody Report

Login: L15070974
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 28-JUL-2015

Samplenum	Container ID	Products
L15070974-01	603786	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:37	AWE	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:37	AWE	CLS	

Samplenum	Container ID	Products
L15070974-01	603787	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Samplenum	Container ID	Products
L15070974-01	603788	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	17-JUL-2015 11:21	CLS		
2	PREP	L1	SEM	17-JUL-2015 11:33	ALS	CLS	
3	STORE	SEM	A2	21-JUL-2015 09:30	CLS	ALS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15070974
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 28-JUL-2015

Samplenum	Container ID	Products
L15070974-01	603789	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUL-2015 11:21	CLS		
2	ANALYZ	W1	WET	20-JUL-2015 08:25	EPT	CLS	
3	STORE	WET	A2	21-JUL-2015 08:24	BRG	EPT	
4	ANALYZ	A2	WET	22-JUL-2015 08:07	EPT	BRG	
5	STORE	WET	A2	24-JUL-2015 08:25	BRG	EPT	

Samplenum	Container ID	Products
L15070974-01	603790	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUL-2015 11:21	CLS		
2	PREP	W1	DIG	17-JUL-2015 13:24	ERP	CLS	
3	STORE	W1	DIG	17-JUL-2015 15:01	CLS	ERP	
4	ANALYZ*	DIG	METALS	20-JUL-2015 11:46	KHR	ERP	

Sample extract/digestate/leachate

Samplenum	Container ID	Products
L15070974-02	603791	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:37	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:37	AWE	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:37	AWE	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L15070974
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 28-JUL-2015

Samplenum	Container ID	Products
L15070974-02	603792	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Samplenum	Container ID	Products
L15070974-02	603793	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	17-JUL-2015 11:21	CLS		
2	PREP	L1	SEM	17-JUL-2015 11:33	ALS	CLS	
3	STORE	SEM	A2	21-JUL-2015 09:30	CLS	ALS	

Samplenum	Container ID	Products
L15070974-02	603794	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUL-2015 11:21	CLS		
2	ANALYZ	W1	WET	20-JUL-2015 08:25	EPT	CLS	
3	STORE	WET	A2	21-JUL-2015 08:24	BRG	EPT	
4	ANALYZ	A2	WET	22-JUL-2015 08:07	EPT	BRG	
5	STORE	WET	A2	24-JUL-2015 08:25	BRG	EPT	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15070974
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 28-JUL-2015

Samplenum	Container ID	Products
L15070974-02	603795	K MG NA CA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUL-2015 11:21	CLS		
2	PREP	W1	DIG	17-JUL-2015 13:24	ERP	CLS	
3	STORE	W1	DIG	17-JUL-2015 15:01	CLS	ERP	
4	ANALYZ*	DIG	METALS	20-JUL-2015 11:46	KHR	ERP	

Sample extract/digestate/leachate

Samplenum	Container ID	Products
L15070974-03	603796	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Samplenum	Container ID	Products
L15070974-03	603797	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15070974
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 28-JUL-2015

Samplenum	Container ID	Products
L15070974-03	603798	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	17-JUL-2015 11:21	CLS		
2	PREP	L1	SEM	17-JUL-2015 11:33	ALS	CLS	
3	STORE	SEM	A2	21-JUL-2015 09:30	CLS	ALS	

Samplenum	Container ID	Products
L15070974-03	603799	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUL-2015 11:21	CLS		
2	ANALYZ	W1	WET	20-JUL-2015 08:25	EPT	CLS	
3	STORE	WET	A2	21-JUL-2015 08:24	BRG	EPT	
4	ANALYZ	A2	WET	22-JUL-2015 08:07	EPT	BRG	
5	STORE	WET	A2	24-JUL-2015 08:25	BRG	EPT	

Samplenum	Container ID	Products
L15070974-03	603800	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUL-2015 11:21	CLS		
2	PREP	W1	DIG	17-JUL-2015 13:24	ERP	CLS	
3	STORE	W1	DIG	17-JUL-2015 15:01	CLS	ERP	
4	ANALYZ*	DIG	METALS	20-JUL-2015 11:46	KHR	ERP	

Sample extract/digestate/leachate

Samplenum	Container ID	Products
L15070974-04	603801	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

ANALYTICAL SERVICES, INC.

Virginia Office
402 North West Street
Culpeper, Virginia 22701
540-829-5642 Office
540-829-5641 Fax

DATA CERTIFICATION

The attached laboratory report L15070975 consisting of 548 pages, has been certified by David E. Vandenberg, Managing Director, Microbac Laboratories. The data contained herein was completed in accordance with the requirements of the DoD QSM and other applicable contract terms and conditions.

I hereby certify that this laboratory report and associated documentation has been reviewed and approved.

Ralph Abbondanza, REM
Vice President
PR Chemist's License #3803

ESTADO LIBRE ASOCIADO DE PUERTO RICO
A 1448796
Ralph Abbondanza III
Zomaitis
Lic.#3803
QUIMICO LICENCIADO

Microbac

Laboratory Report Number: L15070975

Jeanette Hamm
Kemron Environmental Services
1359 Ellsworth Industrial Blvd.
Atlanta, GA 30082

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Stephanie Mossburg – Team Chemist/Data Specialist
(740) 373-4071
Stephanie.Mossburg@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on July 29 2015

David Vandenberg – Managing Director

State of Origin: PR
Accrediting Authority: N/A ID:N/A
QAPP: DOD Ver 4.2 without flagging

Microbac

Lab Report #: L15070975
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

There were no discrepancies.

Discrepancy	Resolution

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
00112432	H	2.0		1004161162410004575000808288275592	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	Yes

Microbac

Lab Report #: L15070975
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
FTB034-GM-MW-7A-071615	L15070975-01	07/16/2015 14:36	07/17/2015 10:17
FTB034-GM-MW-7B-071615	L15070975-02	07/16/2015 13:41	07/17/2015 10:17
FTB034-GM-MW-20-071615	L15070975-03	07/16/2015 08:26	07/17/2015 10:17

Login Number: L15070975
Department: Volatiles
Analyst: Anthony Canter

METHOD

Preparation SW-846 5030C/5035A

Analysis SW-846 8260B

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: The percent difference was out of range for the following analytes: Carbon Disulfide, Trichlorofluoromethane. Please see the applicable QC report for a detailed presentation of the failures.

Continuing Calibration and Tune: Recoveries out of range were observed for the following analytes: Dichlorodifluoromethane. Please see the applicable QC report for a detailed presentation of the failures.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: Recoveries out of range were observed for the following analytes: 2-Hexanone. Please see the applicable QC report for a detailed presentation of the failures.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC

prescribed MS/MSD. Microbac Laboratories recommends site specific MS/MSD samples to avoid possible data qualifications.

SAMPLES

Internal Standards: All acceptance criteria were met.

Surrogates: All acceptance criteria were met.

Other: None.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak. In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak. This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline. There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous. Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Managing Director or the QAO will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 102103
Approved By: Franci Bolden

Login Number: L15070975
Department: Volatiles - GC
Analyst: Jared Smith

Analysis RSK-175

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes/Sample Duplicates: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. Microbac Laboratories recommends site specific MS/MSD samples to avoid possible data qualifications.

SAMPLES

Samples: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

Narrative ID: 101898
Approved By: Franci Bolden

Login Number: L15070975
Department: Metals
Analyst: Kim Rhodes

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG531894 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: WG531894 - Client samples 01 and 03 required dilution analyses in order to obtain results for calcium within the calibration range. A linear range check for magnesium was analyzed with the client samples.

Narrative ID: 102001
Approved By: Brendan Torrence

Login Number: L15070975
Department: General Chromatography
Analyst: Adriane Steed

METHOD

Analysis EPA300.0/SW846 9056

HOLDING TIMES

Sample Analysis: Hold times for NO2 and NO3 are 48 hours and the hold times for F, Cl, Br, and SO4 are 28 days. The hold time forms calculate the hold time based on 48 hours. All samples were analyzed in hold.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group.

SAMPLES

Samples: All acceptance criteria were met.

MANUAL INTEGRATION: No manual integration required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data

contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 101707
Approved By: Wade DeLong

Login Number: L15070975
Department: Conventionals
Analyst: Ethan Tidd

METHOD

Analysis Water: EPA 415.1/SM5310C/SW846 9060 (Total Organic Carbon)
Soil: Lloyd-Khan Methodology

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 101952
Approved By: Deanna Hesson

Certificate of Analysis

Sample #:	L15070975-01	**PrePrep Method:**	N/A	**Instrument:**	HPMS17
Client ID:	FTB034-GM-MW-7A-071615	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	05/18/2015 14:34
Workgroup #:	WG532514	**Analyst:**	ADC	**Run Date:**	07/24/2015 17:22
Collect Date:	07/16/2015 14:36	**Dilution:**	1	**File ID:**	17M013928
Sample Tag:	02	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	0.343	J	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6	1.41		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	109	70	120	
4-Bromofluorobenzene	101	75	120	
Dibromofluoromethane	96.6	85	115	
Toluene-d8	102	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L15070975-01	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-7A-071615	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531679	**Analyst:**	JDS	**Run Date:**	07/17/2015 17:23
Collect Date:	07/16/2015 14:36	**Dilution:**	1	**File ID:**	16G48114
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8	6.85		5.00	1.00
Ethene	74-85-1		U	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070975-01	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	FTB034-GM-MW-7A-071615	**Prep Method:**	3015	**Prep Date:**	07/17/2015 13:35
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/24/2015 09:29
Workgroup #:	WG531894	**Analyst:**	KHR	**Run Date:**	07/24/2015 12:13
Collect Date:	07/16/2015 14:36	**Dilution:**	1	**File ID:**	T3.072415.121330
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Magnesium, Total	7439-95-4	24.9		0.500	0.250
Potassium, Total	7440-09-7	2.14		1.00	0.500
Sodium, Total	7440-23-5	38.9		0.500	0.250

Sample #:	L15070975-01	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	FTB034-GM-MW-7A-071615	**Prep Method:**	3015	**Prep Date:**	07/17/2015 13:35
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/24/2015 09:29
Workgroup #:	WG531894	**Analyst:**	KHR	**Run Date:**	07/24/2015 14:00
Collect Date:	07/16/2015 14:36	**Dilution:**	10	**File ID:**	T3.072415.140035
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	76.1		5.00	2.50

Certificate of Analysis

Sample #:	L15070975-01	**PrePrep Method:**	N/A	**Instrument:**	IC3
Client ID:	FTB034-GM-MW-7A-071615	**Prep Method:**	9056	**Prep Date:**	07/17/2015 12:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	06/30/2015 12:33
Workgroup #:	WG531706	**Analyst:**	ALS	**Run Date:**	07/17/2015 15:47
Collect Date:	07/16/2015 14:36	**Dilution:**	1	**File ID:**	I3_071715-11
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8	0.420	J	0.600	0.100
Sulfate	14808-79-8	35.3		1.00	0.500
J	Estimated value ; the analyte concentration was less than the LOQ.				

Sample #:	L15070975-01	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-MW-7A-071615	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG532335	**Analyst:**	EPT	**Run Date:**	07/23/2015 19:30
Collect Date:	07/16/2015 14:36	**Dilution:**	1	**File ID:**	TC07232015.024
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	1.95		1.00	0.500
Total Organic Carbon Rep1		1.55		1.00	0.500
Total Organic Carbon Rep2		2.00		1.00	0.500
Total Organic Carbon Rep3		1.95		1.00	0.500
Total Organic Carbon Rep4		2.29		1.00	0.500

Sample #:	L15070975-02	**PrePrep Method:**	N/A	**Instrument:**	HPMS17
Client ID:	FTB034-GM-MW-7B-071615	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	05/18/2015 14:34
Workgroup #:	WG532514	**Analyst:**	ADC	**Run Date:**	07/24/2015 17:42
Collect Date:	07/16/2015 13:41	**Dilution:**	1	**File ID:**	17M013929
Sample Tag:	02	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4	0.626	J	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	15.9		1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5	1.02		1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6	2.50		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4	8.22		1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	110	70	120	
4-Bromofluorobenzene	101	75	120	
Dibromofluoromethane	97.9	85	115	
Toluene-d8	101	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070975-02	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-7B-071615	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531679	**Analyst:**	JDS	**Run Date:**	07/17/2015 17:35
Collect Date:	07/16/2015 13:41	**Dilution:**	1	**File ID:**	16G48115
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8	6.51		5.00	1.00
Ethene	74-85-1	1.35	J	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L15070975-02	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	FTB034-GM-MW-7B-071615	**Prep Method:**	3015	**Prep Date:**	07/17/2015 13:35
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/24/2015 09:29
Workgroup #:	WG531894	**Analyst:**	KHR	**Run Date:**	07/24/2015 12:17
Collect Date:	07/16/2015 13:41	**Dilution:**	1	**File ID:**	T3.072415.121730
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	20.6		0.500	0.250
Magnesium, Total	7439-95-4	8.79		0.500	0.250
Potassium, Total	7440-09-7	0.804	J	1.00	0.500
Sodium, Total	7440-23-5	15.8		0.500	0.250

J	Estimated value ; the analyte concentration was less than the LOQ.

Sample #:	L15070975-02	**PrePrep Method:**	N/A	**Instrument:**	IC3
Client ID:	FTB034-GM-MW-7B-071615	**Prep Method:**	9056	**Prep Date:**	07/17/2015 12:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	06/30/2015 12:33
Workgroup #:	WG531706	**Analyst:**	ALS	**Run Date:**	07/17/2015 16:07
Collect Date:	07/16/2015 13:41	**Dilution:**	1	**File ID:**	I3_071715-12
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8	0.317	J	0.600	0.100
Sulfate	14808-79-8	24.3		1.00	0.500

J	Estimated value ; the analyte concentration was less than the LOQ.

Sample #:	L15070975-02	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-MW-7B-071615	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG532335	**Analyst:**	EPT	**Run Date:**	07/23/2015 20:14
Collect Date:	07/16/2015 13:41	**Dilution:**	1	**File ID:**	TC07232015.025
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	3.91		1.00	0.500
Total Organic Carbon Rep1		3.86		1.00	0.500
Total Organic Carbon Rep2		3.93		1.00	0.500
Total Organic Carbon Rep3		3.95		1.00	0.500
Total Organic Carbon Rep4		3.90		1.00	0.500

Certificate of Analysis

Sample #:	L15070975-03	**PrePrep Method:**	N/A	**Instrument:**	HPMS17
Client ID:	FTB034-GM-MW-20-071615	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	05/18/2015 14:34
Workgroup #:	WG532514	**Analyst:**	ADC	**Run Date:**	07/24/2015 18:02
Collect Date:	07/16/2015 08:26	**Dilution:**	1	**File ID:**	17M013930
Sample Tag:	02	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	0.951	J	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6	1.04		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	110	70	120	
4-Bromofluorobenzene	101	75	120	
Dibromofluoromethane	96.8	85	115	
Toluene-d8	99.9	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L15070975-03	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-20-071615	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531679	**Analyst:**	JDS	**Run Date:**	07/17/2015 17:46
Collect Date:	07/16/2015 08:26	**Dilution:**	1	**File ID:**	16G48116
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8	1.66	J	5.00	1.00
Ethene	74-85-1		U	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070975-03	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	FTB034-GM-MW-20-071615	**Prep Method:**	3015	**Prep Date:**	07/17/2015 13:35
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/24/2015 09:29
Workgroup #:	WG531894	**Analyst:**	KHR	**Run Date:**	07/24/2015 12:21
Collect Date:	07/16/2015 08:26	**Dilution:**	1	**File ID:**	T3.072415.122130
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Magnesium, Total	7439-95-4	23.7		0.500	0.250
Potassium, Total	7440-09-7	2.43		1.00	0.500
Sodium, Total	7440-23-5	52.2		0.500	0.250

Sample #:	L15070975-03	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	FTB034-GM-MW-20-071615	**Prep Method:**	3015	**Prep Date:**	07/17/2015 13:35
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/24/2015 09:29
Workgroup #:	WG531894	**Analyst:**	KHR	**Run Date:**	07/24/2015 14:04
Collect Date:	07/16/2015 08:26	**Dilution:**	10	**File ID:**	T3.072415.140435
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	79.8		5.00	2.50

Certificate of Analysis

Sample #:	L15070975-03	**PrePrep Method:**	N/A	**Instrument:**	IC3
Client ID:	FTB034-GM-MW-20-071615	**Prep Method:**	9056	**Prep Date:**	07/17/2015 12:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	06/30/2015 12:33
Workgroup #:	WG531706	**Analyst:**	ALS	**Run Date:**	07/17/2015 16:27
Collect Date:	07/16/2015 08:26	**Dilution:**	1	**File ID:**	I3_071715-13
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8	0.353	J	0.600	0.100
Sulfate	14808-79-8	64.5		1.00	0.500
J	Estimated value ; the analyte concentration was less than the LOQ.				

Sample #:	L15070975-03	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-MW-20-071615	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG532335	**Analyst:**	EPT	**Run Date:**	07/23/2015 21:16
Collect Date:	07/16/2015 08:26	**Dilution:**	1	**File ID:**	TC07232015.028
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	1.23		1.00	0.500
Total Organic Carbon Rep1		0.805	J	1.00	0.500
Total Organic Carbon Rep2		1.16		1.00	0.500
Total Organic Carbon Rep3		1.41		1.00	0.500
Total Organic Carbon Rep4		1.53		1.00	0.500
J	Estimated value ; the analyte concentration was less than the LOQ.				

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070975
Blank File ID: 17M013911
Prep Date: 07/24/15 12:03
Analyzed Date: 07/24/15 12:03
Analyst: ADC

Work Group: WG532514
Blank Sample ID: WG532514-01
Instrument ID: HPMS17
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532514-02	17M013916	07/24/15 13:23	01
LCS2	WG532514-03	17M013917	07/24/15 13:43	01
FTB034-GM-MW-7A-071615	L15070975-01	17M013928	07/24/15 17:22	02
FTB034-GM-MW-7B-071615	L15070975-02	17M013929	07/24/15 17:42	02
FTB034-GM-MW-20-071615	L15070975-03	17M013930	07/24/15 18:02	02

Report Name: BLANK_SUMMARY
PDF File ID: 4299448
Report generated 07/28/2015 16:58

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070975
Blank File ID: 17M013943
Prep Date: 07/24/15 22:21
Analyzed Date: 07/24/15 22:21
Analyst: ADC

Work Group: WG532514
Blank Sample ID: WG532514-04
Instrument ID: HPMS17
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532514-02	17M013916	07/24/15 13:23	01
LCS2	WG532514-03	17M013917	07/24/15 13:43	01
FTB034-GM-MW-7A-071615	L15070975-01	17M013928	07/24/15 17:22	02
FTB034-GM-MW-7B-071615	L15070975-02	17M013929	07/24/15 17:42	02
FTB034-GM-MW-20-071615	L15070975-03	17M013930	07/24/15 18:02	02

Report Name: BLANK_SUMMARY
PDF File ID: 4299448
Report generated 07/28/2015 16:58

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070975 Prep Date: 07/24/15 12:03 Sample ID: WG532514-01
Instrument ID: HPMS17 Run Date: 07/24/15 12:03 Prep Method: 5030B/5030C/503
File ID: 17M013911 Analyst: ADC Method: 8260B
Workgroup (AAB#): WG532514 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS17-18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	2.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1-Chlorohexane	0.125	1.00	0.125	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
2-Butanone	2.50	5.00	2.50	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
2-Hexanone	2.50	5.00	2.50	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	5.00	2.50	1	U
Acetone	2.50	5.00	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U

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METHOD BLANK REPORT

Login Number: L15070975 Prep Date: 07/24/15 12:03 Sample ID: WG532514-01
Instrument ID: HPMS17 Run Date: 07/24/15 12:03 Prep Method: 5030B/5030C/503
File ID: 17M013911 Analyst: ADC Method: 8260B
Workgroup (AAB#): WG532514 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS17-18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U
Isopropylbenzene	0.250	1.00	0.250	1	U
Methylene chloride	0.250	1.00	0.250	1	U
Methyl t-butyl ether (MTBE)	0.500	1.00	0.500	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Naphthalene	0.200	1.00	0.200	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	109	70 - 120	PASS
4-Bromofluorobenzene	98.1	75 - 120	PASS
Dibromofluoromethane	95.0	85 - 115	PASS
Toluene-d8	100	85 - 120	PASS

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
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Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070975 Prep Date: 07/24/15 22:21 Sample ID: WG532514-04
Instrument ID: HPMS17 Run Date: 07/24/15 22:21 Prep Method: 5030B/5030C/503
File ID: 17M013943 Analyst: ADC Method: 8260B
Workgroup (AAB#): WG532514 Matrix: Water 2 Units: ug/L
Contract #: Cal ID: HPMS17-18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.751	1	*
1,2-Dibromo-3-chloropropane	1.00	2.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1-Chlorohexane	0.125	1.00	0.125	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
2-Butanone	2.50	5.00	2.50	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
2-Hexanone	2.50	5.00	2.50	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	5.00	2.50	1	U
Acetone	2.50	5.00	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U

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Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070975 Prep Date: 07/24/15 22:21 Sample ID: WG532514-04
Instrument ID: HPMS17 Run Date: 07/24/15 22:21 Prep Method: 5030B/5030C/503
File ID: 17M013943 Analyst: ADC Method: 8260B
Workgroup (AAB#): WG532514 Matrix: Water 2 Units: ug/L
Contract #: Cal ID: HPMS17-18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U
Isopropylbenzene	0.250	1.00	0.250	1	U
Methylene chloride	0.250	1.00	0.250	1	U
Methyl t-butyl ether (MTBE)	0.500	1.00	0.500	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Naphthalene	0.200	1.00	0.258	1	J
p-Isopropyltoluene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.437	1	J
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes	0.500	1.00	1.33	1	*

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	102	70 - 120	PASS
4-Bromofluorobenzene	109	75 - 120	PASS
Dibromofluoromethane	90.0	85 - 115	PASS
Toluene-d8	103	85 - 120	PASS

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
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Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070975 Run Date: 07/24/2015 Sample ID: WG532514-02
Instrument ID: HPMS17 Run Time: 13:23 Prep Method: 5030B/5030C/503
File ID: 17M013916 Analyst: ADC Method: 8260B
Workgroup (AAB#): WG532514 Matrix: Water Units: ug/L
QC Key: DOD4 Lot#: STD71570 Cal ID: HPMS17-18-MAY-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
1,1,1,2-Tetrachloroethane	20.0	18.7	93.5	80 - 130	
1,1,1-Trichloroethane	20.0	19.9	99.5	65 - 130	
1,1,2,2-Tetrachloroethane	20.0	19.0	94.8	65 - 130	
1,1,2-Trichloroethane	20.0	20.2	101	75 - 125	
1,1-Dichloroethane	20.0	20.1	101	70 - 135	
1,1-Dichloroethene	20.0	17.5	87.7	70 - 130	
1,1-Dichloropropene	20.0	19.5	97.7	75 - 130	
1,2,3-Trichlorobenzene	20.0	19.0	95.0	55 - 140	
1,2,3-Trichloropropane	20.0	21.4	107	75 - 125	
1,2,4-Trichlorobenzene	20.0	18.7	93.3	65 - 135	
1,2,4-Trimethylbenzene	20.0	17.8	89.2	75 - 130	
1,2-Dibromo-3-chloropropane	20.0	22.1	110	50 - 130	
1,2-Dibromoethane	20.0	21.1	106	80 - 120	
1,2-Dichlorobenzene	20.0	18.5	92.3	70 - 120	
1,2-Dichloroethane	20.0	21.0	105	70 - 130	
1,2-Dichloropropane	20.0	19.6	98.0	75 - 125	
1,3,5-Trimethylbenzene	20.0	18.2	90.8	75 - 130	
1,3-Dichlorobenzene	20.0	18.3	91.6	75 - 125	
1,4-Dichlorobenzene	20.0	17.7	88.4	75 - 125	
1-Chlorohexane	20.0	20.9	105	80 - 127	
2,2-Dichloropropane	20.0	21.1	106	70 - 135	
2-Butanone	20.0	26.3	131	30 - 150	
2-Chlorotoluene	20.0	18.7	93.3	75 - 125	
2-Hexanone	20.0	26.3	131	55 - 130	*
4-Chlorotoluene	20.0	19.0	95.0	75 - 130	
4-Methyl-2-pentanone	20.0	22.8	114	60 - 135	
Acetone	20.0	25.9	130	40 - 140	
Benzene	20.0	18.8	93.9	80 - 120	
Bromobenzene	20.0	18.0	90.2	75 - 125	
Bromochloromethane	20.0	20.2	101	65 - 130	
Bromodichloromethane	20.0	19.6	97.8	75 - 120	
Bromoform	20.0	22.7	114	70 - 130	
Bromomethane	20.0	17.4	87.0	30 - 145	
Carbon disulfide	20.0	9.63	48.2	35 - 160	
Carbon tetrachloride	20.0	20.2	101	65 - 140	
Chlorobenzene	20.0	19.5	97.4	80 - 120	
Chloroethane	20.0	17.7	88.4	60 - 135	
Chloroform	20.0	20.7	103	65 - 135	
Chloromethane	20.0	23.3	117	40 - 125	
cis-1,2-Dichloroethene	20.0	19.0	94.8	70 - 125	
cis-1,3-Dichloropropene	20.0	20.7	103	70 - 130	

LCS - Modified 03/06/2008
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Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070975 Run Date: 07/24/2015 Sample ID: WG532514-02
Instrument ID: HPMS17 Run Time: 13:23 Prep Method: 5030B/5030C/503
File ID: 17M013916 Analyst: ADC Method: 8260B
Workgroup (AAB#): WG532514 Matrix: Water Units: ug/L
QC Key: DOD4 Lot#: STD71570 Cal ID: HPMS17 - 18-MAY-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Chlorodibromomethane	20.0	20.5	102	60 - 135	
Dichlorodifluoromethane	20.0	27.3	137	30 - 155	
Ethylbenzene	20.0	18.9	94.5	75 - 125	
Hexachlorobutadiene	20.0	16.4	81.9	50 - 140	
Isopropylbenzene	20.0	19.5	97.5	75 - 125	
Methylene chloride	20.0	18.7	93.4	55 - 140	
Methyl t-butyl ether (MTBE)	20.0	23.3	116	65 - 125	
n-Butylbenzene	20.0	18.7	93.4	70 - 135	
n-Propylbenzene	20.0	19.0	95.0	70 - 130	
Naphthalene	20.0	20.3	102	55 - 140	
p-Isopropyltoluene	20.0	17.5	87.3	75 - 130	
sec-Butylbenzene	20.0	18.1	90.6	70 - 125	
Styrene	20.0	19.2	95.8	65 - 135	
tert-Butylbenzene	20.0	17.9	89.5	70 - 130	
Tetrachloroethene	20.0	19.2	95.9	45 - 150	
Toluene	20.0	19.3	96.7	75 - 120	
trans-1,2-Dichloroethene	20.0	18.5	92.4	60 - 140	
trans-1,3-Dichloropropene	20.0	21.2	106	55 - 140	
Trichloroethene	20.0	18.5	92.6	70 - 125	
Trichlorofluoromethane	20.0	19.2	95.9	60 - 145	
Vinyl chloride	20.0	21.3	106	50 - 145	
Xylenes	60.0	58.4	97.3	80 - 120	

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	108	70 - 120	PASS
4-Bromofluorobenzene	97.9	75 - 120	PASS
Dibromofluoromethane	96.8	85 - 115	PASS
Toluene-d8	101	85 - 120	PASS

* EXCEEDS %REC LIMIT

LCS - Modified 03/06/2008
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Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070975 Analyst: ADC Prep Method: 5030B/5030C/503
Instrument ID: HPMS17 Matrix: Water Method: 8260B
Workgroup (AAB#): WG532514 Units: ug/L
QC Key: DOD4 Lot #: STD71570

Sample ID: WG532514-02 LCS File ID: 17M013916 Run Date: 07/24/2015 13:23
Sample ID: WG532514-03 LCS2 File ID: 17M013917 Run Date: 07/24/2015 13:43

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
1,1,1,2-Tetrachloroethane	20.0	18.7	93.5	20.0	19.4	97.0	3.61	80 - 130	30	
1,1,1-Trichloroethane	20.0	19.9	99.5	20.0	20.9	105	5.17	65 - 130	30	
1,1,2,2-Tetrachloroethane	20.0	19.0	94.8	20.0	19.4	97.0	2.27	65 - 130	30	
1,1,2-Trichloroethane	20.0	20.2	101	20.0	20.8	104	2.78	75 - 125	30	
1,1-Dichloroethane	20.0	20.1	101	20.0	20.9	105	3.92	70 - 135	30	
1,1-Dichloroethene	20.0	17.5	87.7	20.0	18.4	92.0	4.79	70 - 130	30	
1,1-Dichloropropene	20.0	19.5	97.7	20.0	20.4	102	4.15	75 - 130	30	
1,2,3-Trichlorobenzene	20.0	19.0	95.0	20.0	19.5	97.4	2.50	55 - 140	30	
1,2,3-Trichloropropane	20.0	21.4	107	20.0	22.0	110	2.62	75 - 125	30	
1,2,4-Trichlorobenzene	20.0	18.7	93.3	20.0	19.3	96.5	3.31	65 - 135	30	
1,2,4-Trimethylbenzene	20.0	17.8	89.2	20.0	18.9	94.7	6.00	75 - 130	30	
1,2-Dibromo-3-chloropropane	20.0	22.1	110	20.0	23.1	116	4.66	50 - 130	30	
1,2-Dibromoethane	20.0	21.1	106	20.0	21.9	109	3.51	80 - 120	30	
1,2-Dichlorobenzene	20.0	18.5	92.3	20.0	19.3	96.5	4.46	70 - 120	30	
1,2-Dichloroethane	20.0	21.0	105	20.0	21.9	110	4.42	70 - 130	30	
1,2-Dichloropropane	20.0	19.6	98.0	20.0	20.3	102	3.58	75 - 125	30	
1,3,5-Trimethylbenzene	20.0	18.2	90.8	20.0	19.2	95.9	5.48	75 - 130	30	
1,3-Dichlorobenzene	20.0	18.3	91.6	20.0	19.3	96.6	5.34	75 - 125	30	
1,4-Dichlorobenzene	20.0	17.7	88.4	20.0	18.6	92.8	4.87	75 - 125	30	
1-Chlorohexane	20.0	20.9	105	20.0	21.8	109	4.31	80 - 127	30	
2,2-Dichloropropane	20.0	21.1	106	20.0	21.9	109	3.55	70 - 135	30	
2-Butanone	20.0	26.3	131	20.0	27.1	135	2.89	30 - 150	30	
2-Chlorotoluene	20.0	18.7	93.3	20.0	19.8	99.2	6.20	75 - 125	30	
2-Hexanone	20.0	26.3	131	20.0	27.0	135	2.88	55 - 130	30	*
4-Chlorotoluene	20.0	19.0	95.0	20.0	20.1	100	5.54	75 - 130	30	
4-Methyl-2-pentanone	20.0	22.8	114	20.0	23.4	117	2.53	60 - 135	30	
Acetone	20.0	25.9	130	20.0	27.7	138	6.57	40 - 140	30	
Benzene	20.0	18.8	93.9	20.0	19.6	98.0	4.20	80 - 120	30	
Bromobenzene	20.0	18.0	90.2	20.0	19.2	95.9	6.06	75 - 125	30	
Bromochloromethane	20.0	20.2	101	20.0	21.0	105	3.52	65 - 130	30	
Bromodichloromethane	20.0	19.6	97.8	20.0	20.3	101	3.51	75 - 120	30	
Bromoform	20.0	22.7	114	20.0	23.5	117	3.10	70 - 130	30	
Bromomethane	20.0	17.4	87.0	20.0	18.8	94.2	7.96	30 - 145	30	
Carbon disulfide	20.0	9.63	48.2	20.0	10.1	50.7	5.07	35 - 160	30	
Carbon tetrachloride	20.0	20.2	101	20.0	21.3	107	5.18	65 - 140	30	
Chlorobenzene	20.0	19.5	97.4	20.0	20.2	101	3.64	80 - 120	30	
Chloroethane	20.0	17.7	88.4	20.0	18.4	92.0	3.95	60 - 135	30	
Chloroform	20.0	20.7	103	20.0	21.5	107	3.71	65 - 135	30	
Chloromethane	20.0	23.3	117	20.0	24.2	121	3.71	40 - 125	30	
cis-1,2-Dichloroethene	20.0	19.0	94.8	20.0	19.7	98.3	3.68	70 - 125	30	

LCS_LCS2 - Modified 03/06/2008
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Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070975 Analyst: ADC Prep Method: 5030B/5030C/503
Instrument ID: HPMS17 Matrix: Water Method: 8260B
Workgroup (AAB#): WG532514 Units: ug/L
QC Key: DOD4 Lot #: STD71570

Sample ID: WG532514-02 LCS File ID: 17M013916 Run Date: 07/24/2015 13:23
Sample ID: WG532514-03 LCS2 File ID: 17M013917 Run Date: 07/24/2015 13:43

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
cis-1,3-Dichloropropene	20.0	20.7	103	20.0	21.5	108	3.89	70 - 130	30	
Chlorodibromomethane	20.0	20.5	102	20.0	20.9	104	2.08	60 - 135	30	
Dichlorodifluoromethane	20.0	27.3	137	20.0	28.4	142	3.91	30 - 155	30	
Ethylbenzene	20.0	18.9	94.5	20.0	19.6	97.9	3.56	75 - 125	30	
Hexachlorobutadiene	20.0	16.4	81.9	20.0	17.3	86.3	5.24	50 - 140	30	
Isopropylbenzene	20.0	19.5	97.5	20.0	20.3	102	4.16	75 - 125	30	
Methyl t-butyl ether (MTBE)	20.0	23.3	116	20.0	24.0	120	3.01	65 - 125	30	
Methylene chloride	20.0	18.7	93.4	20.0	19.3	96.7	3.56	55 - 140	30	
n-Butylbenzene	20.0	18.7	93.4	20.0	19.8	98.8	5.72	70 - 135	30	
n-Propylbenzene	20.0	19.0	95.0	20.0	20.2	101	6.24	70 - 130	30	
Naphthalene	20.0	20.3	102	20.0	20.9	105	2.88	55 - 140	30	
p-Isopropyltoluene	20.0	17.5	87.3	20.0	18.6	93.1	6.42	75 - 130	30	
sec-Butylbenzene	20.0	18.1	90.6	20.0	19.3	96.5	6.27	70 - 125	30	
Styrene	20.0	19.2	95.8	20.0	19.8	99.0	3.27	65 - 135	30	
tert-Butylbenzene	20.0	17.9	89.5	20.0	19.1	95.3	6.33	70 - 130	30	
Tetrachloroethene	20.0	19.2	95.9	20.0	20.0	100	4.24	45 - 150	30	
Toluene	20.0	19.3	96.7	20.0	20.2	101	4.24	75 - 120	30	
trans-1,2-Dichloroethene	20.0	18.5	92.4	20.0	19.3	96.5	4.32	60 - 140	30	
trans-1,3-Dichloropropene	20.0	21.2	106	20.0	21.8	109	2.69	55 - 140	30	
Trichloroethene	20.0	18.5	92.6	20.0	19.7	98.3	5.92	70 - 125	30	
Trichlorofluoromethane	20.0	19.2	95.9	20.0	21.0	105	8.91	60 - 145	30	
Vinyl chloride	20.0	21.3	106	20.0	22.3	112	4.82	50 - 145	30	
Xylenes	60.0	58.4	97.3	60.0	60.9	101	4.17	80 - 120	30	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	108	108	70 - 120	PASS
Dibromofluoromethane	96.8	96.8	85 - 115	PASS
4-Bromofluorobenzene	97.9	101	75 - 120	PASS
Toluene-d8	101	101	85 - 120	PASS

* EXCEEDS %REC LIMIT

\# EXCEEDS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4299450
Report generated: 07/28/2015 16:58

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070975
Blank File ID: 16G48096
Prep Date: 07/17/15 11:34
Analyzed Date: 07/17/15 11:34
Analyst: JDS

Work Group: WG531679
Blank Sample ID: WG531679-01
Instrument ID: HP16
Method: RSK175

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531679-02	16G48097	07/17/15 11:45	01
LCS2	WG531679-03	16G48098	07/17/15 11:57	01
FTB034-GM-MW-7A-071615	L15070975-01	16G48114	07/17/15 17:23	01
FTB034-GM-MW-7B-071615	L15070975-02	16G48115	07/17/15 17:35	01
FTB034-GM-MW-20-071615	L15070975-03	16G48116	07/17/15 17:46	01

Report Name: BLANK_SUMMARY
PDF File ID: 4293615
Report generated 07/23/2015 12:41

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070975 Prep Date: 07/17/15 11:34 Sample ID: WG531679-01
Instrument ID: HP16 Run Date: 07/17/15 11:34 Prep Method: 5021
File ID: 16G48096 Analyst: JDS Method: RSK175
Workgroup (AAB#): WG531679 Matrix: Water Units: ug/L
Contract #: Cal ID: HP16 - 03-MAR-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Methane	1.00	5.00	1.00	1	U
Ethene	1.00	5.00	1.00	1	U
Ethane	1.00	5.00	1.00	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 4293616
23-JUL-2015 12:41

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070975 Analyst: JDS Prep Method: 5021
Instrument ID: HP16 Matrix: Water Method: RSK175
Workgroup (AAB#): WG531679 Units: ug/L
QC Key: DOD4 Lot #: STD68250

Sample ID: WG531679-02 LCS File ID: 16G48097 Run Date: 07/17/2015 11:45
Sample ID: WG531679-03 LCS2 File ID: 16G48098 Run Date: 07/17/2015 11:57

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Methane	114	112	98.3	114	112	97.7	0.597	85 - 115	20	
Ethene	200	197	98.6	200	194	97.1	1.55	85 - 115	20	
Ethane	214	205	95.7	214	202	94.4	1.34	85 - 115	20	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4293617
Report generated: 07/23/2015 12:41

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070975
Blank File ID: T3.072415.115401
Prep Date: 07/17/15 13:35
Analyzed Date: 07/24/15 11:54
Analyst: KHR

Work Group: WG531894
Blank Sample ID: WG531726-02
Instrument ID: ICP-THERMO3
Method: 6010C

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531726-03	T3.072415.115806	07/24/15 11:58	01
FTB034-GM-MW-7A-071615	L15070975-01	T3.072415.121330	07/24/15 12:13	01
FTB034-GM-MW-7B-071615	L15070975-02	T3.072415.121730	07/24/15 12:17	01
FTB034-GM-MW-20-071615	L15070975-03	T3.072415.122130	07/24/15 12:21	01
FTB034-GM-MW-7A-071615	L15070975-01	T3.072415.140035	07/24/15 14:00	DL01
FTB034-GM-MW-20-071615	L15070975-03	T3.072415.140435	07/24/15 14:04	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 4302053
Report generated 07/27/2015 09:17

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070975 Prep Date: 07/17/15 13:35 Sample ID: WG531726-02
Instrument ID: ICP-THERMO3 Run Date: 07/24/15 11:54 Prep Method: 3015
File ID: T3.072415.115401 Analyst: KHR Method: 6010C
Workgroup (AAB#): WG531894 Matrix: Water Units: mg/L
Contract #: Cal ID: ICP-TH-24-JUL-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Calcium, Total	0.250	0.500	0.250	1	U
Magnesium, Total	0.250	0.500	0.250	1	U
Potassium, Total	0.500	1.00	0.500	1	U
Sodium, Total	0.250	0.500	0.250	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 4302054
27-JUL-2015 09:17

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070975 Run Date: 07/24/2015 Sample ID: WG531726-03
Instrument ID: ICP-THERMO3 Run Time: 11:58 Prep Method: 3015
File ID: T3.072415.115806 Analyst: KHR Method: 6010C
Workgroup (AAB#): WG531894 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD71485 Cal ID: ICP-TH-24-JUL-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Calcium, Total	6.25	6.13	98.1	80 - 120	
Magnesium, Total	6.25	6.17	98.7	80 - 120	
Potassium, Total	31.3	30.7	98.3	80 - 120	
Sodium, Total	31.3	30.4	97.4	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 4302055
Report generated: 07/27/2015 09:17

Microbac Laboratories Inc.
MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum: L15070975 Cal ID: ICP-THERMO3 - Worknum: WG531894
Instrument ID: ICP-THERMO3 Contract #: Method: 6010C
Parent ID: WG531726-01 File ID: T3.072415.120154 Dil: 1 Matrix: WATER
Sample ID: WG531726-04 MS File ID: T3.072415.120554 Dil: 1 Units: mg/L
Sample ID: WG531726-05 MSD File ID: T3.072415.120942 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Magnesium, Total	23.7	6.25	29.3	89.9	6.25	28.9	83.5	1.38	80 - 120	20	
Potassium, Total	2.62	31.3	33.3	98.3	31.3	33.1	97.7	0.602	80 - 120	20	
Sodium, Total	50.9	31.3	80.9	95.9	31.3	78.8	89.5	2.52	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 05/26/2011
PDF File ID: 4302056
Report generated 07/27/2015 09:35

Microbac Laboratories Inc.
MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum: L15070975 Cal ID: ICP-THERMO3 - Worknum: WG531894
Instrument ID: ICP-THERMO3 Contract #: Method: 6010C
Parent ID: WG531726-01 File ID: T3.072415.134836 Dil: 10 Matrix: WATER
Sample ID: WG531726-04 MS File ID: T3.072415.135236 Dil: 10 Units: mg/L
Sample ID: WG531726-05 MSD File ID: T3.072415.135635 Dil: 10

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Calcium, Total	86.3	6.25	90.5	67.8	6.25	85.8	-6.96	5.30	80 - 120	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 05/26/2011
PDF File ID: 4302056
Report generated 07/27/2015 09:35

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070975
Blank File ID: I3_071715-05
Prep Date: 07/17/15 12:00
Analyzed Date: 07/17/15 13:45
Analyst: ALS

Work Group: WG531706
Blank Sample ID: WG531706-01
Instrument ID: IC3
Method: 9056

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531706-02	I3_071715-06	07/17/15 14:05	01
DUP	WG531706-04	I3_071715-08	07/17/15 14:46	01
FTB034-GM-MW-7A-071615	L15070975-01	I3_071715-11	07/17/15 15:47	01
FTB034-GM-MW-7B-071615	L15070975-02	I3_071715-12	07/17/15 16:07	01
FTB034-GM-MW-20-071615	L15070975-03	I3_071715-13	07/17/15 16:27	01

Report Name: BLANK_SUMMARY
PDF File ID: 4291111
Report generated 07/20/2015 13:17

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070975 Prep Date: 07/17/15 12:00 Sample ID: WG531706-01
Instrument ID: IC3 Run Date: 07/17/15 13:45 Prep Method: 9056
File ID: I3 071715-05 Analyst: ALS Method: 9056
Workgroup (AAB#): WG531706 Matrix: Water Units: mg/L
Contract #: Cal ID: IC3-30-JUN-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Nitrate	0.100	0.600	0.100	1	U
Sulfate	0.500	1.00	0.500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4291112
20-JUL-2015 13:17

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070975 Run Date: 07/17/2015 Sample ID: WG531706-02
Instrument ID: IC3 Run Time: 14:05 Prep Method: 9056
File ID: I3 071715-06 Analyst: ALS Method: 9056
Workgroup (AAB#): WG531706 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD69216 Cal ID: IC3-30-JUN-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrate	5.42	5.05	93.2	90 - 110	
Sulfate	40.0	37.0	92.6	90 - 110	

LCS - Modified 03/06/2008
PDF File ID: 4291113
Report generated: 07/20/2015 13:17

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070975
Blank File ID: TC07232015.013
Prep Date: 07/23/15 12:14
Analyzed Date: 07/23/15 12:14
Analyst: EPT

Work Group: WG532335
Blank Sample ID: WG532335-01
Instrument ID: TOC-VWP
Method: 9060A

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532335-02	TC07232015.016	07/23/15 13:13	01
LCS2	WG532335-03	TC07232015.017	07/23/15 14:06	01
FTB034-GM-MW-7A-071615	L15070975-01	TC07232015.024	07/23/15 19:30	01
FTB034-GM-MW-7B-071615	L15070975-02	TC07232015.025	07/23/15 20:14	01
FTB034-GM-MW-20-071615	L15070975-03	TC07232015.028	07/23/15 21:16	01
DUP	WG532335-08	TC07232015.041	07/24/15 04:54	01

Report Name: BLANK_SUMMARY
PDF File ID: 4300608
Report generated 07/24/2015 10:27

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070975 Prep Date: 07/23/15 12:14 Sample ID: WG532335-01
Instrument ID: TOC-VWP Run Date: 07/23/15 12:14 Prep Method: 9060A
File ID: TC07232015.013 Analyst: EPT Method: 9060A
Workgroup (AAB#): WG532335 Matrix: Water Units: mg/L
Contract #: Cal ID: TOC-VW-27-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U
Total Organic Carbon Rep1	0.500	1.00	0.500	1	U
Total Organic Carbon Rep2	0.500	1.00	0.500	1	U
Total Organic Carbon Rep3	0.500	1.00	0.500	1	U
Total Organic Carbon Rep4	0.500	1.00	0.500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 4300609
24-JUL-2015 10:27

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070975 Analyst: EPT Prep Method: 9060A
Instrument ID: TOC-VWP Matrix: Water Method: 9060A
Workgroup (AAB#): WG532335 Units: mg/L
QC Key: DOD4 Lot #: STD69935

Sample ID: WG532335-02 LCS File ID: TC07232015.016 Run Date: 07/23/2015 13:13
Sample ID: WG532335-03 LCS2 File ID: TC07232015.017 Run Date: 07/23/2015 14:06

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	26.7	107	25.0	25.7	103	3.93	85 - 115	15	
Total Organic Carbon Rep1		24.8			25.6		3.21	85 - 115	15	*
Total Organic Carbon Rep2		25.6			25.7		0.702	85 - 115	15	*
Total Organic Carbon Rep3		25.2			25.5		0.868	85 - 115	15	*
Total Organic Carbon Rep4		31.3			25.9		18.7	85 - 115	15	*#

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4300610
Report generated: 07/24/2015 10:27

001 - BIO-CHEM TESTING WVDEP 220
002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental
004 - MICROBAC PITTSBURGH
005 - ES LABORATORIES
006 - ALCOSAN LABORATORIES
007 - ALS LABORATORIES
008 - BENCHMARK LABORATORIES
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JDH - JUSTIN D. HESSON
JDS - JARED D. SMITH
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JKP - JACQUELINE K. PARSONS
JLL - JOHN L. LENT
JMW - JEANA M. WHITE
JTP - JOSHUA T. PEMBERTON
JWR - JOHN W. RICHARDS
JWS - JACK W. SHEAVES
JYH - JI Y. HU
KAJ - KELLIE A. JOHNSON
KAT - KATHY A. TUCKER
KDW - KATHRYN D. WELCH
KEB - KATIE E. BARNES
KHR - KIM H. RHODES
KKB - KERRI K. BUCK
KRA - KATHY R. ALBERTSON
KRB - KAELY R. BECKER
KRP - KATHY R. PARSONS
LEC - LAURA E. CARPENTER
LKN - LINDA K. NEDEFF
LLS - LARRY L. STEPHENS
LSB - LESLIE S. BUCINA
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PIT - MICROBAC WARRENDALE
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RLB - BOB BUCHANAN
RM - RAYMOND MALEKE
RNP - RICK N. PETTY
RST - ROBIN S. TURNER
SAV - SARAH A. VANDENBERG
SCB - SARAH C. BOGOLIN
SDC - SHALYN D. CONLEY
SLM - STEPHANIE L. MOSSBURG
SLP - SHERI L. PFALZGRAF
TB - TODD BOYLE
TGF - TIM G. FELTON
TMB - TIFFANY M. BAILEY
TMM - TAMMY M. MORRIS
VC - VICKI COLLIER
WJB - WILL J. BEASLEY
WRR - WESLEY R. RICHARDS
WTD - WADE T. DELONG
XXX - UNAVAILABLE OR SUBCONTRACT

Microbac Laboratories Inc.
List of Valid Qualifiers
July 29, 2015

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B,H1	Analyte present in method blank. Sample analysis performed past holding time.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	Cooler temperature at sample reciept exceeded regulatory limit.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
E,CT1	Estimated results. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
H1	Sample analysis performed past holding time.
H1,CT1	Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guidelines for reque
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value ; the analyte concentration was less than the LOQ. Cooler temperature at sample reciept exceeded regu
J,H1	Estimated value ; the analyte concentration was less than the LOQ. Sample analysis performed past holding time.
J,H1	The reported result is an estimated value. Sample was analyzed past holding time.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentativlely identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL/MDL).
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
ND,H1	Not detected; Sample analysis performed past holding time.
ND,H1,CT1	Not detected; Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guide
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
Q,H1	One or more quality control criteria failed. Sample analyzed past holding time. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
T5	Laboratory not licensed for this parameter
TIC	Library Search Compound
TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.

Qualkey: DOD

TNTC,CT1	Too numerous to count. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
TNTC,H1	Too numerous to count. Sample analysis performed past holding time.
U	Analyte was not detected. The concentration is below the reported LOD.
U,CT1	Analyte was not detected. The concentration is below the reported LOD. Cooler temperature at sample reciept exceeded
U,H1	Not detected; Sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

Microbac

Co.Name: Kemron Environmental
Prj Contact: Jeanette Hamm
Prj Name: Ft. Buchanan
Location: Bayamon, PR

TAT: STD
Phone: 404-636-0928

COC No. 1

Sampler Print: Charlie Tabb

Sampler Sign:

Sample ID	Comp	Grab	Date	Time	Hold	# of Containers	Anions Sulfate / Nitrate 9056A	Cations (Mg, Ca, Na, K) 6010C	TOC 9060 A	Gas Gas RSK175	VOC 8260 B						Notes:
FB034-GM-MW-7A 071615		✓	7/16/15	1434		9	✓	✓	✓	✓	✓						
FB034-GM-MW-7B 071615		✓	7/16/15	1341		9	✓	✓	✓	✓	✓						
FB034-GM-MW-20 071615		✓	7/16/15	0826		9	✓	✓	✓	✓	✓						

Relinquished By:
Date/Time 7/16/15 1710

Relinquished By:
Date/Time

Microbac OVD
Received: 07/17/2015 10:17
By: CARA STRICKLER 221000072771
Cara Strickler

Relinquished By
Date/Time:

Received By:
Date/Time:

Cooler Temp(s):

Comments:

COMMERCIAL INVOICE (Factura Comercial)

This invoice must be completed in English (Esta factura se debe llenar en ingles)

SHIPPED FROM (Envio de):
Tax ID/VAT No. (No de Identificación): 11-2393978
Contact Name (Nombre): Jeanette Hamm
Telephone No. (Teléfono): 404-643-2033
E-Mail (E-Mail): jhamm@kemron.com
Company Name/Address (Compania/Dirección):
KEMRON Environmental Services
1359A Ellsworth Industrial Boulevard
Atlanta, GA 30318

Country (Pais): United States
Parties to Transaction:
☑ **Related** (Vinculado) ☐ **Non-related** (No Vinculado)

Date (Fecha): 07/16/2015
Air Waybill No. (Conocimiento de Embarque):
Invoice No. (No de la Factura): Not Applicable
Purchase Order No. (No de Orden de Compra): Not Applicable
Payment Terms (Terminos de Pago): Paid when Paid
Incoterms (Incoterms): CPT=CARRIAGE PAID TO
Reason for Export:
Sold (Vendido) ✓ **Not Sold** (No Esta Vendido) **Other** (Otro)

SHIPPED TO (Destinatario):
Tax ID/VAT No. (No de Identificación): 25-1199642
Contact Name (Nombre): Stephanie Mossburg
Telephone No. (Teléfono): 1-800-373-4071
E-Mail (E-Mail): Stephanie.Mossburg@microbac.com
Company Name/Address (Compania/Dirección):
Microbac Laboratories, Inc.
158 Starlite Drive
Marietta, OH 45750

Country (Pais): USA

SOLD TO (Vendido a): **Same as SHIPPED TO (Igual que el Destinatario):**
Company Name/Address (Compania/Dirección):
Country (Pais): USA

No. of Packages (No de Paquetes)	No. of Units (No Unitario)	Unit of Measure (Unidad de Medida)	Description of Goods (Including Harmonized Tariff No.) (Descripción de la Mercancia [Con No de Clasificación Arancelaria])	Country of Origin (Pais de Origen)	Value Unit (Precio Unitario)	Total Value (Precio Total)
1	8	each	Groundwater Samples for analysis	PR	10.00	80.00
						0.00
						0.00

Total No. of Packages (Total de Paquetes): 1
Total Weight (Indicate LBS or KGS) (Peso Total [En Lbs o Kgs]): 50 LBS

Special Instructions (Instrucciones Especiales):
This package contains soil samples which will be used for destructive analysis.

Declaration Statement(s) (Declaración[es]):

Subtotal (Subtotal):	80.00
Insurance (Seguro):	0.00
Freight (Flete):	0.00
Packing (Embalaje):	0.00
Handling (Manejo):	0.00
Other (Otros):	0.00
Invoice Total (Total):	80.00
Currency Code (Tipo de Moneda):	

Signature/Title (Firma del Declarante/Puesto)
Date (Fecha)

L1507097 5 / Revision: 0 / 59 total pages Generated: 07/29/2015 08:28

TOXIC SUBSTANCE CONTROL ACT (TSCA) CERTIFICATION

Date: July 4, 2015

(CHECK ONE SECTION ONLY)

POSITIVE CERTIFICATION

_____ "I certify that all chemical substances in this shipment comply with all applicable rules or orders under TSCA and that I am not offering a chemical substance for entry in violation of TSCA or any applicable rules order thereunder."

● OR ●

NEGATIVE CERTIFICATION

X "I certify that all chemical substances in this shipment are not subject to TSCA."

Company Name: KEMRON Environmental Services

Company Address: 1359A Ellsworth Industrial Boulevard

City/State: Atlanta, GA

Country/Zip: USA, 30318

Authorized Name: Charlie Taylor

Authorized Signature: _____

Title: Site Manager

Federal Express AWB#: _____

If the certifier is unsure if their chemical substance is subject to TSCA compliance, contact the Environmental Protection Agency, TSCA Assistance Office, Washington, D.C. (202) 554-1404 between 8:30 am and 5:00 pm EST.

Revised 04-2009

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L15070975
Account: 2820
Project: 2820.250
Samples: 3
Due Date: 28-JUL-2015

Samplenum	Container ID	Products
L15070975-01	603802	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:24	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:24	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:24	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Samplenum	Container ID	Products
L15070975-01	603803	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:24	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:24	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:24	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Samplenum	Container ID	Products
L15070975-01	603804	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	17-JUL-2015 11:24	CLS		
2	PREP	L1	SEM	17-JUL-2015 11:33	ALS	CLS	
3	STORE	SEM	A2	21-JUL-2015 09:30	CLS	ALS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L15070975
Account: 2820
Project: 2820.250
Samples: 3
Due Date: 28-JUL-2015

Samplenum	Container ID	Products
L15070975-01	603805	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUL-2015 11:24	CLS		
2	ANALYZ	W1	WET	20-JUL-2015 08:25	EPT	CLS	
3	STORE	WET	A2	21-JUL-2015 08:24	BRG	EPT	
4	ANALYZ	A2	WET	22-JUL-2015 08:07	EPT	BRG	
5	STORE	WET	A2	24-JUL-2015 08:25	BRG	EPT	

Samplenum	Container ID	Products
L15070975-01	603806	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUL-2015 11:24	CLS		
2	PREP	W1	DIG	17-JUL-2015 13:24	ERP	CLS	
3	STORE	W1	DIG	17-JUL-2015 15:01	CLS	ERP	
4	ANALYZ*	DIG	METALS	20-JUL-2015 11:46	KHR	ERP	

Sample extract/digestate/leachate

Samplenum	Container ID	Products
L15070975-02	603807	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:24	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:24	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:24	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L15070975
Account: 2820
Project: 2820.250
Samples: 3
Due Date: 28-JUL-2015

Samplenum	Container ID	Products
L15070975-02	603808	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:24	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:24	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:24	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Samplenum	Container ID	Products
L15070975-02	603809	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	17-JUL-2015 11:24	CLS		
2	PREP	L1	SEM	17-JUL-2015 11:33	ALS	CLS	
3	STORE	SEM	A2	21-JUL-2015 09:30	CLS	ALS	

Samplenum	Container ID	Products
L15070975-02	603810	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUL-2015 11:24	CLS		
2	ANALYZ	W1	WET	20-JUL-2015 08:25	EPT	CLS	
3	STORE	WET	A2	21-JUL-2015 08:24	BRG	EPT	
4	ANALYZ	A2	WET	22-JUL-2015 08:07	EPT	BRG	
5	STORE	WET	A2	24-JUL-2015 08:25	BRG	EPT	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L15070975
Account: 2820
Project: 2820.250
Samples: 3
Due Date: 28-JUL-2015

Samplenum	Container ID	Products
L15070975-02	603811	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUL-2015 11:24	CLS		
2	PREP	W1	DIG	17-JUL-2015 13:24	ERP	CLS	
3	STORE	W1	DIG	17-JUL-2015 15:01	CLS	ERP	
4	ANALYZ*	DIG	METALS	20-JUL-2015 11:46	KHR	ERP	

Sample extract/digestate/leachate

Samplenum	Container ID	Products
L15070975-03	603812	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:24	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:24	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:24	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Samplenum	Container ID	Products
L15070975-03	603813	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:24	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:24	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:24	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15070975
Account: 2820
Project: 2820.250
Samples: 3
Due Date: 28-JUL-2015

Samplenum	Container ID	Products
L15070975-03	603814	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	17-JUL-2015 11:24	CLS		
2	PREP	L1	SEM	17-JUL-2015 11:33	ALS	CLS	
3	STORE	SEM	A2	21-JUL-2015 09:30	CLS	ALS	

Samplenum	Container ID	Products
L15070975-03	603815	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUL-2015 11:24	CLS		
2	ANALYZ	W1	WET	20-JUL-2015 08:25	EPT	CLS	
3	STORE	WET	A2	21-JUL-2015 08:25	BRG	EPT	
4	ANALYZ	A2	WET	22-JUL-2015 08:07	EPT	BRG	
5	STORE	WET	A2	24-JUL-2015 08:25	BRG	EPT	

Samplenum	Container ID	Products
L15070975-03	603816	K MG NA CA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUL-2015 11:24	CLS		
2	PREP	W1	DIG	17-JUL-2015 13:24	ERP	CLS	
3	STORE	W1	DIG	17-JUL-2015 15:01	CLS	ERP	
4	ANALYZ*	DIG	METALS	20-JUL-2015 11:46	KHR	ERP	

Sample extract/digestate/leachate

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

ANALYTICAL SERVICES, INC.

Virginia Office
402 North West Street
Culpeper, Virginia 22701
540-829-5642 Office
540-829-5641 Fax

DATA CERTIFICATION

The attached laboratory report L15070976 consisting of 658 pages, has been certified by David E. Vandenberg, Managing Director, Microbac Laboratories. The data contained herein was completed in accordance with the requirements of the DoD QSM and other applicable contract terms and conditions.

I hereby certify that this laboratory report and associated documentation has been reviewed and approved.

Ralph Abbondanza, REM
Vice President
PR Chemist's License #3803

ESTADO LIBRE ASOCIADO DE PUERTO RICO
Ralph Abbondanza III
A 11448797
Zemaitis
Lic.#3803
QUIMICO LICENCIADO

Microbac

Laboratory Report Number: L15070976

Jeanette Hamm
Kemron Environmental Services
1359 Ellsworth Industrial Blvd.
Atlanta, GA 30082

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Stephanie Mossburg – Team Chemist/Data Specialist
(740) 373-4071
Stephanie.Mossburg@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on July 28 2015

David Vandenberg – Managing Director

State of Origin: PR
Accrediting Authority: N/A ID:N/A
QAPP: DOD Ver 4.2 without flagging

Microbac

Lab Report #: L15070976
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

The following discrepancies were noted:

Discrepancy	Resolution
FTB034-GM-MW-1C-071515: the Anions sample was received out of hold. CLS	Please cancel the 1 sample collected at 8:00 AM. They will recollect. Please proceed with all other analyses. SLM

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
0018145	I	0.0		1001845362410004575000808355258064	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	No
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	Yes

Microbac

Lab Report #: L15070976
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
FTB034-GM-MW-8B-071515	L15070976-01	07/15/2015 14:51	07/17/2015 10:16
FTB034-GM-MW-1C-071515	L15070976-02	07/15/2015 08:00	07/17/2015 10:16
FTB034-GM-MW-8A-071515	L15070976-03	07/15/2015 13:16	07/17/2015 10:16
TRIP BLANK	L15070976-04	07/15/2015 00:01	07/17/2015 10:16

Login Number: L15070976
Department: Volatiles
Analyst: Tiffany Bailey

METHOD

Preparation SW-846 5030C/5035A

Analysis SW-846 8260B

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: The percent difference was out of range for the following analytes: Carbon Disulfide and Trichlorofluoromethane were below the LCL in WG523986-12. Please see the applicable QC report for a detailed presentation of the failures.

Continuing Calibration and Tune: Recoveries out of range were observed for the following analytes: 2-Butanone, 2-Hexanone were above the UCL in WG531927-02 and Bromomethane, Chloroethane were below the LCL in WG531927-02. Please see the applicable QC report for a detailed presentation of the failures.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient

volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC prescribed MS/MSD. Microbac Laboratories recommends site specific MS/MSD samples to avoid possible data qualifications.

SAMPLES

Internal Standards: All acceptance criteria were met.

Surrogates: All acceptance criteria were met.

Other: None.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak. In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak. This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline. There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous. Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Managing Director or the QAO will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 101851
Approved By: Wade DeLong

Login Number: L15070976
Department: Volatiles - GC
Analyst: Jared Smith

Analysis RSK-175

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes/Sample Duplicates: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. Microbac Laboratories recommends site specific MS/MSD samples to avoid possible data qualifications.

SAMPLES

Samples: Sample 03 required a dilution analysis.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

Narrative ID: 101899
Approved By: Franci Bolden

Login Number: L15070976
Department: Metals
Analyst: Kim Rhodes

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG531894 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: WG531894 - Client samples 01, 02, and 03 required dilution analyses in order to obtain results for calcium within the calibration range. A linear range check for magnesium was analyzed with the client samples.

Narrative ID: 102002
Approved By: Brendan Torrence

Login Number: L15070976
Department: General Chromatography
Analyst: Adriane Steed

METHOD

Analysis EPA300.0/SW846 9056

HOLDING TIMES

Sample Analysis: Hold times for NO2 and NO3 are 48 hours and the hold times for F, Cl, Br, and SO4 are 28 days. The hold time forms calculate the hold time based on 48 hours. Samples were analyzed marginally out of hold (2.1,2.2 days).

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group.

SAMPLES

Samples: All acceptance criteria were met.

MANUAL INTEGRATION: No manual integration required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data

contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 101708
Approved By: Wade DeLong

Login Number: L15070976
Department: Conventionals
Analyst: Ethan Tidd

METHOD

Analysis Water: EPA 415.1/SM5310C/SW846 9060 (Total Organic Carbon)
Soil: Lloyd-Khan Methodology

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 101953
Approved By: Deanna Hesson

Microbac

Lab Report #: L15070976
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Certificate of Analysis

Sample #:	L15070976-01	**PrePrep Method:**	N/A	**Instrument:**	HPMS17
Client ID:	FTB034-GM-MW-8B-071515	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	05/18/2015 14:34
Workgroup #:	WG531954	**Analyst:**	TMB/ JDS	**Run Date:**	07/21/2015 00:51
Collect Date:	07/15/2015 14:51	**Dilution:**	1	**File ID:**	17M013848
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1	3.26	J	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	113	70	120	
4-Bromofluorobenzene	101	75	120	
Dibromofluoromethane	96.9	85	115	
Toluene-d8	102	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L15070976-01	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-8B-071515	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531679	**Analyst:**	JDS	**Run Date:**	07/17/2015 18:09
Collect Date:	07/15/2015 14:51	**Dilution:**	1	**File ID:**	16G48118
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8	2.77	J	5.00	1.00
Ethene	74-85-1		U	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070976-01	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	FTB034-GM-MW-8B-071515	**Prep Method:**	3015	**Prep Date:**	07/17/2015 13:35
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/24/2015 09:29
Workgroup #:	WG531894	**Analyst:**	KHR	**Run Date:**	07/24/2015 12:41
Collect Date:	07/15/2015 14:51	**Dilution:**	1	**File ID:**	T3.072415.124108
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Magnesium, Total	7439-95-4	24.3		0.500	0.250
Potassium, Total	7440-09-7	2.76		1.00	0.500
Sodium, Total	7440-23-5	39.5		0.500	0.250

Sample #:	L15070976-01	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	FTB034-GM-MW-8B-071515	**Prep Method:**	3015	**Prep Date:**	07/17/2015 13:35
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/24/2015 09:29
Workgroup #:	WG531894	**Analyst:**	KHR	**Run Date:**	07/24/2015 14:24
Collect Date:	07/15/2015 14:51	**Dilution:**	10	**File ID:**	T3.072415.142418
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	88.4		5.00	2.50

Certificate of Analysis

Sample #:	L15070976-01	**PrePrep Method:**	N/A	**Instrument:**	IC3
Client ID:	FTB034-GM-MW-8B-071515	**Prep Method:**	9056	**Prep Date:**	07/17/2015 12:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	06/30/2015 12:33
Workgroup #:	WG531706	**Analyst:**	ALS	**Run Date:**	07/17/2015 16:48
Collect Date:	07/15/2015 14:51	**Dilution:**	1	**File ID:**	I3_071715-14
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8		U	0.600	0.100
Sulfate	14808-79-8	32.1		1.00	0.500
U	Analyte was not detected. The concentration is below the reported LOD.				

Sample #:	L15070976-01	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-MW-8B-071515	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG532335	**Analyst:**	EPT	**Run Date:**	07/23/2015 21:56
Collect Date:	07/15/2015 14:51	**Dilution:**	1	**File ID:**	TC07232015.029
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	1.65		1.00	0.500
Total Organic Carbon Rep1		1.19		1.00	0.500
Total Organic Carbon Rep2		1.52		1.00	0.500
Total Organic Carbon Rep3		1.79		1.00	0.500
Total Organic Carbon Rep4		2.09		1.00	0.500

Sample #:	L15070976-02	**PrePrep Method:**	N/A	**Instrument:**	HPMS17
Client ID:	FTB034-GM-MW-1C-071515	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	05/18/2015 14:34
Workgroup #:	WG531954	**Analyst:**	TMB/ JDS	**Run Date:**	07/21/2015 01:11
Collect Date:	07/15/2015 08:00	**Dilution:**	1	**File ID:**	17M013849
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1	3.15	J	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	114	70	120	
4-Bromofluorobenzene	103	75	120	
Dibromofluoromethane	99.1	85	115	
Toluene-d8	102	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070976-02	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-1C-071515	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531679	**Analyst:**	JDS	**Run Date:**	07/17/2015 18:20
Collect Date:	07/15/2015 08:00	**Dilution:**	1	**File ID:**	16G48119
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8	2.89	J	5.00	1.00
Ethene	74-85-1		U	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L15070976-02	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	FTB034-GM-MW-1C-071515	**Prep Method:**	3015	**Prep Date:**	07/17/2015 13:35
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/24/2015 09:29
Workgroup #:	WG531894	**Analyst:**	KHR	**Run Date:**	07/24/2015 12:45
Collect Date:	07/15/2015 08:00	**Dilution:**	1	**File ID:**	T3.072415.124509
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Magnesium, Total	7439-95-4	24.3		0.500	0.250
Potassium, Total	7440-09-7	2.74		1.00	0.500
Sodium, Total	7440-23-5	39.2		0.500	0.250

Sample #:	L15070976-02	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	FTB034-GM-MW-1C-071515	**Prep Method:**	3015	**Prep Date:**	07/17/2015 13:35
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/24/2015 09:29
Workgroup #:	WG531894	**Analyst:**	KHR	**Run Date:**	07/24/2015 14:28
Collect Date:	07/15/2015 08:00	**Dilution:**	10	**File ID:**	T3.072415.142819
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	89.1		5.00	2.50

Sample #:	L15070976-02	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-MW-1C-071515	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG532335	**Analyst:**	EPT	**Run Date:**	07/23/2015 22:37
Collect Date:	07/15/2015 08:00	**Dilution:**	1	**File ID:**	TC07232015.030
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	1.35		1.00	0.500
Total Organic Carbon Rep1		1.03		1.00	0.500
Total Organic Carbon Rep2		1.15		1.00	0.500
Total Organic Carbon Rep3		1.62		1.00	0.500
Total Organic Carbon Rep4		1.62		1.00	0.500

Certificate of Analysis

Sample #:	L15070976-03	**PrePrep Method:**	N/A	**Instrument:**	HPMS17
Client ID:	FTB034-GM-MW-8A-071515	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	05/18/2015 14:34
Workgroup #:	WG531954	**Analyst:**	TMB/ JDS	**Run Date:**	07/21/2015 01:31
Collect Date:	07/15/2015 13:16	**Dilution:**	1	**File ID:**	17M013850
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1	3.19	J	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	12.0		1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	114	70	120	
4-Bromofluorobenzene	102	75	120	
Dibromofluoromethane	99.0	85	115	
Toluene-d8	102	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L15070976-03	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-8A-071515	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531679	**Analyst:**	JDS	**Run Date:**	07/17/2015 18:32
Collect Date:	07/15/2015 13:16	**Dilution:**	1	**File ID:**	16G48120
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Ethene	74-85-1		U	5.00	1.00
Ethane	74-84-0		U	5.00	1.00
U	Analyte was not detected. The concentration is below the reported LOD.				

Sample #:	L15070976-03	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-8A-071515	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531865	**Analyst:**	JDS	**Run Date:**	07/20/2015 14:23
Collect Date:	07/15/2015 13:16	**Dilution:**	5	**File ID:**	16G48129
Sample Tag:	DL01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8	723		25.0	5.00

Sample #:	L15070976-03	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	FTB034-GM-MW-8A-071515	**Prep Method:**	3015	**Prep Date:**	07/17/2015 13:35
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/24/2015 09:29
Workgroup #:	WG531894	**Analyst:**	KHR	**Run Date:**	07/24/2015 12:49
Collect Date:	07/15/2015 13:16	**Dilution:**	1	**File ID:**	T3.072415.124909
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Magnesium, Total	7439-95-4	5.96		0.500	0.250
Potassium, Total	7440-09-7	1.26		1.00	0.500
Sodium, Total	7440-23-5	24.1		0.500	0.250

Sample #:	L15070976-03	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	FTB034-GM-MW-8A-071515	**Prep Method:**	3015	**Prep Date:**	07/17/2015 13:35
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/24/2015 09:29
Workgroup #:	WG531894	**Analyst:**	KHR	**Run Date:**	07/24/2015 14:32
Collect Date:	07/15/2015 13:16	**Dilution:**	10	**File ID:**	T3.072415.143220
Sample Tag:	DL01	**Units:**	mg/L		

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	60.6		5.00	2.50

Sample #:	L15070976-03	**PrePrep Method:**	N/A	**Instrument:**	IC3
Client ID:	FTB034-GM-MW-8A-071515	**Prep Method:**	9056	**Prep Date:**	07/17/2015 12:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	06/30/2015 12:33
Workgroup #:	WG531706	**Analyst:**	ALS	**Run Date:**	07/17/2015 17:49
Collect Date:	07/15/2015 13:16	**Dilution:**	1	**File ID:**	I3_071715-17
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8		U	0.600	0.100
Sulfate	14808-79-8	2.93		1.00	0.500

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15070976-03	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-MW-8A-071515	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG532335	**Analyst:**	EPT	**Run Date:**	07/23/2015 23:18
Collect Date:	07/15/2015 13:16	**Dilution:**	1	**File ID:**	TC07232015.031
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	3.36		1.00	0.500
Total Organic Carbon Rep1		3.08		1.00	0.500
Total Organic Carbon Rep2		3.30		1.00	0.500
Total Organic Carbon Rep3		3.39		1.00	0.500
Total Organic Carbon Rep4		3.68		1.00	0.500

Sample #:	L15070976-04	**PrePrep Method:**	N/A	**Instrument:**	HPMS17
Client ID:	TRIP BLANK	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	05/18/2015 14:34
Workgroup #:	WG531954	**Analyst:**	TMB/ JDS	**Run Date:**	07/21/2015 00:32
Collect Date:	07/15/2015 00:01	**Dilution:**	1	**File ID:**	17M013847
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	112	70	120	
4-Bromofluorobenzene	103	75	120	
Dibromofluoromethane	95.0	85	115	
Toluene-d8	102	85	120	

U	Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070976
Blank File ID: 17M013842
Prep Date: 07/20/15 22:52
Analyzed Date: 07/20/15 22:52
Analyst: TMB/ JDS

Work Group: WG531954
Blank Sample ID: WG531954-01
Instrument ID: HPMS17
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531954-02	17M013843	07/20/15 23:12	01
LCS2	WG531954-03	17M013844	07/20/15 23:32	01
TRIP BLANK	L15070976-04	17M013847	07/21/15 00:32	01
FTB034-GM-MW-8B-071515	L15070976-01	17M013848	07/21/15 00:51	01
FTB034-GM-MW-1C-071515	L15070976-02	17M013849	07/21/15 01:11	01
FTB034-GM-MW-8A-071515	L15070976-03	17M013850	07/21/15 01:31	01

Report Name: BLANK_SUMMARY
PDF File ID: 4297363
Report generated 07/23/2015 08:19

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070976 Prep Date: 07/20/15 22:52 Sample ID: WG531954-01
Instrument ID: HPMS17 Run Date: 07/20/15 22:52 Prep Method: 5030B/5030C/503
File ID: 17M013842 Analyst: TMB/ JDS Method: 8260B
Workgroup (AAB#): WG531954 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS17-18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	2.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1-Chlorohexane	0.125	1.00	0.125	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
2-Butanone	2.50	5.00	2.50	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
2-Hexanone	2.50	5.00	2.50	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	5.00	2.50	1	U
Acetone	2.50	5.00	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U

Report Name: BLANK
PDF ID: 4297364
23-JUL-2015 08:19

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070976 Prep Date: 07/20/15 22:52 Sample ID: WG531954-01
Instrument ID: HPMS17 Run Date: 07/20/15 22:52 Prep Method: 5030B/5030C/503
File ID: 17M013842 Analyst: TMB/ JDS Method: 8260B
Workgroup (AAB#): WG531954 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS17-18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U
Isopropylbenzene	0.250	1.00	0.250	1	U
Methylene chloride	0.250	1.00	0.250	1	U
Methyl t-butyl ether (MTBE)	0.500	1.00	0.500	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Naphthalene	0.200	1.00	0.200	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	115	70 - 120	PASS
4-Bromofluorobenzene	102	75 - 120	PASS
Dibromofluoromethane	97.5	85 - 115	PASS
Toluene-d8	101	85 - 120	PASS

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4297364
23-JUL-2015 08:19

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070976 Analyst: TMB/ JDS Prep Method: 5030B/5030C/503
Instrument ID: HPMS17 Matrix: Water Method: 8260B
Workgroup (AAB#): WG531954 Units: ug/L
QC Key: DOD4 Lot #: STD71570

Sample ID: WG531954-02 LCS File ID: 17M013843 Run Date: 07/20/2015 23:12
Sample ID: WG531954-03 LCS2 File ID: 17M013844 Run Date: 07/20/2015 23:32

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
1,1,1,2-Tetrachloroethane	20.0	19.0	94.8	20.0	19.2	96.0	1.26	80 - 130	30	
1,1,1-Trichloroethane	20.0	20.4	102	20.0	20.5	102	0.419	65 - 130	30	
1,1,2,2-Tetrachloroethane	20.0	16.9	84.5	20.0	19.7	98.5	15.4	65 - 130	30	
1,1,2-Trichloroethane	20.0	20.6	103	20.0	20.8	104	1.10	75 - 125	30	
1,1-Dichloroethane	20.0	20.2	101	20.0	20.5	103	1.46	70 - 135	30	
1,1-Dichloroethene	20.0	17.7	88.4	20.0	17.8	89.0	0.655	70 - 130	30	
1,1-Dichloropropene	20.0	19.7	98.4	20.0	19.9	99.5	1.09	75 - 130	30	
1,2,3-Trichlorobenzene	20.0	18.0	90.2	20.0	18.9	94.3	4.43	55 - 140	30	
1,2,3-Trichloropropane	20.0	21.7	109	20.0	22.0	110	1.48	75 - 125	30	
1,2,4-Trichlorobenzene	20.0	17.6	87.9	20.0	18.5	92.7	5.32	65 - 135	30	
1,2,4-Trimethylbenzene	20.0	18.1	90.3	20.0	18.8	93.8	3.78	75 - 130	30	
1,2-Dibromo-3-chloropropane	20.0	21.4	107	20.0	22.0	110	2.81	50 - 130	30	
1,2-Dibromoethane	20.0	21.3	106	20.0	21.6	108	1.47	80 - 120	30	
1,2-Dichlorobenzene	20.0	18.7	93.7	20.0	19.3	96.6	3.10	70 - 120	30	
1,2-Dichloroethane	20.0	21.7	109	20.0	21.8	109	0.300	70 - 130	30	
1,2-Dichloropropane	20.0	19.7	98.7	20.0	20.1	100	1.75	75 - 125	30	
1,3,5-Trimethylbenzene	20.0	18.5	92.4	20.0	19.0	95.2	2.97	75 - 130	30	
1,3-Dichlorobenzene	20.0	18.6	92.8	20.0	19.1	95.5	2.91	75 - 125	30	
1,4-Dichlorobenzene	20.0	17.9	89.5	20.0	18.5	92.7	3.56	75 - 125	30	
1-Chlorohexane	20.0	20.9	105	20.0	21.2	106	1.09	80 - 127	30	
2,2-Dichloropropane	20.0	18.2	90.9	20.0	18.2	91.2	0.268	70 - 135	30	
2-Butanone	20.0	26.2	131	20.0	25.4	127	3.20	30 - 150	30	
2-Chlorotoluene	20.0	19.2	96.2	20.0	19.8	99.1	2.95	75 - 125	30	
2-Hexanone	20.0	25.4	127	20.0	25.5	128	0.224	55 - 130	30	
4-Chlorotoluene	20.0	19.5	97.4	20.0	20.2	101	3.82	75 - 130	30	
4-Methyl-2-pentanone	20.0	21.6	108	20.0	21.5	108	0.352	60 - 135	30	
Acetone	20.0	27.4	137	20.0	25.7	128	6.58	40 - 140	30	
Benzene	20.0	19.0	95.2	20.0	19.4	97.1	1.94	80 - 120	30	
Bromobenzene	20.0	18.6	93.0	20.0	19.1	95.7	2.86	75 - 125	30	
Bromochloromethane	20.0	20.3	102	20.0	20.4	102	0.605	65 - 130	30	
Bromodichloromethane	20.0	19.9	99.5	20.0	20.1	101	1.16	75 - 120	30	
Bromoform	20.0	22.9	115	20.0	23.0	115	0.315	70 - 130	30	
Bromomethane	20.0	15.4	77.1	20.0	16.1	80.7	4.53	30 - 145	30	
Carbon disulfide	20.0	10.3	51.6	20.0	10.3	51.5	0.249	35 - 160	30	
Carbon tetrachloride	20.0	20.5	102	20.0	21.0	105	2.55	65 - 140	30	
Chlorobenzene	20.0	19.8	98.8	20.0	20.0	100	1.34	80 - 120	30	
Chloroethane	20.0	17.1	85.3	20.0	17.3	86.5	1.39	60 - 135	30	
Chloroform	20.0	21.1	106	20.0	21.3	106	0.603	65 - 135	30	
Chloromethane	20.0	18.9	94.4	20.0	18.9	94.7	0.395	40 - 125	30	
cis-1,2-Dichloroethene	20.0	19.0	94.8	20.0	19.3	96.5	1.78	70 - 125	30	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4294399
Report generated: 07/23/2015 08:19

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070976 Analyst: TMB/ JDS Prep Method: 5030B/5030C/503
Instrument ID: HPMS17 Matrix: Water Method: 8260B
Workgroup (AAB#): WG531954 Units: ug/L
QC Key: DOD4 Lot #: STD71570

Sample ID: WG531954-02 LCS File ID: 17M013843 Run Date: 07/20/2015 23:12
Sample ID: WG531954-03 LCS2 File ID: 17M013844 Run Date: 07/20/2015 23:32

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
cis-1,3-Dichloropropene	20.0	20.3	101	20.0	20.4	102	0.798	70 - 130	30	
Chlorodibromomethane	20.0	20.6	103	20.0	20.8	104	1.26	60 - 135	30	
Dichlorodifluoromethane	20.0	17.3	86.7	20.0	17.7	88.7	2.27	30 - 155	30	
Ethylbenzene	20.0	19.0	94.9	20.0	19.5	97.4	2.66	75 - 125	30	
Hexachlorobutadiene	20.0	15.2	76.0	20.0	16.2	80.8	6.13	50 - 140	30	
Isopropylbenzene	20.0	19.5	97.4	20.0	20.0	99.9	2.56	75 - 125	30	
Methyl t-butyl ether (MTBE)	20.0	23.5	117	20.0	23.5	117	0.0934	65 - 125	30	
Methylene chloride	20.0	18.8	94.1	20.0	19.0	94.9	0.830	55 - 140	30	
n-Butylbenzene	20.0	18.4	91.8	20.0	19.3	96.4	4.93	70 - 135	30	
n-Propylbenzene	20.0	19.3	96.7	20.0	20.2	101	4.23	70 - 130	30	
Naphthalene	20.0	19.5	97.7	20.0	20.1	101	3.02	55 - 140	30	
p-Isopropyltoluene	20.0	17.6	88.0	20.0	18.3	91.6	4.02	75 - 130	30	
sec-Butylbenzene	20.0	18.3	91.7	20.0	19.3	96.3	4.91	70 - 125	30	
Styrene	20.0	19.5	97.5	20.0	19.8	99.0	1.58	65 - 135	30	
tert-Butylbenzene	20.0	18.2	90.8	20.0	19.0	95.1	4.59	70 - 130	30	
Tetrachloroethene	20.0	19.2	95.9	20.0	19.8	98.9	3.01	45 - 150	30	
Toluene	20.0	19.6	97.9	20.0	20.0	99.9	2.03	75 - 120	30	
trans-1,2-Dichloroethene	20.0	18.9	94.4	20.0	18.8	93.9	0.575	60 - 140	30	
trans-1,3-Dichloropropene	20.0	20.7	104	20.0	20.8	104	0.241	55 - 140	30	
Trichloroethene	20.0	20.6	103	20.0	19.3	96.7	6.15	70 - 125	30	
Trichlorofluoromethane	20.0	19.6	98.1	20.0	20.1	101	2.54	60 - 145	30	
Vinyl chloride	20.0	18.9	94.5	20.0	19.2	95.9	1.41	50 - 145	30	
Xylenes	60.0	58.4	97.3	60.0	59.5	99.2	1.86	80 - 120	30	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	113	111	70 - 120	PASS
Dibromofluoromethane	100	99.1	85 - 115	PASS
4-Bromofluorobenzene	101	102	75 - 120	PASS
Toluene-d8	103	103	85 - 120	PASS

* EXCEEDS %REC LIMIT

\# EXCEEDS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4294399
Report generated: 07/23/2015 08:19

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070976
Blank File ID: 16G48096
Prep Date: 07/17/15 11:34
Analyzed Date: 07/17/15 11:34
Analyst: JDS

Work Group: WG531679
Blank Sample ID: WG531679-01
Instrument ID: HP16
Method: RSK175

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531679-02	16G48097	07/17/15 11:45	01
LCS2	WG531679-03	16G48098	07/17/15 11:57	01
FTB034-GM-MW-8B-071515	L15070976-01	16G48118	07/17/15 18:09	01
FTB034-GM-MW-1C-071515	L15070976-02	16G48119	07/17/15 18:20	01
FTB034-GM-MW-8A-071515	L15070976-03	16G48120	07/17/15 18:32	01

Report Name: BLANK_SUMMARY
PDF File ID: 4293491
Report generated 07/23/2015 12:41

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070976
Blank File ID: 16G48123
Prep Date: 07/20/15 11:36
Analyzed Date: 07/20/15 11:36
Analyst: JDS

Work Group: WG531865
Blank Sample ID: WG531865-01
Instrument ID: HP16
Method: RSK175

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531865-02	16G48124	07/20/15 11:47	01
LCS2	WG531865-03	16G48125	07/20/15 11:58	01
FTB034-GM-MW-8A-071515	L15070976-03	16G48129	07/20/15 14:23	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 4293491
Report generated 07/23/2015 12:41

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070976 Prep Date: 07/17/15 11:34 Sample ID: WG531679-01
Instrument ID: HP16 Run Date: 07/17/15 11:34 Prep Method: 5021
File ID: 16G48096 Analyst: JDS Method: RSK175
Workgroup (AAB#): WG531679 Matrix: Water Units: ug/L
Contract #: Cal ID: HP16 - 03-MAR-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Methane	1.00	5.00	1.00	1	U
Ethene	1.00	5.00	1.00	1	U
Ethane	1.00	5.00	1.00	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 4293492
23-JUL-2015 12:41

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070976 Prep Date: 07/20/15 11:36 Sample ID: WG531865-01
Instrument ID: HP16 Run Date: 07/20/15 11:36 Prep Method: 5021
File ID: 16G48123 Analyst: JDS Method: RSK175
Workgroup (AAB#): WG531865 Matrix: Water Units: ug/L
Contract #: Cal ID: HP16 - 03-MAR-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Methane	1.00	5.00	1.00	1	U
Ethene	1.00	5.00	1.00	1	U
Ethane	1.00	5.00	1.00	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 4293492
23-JUL-2015 12:41

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070976 Analyst: JDS Prep Method: 5021
Instrument ID: HP16 Matrix: Water Method: RSK175
Workgroup (AAB#): WG531679 Units: ug/L
QC Key: DOD4 Lot #: STD68250

Sample ID: WG531679-02 LCS File ID: 16G48097 Run Date: 07/17/2015 11:45
Sample ID: WG531679-03 LCS2 File ID: 16G48098 Run Date: 07/17/2015 11:57

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Methane	114	112	98.3	114	112	97.7	0.597	85 - 115	20	
Ethene	200	197	98.6	200	194	97.1	1.55	85 - 115	20	
Ethane	214	205	95.7	214	202	94.4	1.34	85 - 115	20	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4293493
Report generated: 07/23/2015 12:41

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070976 Analyst: JDS Prep Method: 5021
Instrument ID: HP16 Matrix: Water Method: RSK175
Workgroup (AAB#): WG531865 Units: ug/L
QC Key: DOD4 Lot #: STD68250

Sample ID: WG531865-02 LCS File ID: 16G48124 Run Date: 07/20/2015 11:47
Sample ID: WG531865-03 LCS2 File ID: 16G48125 Run Date: 07/20/2015 11:58

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Methane	114	112	97.9	114	111	97.4	0.553	85 - 115	20	
Ethene	200	199	99.5	200	194	97.2	2.33	85 - 115	20	
Ethane	214	206	96.2	214	201	94.0	2.27	85 - 115	20	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4293493
Report generated: 07/23/2015 12:41

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070976
Blank File ID: T3.072415.115401
Prep Date: 07/17/15 13:35
Analyzed Date: 07/24/15 11:54
Analyst: KHR

Work Group: WG531894
Blank Sample ID: WG531726-02
Instrument ID: ICP-THERMO3
Method: 6010C

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531726-03	T3.072415.115806	07/24/15 11:58	01
FTB034-GM-MW-8B-071515	L15070976-01	T3.072415.124108	07/24/15 12:41	01
FTB034-GM-MW-1C-071515	L15070976-02	T3.072415.124509	07/24/15 12:45	01
FTB034-GM-MW-8A-071515	L15070976-03	T3.072415.124909	07/24/15 12:49	01
FTB034-GM-MW-8B-071515	L15070976-01	T3.072415.142418	07/24/15 14:24	DL01
FTB034-GM-MW-1C-071515	L15070976-02	T3.072415.142819	07/24/15 14:28	DL01
FTB034-GM-MW-8A-071515	L15070976-03	T3.072415.143220	07/24/15 14:32	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 4302069
Report generated 07/27/2015 09:32

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070976 Prep Date: 07/17/15 13:35 Sample ID: WG531726-02
Instrument ID: ICP-THERMO3 Run Date: 07/24/15 11:54 Prep Method: 3015
File ID: T3.072415.115401 Analyst: KHR Method: 6010C
Workgroup (AAB#): WG531894 Matrix: Water Units: mg/L
Contract #: Cal ID: ICP-TH-24-JUL-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Calcium, Total	0.250	0.500	0.250	1	U
Magnesium, Total	0.250	0.500	0.250	1	U
Potassium, Total	0.500	1.00	0.500	1	U
Sodium, Total	0.250	0.500	0.250	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4302070
27-JUL-2015 09:32

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070976 Run Date: 07/24/2015 Sample ID: WG531726-03
Instrument ID: ICP-THERMO3 Run Time: 11:58 Prep Method: 3015
File ID: T3.072415.115806 Analyst: KHR Method: 6010C
Workgroup (AAB#): WG531894 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD71485 Cal ID: ICP-TH-24-JUL-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Calcium, Total	6.25	6.13	98.1	80 - 120	
Magnesium, Total	6.25	6.17	98.7	80 - 120	
Potassium, Total	31.3	30.7	98.3	80 - 120	
Sodium, Total	31.3	30.4	97.4	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 4302071
Report generated: 07/27/2015 09:32

Microbac Laboratories Inc.
MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum: L15070976 Cal ID: ICP-THERMO3 - Worknum: WG531894
Instrument ID: ICP-THERMO3 Contract #: Method: 6010C
Parent ID: WG531726-01 File ID: T3.072415.120154 Dil: 1 Matrix: WATER
Sample ID: WG531726-04 MS File ID: T3.072415.120554 Dil: 1 Units: mg/L
Sample ID: WG531726-05 MSD File ID: T3.072415.120942 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Magnesium, Total	23.7	6.25	29.3	89.9	6.25	28.9	83.5	1.38	80 - 120	20	
Potassium, Total	2.62	31.3	33.3	98.3	31.3	33.1	97.7	0.602	80 - 120	20	
Sodium, Total	50.9	31.3	80.9	95.9	31.3	78.8	89.5	2.52	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 05/26/2011
PDF File ID: 4302072
Report generated 07/27/2015 09:35

Microbac Laboratories Inc.
MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum: L15070976 Cal ID: ICP-THERMO3 - Worknum: WG531894
Instrument ID: ICP-THERMO3 Contract #: Method: 6010C
Parent ID: WG531726-01 File ID: T3.072415.134836 Dil: 10 Matrix: WATER
Sample ID: WG531726-04 MS File ID: T3.072415.135236 Dil: 10 Units: mg/L
Sample ID: WG531726-05 MSD File ID: T3.072415.135635 Dil: 10

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Calcium, Total	86.3	6.25	90.5	67.8	6.25	85.8	-6.96	5.30	80 - 120	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 05/26/2011
PDF File ID: 4302072
Report generated 07/27/2015 09:35

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070976
Blank File ID: I3_071715-05
Prep Date: 07/17/15 12:00
Analyzed Date: 07/17/15 13:45
Analyst: ALS

Work Group: WG531706
Blank Sample ID: WG531706-01
Instrument ID: IC3
Method: 9056

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531706-02	I3_071715-06	07/17/15 14:05	01
DUP	WG531706-04	I3_071715-08	07/17/15 14:46	01
FTB034-GM-MW-8B-071515	L15070976-01	I3_071715-14	07/17/15 16:48	01
FTB034-GM-MW-8A-071515	L15070976-03	I3_071715-17	07/17/15 17:49	01

Report Name: BLANK_SUMMARY
PDF File ID: 4291119
Report generated 07/20/2015 13:18

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070976 Prep Date: 07/17/15 12:00 Sample ID: WG531706-01
Instrument ID: IC3 Run Date: 07/17/15 13:45 Prep Method: 9056
File ID: I3 071715-05 Analyst: ALS Method: 9056
Workgroup (AAB#): WG531706 Matrix: Water Units: mg/L
Contract #: Cal ID: IC3-30-JUN-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Nitrate	0.100	0.600	0.100	1	U
Sulfate	0.500	1.00	0.500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 4291120
20-JUL-2015 13:18

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070976 Run Date: 07/17/2015 Sample ID: WG531706-02
Instrument ID: IC3 Run Time: 14:05 Prep Method: 9056
File ID: I3 071715-06 Analyst: ALS Method: 9056
Workgroup (AAB#): WG531706 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD69216 Cal ID: IC3-30-JUN-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrate	5.42	5.05	93.2	90 - 110	
Sulfate	40.0	37.0	92.6	90 - 110	

LCS - Modified 03/06/2008
PDF File ID: 4291121
Report generated: 07/20/2015 13:18

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15070976
Blank File ID: TC07232015.013
Prep Date: 07/23/15 12:14
Analyzed Date: 07/23/15 12:14
Analyst: EPT

Work Group: WG532335
Blank Sample ID: WG532335-01
Instrument ID: TOC-VWP
Method: 9060A

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532335-02	TC07232015.016	07/23/15 13:13	01
LCS2	WG532335-03	TC07232015.017	07/23/15 14:06	01
FTB034-GM-MW-8B-071515	L15070976-01	TC07232015.029	07/23/15 21:56	01
FTB034-GM-MW-1C-071515	L15070976-02	TC07232015.030	07/23/15 22:37	01
FTB034-GM-MW-8A-071515	L15070976-03	TC07232015.031	07/23/15 23:18	01
DUP	WG532335-08	TC07232015.041	07/24/15 04:54	01

Report Name: BLANK_SUMMARY
PDF File ID: 4300612
Report generated 07/24/2015 10:27

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15070976 Prep Date: 07/23/15 12:14 Sample ID: WG532335-01
Instrument ID: TOC-VWP Run Date: 07/23/15 12:14 Prep Method: 9060A
File ID: TC07232015.013 Analyst: EPT Method: 9060A
Workgroup (AAB#): WG532335 Matrix: Water Units: mg/L
Contract #: Cal ID: TOC-VW-27-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U
Total Organic Carbon Rep1	0.500	1.00	0.500	1	U
Total Organic Carbon Rep2	0.500	1.00	0.500	1	U
Total Organic Carbon Rep3	0.500	1.00	0.500	1	U
Total Organic Carbon Rep4	0.500	1.00	0.500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 4300613
24-JUL-2015 10:27

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15070976 Analyst: EPT Prep Method: 9060A
Instrument ID: TOC-VWP Matrix: Water Method: 9060A
Workgroup (AAB#): WG532335 Units: mg/L
QC Key: DOD4 Lot #: STD69935

Sample ID: WG532335-02 LCS File ID: TC07232015.016 Run Date: 07/23/2015 13:13
Sample ID: WG532335-03 LCS2 File ID: TC07232015.017 Run Date: 07/23/2015 14:06

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	26.7	107	25.0	25.7	103	3.93	85 - 115	15	
Total Organic Carbon Rep1		24.8			25.6		3.21	85 - 115	15	*
Total Organic Carbon Rep2		25.6			25.7		0.702	85 - 115	15	*
Total Organic Carbon Rep3		25.2			25.5		0.868	85 - 115	15	*
Total Organic Carbon Rep4		31.3			25.9		18.7	85 - 115	15	*#

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4300614
Report generated: 07/24/2015 10:27

001 - BIO-CHEM TESTING WVDEP 220
002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental
004 - MICROBAC PITTSBURGH
005 - ES LABORATORIES
006 - ALCOSAN LABORATORIES
007 - ALS LABORATORIES
008 - BENCHMARK LABORATORIES
010 - MICROBAC CHICAGOLAND
AC - AMBER R. CARMICHAEL
ADC - ANTHONY D. CANTER
ADG - APRIL D. GREENE
AED - ALLEN E. DAVIS
ALS - ADRIANE L. STEED
AWE - ANDREW W. ESSIG
AZH - AFTER HOURS
BJO - BRIAN J. OGDEN
BKT - BRENDAN TORRENCE
BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY
CAA - CASSIE A. AUGENSTEIN
CAF - CHERYL A. FLOWERS
CEB - CHAD E. BARNES
CJR - COURTNEY J. REXROAD
CLC - CHRYS L. CRAWFORD
CLS - CARA L. STRICKLER
CLW - CHARISSA L. WINTERS
CPD - CHAD P. DAVIS
CSH - CHRIS S. HILL
DAK - DEAN A. KETELSEN
DCM - DAVID C. MERCKLE
DEV - DAVID E. VANDENBERG
DIH - DEANNA I. HESSON
DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE
DLW - DIANA L. WRIGHT
DSM - DAVID S. MOSSOR
ECL - ERIC C. LAWSON
ENY - EMILY N. YOAK
EPT - ETHAN P. TIDD
ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN
JBK - JEREMY B. KINNEY
JDH - JUSTIN D. HESSON
JDS - JARED D. SMITH
JJS - JOHN J. STE MARIE
JKP - JACQUELINE K. PARSONS
JLL - JOHN L. LENT
JMW - JEANA M. WHITE
JTP - JOSHUA T. PEMBERTON
JWR - JOHN W. RICHARDS
JWS - JACK W. SHEAVES
JYH - JI Y. HU
KAJ - KELLIE A. JOHNSON
KAT - KATHY A. TUCKER
KDW - KATHRYN D. WELCH
KEB - KATIE E. BARNES
KHR - KIM H. RHODES
KKB - KERRI K. BUCK
KRA - KATHY R. ALBERTSON
KRB - KAELY R. BECKER
KRP - KATHY R. PARSONS
LEC - LAURA E. CARPENTER
LKN - LINDA K. NEDEFF
LLS - LARRY L. STEPHENS
LSB - LESLIE S. BUCINA
MBK - MORGAN B. KNOWLTON
MDA - MIKE D. ALBERTSON
MDC - MIKE D. COCHRAN
MES - MARY E. SCHILLING
MLB - MEGAN L. BACHE
MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR
MSW - MATT S. WILSON
PDM - PIERCE D. MORRIS
PIT - MICROBAC WARRENDALE
PRL - PAIGE R. LAMB
PSW - PEGGY S. WEBB
QX - QIN XU
RAH - ROY A. HALSTEAD
REK - BOB E. KYER
RLB - BOB BUCHANAN
RM - RAYMOND MALEKE
RNP - RICK N. PETTY
RST - ROBIN S. TURNER
SAV - SARAH A. VANDENBERG
SCB - SARAH C. BOGOLIN
SDC - SHALYN D. CONLEY
SLM - STEPHANIE L. MOSSBURG
SLP - SHERI L. PFALZGRAF
TB - TODD BOYLE
TGF - TIM G. FELTON
TMB - TIFFANY M. BAILEY
TMM - TAMMY M. MORRIS
VC - VICKI COLLIER
WJB - WILL J. BEASLEY
WRR - WESLEY R. RICHARDS
WTD - WADE T. DELONG
XXX - UNAVAILABLE OR SUBCONTRACT

Microbac Laboratories Inc.
List of Valid Qualifiers
July 28, 2015

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B,H1	Analyte present in method blank. Sample analysis performed past holding time.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	Cooler temperature at sample reciept exceeded regulatory limit.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
E,CT1	Estimated results. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
H1	Sample analysis performed past holding time.
H1,CT1	Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guidelines for reque
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value ; the analyte concentration was less than the LOQ. Cooler temperature at sample reciept exceeded regu
J,H1	Estimated value ; the analyte concentration was less than the LOQ. Sample analysis performed past holding time.
J,H1	The reported result is an estimated value. Sample was analyzed past holding time.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentativlely identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL/MDL).
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
ND,H1	Not detected; Sample analysis performed past holding time.
ND,H1,CT1	Not detected; Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guide
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
Q,H1	One or more quality control criteria failed. Sample analyzed past holding time. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
T5	Laboratory not licensed for this parameter
TIC	Library Search Compound
TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.

Qualkey: DOD

TNTC,CT1	Too numerous to count. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
TNTC,H1	Too numerous to count. Sample analysis performed past holding time.
U	Analyte was not detected. The concentration is below the reported LOD.
U,CT1	Analyte was not detected. The concentration is below the reported LOD. Cooler temperature at sample reciept exceeded
U,H1	Not detected; Sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

COC No. A 46723

158 Starlite Drive
Marietta, OH 45750

MICROBAC®

CHAIN-OF-CUSTODY RECORD

Phone: 740-373-4071
Toll Free: 800-373-4071

Blue

Company Name: Kemron Environmental Services

Project Contact: Jeanette Hamm

Contact Phone #: 404-631-0928

Turn Around Requirements: STD

Location: Ft. Buchanan

Project ID: SH4906.0016

Sampler (print): Charlie Tay

Signature:

Program: ☐ CWA ☐ RCRA ☐ DOD ☐ AFCEE ☐ Other _____

Sample I.D. No.	Comp	Grab	Date	Time	Matrix*	NUMBER OF CONTAINERS	Hold	Anions - Sulfate / Nitrate 9056A	Cations - Mg, Ca, Na, K 6010C	TOC 9060A	Dis Gas RSK 175	VOC 8260B	TOTAL # (LAB USE)	ADDITIONAL REQUIREMENTS
~~MW-~~														
FTB034-GM-MW-8B 071615		✓	7/15/15	1461	GW	9		✓	✓	✓	✓	✓		
FTB034-GM-MW-[illegible]-071615		✓	7/15/15	0800	GW	9		✓	✓	✓	✓	✓		
~~MW-8~~														
FTB034-GM-MW-8A 071615		✓	7/15/15	1316	GW	9		✓	✓	✓	✓	✓		
Trip Blank		✓	7/15/15	n/a	W	2						✓		

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	7/15/15	1710			
Relinquished by: (Signature)	Date	Time			

Microbac OVD
Received: 07/17/2015 10:16
By: BRENDA GREENWALT
221000072769
Brenda Greenwalt

Remarks:

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

Page _____ of _____

TOXIC SUBSTANCE CONTROL ACT (TSCA)
CERTIFICATION

Date: July 6, 2015

(CHECK ONE SECTION ONLY)

POSITIVE CERTIFICATION

_____ "I certify that all chemical substances in this shipment comply with all applicable rules or orders under TSCA and that I am not offering a chemical substance for entry in violation of TSCA or any applicable rules order thereunder."

● OR ●

NEGATIVE CERTIFICATION

X "I certify that all chemical substances in this shipment are not subject to TSCA."

Company Name: KEMRON Environmental Services

Company Address: 1359A Ellsworth Industrial Boulevard

City/State: Atlanta, GA

Country/Zip: USA, 30318

Authorized Name: Charlie Taylor

Authorized Signature: _____

Title: Site Manager

Federal Express AWB#: _____

If the certifier is unsure if their chemical substance is subject to TSCA compliance, contact the Environmental Protection Agency, TSCA Assistance Office, Washington, D.C. (202) 554-1404 between 8:30 am and 5:00 pm EST.

Revised 04-2009

COMMERCIAL INVOICE (Factura Comercial)

This invoice must be completed in English (Esta factura se debe llenar en ingles)

SHIPPED FROM (Envio de):
Tax ID/VAT No. (No de Identificación): 11-2393978
Contact Name (Nombre): Jeanette Hamm
Telephone No. (Teléfono): 404-643-2033
E-Mail (E-Mail): jhamm@kemron.com
Company Name/Address (Compania/Dirección):
KEMRON Environmental Services
1359A Ellsworth Industrial Boulevard
Atlanta, GA 30318

Country (Pais): United States
Parties to Transaction:
☑ **Related** (Vinculado) ☐ **Non-related** (No Vinculado)

Date (Fecha): 07/ /2015
Air Waybill No. (Conocimiento de Embarque):
Invoice No. (No de la Factura): Not Applicable
Purchase Order No. (No de Orden de Compra): Not Applicable
Payment Terms (Terminos de Pago): Paid when Paid
Incoterms (Incoterms): CPT=CARRIAGE PAID TO
Reason for Export:
Sold (Vendido) ✓ **Not Sold** (No Esta Vendido) **Other** (Otro)

SHIPPED TO (Destinatario):
Tax ID/VAT No. (No de Identificación): 25-1199642
Contact Name (Nombre): Stephanie Mossburg
Telephone No. (Teléfono): 1-800-373-4071
E-Mail (E-Mail): Stephanie.Mossburg@microbac.com
Company Name/Address (Compania/Dirección):
Microbac Laboratories, Inc.
158 Starlite Drive
Marietta, OH 45750

Country (Pais): USA

SOLD TO (Vendido a): **Same as SHIPPED TO (Igual que el Destinatario):**
Company Name/Address (Compania/Dirección):
Country (Pais): USA

No. of Packages (No de Paquetes)	No. of Units (No Unitario)	Unit of Measure (Unidad de Medida)	Description of Goods (Including Harmonized Tariff No.) (Descripción de la Mercancia [Con No de Clasificación Arancelaria])	Country of Origin (Pais de Origen)	Value Unit (Precio Unitario)	Total Value (Precio Total)
1	8	each	Groundwater Samples for analysis	PR	10.00	80.00
						0.00
						0.00

Total No. of Packages (Total de Paquetes): 1
Total Weight (Indicate LBS or KGS) (Peso Total [En Lbs o Kgs]): 50 LBS

Special Instructions (Instrucciones Especiales):
This package contains soil samples which will be used for destructive analysis.

Declaration Statement(s) (Declaración[es]):

Subtotal (Subtotal):	80.00
Insurance (Seguro):	0.00
Freight (Flete):	0.00
Packing (Embalaje):	0.00
Handling (Manejo):	0.00
Other (Otros):	0.00
Invoice Total (Total):	80.00
Currency Code (Tipo de Moneda):	

Signature/Title (Firma del Declarante/Puesto) **Date** (Fecha)

Internal Chain of Custody Report

Login: L15070976
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 28-JUL-2015

Samplenum	Container ID	Products
L15070976-01	603817	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:29	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:29	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:29	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Samplenum	Container ID	Products
L15070976-01	603818	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:29	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:29	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:29	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Samplenum	Container ID	Products
L15070976-01	603819	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	17-JUL-2015 11:29	CLS		
2	PREP	L1	SEM	17-JUL-2015 11:33	ALS	CLS	
3	STORE	SEM	A2	21-JUL-2015 09:30	CLS	ALS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15070976
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 28-JUL-2015

Samplenum	Container ID	Products
L15070976-01	603820	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUL-2015 11:29	CLS		
2	ANALYZ	W1	WET	20-JUL-2015 08:25	EPT	CLS	
3	STORE	WET	A2	21-JUL-2015 08:25	BRG	EPT	
4	ANALYZ	A2	WET	22-JUL-2015 08:07	EPT	BRG	
5	STORE	WET	A2	24-JUL-2015 08:25	BRG	EPT	

Samplenum	Container ID	Products
L15070976-01	603821	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUL-2015 11:29	CLS		
2	PREP	W1	DIG	17-JUL-2015 13:24	ERP	CLS	
3	STORE	W1	DIG	17-JUL-2015 15:01	CLS	ERP	
4	ANALYZ*	DIG	METALS	20-JUL-2015 11:46	KHR	ERP	

Sample extract/digestate/leachate

Samplenum	Container ID	Products
L15070976-02	603822	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER		17-JUL-2015 11:29	CLS		
999	DISP			05-JAN-2010 08:10	BRG	BRG	

Comments:sied-scratch0.txt

Sample number changed: L09080101-01

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:29	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:29	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15070976
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 28-JUL-2015

Samplenum	Container ID	Products
L15070976-02	603823	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER		17-JUL-2015 11:29	CLS		<2
999	DISP			05-JAN-2010 08:10	BRG	BRG	

Comments:sied-scratch0.txt

Sample number changed: L09080101-02

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:29	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:29	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Samplenum	Container ID	Products
L15070976-02	603824	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUL-2015 11:29	CLS		
999	DISP			05-JAN-2010 08:10	BRG	BRG	

Comments:sied-scratch0.txt

Sample number changed: L09080101-03

Samplenum	Container ID	Products
L15070976-02	603825	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUL-2015 11:29	CLS		
999	DISP			05-JAN-2010 08:10	BRG	BRG	

Comments:sied-scratch0.txt

Sample number changed: L09080102-01

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15070976
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 28-JUL-2015

Samplenum	Container ID	Products
L15070976-03	603826	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:29	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER		17-JUL-2015 11:29	CLS		

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:29	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Samplenum	Container ID	Products
L15070976-03	603827	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:29	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:29	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:29	CLS		<2
2	ANALYZ	V1	ORG1	17-JUL-2015 15:12	JDS	CLS	

Samplenum	Container ID	Products
L15070976-03	603828	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	17-JUL-2015 11:29	CLS		
2	PREP	L1	SEM	17-JUL-2015 11:33	ALS	CLS	
3	STORE	SEM	A2	21-JUL-2015 09:30	CLS	ALS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15070976
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 28-JUL-2015

Samplenum	Container ID	Products
L15070976-03	603829	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUL-2015 11:29	CLS		
2	ANALYZ	W1	WET	20-JUL-2015 08:25	EPT	CLS	
3	STORE	WET	A2	21-JUL-2015 08:25	BRG	EPT	
4	ANALYZ	A2	WET	22-JUL-2015 08:07	EPT	BRG	
5	STORE	WET	A2	24-JUL-2015 08:25	BRG	EPT	

Samplenum	Container ID	Products
L15070976-03	603830	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	17-JUL-2015 11:29	CLS		
2	PREP	W1	DIG	17-JUL-2015 13:24	ERP	CLS	
3	STORE	W1	DIG	17-JUL-2015 15:01	CLS	ERP	
4	ANALYZ*	DIG	METALS	20-JUL-2015 11:46	KHR	ERP	

Sample extract/digestate/leachate

Samplenum	Container ID	Products
L15070976-04	603831	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:29	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	17-JUL-2015 11:29	CLS		
2	ANALYZ	V1	ORG4	17-JUL-2015 16:36	AWE	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

ANALYTICAL SERVICES, INC.

Virginia Office
402 North West Street
Culpeper, Virginia 22701
540-829-5642 Office
540-829-5641 Fax

DATA CERTIFICATION

The attached laboratory report L15071049 consisting of 565 pages, has been certified by David E. Vandenberg, Managing Director, Microbac Laboratories. The data contained herein was completed in accordance with the requirements of the DoD QSM and other applicable contract terms and conditions.

I hereby certify that this laboratory report and associated documentation has been reviewed and approved.

Ralph Abbondanza, REM
Vice President
PR Chemist's License #3803

$1.00 $1.00
A 1448792
ESTADO LIBRE ASOCIADO DE PUERTO RICO
Ralph Abbondanza III
Zemaitis
Lic.#3803
QUIMICO LICENCIADO

Microbac

Laboratory Report Number: L15071049

Jeanette Hamm
Kemron Environmental Services
1359 Ellsworth Industrial Blvd.
Atlanta, GA 30082

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Stephanie Mossburg – Team Chemist/Data Specialist
(740) 373-4071
Stephanie.Mossburg@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on July 31 2015

David Vandenberg – Managing Director

State of Origin: PR
Accrediting Authority: N/A ID:N/A
QAPP: DOD Ver 4.2 without flagging

Microbac

Lab Report #: L15071049
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

There were no discrepancies.

Discrepancy	Resolution

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
0017840	I	3.0		1004173162560004575000808288276691	X
0019783	I	2.0		1016080562560004575000781000267340	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	Yes

Microbac

Lab Report #: L15071049
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
FTB034-GM-MW-13B-071715	L15071049-01	07/17/2015 10:16	07/18/2015 08:56
FTB034-GM-MW-2C-071715	L15071049-02	07/17/2015 08:00	07/18/2015 08:56
FTB034-GM-OP-4-071715	L15071049-03	07/17/2015 14:36	07/18/2015 08:56
TRIP BLANK	L15071049-04	07/17/2015 00:01	07/18/2015 08:56

Login Number: L15071049
Department: Volatiles
Analyst: Tiffany Bailey

METHOD

Preparation SW-846 5030C/5035A

Analysis SW-846 8260B

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: The percent difference was out of range for the following analytes: Dichlorodifluoromethane. Please see the applicable QC report for a detailed presentation of the failures.

Continuing Calibration and Tune: Recoveries out of range were observed for the following analytes: 2,2-Dichloropropane. Please see the applicable QC report for a detailed presentation of the failures.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC prescribed MS/MSD. Microbac Laboratories recommends site specific MS/MSD samples to avoid possible data

qualifications.

SAMPLES

Internal Standards: All acceptance criteria were met.

Surrogates: All acceptance criteria were met.

Other: Sample 04 (trip blank) has naphthalene carryover from a previous sample. Quantity not sufficient for reanalysis, only one vial provided.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak. In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak. This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline. There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous. Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Managing Director or the QAO will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 102196
Approved By: Franci Bolden

Login Number: L15071049
Department: Volatiles - GC
Analyst: Jared Smith

Analysis RSK-175

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes/Sample Duplicates: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. Microbac Laboratories recommends site specific MS/MSD samples to avoid possible data qualifications.

SAMPLES

Samples: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

Narrative ID: 101900
Approved By: Franci Bolden

Login Number: L15071049
Department: Metals
Analyst: Kim Rhodes

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: WG532044 - The initial calibration blank analyzed on 23-JUL-2015 at 09:18 yielded a result for sodium that was between the MDL and the RDL. However, the reported sample results exceeded that of the ICB by greater than a factor of ten. With permission from the project manager, the samples were reported for sodium and no further action was taken for these samples.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: WG532044 - The continuing calibration blanks analyzed on 23-JUL-2015 at 10:11 and 10:51 yielded noncompliant results for sodium. However, the reported sample results exceeded that of the CCBs by greater than a factor of ten. With permission from the laboratory manager, the samples were reported and no further action was taken for these samples.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG532044 - Due to a post digestion spike failure on 23-JUL-2015 at 10:03 caused by high levels of minerals, the post digestion spike was reanalyzed at a dilution for sodium.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: WG532044 - Client samples 01, 02, and 03 required dilution analyses in order to obtain results for calcium within the calibration range.

Narrative ID: 101866
Approved By: Brendan Torrence

Login Number: L15071049
Department: General Chromatography
Analyst: Adriane Steed

METHOD

Analysis EPA300.0/SW846 9056

HOLDING TIMES

Sample Analysis: Hold times for NO2 and NO3 are 48 hours and the hold times for F, Cl, Br, and SO4 are 28 days. The hold time forms calculate the hold time based on 48 hours. All samples were analyzed in hold.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The client did not specify an MS/MSD for this sample delivery group. The laboratory selected sample 02 for MS/MSD analysis and recoveries out of range were observed for Sulfate. Please see the applicable QC report for a detailed presentation of the failures.

SAMPLES

Samples: All acceptance criteria were met.

MANUAL INTEGRATION: No manual integration required.

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Narrative ID: 101723
Approved By: Wade DeLong

Login Number: L15071049
Department: Conventionals
Analyst: Ethan Tidd

METHOD

Analysis Water: EPA 415.1/SM5310C/SW846 9060 (Total Organic Carbon)
Soil: Lloyd-Khan Methodology

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 101955
Approved By: Deanna Hesson

Microbac

Lab Report #: L15071049
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Certificate of Analysis

Sample #:	L15071049-01	**PrePrep Method:**	N/A	**Instrument:**	HPMS8
Client ID:	FTB034-GM-MW-13B-071715	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	07/20/2015 15:10
Workgroup #:	WG532342	**Analyst:**	TMB	**Run Date:**	07/23/2015 18:38
Collect Date:	07/17/2015 10:16	**Dilution:**	1	**File ID:**	8M406304
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5	0.576	J	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4	0.529	J	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3	1.63		1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	57.8		1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4	3.10		1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5	8.70		1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6	161		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4	5.04		1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	109	70	120	
4-Bromofluorobenzene	104	75	120	
Dibromofluoromethane	112	85	115	
Toluene-d8	101	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L15071049-01	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-13B-071715	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531865	**Analyst:**	JDS	**Run Date:**	07/20/2015 16:10
Collect Date:	07/17/2015 10:16	**Dilution:**	1	**File ID:**	16G48138
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8	55.3		5.00	1.00
Ethene	74-85-1		U	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15071049-01	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-13B-071715	**Prep Method:**	3015	**Prep Date:**	07/21/2015 09:41
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG532044	**Analyst:**	KHR	**Run Date:**	07/23/2015 09:48
Collect Date:	07/17/2015 10:16	**Dilution:**	1	**File ID:**	P2.072315.094841
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Magnesium, Total	7439-95-4	17.5		0.500	0.250
Potassium, Total	7440-09-7	2.02		1.00	0.500
Sodium, Total	7440-23-5	53.5		0.500	0.250

Sample #:	L15071049-01	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-13B-071715	**Prep Method:**	3015	**Prep Date:**	07/21/2015 09:41
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG532044	**Analyst:**	KHR	**Run Date:**	07/23/2015 10:33
Collect Date:	07/17/2015 10:16	**Dilution:**	10	**File ID:**	P2.072315.103301
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	126		5.00	2.50

Certificate of Analysis

Sample #:	L15071049-01	**PrePrep Method:**	N/A	**Instrument:**	IC2
Client ID:	FTB034-GM-MW-13B-071715	**Prep Method:**	9056	**Prep Date:**	07/18/2015 09:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	02/17/2015 19:43
Workgroup #:	WG531892	**Analyst:**	ALS	**Run Date:**	07/18/2015 12:47
Collect Date:	07/17/2015 10:16	**Dilution:**	1	**File ID:**	I2_071815-11
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8	0.487	J	0.600	0.100
Sulfate	14808-79-8	49.9		1.00	0.500
J	Estimated value ; the analyte concentration was less than the LOQ.				

Sample #:	L15071049-01	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-MW-13B-071715	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG532335	**Analyst:**	EPT	**Run Date:**	07/23/2015 23:59
Collect Date:	07/17/2015 10:16	**Dilution:**	1	**File ID:**	TC07232015.032
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	1.17		1.00	0.500
Total Organic Carbon Rep1		0.870	J	1.00	0.500
Total Organic Carbon Rep2		1.06		1.00	0.500
Total Organic Carbon Rep3		1.36		1.00	0.500
Total Organic Carbon Rep4		1.39		1.00	0.500
J	Estimated value ; the analyte concentration was less than the LOQ.				

Sample #:	L15071049-02	**PrePrep Method:**	N/A	**Instrument:**	HPMS8
Client ID:	FTB034-GM-MW-2C-071715	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	07/20/2015 15:10
Workgroup #:	WG532342	**Analyst:**	TMB	**Run Date:**	07/23/2015 19:06
Collect Date:	07/17/2015 08:00	**Dilution:**	1	**File ID:**	8M406305
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5	0.628	J	1.00	0.250

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4	0.534	J	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3	1.56		1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	57.9		1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250

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Analyte	CAS #	Result	Qual	LOQ	DL
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4	3.19		1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5	8.47		1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6	157		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4	5.30		1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	107	70	120	
4-Bromofluorobenzene	103	75	120	
Dibromofluoromethane	111	85	115	
Toluene-d8	104	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15071049-02	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-MW-2C-071715	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531865	**Analyst:**	JDS	**Run Date:**	07/20/2015 16:22
Collect Date:	07/17/2015 08:00	**Dilution:**	1	**File ID:**	16G48139
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8	63.5		5.00	1.00
Ethene	74-85-1	1.14	J	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

J	Estimated value ; the analyte concentration was less than the LOQ.

Certificate of Analysis

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15071049-02	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-2C-071715	**Prep Method:**	3015	**Prep Date:**	07/21/2015 09:41
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG532044	**Analyst:**	KHR	**Run Date:**	07/23/2015 09:51
Collect Date:	07/17/2015 08:00	**Dilution:**	1	**File ID:**	P2.072315.095106
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Magnesium, Total	7439-95-4	18.1		0.500	0.250
Potassium, Total	7440-09-7	2.04		1.00	0.500
Sodium, Total	7440-23-5	53.9		0.500	0.250

Sample #:	L15071049-02	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-MW-2C-071715	**Prep Method:**	3015	**Prep Date:**	07/21/2015 09:41
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG532044	**Analyst:**	KHR	**Run Date:**	07/23/2015 10:36
Collect Date:	07/17/2015 08:00	**Dilution:**	10	**File ID:**	P2.072315.103624
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	140		5.00	2.50

Sample #:	L15071049-02	**PrePrep Method:**	N/A	**Instrument:**	IC2
Client ID:	FTB034-GM-MW-2C-071715	**Prep Method:**	9056	**Prep Date:**	07/18/2015 09:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	02/17/2015 19:43
Workgroup #:	WG531892	**Analyst:**	ALS	**Run Date:**	07/18/2015 11:34
Collect Date:	07/17/2015 08:00	**Dilution:**	1	**File ID:**	I2_071815-07
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8	0.806		0.600	0.100
Sulfate	14808-79-8	49.1		1.00	0.500

Certificate of Analysis

Sample #:	L15071049-02	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-MW-2C-071715	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG532335	**Analyst:**	EPT	**Run Date:**	07/24/2015 00:40
Collect Date:	07/17/2015 08:00	**Dilution:**	1	**File ID:**	TC07232015.033
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	1.60		1.00	0.500
Total Organic Carbon Rep1		0.759	J	1.00	0.500
Total Organic Carbon Rep2		0.838	J	1.00	0.500
Total Organic Carbon Rep3		1.30		1.00	0.500
Total Organic Carbon Rep4		3.49		1.00	0.500

J	Estimated value ; the analyte concentration was less than the LOQ.

Sample #:	L15071049-03	**PrePrep Method:**	N/A	**Instrument:**	HPMS8
Client ID:	FTB034-GM-OP-4-071715	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	07/20/2015 15:10
Workgroup #:	WG532342	**Analyst:**	TMB	**Run Date:**	07/23/2015 19:35
Collect Date:	07/17/2015 14:36	**Dilution:**	1	**File ID:**	8M406306
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2	0.287	J	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250

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Analyte	CAS #	Result	Qual	LOQ	DL
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3	0.740	J	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	18.9		1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4	3.47		1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4	0.670	J	1.00	0.250
Toluene	108-88-3		U	1.00	0.250

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Analyte	CAS #	Result	Qual	LOQ	DL
trans-1,2-Dichloroethene	156-60-5	2.06		1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6	50.9		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	106	70	120	
4-Bromofluorobenzene	102	75	120	
Dibromofluoromethane	108	85	115	
Toluene-d8	102	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15071049-03	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-OP-4-071715	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531865	**Analyst:**	JDS	**Run Date:**	07/20/2015 16:33
Collect Date:	07/17/2015 14:36	**Dilution:**	1	**File ID:**	16G48140
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8	2.16	J	5.00	1.00
Ethene	74-85-1		U	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15071049-03	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-OP-4-071715	**Prep Method:**	3015	**Prep Date:**	07/21/2015 09:41
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG532044	**Analyst:**	KHR	**Run Date:**	07/23/2015 09:53
Collect Date:	07/17/2015 14:36	**Dilution:**	1	**File ID:**	P2.072315.095331
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Magnesium, Total	7439-95-4	15.3		0.500	0.250
Potassium, Total	7440-09-7	1.42		1.00	0.500
Sodium, Total	7440-23-5	101		0.500	0.250

Certificate of Analysis

Sample #:	L15071049-03	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-OP-4-071715	**Prep Method:**	3015	**Prep Date:**	07/21/2015 09:41
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG532044	**Analyst:**	KHR	**Run Date:**	07/23/2015 10:38
Collect Date:	07/17/2015 14:36	**Dilution:**	10	**File ID:**	P2.072315.103849
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	102		5.00	2.50

Sample #:	L15071049-03	**PrePrep Method:**	N/A	**Instrument:**	IC2
Client ID:	FTB034-GM-OP-4-071715	**Prep Method:**	9056	**Prep Date:**	07/18/2015 09:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	02/17/2015 19:43
Workgroup #:	WG531892	**Analyst:**	ALS	**Run Date:**	07/18/2015 13:23
Collect Date:	07/17/2015 14:36	**Dilution:**	1	**File ID:**	I2_071815-13
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8	0.231	J	0.600	0.100
Sulfate	14808-79-8	53.5		1.00	0.500

J	Estimated value ; the analyte concentration was less than the LOQ.

Sample #:	L15071049-03	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-OP-4-071715	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG532335	**Analyst:**	EPT	**Run Date:**	07/24/2015 01:21
Collect Date:	07/17/2015 14:36	**Dilution:**	1	**File ID:**	TC07232015.034
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	1.11		1.00	0.500
Total Organic Carbon Rep1		0.753	J	1.00	0.500
Total Organic Carbon Rep2		0.965	J	1.00	0.500
Total Organic Carbon Rep3		1.35		1.00	0.500
Total Organic Carbon Rep4		1.36		1.00	0.500

J	Estimated value ; the analyte concentration was less than the LOQ.

Certificate of Analysis

Sample #:	L15071049-04	**PrePrep Method:**	N/A	**Instrument:**	HPMS8
Client ID:	TRIP BLANK	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	07/20/2015 15:10
Workgroup #:	WG532342	**Analyst:**	TMB	**Run Date:**	07/23/2015 14:19
Collect Date:	07/17/2015 00:01	**Dilution:**	1	**File ID:**	8M406295
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3	0.315		1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	103	70	120	
4-Bromofluorobenzene	105	75	120	
Dibromofluoromethane	106	85	115	
Toluene-d8	103	85	120	

U	Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071049
Blank File ID: 8M406287
Prep Date: 07/23/15 10:29
Analyzed Date: 07/23/15 10:29
Analyst: TMB

Work Group: WG532342
Blank Sample ID: WG532342-01
Instrument ID: HPMS8
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532342-02	8M406288	07/23/15 10:57	01
LCS2	WG532342-03	8M406289	07/23/15 11:25	01
TRIP BLANK	L15071049-04	8M406295	07/23/15 14:19	02
FTB034-GM-MW-13B-071715	L15071049-01	8M406304	07/23/15 18:38	01
FTB034-GM-MW-2C-071715	L15071049-02	8M406305	07/23/15 19:06	01
FTB034-GM-OP-4-071715	L15071049-03	8M406306	07/23/15 19:35	01
LCS	WG532342-04	8M406309	07/23/15 21:01	02
LCS2	WG532342-05	8M406310	07/23/15 21:30	02

Report Name: BLANK_SUMMARY
PDF File ID: 4310662
Report generated 07/31/2015 09:23

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071049
Blank File ID: 8M406311
Prep Date: 07/23/15 21:59
Analyzed Date: 07/23/15 21:59
Analyst: TMB

Work Group: WG532342
Blank Sample ID: WG532342-06
Instrument ID: HPMS8
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532342-02	8M406288	07/23/15 10:57	01
LCS2	WG532342-03	8M406289	07/23/15 11:25	01
TRIP BLANK	L15071049-04	8M406295	07/23/15 14:19	02
FTB034-GM-MW-13B-071715	L15071049-01	8M406304	07/23/15 18:38	01
FTB034-GM-MW-2C-071715	L15071049-02	8M406305	07/23/15 19:06	01
FTB034-GM-OP-4-071715	L15071049-03	8M406306	07/23/15 19:35	01
LCS	WG532342-04	8M406309	07/23/15 21:01	02
LCS2	WG532342-05	8M406310	07/23/15 21:30	02

Report Name: BLANK_SUMMARY
PDF File ID: 4310662
Report generated 07/31/2015 09:23

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071049 Prep Date: 07/23/15 10:29 Sample ID: WG532342-01
Instrument ID: HPMS8 Run Date: 07/23/15 10:29 Prep Method: 5030B/5030C/503
File ID: 8M406287 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG532342 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS8-20-JUL-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	2.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1-Chlorohexane	0.125	1.00	0.125	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
2-Butanone	2.50	5.00	2.50	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
2-Hexanone	2.50	5.00	2.50	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	5.00	2.50	1	U
Acetone	2.50	5.00	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U

Report Name: BLANK
PDF ID: 4310663
31-JUL-2015 09:23

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071049 Prep Date: 07/23/15 10:29 Sample ID: WG532342-01
Instrument ID: HPMS8 Run Date: 07/23/15 10:29 Prep Method: 5030B/5030C/503
File ID: 8M406287 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG532342 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS8-20-JUL-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U
Isopropylbenzene	0.250	1.00	0.250	1	U
Methylene chloride	0.250	1.00	0.250	1	U
Methyl t-butyl ether (MTBE)	0.500	1.00	0.500	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Naphthalene	0.200	1.00	0.200	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	106	70 - 120	PASS
4-Bromofluorobenzene	103	75 - 120	PASS
Dibromofluoromethane	106	85 - 115	PASS
Toluene-d8	102	85 - 120	PASS

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4310663
31-JUL-2015 09:23

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071049 Prep Date: 07/23/15 21:59 Sample ID: WG532342-06
Instrument ID: HPMS8 Run Date: 07/23/15 21:59 Prep Method: 5030B/5030C/503
File ID: 8M406311 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG532342 Matrix: Water 2 Units: ug/L
Contract #: Cal ID: HPMS8-20-JUL-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	2.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1-Chlorohexane	0.125	1.00	0.125	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
2-Butanone	2.50	5.00	2.50	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
2-Hexanone	2.50	5.00	2.50	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	5.00	2.50	1	U
Acetone	2.50	5.00	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U

Report Name: BLANK
PDF ID: 4310663
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Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071049 Prep Date: 07/23/15 21:59 Sample ID: WG532342-06
Instrument ID: HPMS8 Run Date: 07/23/15 21:59 Prep Method: 5030B/5030C/503
File ID: 8M406311 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG532342 Matrix: Water 2 Units: ug/L
Contract #: Cal ID: HPMS8-20-JUL-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U
Isopropylbenzene	0.250	1.00	0.250	1	U
Methylene chloride	0.250	1.00	0.250	1	U
Methyl t-butyl ether (MTBE)	0.500	1.00	0.500	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Naphthalene	0.200	1.00	0.200	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	103	70 - 120	PASS
4-Bromofluorobenzene	105	75 - 120	PASS
Dibromofluoromethane	111	85 - 115	PASS
Toluene-d8	102	85 - 120	PASS

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4310663
31-JUL-2015 09:23

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071049 Run Date: 07/24/2015 Sample ID: WG532599-02
Instrument ID: HPMS11 Run Time: 16:52 Prep Method: 5030B/5030C/503
File ID: 11M08786 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG532599 Matrix: Water Units: ug/L
QC Key: DOD4 Lot#: STD71618 Cal ID: HPMS11-23-JUL-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
1,1,1,2-Tetrachloroethane	20.0	19.3	96.4	80 - 130	
1,1,1-Trichloroethane	20.0	20.7	103	65 - 130	
1,1,2,2-Tetrachloroethane	20.0	19.5	97.3	65 - 130	
1,1,2-Trichloroethane	20.0	20.1	100	75 - 125	
1,1-Dichloroethane	20.0	20.6	103	70 - 135	
1,1-Dichloroethene	20.0	19.5	97.6	70 - 130	
1,1-Dichloropropene	20.0	19.9	99.5	75 - 130	
1,2,3-Trichlorobenzene	20.0	20.1	101	55 - 140	
1,2,3-Trichloropropane	20.0	19.1	95.4	75 - 125	
1,2,4-Trichlorobenzene	20.0	20.1	101	65 - 135	
1,2,4-Trimethylbenzene	20.0	21.7	109	75 - 130	
1,2-Dibromo-3-chloropropane	20.0	17.5	87.7	50 - 130	
1,2-Dibromoethane	20.0	20.3	101	80 - 120	
1,2-Dichlorobenzene	20.0	20.9	105	70 - 120	
1,2-Dichloroethane	20.0	19.4	97.2	70 - 130	
1,2-Dichloropropane	20.0	20.8	104	75 - 125	
1,3,5-Trimethylbenzene	20.0	22.0	110	75 - 130	
1,3-Dichlorobenzene	20.0	20.7	103	75 - 125	
1,4-Dichlorobenzene	20.0	19.4	97.0	75 - 125	
1-Chlorohexane	20.0	22.1	111	80 - 127	
2,2-Dichloropropane	20.0	23.6	118	70 - 135	
2-Butanone	20.0	19.2	96.0	30 - 150	
2-Chlorotoluene	20.0	22.5	113	75 - 125	
2-Hexanone	20.0	19.0	95.2	55 - 130	
4-Chlorotoluene	20.0	20.4	102	75 - 130	
4-Methyl-2-pentanone	20.0	18.5	92.7	60 - 135	
Acetone	20.0	19.0	95.1	40 - 140	
Benzene	20.0	20.8	104	80 - 120	
Bromobenzene	20.0	19.9	99.6	75 - 125	
Bromochloromethane	20.0	21.0	105	65 - 130	
Bromodichloromethane	20.0	19.9	99.5	75 - 120	
Bromoform	20.0	16.9	84.6	70 - 130	
Bromomethane	20.0	19.4	97.0	30 - 145	
Carbon disulfide	20.0	15.0	75.1	35 - 160	
Carbon tetrachloride	20.0	21.2	106	65 - 140	
Chlorobenzene	20.0	21.4	107	80 - 120	
Chloroethane	20.0	21.3	107	60 - 135	
Chloroform	20.0	20.7	104	65 - 135	
Chloromethane	20.0	20.7	103	40 - 125	
cis-1,2-Dichloroethene	20.0	19.3	96.5	70 - 125	
cis-1,3-Dichloropropene	20.0	22.0	110	70 - 130	

LCS - Modified 03/06/2008
PDF File ID: 4310713
Report generated: 07/30/2015 16:22

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071049 Run Date: 07/24/2015 Sample ID: WG532599-02
Instrument ID: HPMS11 Run Time: 16:52 Prep Method: 5030B/5030C/503
File ID: 11M08786 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG532599 Matrix: Water Units: ug/L
QC Key: DOD4 Lot#: STD71618 Cal ID: HPMS11-23-JUL-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Chlorodibromomethane	20.0	19.6	97.9	60 - 135	
Dichlorodifluoromethane	20.0	23.2	116	30 - 155	
Ethylbenzene	20.0	20.1	100	75 - 125	
Hexachlorobutadiene	20.0	18.5	92.4	50 - 140	
Isopropylbenzene	20.0	22.7	114	75 - 125	
Methylene chloride	20.0	19.2	95.9	55 - 140	
Methyl t-butyl ether (MTBE)	20.0	21.9	109	65 - 125	
n-Butylbenzene	20.0	21.9	109	70 - 135	
n-Propylbenzene	20.0	23.0	115	70 - 130	
Naphthalene	20.0	21.1	106	55 - 140	
p-Isopropyltoluene	20.0	21.9	109	75 - 130	
sec-Butylbenzene	20.0	22.7	114	70 - 125	
Styrene	20.0	21.1	106	65 - 135	
tert-Butylbenzene	20.0	21.7	108	70 - 130	
Tetrachloroethene	20.0	21.2	106	45 - 150	
Toluene	20.0	21.2	106	75 - 120	
trans-1,2-Dichloroethene	20.0	21.0	105	60 - 140	
trans-1,3-Dichloropropene	20.0	19.9	99.5	55 - 140	
Trichloroethene	20.0	20.7	104	70 - 125	
Trichlorofluoromethane	20.0	19.7	98.7	60 - 145	
Vinyl chloride	20.0	21.1	106	50 - 145	
Xylenes	60.0	64.9	108	80 - 120	

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	93.1	70 - 120	PASS
4-Bromofluorobenzene	103	75 - 120	PASS
Dibromofluoromethane	97.4	85 - 115	PASS
Toluene-d8	102	85 - 120	PASS

* EXCEEDS %REC LIMIT

LCS - Modified 03/06/2008
PDF File ID: 4310713
Report generated: 07/30/2015 16:22

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071049 Run Date: 07/23/2015 Sample ID: WG532342-02
Instrument ID: HPMS8 Run Time: 10:57 Prep Method: 5030B/5030C/503
File ID: 8M406288 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG532342 Matrix: Water Units: ug/L
QC Key: DOD4 Lot#: STD71469 Cal ID: HPMS8-20-JUL-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
1,1,1,2-Tetrachloroethane	20.0	19.6	98.1	80 - 130	
1,1,1-Trichloroethane	20.0	22.0	110	65 - 130	
1,1,2,2-Tetrachloroethane	20.0	18.8	94.1	65 - 130	
1,1,2-Trichloroethane	20.0	20.1	100	75 - 125	
1,1-Dichloroethane	20.0	21.1	106	70 - 135	
1,1-Dichloroethene	20.0	19.0	95.2	70 - 130	
1,1-Dichloropropene	20.0	21.1	105	75 - 130	
1,2,3-Trichlorobenzene	20.0	18.7	93.4	55 - 140	
1,2,3-Trichloropropane	20.0	19.9	99.6	75 - 125	
1,2,4-Trichlorobenzene	20.0	19.1	95.3	65 - 135	
1,2,4-Trimethylbenzene	20.0	20.4	102	75 - 130	
1,2-Dibromo-3-chloropropane	20.0	20.2	101	50 - 130	
1,2-Dibromoethane	20.0	19.9	99.3	80 - 120	
1,2-Dichlorobenzene	20.0	21.0	105	70 - 120	
1,2-Dichloroethane	20.0	20.8	104	70 - 130	
1,2-Dichloropropane	20.0	22.1	111	75 - 125	
1,3,5-Trimethylbenzene	20.0	20.5	103	75 - 130	
1,3-Dichlorobenzene	20.0	19.6	98.2	75 - 125	
1,4-Dichlorobenzene	20.0	18.8	94.1	75 - 125	
1-Chlorohexane	20.0	21.4	107	80 - 127	
2,2-Dichloropropane	20.0	22.5	113	70 - 135	
2-Butanone	20.0	20.3	101	30 - 150	
2-Chlorotoluene	20.0	20.8	104	75 - 125	
2-Hexanone	20.0	20.0	100	55 - 130	
4-Chlorotoluene	20.0	20.7	103	75 - 130	
4-Methyl-2-pentanone	20.0	20.8	104	60 - 135	
Acetone	20.0	20.9	105	40 - 140	
Benzene	20.0	22.0	110	80 - 120	
Bromobenzene	20.0	19.7	98.3	75 - 125	
Bromochloromethane	20.0	21.5	108	65 - 130	
Bromodichloromethane	20.0	20.9	104	75 - 120	
Bromoform	20.0	19.9	99.7	70 - 130	
Bromomethane	20.0	17.2	86.0	30 - 145	
Carbon disulfide	20.0	18.0	90.1	35 - 160	
Carbon tetrachloride	20.0	21.9	110	65 - 140	
Chlorobenzene	20.0	20.8	104	80 - 120	
Chloroethane	20.0	20.9	104	60 - 135	
Chloroform	20.0	21.9	110	65 - 135	
Chloromethane	20.0	15.5	77.7	40 - 125	
cis-1,2-Dichloroethene	20.0	21.1	106	70 - 125	
cis-1,3-Dichloropropene	20.0	22.5	112	70 - 130	

LCS - Modified 03/06/2008
PDF File ID: 4310713
Report generated: 07/30/2015 16:22

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071049 Run Date: 07/23/2015 Sample ID: WG532342-02
Instrument ID: HPMS8 Run Time: 10:57 Prep Method: 5030B/5030C/503
File ID: 8M406288 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG532342 Matrix: Water Units: ug/L
QC Key: DOD4 Lot#: STD71469 Cal ID: HPMS8-20-JUL-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Chlorodibromomethane	20.0	19.8	98.9	60 - 135	
Dichlorodifluoromethane	20.0	11.7	58.3	30 - 155	
Ethylbenzene	20.0	19.4	97.2	75 - 125	
Hexachlorobutadiene	20.0	18.5	92.5	50 - 140	
Isopropylbenzene	20.0	22.0	110	75 - 125	
Methylene chloride	20.0	20.6	103	55 - 140	
Methyl t-butyl ether (MTBE)	20.0	21.8	109	65 - 125	
n-Butylbenzene	20.0	20.5	102	70 - 135	
n-Propylbenzene	20.0	21.5	108	70 - 130	
Naphthalene	20.0	19.5	97.6	55 - 140	
p-Isopropyltoluene	20.0	20.9	105	75 - 130	
sec-Butylbenzene	20.0	21.8	109	70 - 125	
Styrene	20.0	21.1	106	65 - 135	
tert-Butylbenzene	20.0	20.3	102	70 - 130	
Tetrachloroethene	20.0	19.8	99.0	45 - 150	
Toluene	20.0	21.0	105	75 - 120	
trans-1,2-Dichloroethene	20.0	20.0	100	60 - 140	
trans-1,3-Dichloropropene	20.0	19.9	99.5	55 - 140	
Trichloroethene	20.0	20.7	103	70 - 125	
Trichlorofluoromethane	20.0	19.8	99.2	60 - 145	
Vinyl chloride	20.0	18.1	90.4	50 - 145	
Xylenes	60.0	62.8	105	80 - 120	

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	103	70 - 120	PASS
4-Bromofluorobenzene	102	75 - 120	PASS
Dibromofluoromethane	106	85 - 115	PASS
Toluene-d8	103	85 - 120	PASS

* EXCEEDS %REC LIMIT

LCS - Modified 03/06/2008
PDF File ID: 4310713
Report generated: 07/30/2015 16:22

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071049 Analyst: TMB Prep Method: 5030B/5030C/503
Instrument ID: HPMS8 Matrix: Water Method: 8260B
Workgroup (AAB#): WG532342 Units: ug/L
QC Key: DOD4 Lot #: STD71469

Sample ID: WG532342-02 LCS File ID: 8M406288 Run Date: 07/23/2015 10:57
Sample ID: WG532342-03 LCS2 File ID: 8M406289 Run Date: 07/23/2015 11:25

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
1,1,1,2-Tetrachloroethane	20.0	19.6	98.1	20.0	19.7	98.4	0.303	80 - 130	30	
1,1,1-Trichloroethane	20.0	22.0	110	20.0	21.2	106	3.59	65 - 130	30	
1,1,2,2-Tetrachloroethane	20.0	18.8	94.1	20.0	19.2	95.8	1.79	65 - 130	30	
1,1,2-Trichloroethane	20.0	20.1	100	20.0	19.8	99.1	1.36	75 - 125	30	
1,1-Dichloroethane	20.0	21.1	106	20.0	20.6	103	2.29	70 - 135	30	
1,1-Dichloroethene	20.0	19.0	95.2	20.0	19.2	95.8	0.659	70 - 130	30	
1,1-Dichloropropene	20.0	21.1	105	20.0	20.3	101	3.90	75 - 130	30	
1,2,3-Trichlorobenzene	20.0	18.7	93.4	20.0	18.8	93.8	0.405	55 - 140	30	
1,2,3-Trichloropropane	20.0	19.9	99.6	20.0	19.6	98.1	1.53	75 - 125	30	
1,2,4-Trichlorobenzene	20.0	19.1	95.3	20.0	18.3	91.7	3.81	65 - 135	30	
1,2,4-Trimethylbenzene	20.0	20.4	102	20.0	20.1	101	1.60	75 - 130	30	
1,2-Dibromo-3-chloropropane	20.0	20.2	101	20.0	19.2	96.1	4.95	50 - 130	30	
1,2-Dibromoethane	20.0	19.9	99.3	20.0	19.7	98.5	0.855	80 - 120	30	
1,2-Dichlorobenzene	20.0	21.0	105	20.0	20.6	103	1.98	70 - 120	30	
1,2-Dichloroethane	20.0	20.8	104	20.0	20.8	104	0.170	70 - 130	30	
1,2-Dichloropropane	20.0	22.1	111	20.0	21.8	109	1.63	75 - 125	30	
1,3,5-Trimethylbenzene	20.0	20.5	103	20.0	20.6	103	0.263	75 - 130	30	
1,3-Dichlorobenzene	20.0	19.6	98.2	20.0	19.8	99.2	1.02	75 - 125	30	
1,4-Dichlorobenzene	20.0	18.8	94.1	20.0	18.6	92.9	1.25	75 - 125	30	
1-Chlorohexane	20.0	21.4	107	20.0	21.0	105	1.98	80 - 127	30	
2,2-Dichloropropane	20.0	22.5	113	20.0	21.3	107	5.47	70 - 135	30	
2-Butanone	20.0	20.3	101	20.0	20.4	102	0.716	30 - 150	30	
2-Chlorotoluene	20.0	20.8	104	20.0	20.6	103	0.852	75 - 125	30	
2-Hexanone	20.0	20.0	100	20.0	19.9	99.4	0.630	55 - 130	30	
4-Chlorotoluene	20.0	20.7	103	20.0	21.0	105	1.63	75 - 130	30	
4-Methyl-2-pentanone	20.0	20.8	104	20.0	21.4	107	2.86	60 - 135	30	
Acetone	20.0	20.9	105	20.0	20.1	101	3.96	40 - 140	30	
Benzene	20.0	22.0	110	20.0	21.5	108	2.14	80 - 120	30	
Bromobenzene	20.0	19.7	98.3	20.0	19.5	97.3	1.02	75 - 125	30	
Bromochloromethane	20.0	21.5	108	20.0	21.9	110	2.00	65 - 130	30	
Bromodichloromethane	20.0	20.9	104	20.0	21.0	105	0.705	75 - 120	30	
Bromoform	20.0	19.9	99.7	20.0	20.1	100	0.612	70 - 130	30	
Bromomethane	20.0	17.2	86.0	20.0	17.0	84.8	1.43	30 - 145	30	
Carbon disulfide	20.0	18.0	90.1	20.0	17.5	87.4	3.00	35 - 160	30	
Carbon tetrachloride	20.0	21.9	110	20.0	21.2	106	3.23	65 - 140	30	
Chlorobenzene	20.0	20.8	104	20.0	20.5	102	1.67	80 - 120	30	
Chloroethane	20.0	20.9	104	20.0	21.0	105	0.721	60 - 135	30	
Chloroform	20.0	21.9	110	20.0	21.2	106	3.27	65 - 135	30	
Chloromethane	20.0	15.5	77.7	20.0	15.2	75.8	2.50	40 - 125	30	
cis-1,2-Dichloroethene	20.0	21.1	106	20.0	20.2	101	4.35	70 - 125	30	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4300076
Report generated: 07/31/2015 09:23

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071049 Analyst: TMB Prep Method: 5030B/5030C/503
Instrument ID: HPMS8 Matrix: Water Method: 8260B
Workgroup (AAB#): WG532342 Units: ug/L
QC Key: DOD4 Lot #: STD71469

Sample ID: WG532342-02 LCS File ID: 8M406288 Run Date: 07/23/2015 10:57
Sample ID: WG532342-03 LCS2 File ID: 8M406289 Run Date: 07/23/2015 11:25

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
cis-1,3-Dichloropropene	20.0	22.5	112	20.0	22.1	110	1.99	70 - 130	30	
Chlorodibromomethane	20.0	19.8	98.9	20.0	19.6	98.2	0.722	60 - 135	30	
Dichlorodifluoromethane	20.0	11.7	58.3	20.0	10.9	54.7	6.39	30 - 155	30	
Ethylbenzene	20.0	19.4	97.2	20.0	19.7	98.5	1.35	75 - 125	30	
Hexachlorobutadiene	20.0	18.5	92.5	20.0	17.7	88.3	4.65	50 - 140	30	
Isopropylbenzene	20.0	22.0	110	20.0	21.5	107	2.36	75 - 125	30	
Methyl t-butyl ether (MTBE)	20.0	21.8	109	20.0	21.6	108	1.16	65 - 125	30	
Methylene chloride	20.0	20.6	103	20.0	20.3	101	1.45	55 - 140	30	
n-Butylbenzene	20.0	20.5	102	20.0	20.2	101	1.51	70 - 135	30	
n-Propylbenzene	20.0	21.5	108	20.0	21.6	108	0.258	70 - 130	30	
Naphthalene	20.0	19.5	97.6	20.0	19.4	96.8	0.881	55 - 140	30	
p-Isopropyltoluene	20.0	20.9	105	20.0	20.4	102	2.22	75 - 130	30	
sec-Butylbenzene	20.0	21.8	109	20.0	21.8	109	0.246	70 - 125	30	
Styrene	20.0	21.1	106	20.0	20.7	103	2.06	65 - 135	30	
tert-Butylbenzene	20.0	20.3	102	20.0	20.3	102	0.0841	70 - 130	30	
Tetrachloroethene	20.0	19.8	99.0	20.0	19.6	98.0	0.981	45 - 150	30	
Toluene	20.0	21.0	105	20.0	20.6	103	2.20	75 - 120	30	
trans-1,2-Dichloroethene	20.0	20.0	100	20.0	19.4	96.9	3.18	60 - 140	30	
trans-1,3-Dichloropropene	20.0	19.9	99.5	20.0	20.2	101	1.56	55 - 140	30	
Trichloroethene	20.0	20.7	103	20.0	20.6	103	0.117	70 - 125	30	
Trichlorofluoromethane	20.0	19.8	99.2	20.0	19.4	96.9	2.34	60 - 145	30	
Vinyl chloride	20.0	18.1	90.4	20.0	17.5	87.6	3.18	50 - 145	30	
Xylenes	60.0	62.8	105	60.0	62.5	104	0.512	80 - 120	30	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	103	99.7	70 - 120	PASS
Dibromofluoromethane	106	104	85 - 115	PASS
4-Bromofluorobenzene	102	101	75 - 120	PASS
Toluene-d8	103	103	85 - 120	PASS

* EXCEEDS %REC LIMIT

\# EXCEEDS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4300076
Report generated: 07/31/2015 09:23

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071049
Blank File ID: 16G48123
Prep Date: 07/20/15 11:36
Analyzed Date: 07/20/15 11:36
Analyst: JDS

Work Group: WG531865
Blank Sample ID: WG531865-01
Instrument ID: HP16
Method: RSK175

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531865-02	16G48124	07/20/15 11:47	01
LCS2	WG531865-03	16G48125	07/20/15 11:58	01
FTB034-GM-MW-13B-071715	L15071049-01	16G48138	07/20/15 16:10	01
FTB034-GM-MW-2C-071715	L15071049-02	16G48139	07/20/15 16:22	01
FTB034-GM-OP-4-071715	L15071049-03	16G48140	07/20/15 16:33	01

Report Name: BLANK_SUMMARY
PDF File ID: 4293556
Report generated 07/23/2015 13:09

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071049 Prep Date: 07/20/15 11:36 Sample ID: WG531865-01
Instrument ID: HP16 Run Date: 07/20/15 11:36 Prep Method: 5021
File ID: 16G48123 Analyst: JDS Method: RSK175
Workgroup (AAB#): WG531865 Matrix: Water Units: ug/L
Contract #: Cal ID: HP16 - 03-MAR-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Methane	1.00	5.00	1.00	1	U
Ethene	1.00	5.00	1.00	1	U
Ethane	1.00	5.00	1.00	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4293557
23-JUL-2015 13:09

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071049 Analyst: JDS Prep Method: 5021
Instrument ID: HP16 Matrix: Water Method: RSK175
Workgroup (AAB#): WG531865 Units: ug/L
QC Key: DOD4 Lot #: STD68250

Sample ID: WG531865-02 LCS File ID: 16G48124 Run Date: 07/20/2015 11:47
Sample ID: WG531865-03 LCS2 File ID: 16G48125 Run Date: 07/20/2015 11:58

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Methane	114	112	97.9	114	111	97.4	0.553	85 - 115	20	
Ethene	200	199	99.5	200	194	97.2	2.33	85 - 115	20	
Ethane	214	206	96.2	214	201	94.0	2.27	85 - 115	20	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4293558
Report generated: 07/23/2015 13:09

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071049
Blank File ID: P2.072315.094255
Prep Date: 07/21/15 09:41
Analyzed Date: 07/23/15 09:42
Analyst: KHR

Work Group: WG532044
Blank Sample ID: WG532017-02
Instrument ID: PE-ICP2
Method: 6010C

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532017-03	P2.072115.113613	07/21/15 11:36	01
LCS	WG532017-03	P2.072315.094617	07/23/15 09:46	02
FTB034-GM-MW-13B-071715	L15071049-01	P2.072315.094841	07/23/15 09:48	01
FTB034-GM-MW-2C-071715	L15071049-02	P2.072315.095106	07/23/15 09:51	01
FTB034-GM-OP-4-071715	L15071049-03	P2.072315.095331	07/23/15 09:53	01
FTB034-GM-MW-13B-071715	L15071049-01	P2.072315.103301	07/23/15 10:33	DL01
FTB034-GM-MW-2C-071715	L15071049-02	P2.072315.103624	07/23/15 10:36	DL01
FTB034-GM-OP-4-071715	L15071049-03	P2.072315.103849	07/23/15 10:38	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 4298359
Report generated 07/23/2015 11:55

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071049 Prep Date: 07/21/15 09:41 Sample ID: WG532017-02
Instrument ID: PE-ICP2 Run Date: 07/23/15 09:42 Prep Method: 3015
File ID: P2.072315.094255 Analyst: KHR Method: 6010C
Workgroup (AAB#): WG532044 Matrix: Water Units: mg/L
Contract #: Cal ID: PE-ICP - 23-JUL-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Calcium, Total	0.250	0.500	0.250	1	U
Magnesium, Total	0.250	0.500	0.250	1	U
Potassium, Total	0.500	1.00	0.500	1	U
Sodium, Total	0.250	0.500	0.250	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4298360
23-JUL-2015 11:55

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071049 Run Date: 07/23/2015 Sample ID: WG532017-03
Instrument ID: PE-ICP2 Run Time: 09:46 Prep Method: 3015
File ID: P2.072315.094617 Analyst: KHR Method: 6010C
Workgroup (AAB#): WG532044 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD71485 Cal ID: PE-ICP-23-JUL-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Calcium, Total	6.25	6.21	99.4	80 - 120	
Magnesium, Total	6.25	6.34	102	80 - 120	
Potassium, Total	31.3	31.2	99.7	80 - 120	
Sodium, Total	31.3	31.8	102	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 4298361
Report generated: 07/23/2015 11:55

Microbac Laboratories Inc.
MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum: L15071049 Cal ID: PE-ICP2- Worknum: WG532044
Instrument ID: PE-ICP2 Contract #: Method: 6010C
Parent ID: WG532017-01 File ID: P2.072315.101952 Dil: 1 Matrix: WATER
Sample ID: WG532017-04 MS File ID: P2.072315.102220 Dil: 1 Units: mg/L
Sample ID: WG532017-05 MSD File ID: P2.072315.102444 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Calcium	2.75	6.25	6.39	58.3	6.25	6.45	59.2	0.880	80 - 120	20	*
Magnesium	5.36	6.25	6.28	14.8	6.25	6.39	16.5	1.65	80 - 120	20	*
Potassium	1.36	31.3	31.3	96.0	31.3	31.4	96.3	0.306	80 - 120	20	
Sodium	729	31.3	119	-1950	31.3	116	-1960	2.69	80 - 120	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 05/26/2011
PDF File ID: 4298362
Report generated 07/23/2015 11:55

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071049
Blank File ID: I2_071815-05
Prep Date: 07/18/15 09:00
Analyzed Date: 07/18/15 10:58
Analyst: ALS

Work Group: WG531892
Blank Sample ID: WG531892-01
Instrument ID: IC2
Method: 9056

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531892-02	I2_071815-06	07/18/15 11:16	01
FTB034-GM-MW-2C-071715	L15071049-02	I2_071815-07	07/18/15 11:34	01
DUP	WG531892-04	I2_071815-08	07/18/15 11:52	01
FTB034-GM-MW-13B-071715	L15071049-01	I2_071815-11	07/18/15 12:47	01
FTB034-GM-OP-4-071715	L15071049-03	I2_071815-13	07/18/15 13:23	01

Report Name: BLANK_SUMMARY
PDF File ID: 4291619
Report generated 07/20/2015 14:40

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071049 Prep Date: 07/18/15 09:00 Sample ID: WG531892-01
Instrument ID: IC2 Run Date: 07/18/15 10:58 Prep Method: 9056
File ID: I2 071815-05 Analyst: ALS Method: 9056
Workgroup (AAB#): WG531892 Matrix: Water Units: mg/L
Contract #: Cal ID: IC2 - 17-FEB-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Nitrate	0.100	0.600	0.100	1	U
Sulfate	0.500	1.00	0.500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4291620
20-JUL-2015 14:40

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071049 Run Date: 07/18/2015 Sample ID: WG531892-02
Instrument ID: IC2 Run Time: 11:16 Prep Method: 9056
File ID: I2 071815-06 Analyst: ALS Method: 9056
Workgroup (AAB#): WG531892 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD69216 Cal ID: IC2 - 17-FEB-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrate	5.42	5.52	102	90 - 110	
Sulfate	40.0	41.5	104	90 - 110	

LCS - Modified 03/06/2008
PDF File ID: 4291621
Report generated: 07/20/2015 14:40

Microbac Laboratories Inc.
MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum: L15071049 Cal ID: IC2 - Worknum: WG531892
Instrument ID: IC2 Contract #: Method: 9056
Parent ID: WG531892-03 File ID: I2_071815-07 Dil: 1 Matrix: WATER
Sample ID: WG531892-05 MS File ID: I2_071815-09 Dil: 1 Units: mg/L
Sample ID: WG531892-06 MSD File ID: I2_071815-10 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Nitrate	0.806	5.42	6.56	106	5.42	6.57	106	0.137	90 - 110	20	
Sulfate	49.1	40.0	94.9	115	40.0	95.8	117	0.947	90 - 110	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 05/26/2011
PDF File ID: 4291622
Report generated 07/20/2015 14:36

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071049
Blank File ID: TC07232015.013
Prep Date: 07/23/15 12:14
Analyzed Date: 07/23/15 12:14
Analyst: EPT

Work Group: WG532335
Blank Sample ID: WG532335-01
Instrument ID: TOC-VWP
Method: 9060A

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532335-02	TC07232015.016	07/23/15 13:13	01
LCS2	WG532335-03	TC07232015.017	07/23/15 14:06	01
FTB034-GM-MW-13B-071715	L15071049-01	TC07232015.032	07/23/15 23:59	01
FTB034-GM-MW-2C-071715	L15071049-02	TC07232015.033	07/24/15 00:40	01
FTB034-GM-OP-4-071715	L15071049-03	TC07232015.034	07/24/15 01:21	01
DUP	WG532335-08	TC07232015.041	07/24/15 04:54	01

Report Name: BLANK_SUMMARY
PDF File ID: 4300616
Report generated 07/24/2015 10:27

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071049 Prep Date: 07/23/15 12:14 Sample ID: WG532335-01
Instrument ID: TOC-VWP Run Date: 07/23/15 12:14 Prep Method: 9060A
File ID: TC07232015.013 Analyst: EPT Method: 9060A
Workgroup (AAB#): WG532335 Matrix: Water Units: mg/L
Contract #: Cal ID: TOC-VW-27-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U
Total Organic Carbon Rep1	0.500	1.00	0.500	1	U
Total Organic Carbon Rep2	0.500	1.00	0.500	1	U
Total Organic Carbon Rep3	0.500	1.00	0.500	1	U
Total Organic Carbon Rep4	0.500	1.00	0.500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 4300617
24-JUL-2015 10:27

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071049 Analyst: EPT Prep Method: 9060A
Instrument ID: TOC-VWP Matrix: Water Method: 9060A
Workgroup (AAB#): WG532335 Units: mg/L
QC Key: DOD4 Lot #: STD69935

Sample ID: WG532335-02 LCS File ID: TC07232015.016 Run Date: 07/23/2015 13:13
Sample ID: WG532335-03 LCS2 File ID: TC07232015.017 Run Date: 07/23/2015 14:06

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	26.7	107	25.0	25.7	103	3.93	85 - 115	15	
Total Organic Carbon Rep1		24.8			25.6		3.21	85 - 115	15	*
Total Organic Carbon Rep2		25.6			25.7		0.702	85 - 115	15	*
Total Organic Carbon Rep3		25.2			25.5		0.868	85 - 115	15	*
Total Organic Carbon Rep4		31.3			25.9		18.7	85 - 115	15	*#

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4300618
Report generated: 07/24/2015 10:27

001 - BIO-CHEM TESTING WVDEP 220
002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental
004 - MICROBAC PITTSBURGH
005 - ES LABORATORIES
006 - ALCOSAN LABORATORIES
007 - ALS LABORATORIES
008 - BENCHMARK LABORATORIES
010 - MICROBAC CHICAGOLAND
AC - AMBER R. CARMICHAEL
ADC - ANTHONY D. CANTER
ADG - APRIL D. GREENE
AED - ALLEN E. DAVIS
ALS - ADRIANE L. STEED
AWE - ANDREW W. ESSIG
AZH - AFTER HOURS
BJO - BRIAN J. OGDEN
BKT - BRENDAN TORRENCE
BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY
CAA - CASSIE A. AUGENSTEIN
CAF - CHERYL A. FLOWERS
CEB - CHAD E. BARNES
CJR - COURTNEY J. REXROAD
CLC - CHRYS L. CRAWFORD
CLS - CARA L. STRICKLER
CLW - CHARISSA L. WINTERS
CPD - CHAD P. DAVIS
CSH - CHRIS S. HILL
DAK - DEAN A. KETELSEN
DCM - DAVID C. MERCKLE
DEV - DAVID E. VANDENBERG
DIH - DEANNA I. HESSON
DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE
DLW - DIANA L. WRIGHT
DSM - DAVID S. MOSSOR
ECL - ERIC C. LAWSON
ENY - EMILY N. YOAK
EPT - ETHAN P. TIDD
ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN
JBK - JEREMY B. KINNEY
JDH - JUSTIN D. HESSON
JDS - JARED D. SMITH
JJS - JOHN J. STE MARIE
JKP - JACQUELINE K. PARSONS
JLL - JOHN L. LENT
JMW - JEANA M. WHITE
JTP - JOSHUA T. PEMBERTON
JWR - JOHN W. RICHARDS
JWS - JACK W. SHEAVES
JYH - JI Y. HU
KAJ - KELLIE A. JOHNSON
KAT - KATHY A. TUCKER
KDW - KATHRYN D. WELCH
KEB - KATIE E. BARNES
KHR - KIM H. RHODES
KKB - KERRI K. BUCK
KRA - KATHY R. ALBERTSON
KRB - KAELY R. BECKER
KRP - KATHY R. PARSONS
LEC - LAURA E. CARPENTER
LKN - LINDA K. NEDEFF
LLS - LARRY L. STEPHENS
LSB - LESLIE S. BUCINA
MBK - MORGAN B. KNOWLTON
MDA - MIKE D. ALBERTSON
MDC - MIKE D. COCHRAN
MES - MARY E. SCHILLING
MLB - MEGAN L. BACHE
MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR
MSW - MATT S. WILSON
PDM - PIERCE D. MORRIS
PIT - MICROBAC WARRENDALE
PRL - PAIGE R. LAMB
PSW - PEGGY S. WEBB
QX - QIN XU
RAH - ROY A. HALSTEAD
REK - BOB E. KYER
RLB - BOB BUCHANAN
RM - RAYMOND MALEKE
RNP - RICK N. PETTY
RST - ROBIN S. TURNER
SAV - SARAH A. VANDENBERG
SCB - SARAH C. BOGOLIN
SDC - SHALYN D. CONLEY
SLM - STEPHANIE L. MOSSBURG
SLP - SHERI L. PFALZGRAF
TB - TODD BOYLE
TGF - TIM G. FELTON
TMB - TIFFANY M. BAILEY
TMM - TAMMY M. MORRIS
VC - VICKI COLLIER
WJB - WILL J. BEASLEY
WRR - WESLEY R. RICHARDS
WTD - WADE T. DELONG
XXX - UNAVAILABLE OR SUBCONTRACT

Microbac Laboratories Inc.
List of Valid Qualifiers
July 31, 2015

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B,H1	Analyte present in method blank. Sample analysis performed past holding time.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	Cooler temperature at sample reciept exceeded regulatory limit.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
E,CT1	Estimated results. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
H1	Sample analysis performed past holding time.
H1,CT1	Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guidelines for reque
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value ; the analyte concentration was less than the LOQ. Cooler temperature at sample reciept exceeded regu
J,H1	Estimated value ; the analyte concentration was less than the LOQ. Sample analysis performed past holding time.
J,H1	The reported result is an estimated value. Sample was analyzed past holding time.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentativlely identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL/MDL).
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
ND,H1	Not detected; Sample analysis performed past holding time.
ND,H1,CT1	Not detected; Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guide
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
Q,H1	One or more quality control criteria failed. Sample analyzed past holding time. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
T5	Laboratory not licensed for this parameter
TIC	Library Search Compound
TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.

Qualkey: DOD

TNTC,CT1	Too numerous to count. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
TNTC,H1	Too numerous to count. Sample analysis performed past holding time.
U	Analyte was not detected. The concentration is below the reported LOD.
U,CT1	Analyte was not detected. The concentration is below the reported LOD. Cooler temperature at sample reciept exceeded
U,H1	Not detected; Sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

White Cooler

Microbac

Co.Name: Kemen Environmental
Prj Contact: Ft. Buchanan
Prj Name: Jeanette Hamm
Location: Bayamon, PR

TAT: STT
Phone: 404-636-0928

COC No. 1

Sampler Print: Charlie Todd

Sampler Sign: [signature]

Sample ID	Comp	Grab	Date	Time	Hold	# of Containers	Anions Sulfate/Nitrate 9056A	Cations (Mg, Ca, Na, K) 6010C	TOC 9060A	Diss Gas RSK175	VOC 8260B						Notes:
~~FTB-034-GM-~~																	
FTB034-GM-MW-13B 071715		✓	7/17/15	1016		9	✓	✓	✓	✓	✓						
FTB034-GM-MW-2C 071715		✓	7/17/15	0800		9	✓	✓	✓	✓	✓						
FTB034-GM-OP-4 071715		✓	7/17/15	1436		9	✓	✓	✓	✓	✓						
Trip Blank		✓				1					✓						

Relinquished By: [signature]
Date/Time 7/17/15 1630

Relinquished By:
Date/Time

Microbac OVD
Received: 07/18/2015 08:56
By: BRENDA GREENWALT 221000072798
Brenda Greenwalt
Date/Time

Relinquished By
Date/Time:

Received By:
Date/Time:

Cooler Temp(s):

Comments:

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L15071049
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 31-JUL-2015

Samplenum	Container ID	Products
L15071049-01	604396	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 10:38	BRG		
2	ANALYZ	V1	ORG4	20-JUL-2015 14:40	DLW	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 10:38	BRG		
2	ANALYZ	V1	ORG4	20-JUL-2015 14:40	DLW	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 10:38	BRG		
2	ANALYZ	V1	ORG4	20-JUL-2015 14:40	DLW	CLS	

Samplenum	Container ID	Products
L15071049-01	604397	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 10:38	BRG		<2
2	ANALYZ	V1	ORG1	20-JUL-2015 13:54	JDS	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 10:38	BRG		<2
2	ANALYZ	V1	ORG1	20-JUL-2015 13:54	JDS	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 10:38	BRG		<2
2	ANALYZ	V1	ORG1	20-JUL-2015 13:54	JDS	CLS	

Samplenum	Container ID	Products
L15071049-01	604398	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	20-JUL-2015 10:38	BRG		
2	PREP	L1	SEM	20-JUL-2015 10:57	ALS	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15071049
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 31-JUL-2015

Samplenum	Container ID	Products
L15071049-01	604399	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	20-JUL-2015 10:38	BRG		
2	ANALYZ	W1	WET	23-JUL-2015 08:16	EPT	CLS	
3	STORE	WET	A2	24-JUL-2015 08:25	BRG	EPT	

Samplenum	Container ID	Products
L15071049-01	604400	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	20-JUL-2015 10:38	BRG		
2	PREP	W1	DIG	20-JUL-2015 11:14	ERP	CLS	
3	ANALYZ*	DIG	METALS	21-JUL-2015 11:11	KHR	ERP	
4	STORE	DIG	A2	21-JUL-2015 13:34	BRG	ERP	

Sample extract/digestate/leachate

Samplenum	Container ID	Products
L15071049-02	604401	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 10:38	BRG		
2	ANALYZ	V1	ORG4	20-JUL-2015 14:40	DLW	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 10:38	BRG		
2	ANALYZ	V1	ORG4	20-JUL-2015 14:40	DLW	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 10:38	BRG		
2	ANALYZ	V1	ORG4	20-JUL-2015 14:40	DLW	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15071049
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 31-JUL-2015

Samplenum	Container ID	Products
L15071049-02	604402	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 10:38	BRG		<2
2	ANALYZ	V1	ORG1	20-JUL-2015 13:54	JDS	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 10:38	BRG		<2
2	ANALYZ	V1	ORG1	20-JUL-2015 13:54	JDS	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 10:38	BRG		<2
2	ANALYZ	V1	ORG1	20-JUL-2015 13:54	JDS	CLS	

Samplenum	Container ID	Products
L15071049-02	604403	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	20-JUL-2015 10:38	BRG		
2	PREP	L1	SEM	20-JUL-2015 10:57	ALS	CLS	
3	STORE	SEM	A2	21-JUL-2015 09:31	CLS	ALS	

Samplenum	Container ID	Products
L15071049-02	604404	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	20-JUL-2015 10:38	BRG		
2	ANALYZ	W1	WET	23-JUL-2015 08:16	EPT	CLS	
3	STORE	WET	A2	24-JUL-2015 08:25	BRG	EPT	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15071049
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 31-JUL-2015

Samplenum	Container ID	Products
L15071049-02	604405	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	20-JUL-2015 10:38	BRG		
2	PREP	W1	DIG	20-JUL-2015 11:14	ERP	CLS	
3	ANALYZ*	DIG	METALS	21-JUL-2015 11:11	KHR	ERP	
4	STORE	DIG	A2	21-JUL-2015 13:34	BRG	ERP	

Sample extract/digestate/leachate

Samplenum	Container ID	Products
L15071049-03	604406	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 10:38	BRG		
2	ANALYZ	V1	ORG4	20-JUL-2015 14:40	DLW	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 10:38	BRG		
2	ANALYZ	V1	ORG4	20-JUL-2015 14:40	DLW	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 10:38	BRG		
2	ANALYZ	V1	ORG4	20-JUL-2015 14:40	DLW	CLS	

Samplenum	Container ID	Products
L15071049-03	604407	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 10:38	BRG		<2
2	ANALYZ	V1	ORG1	20-JUL-2015 13:54	JDS	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 10:38	BRG		<2
2	ANALYZ	V1	ORG1	20-JUL-2015 13:54	JDS	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 10:38	BRG		<2
2	ANALYZ	V1	ORG1	20-JUL-2015 13:54	JDS	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15071049
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 31-JUL-2015

Samplenum	Container ID	Products
L15071049-03	604408	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	20-JUL-2015 10:38	BRG		
2	PREP	L1	SEM	20-JUL-2015 10:57	ALS	CLS	
3	STORE	SEM	A2	21-JUL-2015 09:31	CLS	ALS	

Samplenum	Container ID	Products
L15071049-03	604409	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	20-JUL-2015 10:38	BRG		
2	ANALYZ	W1	WET	23-JUL-2015 08:16	EPT	CLS	
3	STORE	WET	A2	24-JUL-2015 08:25	BRG	EPT	

Samplenum	Container ID	Products
L15071049-03	604410	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	20-JUL-2015 10:38	BRG		
2	PREP	W1	DIG	20-JUL-2015 11:14	ERP	CLS	
3	ANALYZ*	DIG	METALS	21-JUL-2015 11:11	KHR	ERP	
4	STORE	DIG	A2	21-JUL-2015 13:34	BRG	ERP	

Sample extract/digestate/leachate

Samplenum	Container ID	Products
L15071049-04	604411	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 10:38	BRG		
2	ANALYZ	V1	ORG4	20-JUL-2015 14:40	DLW	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

ANALYTICAL SERVICES, INC.

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DATA CERTIFICATION

The attached laboratory report L15071055 consisting of 518 pages, has been certified by David E. Vandenberg, Managing Director, Microbac Laboratories. The data contained herein was completed in accordance with the requirements of the DoD QSM and other applicable contract terms and conditions.

I hereby certify that this laboratory report and associated documentation has been reviewed and approved.

Ralph Abbondanza, REM
Vice President
PR Chemist's License #3803

ESTADO LIBRE ASOCIADO DE PUERTO RICO
A 1448791
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Zemaitis
Lic.#3803
QUIMICO LICENCIADO

Microbac

Laboratory Report Number: L15071055

Jeanette Hamm
Kemron Environmental Services
1359 Ellsworth Industrial Blvd.
Atlanta, GA 30082

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Stephanie Mossburg – Team Chemist/Data Specialist
(740) 373-4071
Stephanie.Mossburg@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on July 31 2015

David Vandenberg – Managing Director

State of Origin: PR
Accrediting Authority: N/A ID:N/A
QAPP: DOD Ver 4.2 without flagging

Microbac

Lab Report #: L15071055
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

The following discrepancies were noted:

Discrepancy	Resolution
Per COC, Trip Blank listed. Received (1) voa vial with no label. Question this as Trip Blank? BRG	With process of elimination, it was determined this was the trip blank. Please proceed.

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
0017840	I	3.0		1004173162560004575000808288276691	X
0019783	I	2.0		1016080562560004575000781000267340	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	No
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	Yes

Microbac

Lab Report #: L15071055
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
FTB034-GM-OP-5-071715	L15071055-01	07/17/2015 12:56	07/18/2015 08:56
TRIP BLANK	L15071055-02	07/17/2015 00:01	07/18/2015 08:56

Microbac Laboratories ● Ohio Valley Division
158 Starlite Drive, Marietta, OH 45750 ● T: (740)373-4071 F: (740)373-4835
www.microbac.com

Login Number: L15071055
Department: Volatiles
Analyst: Anthony Canter

METHOD

Preparation SW-846 5030C/5035A

Analysis SW-846 8260B

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: The percent difference was out of range for the following analytes: Carbon Disulfide, Trichlorofluoromethane. Please see the applicable QC report for a detailed presentation of the failures.

Continuing Calibration and Tune: Recoveries out of range were observed for the following analytes: Dichlorodifluoromethane. Please see the applicable QC report for a detailed presentation of the failures.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: Recoveries out of range were observed for the following analytes on MS17 ion 7/21/15: 1,1,1,2-Tetrachloroethane, 1,3-Dichlorobenzene, 2-Chlorotoluene, Chlorobenzene, Isopropylbenzene, p-Isopropyltoluene, Xylenes, 1,2-Dichlorobenzene, 2-Hexanone, tert-Butylbenzene; and RPD results outside control limits for the following analytes:1,2,3-Trichlorobenzene, 2,2-Dichloropropane, Carbon Disulfide, Dichlorodifluoromethane, Naphthalene, sec-Butylbenzene.
Sample 02 (trip blank) analyzed with multiple LCS failures, LCS2 had significantly fewer failures. Quantity not sufficient for

reanalysis of trip blank due to only one vial being received.
Sample 01 reanalyzed 7/24/15.
Recoveries out of range were observed for the following analytes on MS17 on 7/24/15: 2-Hexanone.
Please see the applicable QC report for a detailed presentation of the failures.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC prescribed MS/MSD. Microbac Laboratories recommends site specific MS/MSD samples to avoid possible data qualifications.

SAMPLES

Internal Standards: All acceptance criteria were met.

Surrogates: All acceptance criteria were met.

Other: None.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak. In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak. This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline. There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous. Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Managing Director or the QAO will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 102201

Approved By: Franci Bolden

Login Number: L15071055
Department: Volatiles - GC
Analyst: Jared Smith

Analysis RSK-175

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes/Sample Duplicates: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. Microbac Laboratories recommends site specific MS/MSD samples to avoid possible data qualifications.

SAMPLES

Samples: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

Narrative ID: 101901
Approved By: Franci Bolden

Login Number: L15071055
Department: Metals
Analyst: Kim Rhodes

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: WG532044 - The initial calibration blank analyzed on 23-JUL-2015 at 09:18 yielded a result for sodium that was between the MDL and the RDL. However, the reported sample results exceeded that of the ICB by greater than a factor of ten. With permission from the project manager, the samples were reported for sodium and no further action was taken for these samples.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: WG532044 - The continuing calibration blanks analyzed on 23-JUL-2015 at 10:11 and 10:51 yielded noncompliant results for sodium. However, the reported sample results exceeded that of the CCBs by greater than a factor of ten. With permission from the laboratory manager, the samples were reported and no further action was taken for these samples.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG532044 - Due to a post digestion spike failure on 23-JUL-2015 at 10:03 caused by high levels of minerals, the post digestion spike was reanalyzed at a dilution for sodium.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: WG532044 - Client sample 01 required a dilution analysis in order to obtain a result for calcium within the calibration range.

Narrative ID: 101867
Approved By: Brendan Torrence

Login Number: L15071055
Department: General Chromatography
Analyst: Adriane Steed

METHOD

Analysis EPA300.0/SW846 9056

HOLDING TIMES

Sample Analysis: Hold times for NO2 and NO3 are 48 hours and the hold times for F, Cl, Br, and SO4 are 28 days. The hold time forms calculate the hold time based on 48 hours. All samples were analyzed in hold.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group.

SAMPLES

Samples: All acceptance criteria were met.

MANUAL INTEGRATION: No manual integration required.

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contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 101726
Approved By: Wade DeLong

Login Number: L15071055
Department: Conventionals
Analyst: Ethan Tidd

METHOD

Analysis Water: EPA 415.1/SM5310C/SW846 9060 (Total Organic Carbon)
Soil: Lloyd-Khan Methodology

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

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Narrative ID: 101957
Approved By: Deanna Hesson

Microbac

Lab Report #: L15071055
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Certificate of Analysis

Sample #:	L15071055-01	**PrePrep Method:**	N/A	**Instrument:**	HPMS17
Client ID:	FTB034-GM-OP-5-071715	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	05/18/2015 14:34
Workgroup #:	WG532514	**Analyst:**	ADC	**Run Date:**	07/24/2015 16:22
Collect Date:	07/17/2015 12:56	**Dilution:**	1	**File ID:**	17M013925
Sample Tag:	02	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6	1.23		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	112	70	120	
4-Bromofluorobenzene	102	75	120	
Dibromofluoromethane	97.6	85	115	
Toluene-d8	102	85	120	

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L15071055-01	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-OP-5-071715	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG531865	**Analyst:**	JDS	**Run Date:**	07/20/2015 15:57
Collect Date:	07/17/2015 12:56	**Dilution:**	1	**File ID:**	16G48137
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8		U	5.00	1.00
Ethene	74-85-1		U	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15071055-01	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-OP-5-071715	**Prep Method:**	3015	**Prep Date:**	07/21/2015 09:41
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG532044	**Analyst:**	KHR	**Run Date:**	07/23/2015 09:55
Collect Date:	07/17/2015 12:56	**Dilution:**	1	**File ID:**	P2.072315.095556
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Magnesium, Total	7439-95-4	14.4		0.500	0.250
Potassium, Total	7440-09-7	3.58		1.00	0.500
Sodium, Total	7440-23-5	45.6		0.500	0.250

Sample #:	L15071055-01	**PrePrep Method:**	N/A	**Instrument:**	PE-ICP2
Client ID:	FTB034-GM-OP-5-071715	**Prep Method:**	3015	**Prep Date:**	07/21/2015 09:41
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/23/2015 09:13
Workgroup #:	WG532044	**Analyst:**	KHR	**Run Date:**	07/23/2015 10:42
Collect Date:	07/17/2015 12:56	**Dilution:**	10	**File ID:**	P2.072315.104213
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	111		5.00	2.50

Certificate of Analysis

Sample #:	L15071055-01	**PrePrep Method:**	N/A	**Instrument:**	IC2
Client ID:	FTB034-GM-OP-5-071715	**Prep Method:**	9056	**Prep Date:**	07/18/2015 09:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	02/17/2015 19:43
Workgroup #:	WG531892	**Analyst:**	ALS	**Run Date:**	07/18/2015 13:05
Collect Date:	07/17/2015 12:56	**Dilution:**	1	**File ID:**	I2_071815-12
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8	0.886		0.600	0.100
Sulfate	14808-79-8	50.4		1.00	0.500

Sample #:	L15071055-01	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-OP-5-071715	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG532335	**Analyst:**	EPT	**Run Date:**	07/24/2015 02:02
Collect Date:	07/17/2015 12:56	**Dilution:**	1	**File ID:**	TC07232015.035
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	1.21		1.00	0.500
Total Organic Carbon Rep1		0.839	J	1.00	0.500
Total Organic Carbon Rep2		1.01		1.00	0.500
Total Organic Carbon Rep3		1.11		1.00	0.500
Total Organic Carbon Rep4		1.86		1.00	0.500

J	Estimated value ; the analyte concentration was less than the LOQ.

Sample #:	L15071055-02	**PrePrep Method:**	N/A	**Instrument:**	HPMS17
Client ID:	TRIP BLANK	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	05/18/2015 14:34
Workgroup #:	WG532010	**Analyst:**	TMB/ JDS	**Run Date:**	07/21/2015 18:09
Collect Date:	07/17/2015 00:01	**Dilution:**	1	**File ID:**	17M013874
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	109	70	120	
4-Bromofluorobenzene	102	75	120	
Dibromofluoromethane	95.7	85	115	
Toluene-d8	103	85	120	

U	Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071055
Blank File ID: 17M013862
Prep Date: 07/21/15 14:30
Analyzed Date: 07/21/15 14:30
Analyst: TMB/ JDS

Work Group: WG532010
Blank Sample ID: WG532010-01
Instrument ID: HPMS17
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532010-02	17M013866	07/21/15 15:50	01
LCS2	WG532010-03	17M013869	07/21/15 16:49	01
TRIP BLANK	L15071055-02	17M013874	07/21/15 18:09	01

Report Name: BLANK_SUMMARY
PDF File ID: 4299545
Report generated 07/31/2015 10:04

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071055
Blank File ID: 17M013898
Prep Date: 07/22/15 02:08
Analyzed Date: 07/22/15 02:08
Analyst: TMB/ JDS

Work Group: WG532010
Blank Sample ID: WG532010-04
Instrument ID: HPMS17
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532010-02	17M013866	07/21/15 15:50	01
LCS2	WG532010-03	17M013869	07/21/15 16:49	01
TRIP BLANK	L15071055-02	17M013874	07/21/15 18:09	01

Report Name: BLANK_SUMMARY
PDF File ID: 4299545
Report generated 07/31/2015 10:04

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071055
Blank File ID: 17M013911
Prep Date: 07/24/15 12:03
Analyzed Date: 07/24/15 12:03
Analyst: ADC

Work Group: WG532514
Blank Sample ID: WG532514-01
Instrument ID: HPMS17
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532514-02	17M013916	07/24/15 13:23	01
LCS2	WG532514-03	17M013917	07/24/15 13:43	01
FTB034-GM-OP-5-071715	L15071055-01	17M013925	07/24/15 16:22	02

Report Name: BLANK_SUMMARY
PDF File ID: 4299545
Report generated 07/31/2015 10:04

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071055
Blank File ID: 17M013943
Prep Date: 07/24/15 22:21
Analyzed Date: 07/24/15 22:21
Analyst: ADC

Work Group: WG532514
Blank Sample ID: WG532514-04
Instrument ID: HPMS17
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532514-02	17M013916	07/24/15 13:23	01
LCS2	WG532514-03	17M013917	07/24/15 13:43	01
FTB034-GM-OP-5-071715	L15071055-01	17M013925	07/24/15 16:22	02

Report Name: BLANK_SUMMARY
PDF File ID: 4299545
Report generated 07/31/2015 10:04

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071055 Prep Date: 07/21/15 14:30 Sample ID: WG532010-01
Instrument ID: HPMS17 Run Date: 07/21/15 14:30 Prep Method: 5030B/5030C/503
File ID: 17M013862 Analyst: TMB/ JDS Method: 8260B
Workgroup (AAB#): WG532010 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS17-18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	2.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1-Chlorohexane	0.125	1.00	0.125	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
2-Butanone	2.50	5.00	2.50	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
2-Hexanone	2.50	5.00	2.50	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	5.00	2.50	1	U
Acetone	2.50	5.00	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U

Report Name: BLANK
PDF ID: 4299546
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Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071055 Prep Date: 07/21/15 14:30 Sample ID: WG532010-01
Instrument ID: HPMS17 Run Date: 07/21/15 14:30 Prep Method: 5030B/5030C/503
File ID: 17M013862 Analyst: TMB/ JDS Method: 8260B
Workgroup (AAB#): WG532010 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS17 - 18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U
Isopropylbenzene	0.250	1.00	0.250	1	U
Methylene chloride	0.250	1.00	0.250	1	U
Methyl t-butyl ether (MTBE)	0.500	1.00	0.500	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Naphthalene	0.200	1.00	0.200	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	113	70 - 120	PASS
4-Bromofluorobenzene	101	75 - 120	PASS
Dibromofluoromethane	94.8	85 - 115	PASS
Toluene-d8	102	85 - 120	PASS

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4299546
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Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071055 Prep Date: 07/22/15 02:08 Sample ID: WG532010-04
Instrument ID: HPMS17 Run Date: 07/22/15 02:08 Prep Method: 5030B/5030C/503
File ID: 17M013898 Analyst: TMB/ JDS Method: 8260B
Workgroup (AAB#): WG532010 Matrix: Water 2 Units: ug/L
Contract #: Cal ID: HPMS17-18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	2.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1-Chlorohexane	0.125	1.00	0.125	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
2-Butanone	2.50	5.00	2.50	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
2-Hexanone	2.50	5.00	2.50	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	5.00	2.50	1	U
Acetone	2.50	5.00	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U

Report Name: BLANK
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Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071055 Prep Date: 07/22/15 02:08 Sample ID: WG532010-04
Instrument ID: HPMS17 Run Date: 07/22/15 02:08 Prep Method: 5030B/5030C/503
File ID: 17M013898 Analyst: TMB/ JDS Method: 8260B
Workgroup (AAB#): WG532010 Matrix: Water 2 Units: ug/L
Contract #: Cal ID: HPMS17 - 18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U
Isopropylbenzene	0.250	1.00	0.250	1	U
Methylene chloride	0.250	1.00	0.250	1	U
Methyl t-butyl ether (MTBE)	0.500	1.00	0.500	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Naphthalene	0.200	1.00	0.200	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	111	70 - 120	PASS
4-Bromofluorobenzene	103	75 - 120	PASS
Dibromofluoromethane	95.0	85 - 115	PASS
Toluene-d8	103	85 - 120	PASS

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4299546
31-JUL-2015 10:04

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071055 Prep Date: 07/24/15 12:03 Sample ID: WG532514-01
Instrument ID: HPMS17 Run Date: 07/24/15 12:03 Prep Method: 5030B/5030C/503
File ID: 17M013911 Analyst: ADC Method: 8260B
Workgroup (AAB#): WG532514 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS17-18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	2.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1-Chlorohexane	0.125	1.00	0.125	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
2-Butanone	2.50	5.00	2.50	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
2-Hexanone	2.50	5.00	2.50	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	5.00	2.50	1	U
Acetone	2.50	5.00	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U

Report Name: BLANK
PDF ID: 4299546
31-JUL-2015 10:04

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071055 Prep Date: 07/24/15 12:03 Sample ID: WG532514-01
Instrument ID: HPMS17 Run Date: 07/24/15 12:03 Prep Method: 5030B/5030C/503
File ID: 17M013911 Analyst: ADC Method: 8260B
Workgroup (AAB#): WG532514 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS17-18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U
Isopropylbenzene	0.250	1.00	0.250	1	U
Methylene chloride	0.250	1.00	0.250	1	U
Methyl t-butyl ether (MTBE)	0.500	1.00	0.500	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Naphthalene	0.200	1.00	0.200	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	109	70 - 120	PASS
4-Bromofluorobenzene	98.1	75 - 120	PASS
Dibromofluoromethane	95.0	85 - 115	PASS
Toluene-d8	100	85 - 120	PASS

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4299546
31-JUL-2015 10:04

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071055 Prep Date: 07/24/15 22:21 Sample ID: WG532514-04
Instrument ID: HPMS17 Run Date: 07/24/15 22:21 Prep Method: 5030B/5030C/503
File ID: 17M013943 Analyst: ADC Method: 8260B
Workgroup (AAB#): WG532514 Matrix: Water 2 Units: ug/L
Contract #: Cal ID: HPMS17-18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.751	1	*
1,2-Dibromo-3-chloropropane	1.00	2.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1-Chlorohexane	0.125	1.00	0.125	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
2-Butanone	2.50	5.00	2.50	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
2-Hexanone	2.50	5.00	2.50	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	5.00	2.50	1	U
Acetone	2.50	5.00	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U

Report Name: BLANK
PDF ID: 4299546
31-JUL-2015 10:04

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071055 Prep Date: 07/24/15 22:21 Sample ID: WG532514-04
Instrument ID: HPMS17 Run Date: 07/24/15 22:21 Prep Method: 5030B/5030C/503
File ID: 17M013943 Analyst: ADC Method: 8260B
Workgroup (AAB#): WG532514 Matrix: Water 2 Units: ug/L
Contract #: Cal ID: HPMS17-18-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U
Isopropylbenzene	0.250	1.00	0.250	1	U
Methylene chloride	0.250	1.00	0.250	1	U
Methyl t-butyl ether (MTBE)	0.500	1.00	0.500	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Naphthalene	0.200	1.00	0.258	1	J
p-Isopropyltoluene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.437	1	J
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes	0.500	1.00	1.33	1	*

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	102	70 - 120	PASS
4-Bromofluorobenzene	109	75 - 120	PASS
Dibromofluoromethane	90.0	85 - 115	PASS
Toluene-d8	103	85 - 120	PASS

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4299546
31-JUL-2015 10:04

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071055 Analyst: TMB/ JDS Prep Method: 5030B/5030C/503
Instrument ID: HPMS17 Matrix: Water Method: 8260B
Workgroup (AAB#): WG532010 Units: ug/L
QC Key: DOD4 Lot #: STD71570

Sample ID: WG532010-02 LCS File ID: 17M013866 Run Date: 07/21/2015 15:50
Sample ID: WG532010-03 LCS2 File ID: 17M013869 Run Date: 07/21/2015 16:49

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
1,1,1,2-Tetrachloroethane	20.0	15.3	76.5	20.0	19.0	95.2	21.8	80 - 130	30	*
1,1,1-Trichloroethane	20.0	16.0	80.1	20.0	19.6	97.9	19.9	65 - 130	30	
1,1,2,2-Tetrachloroethane	20.0	15.3	76.7	20.0	20.6	103	29.3	65 - 130	30	
1,1,2-Trichloroethane	20.0	16.8	84.2	20.0	20.7	103	20.5	75 - 125	30	
1,1-Dichloroethane	20.0	16.5	82.4	20.0	19.8	99.0	18.3	70 - 135	30	
1,1-Dichloroethene	20.0	15.2	75.9	20.0	17.0	85.0	11.3	70 - 130	30	
1,1-Dichloropropene	20.0	16.8	84.0	20.0	19.6	98.0	15.4	75 - 130	30	
1,2,3-Trichlorobenzene	20.0	14.3	71.7	20.0	19.7	98.5	31.5	55 - 140	30	#
1,2,3-Trichloropropane	20.0	18.3	91.4	20.0	22.2	111	19.6	75 - 125	30	
1,2,4-Trichlorobenzene	20.0	14.6	72.8	20.0	19.4	96.9	28.5	65 - 135	30	
1,2,4-Trimethylbenzene	20.0	15.4	76.8	20.0	18.6	93.1	19.2	75 - 130	30	
1,2-Dibromo-3-chloropropane	20.0	17.6	87.8	20.0	23.0	115	26.7	50 - 130	30	
1,2-Dibromoethane	20.0	17.8	89.2	20.0	21.6	108	19.1	80 - 120	30	
1,2-Dichlorobenzene	20.0	13.9	69.5	20.0	19.3	96.4	32.4	70 - 120	30	*#
1,2-Dichloroethane	20.0	18.2	91.2	20.0	21.0	105	13.9	70 - 130	30	
1,2-Dichloropropane	20.0	16.9	84.4	20.0	20.0	99.8	16.7	75 - 125	30	
1,3,5-Trimethylbenzene	20.0	15.5	77.7	20.0	18.8	94.2	19.2	75 - 130	30	
1,3-Dichlorobenzene	20.0	14.0	69.9	20.0	19.1	95.7	31.2	75 - 125	30	*#
1,4-Dichlorobenzene	20.0	15.2	75.9	20.0	18.4	92.1	19.4	75 - 125	30	
1-Chlorohexane	20.0	17.1	85.5	20.0	20.0	100	15.6	80 - 127	30	
2,2-Dichloropropane	20.0	15.1	75.6	20.0	21.1	105	32.9	70 - 135	30	#
2-Butanone	20.0	23.6	118	20.0	26.5	133	11.6	30 - 150	30	
2-Chlorotoluene	20.0	14.5	72.7	20.0	19.5	97.5	29.2	75 - 125	30	*
2-Hexanone	20.0	21.3	106	20.0	27.7	139	26.3	55 - 130	30	*
4-Chlorotoluene	20.0	14.9	74.7	20.0	20.1	100	29.3	75 - 130	30	*
4-Methyl-2-pentanone	20.0	18.6	93.0	20.0	24.1	121	25.9	60 - 135	30	
Acetone	20.0	23.3	116	20.0	24.8	124	6.26	40 - 140	30	
Benzene	20.0	16.0	80.2	20.0	18.9	94.5	16.4	80 - 120	30	
Bromobenzene	20.0	15.4	77.1	20.0	18.9	94.4	20.1	75 - 125	30	
Bromochloromethane	20.0	16.7	83.7	20.0	20.0	100	17.8	65 - 130	30	
Bromodichloromethane	20.0	15.9	79.5	20.0	19.5	97.3	20.1	75 - 120	30	
Bromoform	20.0	17.8	89.2	20.0	23.4	117	26.8	70 - 130	30	
Bromomethane	20.0	15.8	79.2	20.0	15.1	75.3	4.99	30 - 145	30	
Carbon disulfide	20.0	15.7	78.4	20.0	9.84	49.2	45.8	35 - 160	30	#
Carbon tetrachloride	20.0	16.1	80.5	20.0	19.8	98.8	20.3	65 - 140	30	
Chlorobenzene	20.0	14.8	74.0	20.0	19.8	99.0	28.9	80 - 120	30	*
Chloroethane	20.0	15.3	76.6	20.0	16.0	79.9	4.20	60 - 135	30	
Chloroform	20.0	16.6	82.9	20.0	20.5	103	21.1	65 - 135	30	
Chloromethane	20.0	20.1	100	20.0	15.3	76.7	26.7	40 - 125	30	
cis-1,2-Dichloroethene	20.0	16.5	82.7	20.0	18.9	94.3	13.1	70 - 125	30	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4299547
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Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071055 Analyst: TMB/ JDS Prep Method: 5030B/5030C/503
Instrument ID: HPMS17 Matrix: Water Method: 8260B
Workgroup (AAB#): WG532010 Units: ug/L
QC Key: DOD4 Lot #: STD71570

Sample ID: WG532010-02 LCS File ID: 17M013866 Run Date: 07/21/2015 15:50
Sample ID: WG532010-03 LCS2 File ID: 17M013869 Run Date: 07/21/2015 16:49

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
cis-1,3-Dichloropropene	20.0	17.4	87.2	20.0	21.1	106	19.1	70 - 130	30	
Chlorodibromomethane	20.0	16.3	81.5	20.0	20.7	103	23.7	60 - 135	30	
Dichlorodifluoromethane	20.0	19.9	99.3	20.0	11.5	57.7	53.0	30 - 155	30	#
Ethylbenzene	20.0	15.7	78.6	20.0	18.9	94.7	18.6	75 - 125	30	
Hexachlorobutadiene	20.0	13.4	67.1	20.0	17.1	85.3	23.9	50 - 140	30	
Isopropylbenzene	20.0	14.4	71.8	20.0	19.7	98.5	31.4	75 - 125	30	*#
Methyl t-butyl ether (MTBE)	20.0	18.6	92.9	20.0	23.9	119	25.0	65 - 125	30	
Methylene chloride	20.0	16.5	82.5	20.0	18.2	90.9	9.74	55 - 140	30	
n-Butylbenzene	20.0	15.6	78.0	20.0	19.6	97.8	22.5	70 - 135	30	
n-Propylbenzene	20.0	14.8	74.0	20.0	19.8	99.1	29.0	70 - 130	30	
Naphthalene	20.0	15.9	79.3	20.0	21.9	109	31.9	55 - 140	30	#
p-Isopropyltoluene	20.0	13.7	68.6	20.0	18.4	91.8	28.9	75 - 130	30	*
sec-Butylbenzene	20.0	14.0	70.0	20.0	18.9	94.7	30.1	70 - 125	30	#
Styrene	20.0	16.0	80.0	20.0	19.6	98.2	20.5	65 - 135	30	
tert-Butylbenzene	20.0	13.9	69.6	20.0	18.8	93.8	29.6	70 - 130	30	*
Tetrachloroethene	20.0	15.3	76.7	20.0	19.2	96.1	22.4	45 - 150	30	
Toluene	20.0	16.2	81.2	20.0	19.7	98.3	19.1	75 - 120	30	
trans-1,2-Dichloroethene	20.0	16.8	83.8	20.0	18.4	92.2	9.59	60 - 140	30	
trans-1,3-Dichloropropene	20.0	17.7	88.6	20.0	21.6	108	19.8	55 - 140	30	
Trichloroethene	20.0	16.0	80.1	20.0	18.4	91.9	13.7	70 - 125	30	
Trichlorofluoromethane	20.0	13.5	67.5	20.0	17.7	88.3	26.7	60 - 145	30	
Vinyl chloride	20.0	19.2	95.8	20.0	16.9	84.6	12.4	50 - 145	30	
Xylenes	60.0	45.3	75.5	60.0	58.8	98.1	26.0	80 - 120	30	*

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	111	108	70 - 120	PASS
Dibromofluoromethane	97.6	96.0	85 - 115	PASS
4-Bromofluorobenzene	103	102	75 - 120	PASS
Toluene-d8	101	101	85 - 120	PASS

* EXCEEDS %REC LIMIT

\# EXCEEDS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
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Report generated: 07/31/2015 10:04

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071055 Analyst: ADC Prep Method: 5030B/5030C/503
Instrument ID: HPMS17 Matrix: Water Method: 8260B
Workgroup (AAB#): WG532514 Units: ug/L
QC Key: DOD4 Lot #: STD71570

Sample ID: WG532514-02 LCS File ID: 17M013916 Run Date: 07/24/2015 13:23
Sample ID: WG532514-03 LCS2 File ID: 17M013917 Run Date: 07/24/2015 13:43

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
1,1,1,2-Tetrachloroethane	20.0	18.7	93.5	20.0	19.4	97.0	3.61	80 - 130	30	
1,1,1-Trichloroethane	20.0	19.9	99.5	20.0	20.9	105	5.17	65 - 130	30	
1,1,2,2-Tetrachloroethane	20.0	19.0	94.8	20.0	19.4	97.0	2.27	65 - 130	30	
1,1,2-Trichloroethane	20.0	20.2	101	20.0	20.8	104	2.78	75 - 125	30	
1,1-Dichloroethane	20.0	20.1	101	20.0	20.9	105	3.92	70 - 135	30	
1,1-Dichloroethene	20.0	17.5	87.7	20.0	18.4	92.0	4.79	70 - 130	30	
1,1-Dichloropropene	20.0	19.5	97.7	20.0	20.4	102	4.15	75 - 130	30	
1,2,3-Trichlorobenzene	20.0	19.0	95.0	20.0	19.5	97.4	2.50	55 - 140	30	
1,2,3-Trichloropropane	20.0	21.4	107	20.0	22.0	110	2.62	75 - 125	30	
1,2,4-Trichlorobenzene	20.0	18.7	93.3	20.0	19.3	96.5	3.31	65 - 135	30	
1,2,4-Trimethylbenzene	20.0	17.8	89.2	20.0	18.9	94.7	6.00	75 - 130	30	
1,2-Dibromo-3-chloropropane	20.0	22.1	110	20.0	23.1	116	4.66	50 - 130	30	
1,2-Dibromoethane	20.0	21.1	106	20.0	21.9	109	3.51	80 - 120	30	
1,2-Dichlorobenzene	20.0	18.5	92.3	20.0	19.3	96.5	4.46	70 - 120	30	
1,2-Dichloroethane	20.0	21.0	105	20.0	21.9	110	4.42	70 - 130	30	
1,2-Dichloropropane	20.0	19.6	98.0	20.0	20.3	102	3.58	75 - 125	30	
1,3,5-Trimethylbenzene	20.0	18.2	90.8	20.0	19.2	95.9	5.48	75 - 130	30	
1,3-Dichlorobenzene	20.0	18.3	91.6	20.0	19.3	96.6	5.34	75 - 125	30	
1,4-Dichlorobenzene	20.0	17.7	88.4	20.0	18.6	92.8	4.87	75 - 125	30	
1-Chlorohexane	20.0	20.9	105	20.0	21.8	109	4.31	80 - 127	30	
2,2-Dichloropropane	20.0	21.1	106	20.0	21.9	109	3.55	70 - 135	30	
2-Butanone	20.0	26.3	131	20.0	27.1	135	2.89	30 - 150	30	
2-Chlorotoluene	20.0	18.7	93.3	20.0	19.8	99.2	6.20	75 - 125	30	
2-Hexanone	20.0	26.3	131	20.0	27.0	135	2.88	55 - 130	30	*
4-Chlorotoluene	20.0	19.0	95.0	20.0	20.1	100	5.54	75 - 130	30	
4-Methyl-2-pentanone	20.0	22.8	114	20.0	23.4	117	2.53	60 - 135	30	
Acetone	20.0	25.9	130	20.0	27.7	138	6.57	40 - 140	30	
Benzene	20.0	18.8	93.9	20.0	19.6	98.0	4.20	80 - 120	30	
Bromobenzene	20.0	18.0	90.2	20.0	19.2	95.9	6.06	75 - 125	30	
Bromochloromethane	20.0	20.2	101	20.0	21.0	105	3.52	65 - 130	30	
Bromodichloromethane	20.0	19.6	97.8	20.0	20.3	101	3.51	75 - 120	30	
Bromoform	20.0	22.7	114	20.0	23.5	117	3.10	70 - 130	30	
Bromomethane	20.0	17.4	87.0	20.0	18.8	94.2	7.96	30 - 145	30	
Carbon disulfide	20.0	9.63	48.2	20.0	10.1	50.7	5.07	35 - 160	30	
Carbon tetrachloride	20.0	20.2	101	20.0	21.3	107	5.18	65 - 140	30	
Chlorobenzene	20.0	19.5	97.4	20.0	20.2	101	3.64	80 - 120	30	
Chloroethane	20.0	17.7	88.4	20.0	18.4	92.0	3.95	60 - 135	30	
Chloroform	20.0	20.7	103	20.0	21.5	107	3.71	65 - 135	30	
Chloromethane	20.0	23.3	117	20.0	24.2	121	3.71	40 - 125	30	
cis-1,2-Dichloroethene	20.0	19.0	94.8	20.0	19.7	98.3	3.68	70 - 125	30	

LCS_LCS2 - Modified 03/06/2008
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Report generated: 07/31/2015 10:04

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071055 Analyst: ADC Prep Method: 5030B/5030C/503
Instrument ID: HPMS17 Matrix: Water Method: 8260B
Workgroup (AAB#): WG532514 Units: ug/L
QC Key: DOD4 Lot #: STD71570

Sample ID: WG532514-02 LCS File ID: 17M013916 Run Date: 07/24/2015 13:23
Sample ID: WG532514-03 LCS2 File ID: 17M013917 Run Date: 07/24/2015 13:43

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
cis-1,3-Dichloropropene	20.0	20.7	103	20.0	21.5	108	3.89	70 - 130	30	
Chlorodibromomethane	20.0	20.5	102	20.0	20.9	104	2.08	60 - 135	30	
Dichlorodifluoromethane	20.0	27.3	137	20.0	28.4	142	3.91	30 - 155	30	
Ethylbenzene	20.0	18.9	94.5	20.0	19.6	97.9	3.56	75 - 125	30	
Hexachlorobutadiene	20.0	16.4	81.9	20.0	17.3	86.3	5.24	50 - 140	30	
Isopropylbenzene	20.0	19.5	97.5	20.0	20.3	102	4.16	75 - 125	30	
Methyl t-butyl ether (MTBE)	20.0	23.3	116	20.0	24.0	120	3.01	65 - 125	30	
Methylene chloride	20.0	18.7	93.4	20.0	19.3	96.7	3.56	55 - 140	30	
n-Butylbenzene	20.0	18.7	93.4	20.0	19.8	98.8	5.72	70 - 135	30	
n-Propylbenzene	20.0	19.0	95.0	20.0	20.2	101	6.24	70 - 130	30	
Naphthalene	20.0	20.3	102	20.0	20.9	105	2.88	55 - 140	30	
p-Isopropyltoluene	20.0	17.5	87.3	20.0	18.6	93.1	6.42	75 - 130	30	
sec-Butylbenzene	20.0	18.1	90.6	20.0	19.3	96.5	6.27	70 - 125	30	
Styrene	20.0	19.2	95.8	20.0	19.8	99.0	3.27	65 - 135	30	
tert-Butylbenzene	20.0	17.9	89.5	20.0	19.1	95.3	6.33	70 - 130	30	
Tetrachloroethene	20.0	19.2	95.9	20.0	20.0	100	4.24	45 - 150	30	
Toluene	20.0	19.3	96.7	20.0	20.2	101	4.24	75 - 120	30	
trans-1,2-Dichloroethene	20.0	18.5	92.4	20.0	19.3	96.5	4.32	60 - 140	30	
trans-1,3-Dichloropropene	20.0	21.2	106	20.0	21.8	109	2.69	55 - 140	30	
Trichloroethene	20.0	18.5	92.6	20.0	19.7	98.3	5.92	70 - 125	30	
Trichlorofluoromethane	20.0	19.2	95.9	20.0	21.0	105	8.91	60 - 145	30	
Vinyl chloride	20.0	21.3	106	20.0	22.3	112	4.82	50 - 145	30	
Xylenes	60.0	58.4	97.3	60.0	60.9	101	4.17	80 - 120	30	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	108	108	70 - 120	PASS
Dibromofluoromethane	96.8	96.8	85 - 115	PASS
4-Bromofluorobenzene	97.9	101	75 - 120	PASS
Toluene-d8	101	101	85 - 120	PASS

* EXCEEDS %REC LIMIT

\# EXCEEDS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4299547
Report generated: 07/31/2015 10:04

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071055
Blank File ID: 16G48123
Prep Date: 07/20/15 11:36
Analyzed Date: 07/20/15 11:36
Analyst: JDS

Work Group: WG531865
Blank Sample ID: WG531865-01
Instrument ID: HP16
Method: RSK175

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531865-02	16G48124	07/20/15 11:47	01
LCS2	WG531865-03	16G48125	07/20/15 11:58	01
FTB034-GM-OP-5-071715	L15071055-01	16G48137	07/20/15 15:57	01

Report Name: BLANK_SUMMARY
PDF File ID: 4293566
Report generated 07/23/2015 13:09

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071055 Prep Date: 07/20/15 11:36 Sample ID: WG531865-01
Instrument ID: HP16 Run Date: 07/20/15 11:36 Prep Method: 5021
File ID: 16G48123 Analyst: JDS Method: RSK175
Workgroup (AAB#): WG531865 Matrix: Water Units: ug/L
Contract #: Cal ID: HP16 - 03-MAR-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Methane	1.00	5.00	1.00	1	U
Ethene	1.00	5.00	1.00	1	U
Ethane	1.00	5.00	1.00	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 4293567
23-JUL-2015 13:09

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071055 Analyst: JDS Prep Method: 5021
Instrument ID: HP16 Matrix: Water Method: RSK175
Workgroup (AAB#): WG531865 Units: ug/L
QC Key: DOD4 Lot #: STD68250

Sample ID: WG531865-02 LCS File ID: 16G48124 Run Date: 07/20/2015 11:47
Sample ID: WG531865-03 LCS2 File ID: 16G48125 Run Date: 07/20/2015 11:58

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Methane	114	112	97.9	114	111	97.4	0.553	85 - 115	20	
Ethene	200	199	99.5	200	194	97.2	2.33	85 - 115	20	
Ethane	214	206	96.2	214	201	94.0	2.27	85 - 115	20	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4293568
Report generated: 07/23/2015 13:09

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071055
Blank File ID: P2.072315.094255
Prep Date: 07/21/15 09:41
Analyzed Date: 07/23/15 09:42
Analyst: KHR

Work Group: WG532044
Blank Sample ID: WG532017-02
Instrument ID: PE-ICP2
Method: 6010C

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532017-03	P2.072115.113613	07/21/15 11:36	01
LCS	WG532017-03	P2.072315.094617	07/23/15 09:46	02
FTB034-GM-OP-5-071715	L15071055-01	P2.072315.095556	07/23/15 09:55	01
FTB034-GM-OP-5-071715	L15071055-01	P2.072315.104213	07/23/15 10:42	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 4298375
Report generated 07/23/2015 12:02

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071055 Prep Date: 07/21/15 09:41 Sample ID: WG532017-02
Instrument ID: PE-ICP2 Run Date: 07/23/15 09:42 Prep Method: 3015
File ID: P2.072315.094255 Analyst: KHR Method: 6010C
Workgroup (AAB#): WG532044 Matrix: Water Units: mg/L
Contract #: Cal ID: PE-ICP - 23-JUL-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Calcium, Total	0.250	0.500	0.250	1	U
Magnesium, Total	0.250	0.500	0.250	1	U
Potassium, Total	0.500	1.00	0.500	1	U
Sodium, Total	0.250	0.500	0.250	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4298376
23-JUL-2015 12:02

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071055 Run Date: 07/23/2015 Sample ID: WG532017-03
Instrument ID: PE-ICP2 Run Time: 09:46 Prep Method: 3015
File ID: P2.072315.094617 Analyst: KHR Method: 6010C
Workgroup (AAB#): WG532044 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD71485 Cal ID: PE-ICP-23-JUL-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Calcium, Total	6.25	6.21	99.4	80 - 120	
Magnesium, Total	6.25	6.34	102	80 - 120	
Potassium, Total	31.3	31.2	99.7	80 - 120	
Sodium, Total	31.3	31.8	102	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 4298377
Report generated: 07/23/2015 12:02

Microbac Laboratories Inc.
MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum: L15071055 Cal ID: PE-ICP2- Worknum: WG532044
Instrument ID: PE-ICP2 Contract #: Method: 6010C
Parent ID: WG532017-01 File ID: P2.072315.101952 Dil: 1 Matrix: WATER
Sample ID: WG532017-04 MS File ID: P2.072315.102220 Dil: 1 Units: mg/L
Sample ID: WG532017-05 MSD File ID: P2.072315.102444 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Calcium	2.75	6.25	6.39	58.3	6.25	6.45	59.2	0.880	80 - 120	20	*
Magnesium	5.36	6.25	6.28	14.8	6.25	6.39	16.5	1.65	80 - 120	20	*
Potassium	1.36	31.3	31.3	96.0	31.3	31.4	96.3	0.306	80 - 120	20	
Sodium	729	31.3	119	-1950	31.3	116	-1960	2.69	80 - 120	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 05/26/2011
PDF File ID: 4298378
Report generated 07/23/2015 12:02

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071055
Blank File ID: I2_071815-05
Prep Date: 07/18/15 09:00
Analyzed Date: 07/18/15 10:58
Analyst: ALS

Work Group: WG531892
Blank Sample ID: WG531892-01
Instrument ID: IC2
Method: 9056

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG531892-02	I2_071815-06	07/18/15 11:16	01
DUP	WG531892-04	I2_071815-08	07/18/15 11:52	01
FTB034-GM-OP-5-071715	L15071055-01	I2_071815-12	07/18/15 13:05	01

Report Name: BLANK_SUMMARY
PDF File ID: 4291628
Report generated 07/20/2015 14:40

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071055 Prep Date: 07/18/15 09:00 Sample ID: WG531892-01
Instrument ID: IC2 Run Date: 07/18/15 10:58 Prep Method: 9056
File ID: I2 071815-05 Analyst: ALS Method: 9056
Workgroup (AAB#): WG531892 Matrix: Water Units: mg/L
Contract #: Cal ID: IC2 - 17-FEB-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Nitrate	0.100	0.600	0.100	1	U
Sulfate	0.500	1.00	0.500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4291629
20-JUL-2015 14:40

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071055 Run Date: 07/18/2015 Sample ID: WG531892-02
Instrument ID: IC2 Run Time: 11:16 Prep Method: 9056
File ID: I2 071815-06 Analyst: ALS Method: 9056
Workgroup (AAB#): WG531892 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD69216 Cal ID: IC2 - 17-FEB-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrate	5.42	5.52	102	90 - 110	
Sulfate	40.0	41.5	104	90 - 110	

LCS - Modified 03/06/2008
PDF File ID: 4291630
Report generated: 07/20/2015 14:40

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071055
Blank File ID: TC07232015.013
Prep Date: 07/23/15 12:14
Analyzed Date: 07/23/15 12:14
Analyst: EPT

Work Group: WG532335
Blank Sample ID: WG532335-01
Instrument ID: TOC-VWP
Method: 9060A

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532335-02	TC07232015.016	07/23/15 13:13	01
LCS2	WG532335-03	TC07232015.017	07/23/15 14:06	01
FTB034-GM-OP-5-071715	L15071055-01	TC07232015.035	07/24/15 02:02	01
DUP	WG532335-08	TC07232015.041	07/24/15 04:54	01

Report Name: BLANK_SUMMARY
PDF File ID: 4300620
Report generated 07/24/2015 10:27

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071055 Prep Date: 07/23/15 12:14 Sample ID: WG532335-01
Instrument ID: TOC-VWP Run Date: 07/23/15 12:14 Prep Method: 9060A
File ID: TC07232015.013 Analyst: EPT Method: 9060A
Workgroup (AAB#): WG532335 Matrix: Water Units: mg/L
Contract #: Cal ID: TOC-VW-27-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U
Total Organic Carbon Rep1	0.500	1.00	0.500	1	U
Total Organic Carbon Rep2	0.500	1.00	0.500	1	U
Total Organic Carbon Rep3	0.500	1.00	0.500	1	U
Total Organic Carbon Rep4	0.500	1.00	0.500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 4300621
24-JUL-2015 10:27

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071055 Analyst: EPT Prep Method: 9060A
Instrument ID: TOC-VWP Matrix: Water Method: 9060A
Workgroup (AAB#): WG532335 Units: mg/L
QC Key: DOD4 Lot #: STD69935

Sample ID: WG532335-02 LCS File ID: TC07232015.016 Run Date: 07/23/2015 13:13
Sample ID: WG532335-03 LCS2 File ID: TC07232015.017 Run Date: 07/23/2015 14:06

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	26.7	107	25.0	25.7	103	3.93	85 - 115	15	
Total Organic Carbon Rep1		24.8			25.6		3.21	85 - 115	15	*
Total Organic Carbon Rep2		25.6			25.7		0.702	85 - 115	15	*
Total Organic Carbon Rep3		25.2			25.5		0.868	85 - 115	15	*
Total Organic Carbon Rep4		31.3			25.9		18.7	85 - 115	15	*#

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4300622
Report generated: 07/24/2015 10:27

001 - BIO-CHEM TESTING WVDEP 220
002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental
004 - MICROBAC PITTSBURGH
005 - ES LABORATORIES
006 - ALCOSAN LABORATORIES
007 - ALS LABORATORIES
008 - BENCHMARK LABORATORIES
010 - MICROBAC CHICAGOLAND
AC - AMBER R. CARMICHAEL
ADC - ANTHONY D. CANTER
ADG - APRIL D. GREENE
AED - ALLEN E. DAVIS
ALS - ADRIANE L. STEED
AWE - ANDREW W. ESSIG
AZH - AFTER HOURS
BJO - BRIAN J. OGDEN
BKT - BRENDAN TORRENCE
BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY
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DCM - DAVID C. MERCKLE
DEV - DAVID E. VANDENBERG
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DLP - DOROTHY L. PAYNE
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ENY - EMILY N. YOAK
EPT - ETHAN P. TIDD
ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN
JBK - JEREMY B. KINNEY
JDH - JUSTIN D. HESSON
JDS - JARED D. SMITH
JJS - JOHN J. STE MARIE
JKP - JACQUELINE K. PARSONS
JLL - JOHN L. LENT
JMW - JEANA M. WHITE
JTP - JOSHUA T. PEMBERTON
JWR - JOHN W. RICHARDS
JWS - JACK W. SHEAVES
JYH - JI Y. HU
KAJ - KELLIE A. JOHNSON
KAT - KATHY A. TUCKER
KDW - KATHRYN D. WELCH
KEB - KATIE E. BARNES
KHR - KIM H. RHODES
KKB - KERRI K. BUCK
KRA - KATHY R. ALBERTSON
KRB - KAELY R. BECKER
KRP - KATHY R. PARSONS
LEC - LAURA E. CARPENTER
LKN - LINDA K. NEDEFF
LLS - LARRY L. STEPHENS
LSB - LESLIE S. BUCINA
MBK - MORGAN B. KNOWLTON
MDA - MIKE D. ALBERTSON
MDC - MIKE D. COCHRAN
MES - MARY E. SCHILLING
MLB - MEGAN L. BACHE
MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR
MSW - MATT S. WILSON
PDM - PIERCE D. MORRIS
PIT - MICROBAC WARRENDALE
PRL - PAIGE R. LAMB
PSW - PEGGY S. WEBB
QX - QIN XU
RAH - ROY A. HALSTEAD
REK - BOB E. KYER
RLB - BOB BUCHANAN
RM - RAYMOND MALEKE
RNP - RICK N. PETTY
RST - ROBIN S. TURNER
SAV - SARAH A. VANDENBERG
SCB - SARAH C. BOGOLIN
SDC - SHALYN D. CONLEY
SLM - STEPHANIE L. MOSSBURG
SLP - SHERI L. PFALZGRAF
TB - TODD BOYLE
TGF - TIM G. FELTON
TMB - TIFFANY M. BAILEY
TMM - TAMMY M. MORRIS
VC - VICKI COLLIER
WJB - WILL J. BEASLEY
WRR - WESLEY R. RICHARDS
WTD - WADE T. DELONG
XXX - UNAVAILABLE OR SUBCONTRACT

Microbac Laboratories Inc.
List of Valid Qualifiers
July 31, 2015

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B,H1	Analyte present in method blank. Sample analysis performed past holding time.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	Cooler temperature at sample reciept exceeded regulatory limit.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
E,CT1	Estimated results. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
H1	Sample analysis performed past holding time.
H1,CT1	Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guidelines for reque
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value ; the analyte concentration was less than the LOQ. Cooler temperature at sample reciept exceeded regu
J,H1	Estimated value ; the analyte concentration was less than the LOQ. Sample analysis performed past holding time.
J,H1	The reported result is an estimated value. Sample was analyzed past holding time.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentativlely identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL/MDL).
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
ND,H1	Not detected; Sample analysis performed past holding time.
ND,H1,CT1	Not detected; Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guide
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
Q,H1	One or more quality control criteria failed. Sample analyzed past holding time. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
T5	Laboratory not licensed for this parameter
TIC	Library Search Compound
TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.

Qualkey: DOD

TNTC,CT1	Too numerous to count. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
TNTC,H1	Too numerous to count. Sample analysis performed past holding time.
U	Analyte was not detected. The concentration is below the reported LOD.
U,CT1	Analyte was not detected. The concentration is below the reported LOD. Cooler temperature at sample reciept exceeded
U,H1	Not detected; Sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

Microbac

Co.Name: Roman Environmental
Prj Contact: Jeanette Hamm
Prj Name: Ft. Buchanan
Location: Benjamin, PR

TAT: STD
Phone: 404-636-0925

COC No. 1

Sampler Print: Charlie Tash

Sampler Sign:

Sample ID	Comp	Grab	Date	Time	Hold	# of Containers	Anions Sulfate/Nitrate 9056A	Cations Mg, Ca, Na, K 6010C	TOC 9060A	Diss Gas RSK175	VOC 8260B						Notes:
ATB034-GM-GP-S 071715		✓	7/17/15	1256		9	✓	✓	✓	✓	✓						
Trip Blank		✓				1					✓						

Relinquished By:
Date/Time 7/17/15 1630

Relinquished By:
Date/Time

Microbac OVD
Received: 07/18/2015 08:56
By: BRENDA GREENWALT
221000072799
Brenda Greenwalt

Relinquished By
Date/Time:
Cooler Temp(s):

Received By:
Date/Time:
Comments:

Internal Chain of Custody Report

Login: L15071055
Account: 2820
Project: 2820.250
Samples: 2
Due Date: 31-JUL-2015

Samplenum	Container ID	Products
L15071055-01	604430	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 11:21	BRG		
2	ANALYZ	V1	ORG4	20-JUL-2015 14:40	DLW	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 11:21	BRG		
2	ANALYZ	V1	ORG4	20-JUL-2015 14:40	DLW	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 11:21	BRG		
2	ANALYZ	V1	ORG4	20-JUL-2015 14:40	DLW	CLS	

Samplenum	Container ID	Products
L15071055-01	604431	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 11:21	BRG		<2
2	ANALYZ	V1	ORG1	20-JUL-2015 13:53	JDS	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 11:21	BRG		<2
2	ANALYZ	V1	ORG1	20-JUL-2015 13:53	JDS	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 11:21	BRG		<2
2	ANALYZ	V1	ORG1	20-JUL-2015 13:53	JDS	CLS	

Samplenum	Container ID	Products
L15071055-01	604432	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	20-JUL-2015 11:21	BRG		
2	PREP	L1	SEM	20-JUL-2015 11:28	ALS	CLS	
3	STORE	SEM	A2	21-JUL-2015 09:30	CLS	ALS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15071055
Account: 2820
Project: 2820.250
Samples: 2
Due Date: 31-JUL-2015

Samplenum	Container ID	Products
L15071055-01	604433	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	20-JUL-2015 11:21	BRG		
2	ANALYZ	W1	WET	23-JUL-2015 08:16	EPT	CLS	
3	STORE	WET	A2	24-JUL-2015 08:25	BRG	EPT	

Samplenum	Container ID	Products
L15071055-01	604434	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	20-JUL-2015 11:21	BRG		
2	PREP	W1	DIG	20-JUL-2015 13:58	VC	BRG	
3	ANALYZ*	DIG	METALS	21-JUL-2015 11:11	KHR	VC	
4	STORE	DIG	A2	21-JUL-2015 13:34	BRG	ERP	

Sample extract/digestate/leachate

Samplenum	Container ID	Products
L15071055-02	604435	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	20-JUL-2015 11:21	BRG		
2	ANALYZ	V1	ORG4	20-JUL-2015 14:40	DLW	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

ANALYTICAL SERVICES, INC.

Virginia Office
402 North West Street
Culpeper, Virginia 22701
540-829-5642 Office
540-829-5641 Fax

DATA CERTIFICATION

The attached laboratory report L15071205 consisting of 670 pages, has been certified by David E. Vandenberg, Managing Director, Microbac Laboratories. The data contained herein was completed in accordance with the requirements of the DoD QSM and other applicable contract terms and conditions.

I hereby certify that this laboratory report and associated documentation has been reviewed and approved.

Ralph Abbondanza, REM
Vice President
PR Chemist's License #3803

$1.00 $1.00
A 1448786
ESTADO LIBRE ASOCIADO DE PUERTO RICO
Ralph Abbondanza III
Zomaltis
Lic.#3803
QUIMICO LICENCIADO

Microbac

Laboratory Report Number: L15071205

Jeanette Hamm
Kemron Environmental Services
1359 Ellsworth Industrial Blvd.
Atlanta, GA 30082

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Stephanie Mossburg – Team Chemist/Data Specialist
(740) 373-4071
Stephanie.Mossburg@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on July 31 2015

David Vandenberg – Managing Director

State of Origin: PR
Accrediting Authority: N/A ID:N/A
QAPP: DOD Ver 4.2 without flagging

Microbac

Lab Report #: L15071205
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

The following discrepancies were noted:

Discrepancy	Resolution
FTB034-GM-MW1C-072015: we received RSKs only for this ID and the chain of custody says we should have received a 9056, but we didn't. CLS	Please cancel this sample. The client will recollect. SLM
Trip blanks: no labels on the vials. CLS	Please label and proceed. SLM
Trip blank: chain of custody is marked for 3 vials, but we only received 2 vials. CLS	
The following sample ID was received out of hold for 9056. CLS FTB034-GM-OP-3 072015	Please proceed as close to hold time as possible. Client may try to recollect but that hasn't been confirmed yet. SLM

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
00112141	I	2.0		1004161163010004575000808288274173	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	No
7	Were sample labels intact and match COC?	No
8	Were the correct containers and volumes received?	No
9	Were samples received within EPA hold times?	No
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	Yes

Microbac

Lab Report #: L15071205
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
QCFB-072015	L15071205-01	07/20/2015 12:40	07/22/2015 10:06
QCEB-072015	L15071205-02	07/20/2015 12:30	07/22/2015 10:06
FTB034-GM-OP-3-072015	L15071205-03	07/20/2015 09:01	07/22/2015 10:06
TRIP BLANK	L15071205-04	07/20/2015 00:01	07/22/2015 10:06

Login Number: L15071205
Department: Volatiles
Analyst: Tiffany Bailey

METHOD

Preparation SW-846 5030C/5035A

Analysis SW-846 8260B

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: The percent difference was out of range for the following analytes: Dichlorodifluoromethane. Please see the applicable QC report for a detailed presentation of the failures.

Continuing Calibration and Tune: Recoveries out of range were observed for the following analytes: 2,2-Dichloropropane. Please see the applicable QC report for a detailed presentation of the failures.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC prescribed MS/MSD. Microbac Laboratories recommends site specific MS/MSD samples to avoid possible data

qualifications.

SAMPLES

Internal Standards: All acceptance criteria were met.

Surrogates: All acceptance criteria were met.

Other: None.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak. In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak. This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline. There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous. Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Managing Director or the QAO will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 101934
Approved By: Franci Bolden

Login Number: L15071205
Department: Volatiles - GC
Analyst: Jared Smith

Analysis RSK-175

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes/Sample Duplicates: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. Microbac Laboratories recommends site specific MS/MSD samples to avoid possible data qualifications.

SAMPLES

Samples: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

Narrative ID: 102106
Approved By: Franci Bolden

Login Number: L15071205
Department: Metals
Analyst: Ji Hu

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG532579 - Calcium for client sample 03 was reported from the 25 fold dilution

where the 25 fold post digestion spike dilution was compliant.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: WG532579 - Client sample 03 required dilution analysis in order to obtain a result for calcium within the calibration range.

Narrative ID: 102198
Approved By: Brendan Torrence

Login Number: L15071205
Department: General Chromatography
Analyst: Adriane Steed

METHOD

Analysis EPA300.0/SW846 9056

HOLDING TIMES

Sample Analysis: Hold times for NO2 and NO3 are 48 hours and the hold times for F, Cl, Br, and SO4 are 28 days. The hold time forms calculate the hold time based on 48 hours. Fraction L15071205-03 was received by the lab out of hold.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The client did not specify an MS/MSD for this sample delivery group. The laboratory selected sample 01 for MS/MSD analysis and all acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

MANUAL INTEGRATION: Reason #1: Data System Fails to Select Correct Peak- The chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 101857
Approved By: Wade DeLong

Login Number: L15071205
Department: Conventionals
Analyst: Ethan Tidd

METHOD

Analysis Water: EPA 415.1/SM5310C/SW846 9060 (Total Organic Carbon)
Soil: Lloyd-Khan Methodology

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 101956
Approved By: Deanna Hesson

Microbac

Lab Report #: L15071205
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Certificate of Analysis

Sample #:	L15071205-01	**PrePrep Method:**	N/A	**Instrument:**	HPMS8
Client ID:	QCFB-072015	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	07/20/2015 15:10
Workgroup #:	WG532342	**Analyst:**	TMB	**Run Date:**	07/23/2015 16:15
Collect Date:	07/20/2015 12:40	**Dilution:**	1	**File ID:**	8M406299
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4	3.31		1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3	9.31		1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1	1.38		1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3	0.519	J	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	103	70	120	
4-Bromofluorobenzene	103	75	120	
Dibromofluoromethane	109	85	115	
Toluene-d8	103	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L15071205-01	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	QCFB-072015	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG532384	**Analyst:**	JDS	**Run Date:**	07/23/2015 14:08
Collect Date:	07/20/2015 12:40	**Dilution:**	1	**File ID:**	16G48147
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8		U	5.00	1.00
Ethene	74-85-1		U	5.00	1.00
Ethane	74-84-0		U	5.00	1.00
U	Analyte was not detected. The concentration is below the reported LOD.				

Sample #:	L15071205-01	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	QCFB-072015	**Prep Method:**	3015	**Prep Date:**	07/23/2015 08:44
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/30/2015 14:20
Workgroup #:	WG532579	**Analyst:**	JYH	**Run Date:**	07/30/2015 17:39
Collect Date:	07/20/2015 12:40	**Dilution:**	1	**File ID:**	T3.073015.173945
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2		U	0.500	0.250
Magnesium, Total	7439-95-4		U	0.500	0.250
Potassium, Total	7440-09-7		U	1.00	0.500
Sodium, Total	7440-23-5	1.92		0.500	0.250
U	Analyte was not detected. The concentration is below the reported LOD.				

Sample #:	L15071205-01	**PrePrep Method:**	N/A	**Instrument:**	IC2
Client ID:	QCFB-072015	**Prep Method:**	9056	**Prep Date:**	07/22/2015 07:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	02/17/2015 19:43
Workgroup #:	WG532281	**Analyst:**	ALS	**Run Date:**	07/22/2015 11:02
Collect Date:	07/20/2015 12:40	**Dilution:**	1	**File ID:**	I2_072215-09
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8		U	0.600	0.100
Sulfate	14808-79-8		U	1.00	0.500
U	Analyte was not detected. The concentration is below the reported LOD.				

Certificate of Analysis

Sample #:	L15071205-01	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	QCFB-072015	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG532335	**Analyst:**	EPT	**Run Date:**	07/24/2015 02:41
Collect Date:	07/20/2015 12:40	**Dilution:**	1	**File ID:**	TC07232015.036
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	1.05		1.00	0.500
Total Organic Carbon Rep1		1.08		1.00	0.500
Total Organic Carbon Rep2		1.04		1.00	0.500
Total Organic Carbon Rep3		1.04		1.00	0.500
Total Organic Carbon Rep4		1.03		1.00	0.500

Sample #:	L15071205-02	**PrePrep Method:**	N/A	**Instrument:**	HPMS8
Client ID:	QCEB-072015	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	07/20/2015 15:10
Workgroup #:	WG532342	**Analyst:**	TMB	**Run Date:**	07/23/2015 15:46
Collect Date:	07/20/2015 12:30	**Dilution:**	1	**File ID:**	8M406298
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4	3.52		1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3	8.75		1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1	1.45		1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3	0.519	J	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250

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Analyte	CAS #	Result	Qual	LOQ	DL
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	95.6	70	120	
4-Bromofluorobenzene	105	75	120	
Dibromofluoromethane	97.0	85	115	
Toluene-d8	103	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15071205-02	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	QCEB-072015	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG532384	**Analyst:**	JDS	**Run Date:**	07/23/2015 14:20
Collect Date:	07/20/2015 12:30	**Dilution:**	1	**File ID:**	16G48148
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8		U	5.00	1.00
Ethene	74-85-1		U	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15071205-02	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	QCEB-072015	**Prep Method:**	3015	**Prep Date:**	07/23/2015 08:44
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/30/2015 14:20
Workgroup #:	WG532579	**Analyst:**	JYH	**Run Date:**	07/30/2015 17:43
Collect Date:	07/20/2015 12:30	**Dilution:**	1	**File ID:**	T3.073015.174348
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2		U	0.500	0.250
Magnesium, Total	7439-95-4		U	0.500	0.250
Potassium, Total	7440-09-7		U	1.00	0.500
Sodium, Total	7440-23-5	1.99		0.500	0.250

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L15071205-02	**PrePrep Method:**	N/A	**Instrument:**	IC2
Client ID:	QCEB-072015	**Prep Method:**	9056	**Prep Date:**	07/22/2015 07:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	02/17/2015 19:43
Workgroup #:	WG532281	**Analyst:**	ALS	**Run Date:**	07/22/2015 10:44
Collect Date:	07/20/2015 12:30	**Dilution:**	1	**File ID:**	I2_072215-08
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8		U	0.600	0.100
Sulfate	14808-79-8		U	1.00	0.500

U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15071205-02	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	QCEB-072015	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG532335	**Analyst:**	EPT	**Run Date:**	07/24/2015 03:17
Collect Date:	07/20/2015 12:30	**Dilution:**	1	**File ID:**	TC07232015.037
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	1.02		1.00	0.500
Total Organic Carbon Rep1		1.02		1.00	0.500
Total Organic Carbon Rep2		1.01		1.00	0.500
Total Organic Carbon Rep3		1.01		1.00	0.500
Total Organic Carbon Rep4		1.02		1.00	0.500

Sample #:	L15071205-03	**PrePrep Method:**	N/A	**Instrument:**	HPMS8
Client ID:	FTB034-GM-OP-3-072015	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	07/20/2015 15:10
Workgroup #:	WG532342	**Analyst:**	TMB	**Run Date:**	07/23/2015 18:09
Collect Date:	07/20/2015 09:01	**Dilution:**	1	**File ID:**	8M406303
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3	4.83		1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250

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Analyte	CAS #	Result	Qual	LOQ	DL
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4	1.87		1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6	0.544	J	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	104	70	120	
4-Bromofluorobenzene	102	75	120	
Dibromofluoromethane	109	85	115	
Toluene-d8	105	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Sample #:	L15071205-03	**PrePrep Method:**	N/A	**Instrument:**	HP16
Client ID:	FTB034-GM-OP-3-072015	**Prep Method:**	5021	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	RSK175	**Cal Date:**	03/03/2015 15:29
Workgroup #:	WG532384	**Analyst:**	JDS	**Run Date:**	07/23/2015 14:31
Collect Date:	07/20/2015 09:01	**Dilution:**	1	**File ID:**	16G48149
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Methane	74-82-8	14.0		5.00	1.00
Ethene	74-85-1	3.26	J	5.00	1.00
Ethane	74-84-0		U	5.00	1.00

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L15071205-03	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	FTB034-GM-OP-3-072015	**Prep Method:**	3015	**Prep Date:**	07/23/2015 08:44
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/30/2015 14:20
Workgroup #:	WG532579	**Analyst:**	JYH	**Run Date:**	07/30/2015 17:47
Collect Date:	07/20/2015 09:01	**Dilution:**	1	**File ID:**	T3.073015.174752
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Magnesium, Total	7439-95-4	9.49		0.500	0.250
Potassium, Total	7440-09-7	2.43		1.00	0.500
Sodium, Total	7440-23-5	36.7		0.500	0.250

Sample #:	L15071205-03	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO3
Client ID:	FTB034-GM-OP-3-072015	**Prep Method:**	3015	**Prep Date:**	07/23/2015 08:44
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	07/30/2015 14:20
Workgroup #:	WG532579	**Analyst:**	JYH	**Run Date:**	07/30/2015 18:15
Collect Date:	07/20/2015 09:01	**Dilution:**	25	**File ID:**	T3.073015.181537
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Calcium, Total	7440-70-2	56.2		12.5	6.25

Sample #:	L15071205-03	**PrePrep Method:**	N/A	**Instrument:**	IC2
Client ID:	FTB034-GM-OP-3-072015	**Prep Method:**	9056	**Prep Date:**	07/22/2015 07:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	02/17/2015 19:43
Workgroup #:	WG532281	**Analyst:**	ALS	**Run Date:**	07/22/2015 10:26
Collect Date:	07/20/2015 09:01	**Dilution:**	1	**File ID:**	I2_072215-07
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8	0.166	J,H1	0.600	0.100
Sulfate	14808-79-8	29.5		1.00	0.500
J,H1	Estimated value ; the analyte concentration was less than the LOQ. Sample analysis performed past holding time.				

Sample #:	L15071205-03	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	FTB034-GM-OP-3-072015	**Prep Method:**	9060A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9060A	**Cal Date:**	05/27/2015 15:47
Workgroup #:	WG532335	**Analyst:**	EPT	**Run Date:**	07/24/2015 04:16
Collect Date:	07/20/2015 09:01	**Dilution:**	1	**File ID:**	TC07232015.040
Sample Tag:	01	**Units:**	mg/L		

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Total Organic Carbon	TOC	1.54		1.00	0.500
Total Organic Carbon Rep1		1.45		1.00	0.500
Total Organic Carbon Rep2		1.52		1.00	0.500
Total Organic Carbon Rep3		1.58		1.00	0.500
Total Organic Carbon Rep4		1.62		1.00	0.500

Sample #:	L15071205-04	**PrePrep Method:**	N/A	**Instrument:**	HPMS8
Client ID:	TRIP BLANK	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	07/20/2015 15:10
Workgroup #:	WG532342	**Analyst:**	TMB	**Run Date:**	07/23/2015 15:17
Collect Date:	07/20/2015 00:01	**Dilution:**	1	**File ID:**	8M406297
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	DL
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1-Chlorohexane	544-10-5		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	DL
Acetone	67-64-1		U	5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Chlorodibromomethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methylene chloride	75-09-2		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	101	70	120	

4-Bromofluorobenzene	106	75	120	
Dibromofluoromethane	107	85	115	
Toluene-d8	104	85	120	

U	Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071205
Blank File ID: 8M406287
Prep Date: 07/23/15 10:29
Analyzed Date: 07/23/15 10:29
Analyst: TMB

Work Group: WG532342
Blank Sample ID: WG532342-01
Instrument ID: HPMS8
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532342-02	8M406288	07/23/15 10:57	01
LCS2	WG532342-03	8M406289	07/23/15 11:25	01
TRIP BLANK	L15071205-04	8M406297	07/23/15 15:17	01
QCEB-072015	L15071205-02	8M406298	07/23/15 15:46	01
QCFB-072015	L15071205-01	8M406299	07/23/15 16:15	01
FTB034-GM-OP-3-072015	L15071205-03	8M406303	07/23/15 18:09	01
LCS	WG532342-04	8M406309	07/23/15 21:01	02
LCS2	WG532342-05	8M406310	07/23/15 21:30	02

Report Name: BLANK_SUMMARY
PDF File ID: 4300983
Report generated 07/24/2015 12:00

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071205
Blank File ID: 8M406311
Prep Date: 07/23/15 21:59
Analyzed Date: 07/23/15 21:59
Analyst: TMB

Work Group: WG532342
Blank Sample ID: WG532342-06
Instrument ID: HPMS8
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532342-02	8M406288	07/23/15 10:57	01
LCS2	WG532342-03	8M406289	07/23/15 11:25	01
TRIP BLANK	L15071205-04	8M406297	07/23/15 15:17	01
QCEB-072015	L15071205-02	8M406298	07/23/15 15:46	01
QCFB-072015	L15071205-01	8M406299	07/23/15 16:15	01
FTB034-GM-OP-3-072015	L15071205-03	8M406303	07/23/15 18:09	01
LCS	WG532342-04	8M406309	07/23/15 21:01	02
LCS2	WG532342-05	8M406310	07/23/15 21:30	02

Report Name: BLANK_SUMMARY
PDF File ID: 4300983
Report generated 07/24/2015 12:00

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071205 Prep Date: 07/23/15 10:29 Sample ID: WG532342-01
Instrument ID: HPMS8 Run Date: 07/23/15 10:29 Prep Method: 5030B/5030C/503
File ID: 8M406287 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG532342 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS8-20-JUL-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	2.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1-Chlorohexane	0.125	1.00	0.125	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
2-Butanone	2.50	5.00	2.50	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
2-Hexanone	2.50	5.00	2.50	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	5.00	2.50	1	U
Acetone	2.50	5.00	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U

Report Name: BLANK
PDF ID: 4300984
24-JUL-2015 12:00

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071205 Prep Date: 07/23/15 10:29 Sample ID: WG532342-01
Instrument ID: HPMS8 Run Date: 07/23/15 10:29 Prep Method: 5030B/5030C/503
File ID: 8M406287 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG532342 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS8-20-JUL-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U
Isopropylbenzene	0.250	1.00	0.250	1	U
Methylene chloride	0.250	1.00	0.250	1	U
Methyl t-butyl ether (MTBE)	0.500	1.00	0.500	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Naphthalene	0.200	1.00	0.200	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	106	70 - 120	PASS
4-Bromofluorobenzene	103	75 - 120	PASS
Dibromofluoromethane	106	85 - 115	PASS
Toluene-d8	102	85 - 120	PASS

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4300984
24-JUL-2015 12:00

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071205 Prep Date: 07/23/15 21:59 Sample ID: WG532342-06
Instrument ID: HPMS8 Run Date: 07/23/15 21:59 Prep Method: 5030B/5030C/503
File ID: 8M406311 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG532342 Matrix: Water 2 Units: ug/L
Contract #: Cal ID: HPMS8-20-JUL-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	2.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1-Chlorohexane	0.125	1.00	0.125	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
2-Butanone	2.50	5.00	2.50	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
2-Hexanone	2.50	5.00	2.50	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	5.00	2.50	1	U
Acetone	2.50	5.00	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U

Report Name: BLANK
PDF ID: 4300984
24-JUL-2015 12:00

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071205 Prep Date: 07/23/15 21:59 Sample ID: WG532342-06
Instrument ID: HPMS8 Run Date: 07/23/15 21:59 Prep Method: 5030B/5030C/503
File ID: 8M406311 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG532342 Matrix: Water 2 Units: ug/L
Contract #: Cal ID: HPMS8-20-JUL-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U
Isopropylbenzene	0.250	1.00	0.250	1	U
Methylene chloride	0.250	1.00	0.250	1	U
Methyl t-butyl ether (MTBE)	0.500	1.00	0.500	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Naphthalene	0.200	1.00	0.200	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	103	70 - 120	PASS
4-Bromofluorobenzene	105	75 - 120	PASS
Dibromofluoromethane	111	85 - 115	PASS
Toluene-d8	102	85 - 120	PASS

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4300984
24-JUL-2015 12:00

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071205 Analyst: TMB Prep Method: 5030B/5030C/503
Instrument ID: HPMS8 Matrix: Water Method: 8260B
Workgroup (AAB#): WG532342 Units: ug/L
QC Key: DOD4 Lot #: STD71469

Sample ID: WG532342-02 LCS File ID: 8M406288 Run Date: 07/23/2015 10:57
Sample ID: WG532342-03 LCS2 File ID: 8M406289 Run Date: 07/23/2015 11:25

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
1,1,1,2-Tetrachloroethane	20.0	19.6	98.1	20.0	19.7	98.4	0.303	80 - 130	30	
1,1,1-Trichloroethane	20.0	22.0	110	20.0	21.2	106	3.59	65 - 130	30	
1,1,2,2-Tetrachloroethane	20.0	18.8	94.1	20.0	19.2	95.8	1.79	65 - 130	30	
1,1,2-Trichloroethane	20.0	20.1	100	20.0	19.8	99.1	1.36	75 - 125	30	
1,1-Dichloroethane	20.0	21.1	106	20.0	20.6	103	2.29	70 - 135	30	
1,1-Dichloroethene	20.0	19.0	95.2	20.0	19.2	95.8	0.659	70 - 130	30	
1,1-Dichloropropene	20.0	21.1	105	20.0	20.3	101	3.90	75 - 130	30	
1,2,3-Trichlorobenzene	20.0	18.7	93.4	20.0	18.8	93.8	0.405	55 - 140	30	
1,2,3-Trichloropropane	20.0	19.9	99.6	20.0	19.6	98.1	1.53	75 - 125	30	
1,2,4-Trichlorobenzene	20.0	19.1	95.3	20.0	18.3	91.7	3.81	65 - 135	30	
1,2,4-Trimethylbenzene	20.0	20.4	102	20.0	20.1	101	1.60	75 - 130	30	
1,2-Dibromo-3-chloropropane	20.0	20.2	101	20.0	19.2	96.1	4.95	50 - 130	30	
1,2-Dibromoethane	20.0	19.9	99.3	20.0	19.7	98.5	0.855	80 - 120	30	
1,2-Dichlorobenzene	20.0	21.0	105	20.0	20.6	103	1.98	70 - 120	30	
1,2-Dichloroethane	20.0	20.8	104	20.0	20.8	104	0.170	70 - 130	30	
1,2-Dichloropropane	20.0	22.1	111	20.0	21.8	109	1.63	75 - 125	30	
1,3,5-Trimethylbenzene	20.0	20.5	103	20.0	20.6	103	0.263	75 - 130	30	
1,3-Dichlorobenzene	20.0	19.6	98.2	20.0	19.8	99.2	1.02	75 - 125	30	
1,4-Dichlorobenzene	20.0	18.8	94.1	20.0	18.6	92.9	1.25	75 - 125	30	
1-Chlorohexane	20.0	21.4	107	20.0	21.0	105	1.98	80 - 127	30	
2,2-Dichloropropane	20.0	22.5	113	20.0	21.3	107	5.47	70 - 135	30	
2-Butanone	20.0	20.3	101	20.0	20.4	102	0.716	30 - 150	30	
2-Chlorotoluene	20.0	20.8	104	20.0	20.6	103	0.852	75 - 125	30	
2-Hexanone	20.0	20.0	100	20.0	19.9	99.4	0.630	55 - 130	30	
4-Chlorotoluene	20.0	20.7	103	20.0	21.0	105	1.63	75 - 130	30	
4-Methyl-2-pentanone	20.0	20.8	104	20.0	21.4	107	2.86	60 - 135	30	
Acetone	20.0	20.9	105	20.0	20.1	101	3.96	40 - 140	30	
Benzene	20.0	22.0	110	20.0	21.5	108	2.14	80 - 120	30	
Bromobenzene	20.0	19.7	98.3	20.0	19.5	97.3	1.02	75 - 125	30	
Bromochloromethane	20.0	21.5	108	20.0	21.9	110	2.00	65 - 130	30	
Bromodichloromethane	20.0	20.9	104	20.0	21.0	105	0.705	75 - 120	30	
Bromoform	20.0	19.9	99.7	20.0	20.1	100	0.612	70 - 130	30	
Bromomethane	20.0	17.2	86.0	20.0	17.0	84.8	1.43	30 - 145	30	
Carbon disulfide	20.0	18.0	90.1	20.0	17.5	87.4	3.00	35 - 160	30	
Carbon tetrachloride	20.0	21.9	110	20.0	21.2	106	3.23	65 - 140	30	
Chlorobenzene	20.0	20.8	104	20.0	20.5	102	1.67	80 - 120	30	
Chloroethane	20.0	20.9	104	20.0	21.0	105	0.721	60 - 135	30	
Chloroform	20.0	21.9	110	20.0	21.2	106	3.27	65 - 135	30	
Chloromethane	20.0	15.5	77.7	20.0	15.2	75.8	2.50	40 - 125	30	
cis-1,2-Dichloroethene	20.0	21.1	106	20.0	20.2	101	4.35	70 - 125	30	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4300130
Report generated: 07/24/2015 12:00

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071205 Analyst: TMB Prep Method: 5030B/5030C/503
Instrument ID: HPMS8 Matrix: Water Method: 8260B
Workgroup (AAB#): WG532342 Units: ug/L
QC Key: DOD4 Lot #: STD71469

Sample ID: WG532342-02 LCS File ID: 8M406288 Run Date: 07/23/2015 10:57
Sample ID: WG532342-03 LCS2 File ID: 8M406289 Run Date: 07/23/2015 11:25

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
cis-1,3-Dichloropropene	20.0	22.5	112	20.0	22.1	110	1.99	70 - 130	30	
Chlorodibromomethane	20.0	19.8	98.9	20.0	19.6	98.2	0.722	60 - 135	30	
Dichlorodifluoromethane	20.0	11.7	58.3	20.0	10.9	54.7	6.39	30 - 155	30	
Ethylbenzene	20.0	19.4	97.2	20.0	19.7	98.5	1.35	75 - 125	30	
Hexachlorobutadiene	20.0	18.5	92.5	20.0	17.7	88.3	4.65	50 - 140	30	
Isopropylbenzene	20.0	22.0	110	20.0	21.5	107	2.36	75 - 125	30	
Methyl t-butyl ether (MTBE)	20.0	21.8	109	20.0	21.6	108	1.16	65 - 125	30	
Methylene chloride	20.0	20.6	103	20.0	20.3	101	1.45	55 - 140	30	
n-Butylbenzene	20.0	20.5	102	20.0	20.2	101	1.51	70 - 135	30	
n-Propylbenzene	20.0	21.5	108	20.0	21.6	108	0.258	70 - 130	30	
Naphthalene	20.0	19.5	97.6	20.0	19.4	96.8	0.881	55 - 140	30	
p-Isopropyltoluene	20.0	20.9	105	20.0	20.4	102	2.22	75 - 130	30	
sec-Butylbenzene	20.0	21.8	109	20.0	21.8	109	0.246	70 - 125	30	
Styrene	20.0	21.1	106	20.0	20.7	103	2.06	65 - 135	30	
tert-Butylbenzene	20.0	20.3	102	20.0	20.3	102	0.0841	70 - 130	30	
Tetrachloroethene	20.0	19.8	99.0	20.0	19.6	98.0	0.981	45 - 150	30	
Toluene	20.0	21.0	105	20.0	20.6	103	2.20	75 - 120	30	
trans-1,2-Dichloroethene	20.0	20.0	100	20.0	19.4	96.9	3.18	60 - 140	30	
trans-1,3-Dichloropropene	20.0	19.9	99.5	20.0	20.2	101	1.56	55 - 140	30	
Trichloroethene	20.0	20.7	103	20.0	20.6	103	0.117	70 - 125	30	
Trichlorofluoromethane	20.0	19.8	99.2	20.0	19.4	96.9	2.34	60 - 145	30	
Vinyl chloride	20.0	18.1	90.4	20.0	17.5	87.6	3.18	50 - 145	30	
Xylenes	60.0	62.8	105	60.0	62.5	104	0.512	80 - 120	30	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	103	99.7	70 - 120	PASS
Dibromofluoromethane	106	104	85 - 115	PASS
4-Bromofluorobenzene	102	101	75 - 120	PASS
Toluene-d8	103	103	85 - 120	PASS

* EXCEEDS %REC LIMIT

\# EXCEEDS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4300130
Report generated: 07/24/2015 12:00

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071205
Blank File ID: 16G48143
Prep Date: 07/23/15 11:16
Analyzed Date: 07/23/15 11:16
Analyst: JDS

Work Group: WG532384
Blank Sample ID: WG532384-01
Instrument ID: HP16
Method: RSK175

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532384-02	16G48144	07/23/15 11:28	01
LCS2	WG532384-03	16G48145	07/23/15 11:40	01
QCFB-072015	L15071205-01	16G48147	07/23/15 14:08	01
QCEB-072015	L15071205-02	16G48148	07/23/15 14:20	01
FTB034-GM-OP-3-072015	L15071205-03	16G48149	07/23/15 14:31	01

Report Name: BLANK_SUMMARY
PDF File ID: 4303027
Report generated 07/27/2015 16:37

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071205 Prep Date: 07/23/15 11:16 Sample ID: WG532384-01
Instrument ID: HP16 Run Date: 07/23/15 11:16 Prep Method: 5021
File ID: 16G48143 Analyst: JDS Method: RSK175
Workgroup (AAB#): WG532384 Matrix: Water Units: ug/L
Contract #: Cal ID: HP16 - 03-MAR-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Methane	1.00	5.00	1.00	1	U
Ethene	1.00	5.00	1.00	1	U
Ethane	1.00	5.00	1.00	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 4303028
27-JUL-2015 16:37

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071205 Analyst: JDS Prep Method: 5021
Instrument ID: HP16 Matrix: Water Method: RSK175
Workgroup (AAB#): WG532384 Units: ug/L
QC Key: DOD4 Lot #: STD68250

Sample ID: WG532384-02 LCS File ID: 16G48144 Run Date: 07/23/2015 11:28
Sample ID: WG532384-03 LCS2 File ID: 16G48145 Run Date: 07/23/2015 11:40

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Methane	114	112	98.4	114	114	100	1.59	85 - 115	20	
Ethene	200	196	98.2	200	202	101	2.80	85 - 115	20	
Ethane	214	204	95.2	214	209	97.9	2.78	85 - 115	20	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4303029
Report generated: 07/27/2015 16:37

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071205
Blank File ID: T3.073015.172020
Prep Date: 07/23/15 08:44
Analyzed Date: 07/30/15 17:20
Analyst: JYH

Work Group: WG532579
Blank Sample ID: WG532351-02
Instrument ID: ICP-THERMO3
Method: 6010C

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532351-03	T3.073015.172424	07/30/15 17:24	01
QCFB-072015	L15071205-01	T3.073015.173945	07/30/15 17:39	01
QCEB-072015	L15071205-02	T3.073015.174348	07/30/15 17:43	01
FTB034-GM-OP-3-072015	L15071205-03	T3.073015.174752	07/30/15 17:47	01
FTB034-GM-OP-3-072015	L15071205-03	T3.073015.181537	07/30/15 18:15	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 4311159
Report generated 07/31/2015 08:34

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071205 Prep Date: 07/23/15 08:44 Sample ID: WG532351-02
Instrument ID: ICP-THERMO3 Run Date: 07/30/15 17:20 Prep Method: 3015
File ID: T3.073015.172020 Analyst: JYH Method: 6010C
Workgroup (AAB#): WG532579 Matrix: Water Units: mg/L
Contract #: Cal ID: ICP-TH-30-JUL-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Calcium, Total	0.250	0.500	0.250	1	U
Magnesium, Total	0.250	0.500	0.250	1	U
Potassium, Total	0.500	1.00	0.500	1	U
Sodium, Total	0.250	0.500	0.250	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 4311160
31-JUL-2015 08:34

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071205 Run Date: 07/30/2015 Sample ID: WG532351-03
Instrument ID: ICP-THERMO3 Run Time: 17:24 Prep Method: 3015
File ID: T3.073015.172424 Analyst: JYH Method: 6010C
Workgroup (AAB#): WG532579 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD71485 Cal ID: ICP-TH-30-JUL-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Calcium, Total	6.25	6.46	103	80 - 120	
Magnesium, Total	6.25	6.51	104	80 - 120	
Potassium, Total	31.3	32.1	103	80 - 120	
Sodium, Total	31.3	32.1	103	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 4311161
Report generated: 07/31/2015 08:34

Microbac Laboratories Inc.
MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum: L15071205 Cal ID: ICP-THERMO3 - Worknum: WG532579
Instrument ID: ICP-THERMO3 Contract #: Method: 6010C
Parent ID: WG532351-01 File ID: T3.073015.172811 Dil: 1 Matrix: WATER
Sample ID: WG532351-04 MS File ID: T3.073015.173211 Dil: 1 Units: mg/L
Sample ID: WG532351-05 MSD File ID: T3.073015.173558 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Calcium, Dissolved	161	6.25	168	111	6.25	169	128	0.609	80 - 120	20	*
Magnesium, Dissolved	39.5	6.25	46.0	105	6.25	46.7	116	1.53	80 - 120	20	
Potassium, Dissolved	1.28	31.3	33.4	103	31.3	32.5	99.9	2.72	80 - 120	20	
Sodium, Dissolved	180	31.3	213	105	31.3	213	105	0.00588	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 05/26/2011
PDF File ID: 4311162
Report generated 07/31/2015 08:48

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071205
Blank File ID: I2_072215-05
Prep Date: 07/22/15 07:00
Analyzed Date: 07/22/15 08:39
Analyst: ALS

Work Group: WG532281
Blank Sample ID: WG532281-01
Instrument ID: IC2
Method: 9056

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532281-02	I2_072215-06	07/22/15 08:57	01
FTB034-GM-OP-3-072015	L15071205-03	I2_072215-07	07/22/15 10:26	01
QCEB-072015	L15071205-02	I2_072215-08	07/22/15 10:44	01
QCFB-072015	L15071205-01	I2_072215-09	07/22/15 11:02	01
DUP	WG532281-04	I2_072215-10	07/22/15 11:20	01

Report Name: BLANK_SUMMARY
PDF File ID: 4297897
Report generated 07/23/2015 15:16

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071205 Prep Date: 07/22/15 07:00 Sample ID: WG532281-01
Instrument ID: IC2 Run Date: 07/22/15 08:39 Prep Method: 9056
File ID: I2 072215-05 Analyst: ALS Method: 9056
Workgroup (AAB#): WG532281 Matrix: Water Units: mg/L
Contract #: Cal ID: IC2 - 17-FEB-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Nitrate	0.100	0.600	0.100	1	U
Sulfate	0.500	1.00	0.500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4297898
23-JUL-2015 15:16

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071205 Run Date: 07/22/2015 Sample ID: WG532281-02
Instrument ID: IC2 Run Time: 08:57 Prep Method: 9056
File ID: I2 072215-06 Analyst: ALS Method: 9056
Workgroup (AAB#): WG532281 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD69216 Cal ID: IC2 - 17-FEB-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrate	5.42	5.55	102	90 - 110	
Sulfate	40.0	42.1	105	90 - 110	

LCS - Modified 03/06/2008
PDF File ID: 4297899
Report generated: 07/23/2015 15:16

Microbac Laboratories Inc.
MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum: L15071205 Cal ID: IC2 - Worknum: WG532281
Instrument ID: IC2 Contract #: Method: 9056
Parent ID: WG532281-03 File ID: I2_072215-09 Dil: 1 Matrix: WATER
Sample ID: WG532281-05 MS File ID: I2_072215-11 Dil: 1 Units: mg/L
Sample ID: WG532281-06 MSD File ID: I2_072215-12 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Nitrate	ND	5.42	5.87	108	5.42	5.89	109	0.323	90 - 110	20	
Sulfate	ND	40.0	44.1	110	40.0	43.9	110	0.516	90 - 110	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 05/26/2011
PDF File ID: 4297900
Report generated 07/23/2015 15:15

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071205
Blank File ID: TC07232015.013
Prep Date: 07/23/15 12:14
Analyzed Date: 07/23/15 12:14
Analyst: EPT

Work Group: WG532335
Blank Sample ID: WG532335-01
Instrument ID: TOC-VWP
Method: 9060A

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532335-02	TC07232015.016	07/23/15 13:13	01
LCS2	WG532335-03	TC07232015.017	07/23/15 14:06	01
QCFB-072015	L15071205-01	TC07232015.036	07/24/15 02:41	01
QCEB-072015	L15071205-02	TC07232015.037	07/24/15 03:17	01
FTB034-GM-OP-3-072015	L15071205-03	TC07232015.040	07/24/15 04:16	01
DUP	WG532335-08	TC07232015.041	07/24/15 04:54	01

Report Name: BLANK_SUMMARY
PDF File ID: 4300624
Report generated 07/24/2015 10:28

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071205 Prep Date: 07/23/15 12:14 Sample ID: WG532335-01
Instrument ID: TOC-VWP Run Date: 07/23/15 12:14 Prep Method: 9060A
File ID: TC07232015.013 Analyst: EPT Method: 9060A
Workgroup (AAB#): WG532335 Matrix: Water Units: mg/L
Contract #: Cal ID: TOC-VW-27-MAY-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U
Total Organic Carbon Rep1	0.500	1.00	0.500	1	U
Total Organic Carbon Rep2	0.500	1.00	0.500	1	U
Total Organic Carbon Rep3	0.500	1.00	0.500	1	U
Total Organic Carbon Rep4	0.500	1.00	0.500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4300625
24-JUL-2015 10:28

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071205 Analyst: EPT Prep Method: 9060A
Instrument ID: TOC-VWP Matrix: Water Method: 9060A
Workgroup (AAB#): WG532335 Units: mg/L
QC Key: DOD4 Lot #: STD69935

Sample ID: WG532335-02 LCS File ID: TC07232015.016 Run Date: 07/23/2015 13:13
Sample ID: WG532335-03 LCS2 File ID: TC07232015.017 Run Date: 07/23/2015 14:06

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	26.7	107	25.0	25.7	103	3.93	85 - 115	15	
Total Organic Carbon Rep1		24.8			25.6		3.21	85 - 115	15	*
Total Organic Carbon Rep2		25.6			25.7		0.702	85 - 115	15	*
Total Organic Carbon Rep3		25.2			25.5		0.868	85 - 115	15	*
Total Organic Carbon Rep4		31.3			25.9		18.7	85 - 115	15	*#

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 4300626
Report generated: 07/24/2015 10:28

001 - BIO-CHEM TESTING WVDEP 220
002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental
004 - MICROBAC PITTSBURGH
005 - ES LABORATORIES
006 - ALCOSAN LABORATORIES
007 - ALS LABORATORIES
008 - BENCHMARK LABORATORIES
010 - MICROBAC CHICAGOLAND
AC - AMBER R. CARMICHAEL
ADC - ANTHONY D. CANTER
ADG - APRIL D. GREENE
AED - ALLEN E. DAVIS
ALS - ADRIANE L. STEED
AWE - ANDREW W. ESSIG
AZH - AFTER HOURS
BJO - BRIAN J. OGDEN
BKT - BRENDAN TORRENCE
BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY
CAA - CASSIE A. AUGENSTEIN
CAF - CHERYL A. FLOWERS
CEB - CHAD E. BARNES
CJR - COURTNEY J. REXROAD
CLC - CHRYS L. CRAWFORD
CLS - CARA L. STRICKLER
CLW - CHARISSA L. WINTERS
CPD - CHAD P. DAVIS
CSH - CHRIS S. HILL
DAK - DEAN A. KETELSEN
DCM - DAVID C. MERCKLE
DEV - DAVID E. VANDENBERG
DIH - DEANNA I. HESSON
DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE
DLW - DIANA L. WRIGHT
DSM - DAVID S. MOSSOR
ECL - ERIC C. LAWSON
ENY - EMILY N. YOAK
EPT - ETHAN P. TIDD
ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN
JBK - JEREMY B. KINNEY
JDH - JUSTIN D. HESSON
JDS - JARED D. SMITH
JJS - JOHN J. STE MARIE
JKP - JACQUELINE K. PARSONS
JLL - JOHN L. LENT
JMW - JEANA M. WHITE
JTP - JOSHUA T. PEMBERTON
JWR - JOHN W. RICHARDS
JWS - JACK W. SHEAVES
JYH - JI Y. HU
KAJ - KELLIE A. JOHNSON
KAT - KATHY A. TUCKER
KDW - KATHRYN D. WELCH
KEB - KATIE E. BARNES
KHR - KIM H. RHODES
KKB - KERRI K. BUCK
KRA - KATHY R. ALBERTSON
KRB - KAELY R. BECKER
KRP - KATHY R. PARSONS
LEC - LAURA E. CARPENTER
LKN - LINDA K. NEDEFF
LLS - LARRY L. STEPHENS
LSB - LESLIE S. BUCINA
MBK - MORGAN B. KNOWLTON
MDA - MIKE D. ALBERTSON
MDC - MIKE D. COCHRAN
MES - MARY E. SCHILLING
MLB - MEGAN L. BACHE
MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR
MSW - MATT S. WILSON
PDM - PIERCE D. MORRIS
PIT - MICROBAC WARRENDALE
PRL - PAIGE R. LAMB
PSW - PEGGY S. WEBB
QX - QIN XU
RAH - ROY A. HALSTEAD
REK - BOB E. KYER
RLB - BOB BUCHANAN
RM - RAYMOND MALEKE
RNP - RICK N. PETTY
RST - ROBIN S. TURNER
SAV - SARAH A. VANDENBERG
SCB - SARAH C. BOGOLIN
SDC - SHALYN D. CONLEY
SLM - STEPHANIE L. MOSSBURG
SLP - SHERI L. PFALZGRAF
TB - TODD BOYLE
TGF - TIM G. FELTON
TMB - TIFFANY M. BAILEY
TMM - TAMMY M. MORRIS
VC - VICKI COLLIER
WJB - WILL J. BEASLEY
WRR - WESLEY R. RICHARDS
WTD - WADE T. DELONG
XXX - UNAVAILABLE OR SUBCONTRACT

Microbac Laboratories Inc.
List of Valid Qualifiers
July 31, 2015

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B,H1	Analyte present in method blank. Sample analysis performed past holding time.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	Cooler temperature at sample reciept exceeded regulatory limit.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
E,CT1	Estimated results. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
H1	Sample analysis performed past holding time.
H1,CT1	Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guidelines for reque
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value ; the analyte concentration was less than the LOQ. Cooler temperature at sample reciept exceeded regu
J,H1	Estimated value ; the analyte concentration was less than the LOQ. Sample analysis performed past holding time.
J,H1	The reported result is an estimated value. Sample was analyzed past holding time.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentativlely identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL/MDL).
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
ND,H1	Not detected; Sample analysis performed past holding time.
ND,H1,CT1	Not detected; Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guide
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
Q,H1	One or more quality control criteria failed. Sample analyzed past holding time. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
T5	Laboratory not licensed for this parameter
TIC	Library Search Compound
TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.

Qualkey: DOD

TNTC,CT1	Too numerous to count. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
TNTC,H1	Too numerous to count. Sample analysis performed past holding time.
U	Analyte was not detected. The concentration is below the reported LOD.
U,CT1	Analyte was not detected. The concentration is below the reported LOD. Cooler temperature at sample reciept exceeded
U,H1	Not detected; Sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

Microbac

Co.Name: Kemron Env. Services
Prj Contact: Jeanette Hamm
Prj Name: Ft. Buchanan
Location: Bayamon, PR

TAT: STD
Phone: 404-636-0028

COC No. 1

Sampler Print: Charlie Tolph

Sampler Sign:

Sample ID	Comp	Grab	Date	Time	Hold	# of Containers	Anions Sulfate/Nitrate 9056A	Cations 6010C Mg, Ca, Na, K	TOC 9060A	Diss Gas RSK175	VOC 8260B						Notes:
QCFB-072015		✓	7-20-15	1240		9	✓	✓	✓	✓	✓						
QCEB-072015		✓	7-20-15	1230		9	✓	✓	✓	✓	✓						
FTB034-GM-MWK 072015		✓	7-20-15	1121		18	✓			✗							-Anions only-
FTB034-GM-OP-3 072015		✓	7-20-15	0901		9	✓	✓	✓	✓	✓						
Trip Blank		✓	7-20-15	na		3					✓						

Relinquished By:	Received By:	Relinquished By	Received By:
Date/Time 7/20/15 1600	Date/Time	Date/Time:	Date/Time:
Relinquished By:	Recei	mp(s):	Comments:
Date/Time	Date/		

Microbac OVD
Received: 07/22/2015 10:06
By: BRENDA GREGORY
221000072929

Brenda Gregory

COMMERCIAL INVOICE (Factura Comercial)

This invoice must be completed in English (Esta factura se debe llenar en ingles)

SHIPPED FROM (Envio de):
Tax ID/VAT No. (No de Identificación): 11-2393978
Contact Name (Nombre): Jeanette Hamm
Telephone No. (Teléfono): 404-643-2033
E-Mail (E-Mail): jhamm@kemron.com
Company Name/Address (Compania/Dirección):
KEMRON Environmental Services
1359A Ellsworth Industrial Boulevard
Atlanta, GA 30318
Country (Pais): United States
Parties to Transaction:
☑ **Related** (Vinculado) ☐ **Non-related** (No Vinculado)

Date (Fecha): 07/20/2015
Air Waybill No. (Conocimiento de Embarque):
Invoice No. (No de la Factura): Not Applicable
Purchase Order No. (No de Orden de Compra): Not Applicable
Payment Terms (Terminos de Pago): Paid when Paid
Incoterms (Incoterms): CPT=CARRIAGE PAID TO
Reason for Export:
Sold (Vendido) ✓ **Not Sold** (No Esta Vendido) **Other** (Otro)

SHIPPED TO (Destinatario):
Tax ID/VAT No. (No de Identificación): 25-1199642
Contact Name (Nombre): Stephanie Mossburg
Telephone No. (Teléfono): 1-800-373-4071
E-Mail (E-Mail): Stephanie.Mossburg@microbac.com
Company Name/Address (Compania/Dirección):
Microbac Laboratories, Inc.
158 Starlite Drive
Marietta, OH 45750
Country (Pais): USA

SOLD TO (Vendido a): **Same as SHIPPED TO (Igual que el Destinatario):**
Company Name/Address (Compania/Dirección):
Country (Pais): USA

No. of Packages (No de Paquetes)	No. of Units (No Unitario)	Unit of Measure (Unidad de Medida)	Description of Goods (Including Harmonized Tariff No.) (Descripción de la Mercancia [Con No de Clasificación Arancelaria])	Country of Origin (Pais de Origen)	Value Unit (Precio Unitario)	Total Value (Precio Total)
1	8	each	Groundwater Samples for analysis	PR	10.00	80.00
						0.00
						0.00

Total No. of Packages (Total de Paquetes): 1
Total Weight (Indicate LBS or KGS) (Peso Total [En Lbs o Kgs]): 50 LBS

Special Instructions (Instrucciones Especiales):
This package contains soil samples which will be used for destructive analysis.

Declaration Statement(s) (Declaración[es]):

Subtotal (Subtotal):	80.00
Insurance (Seguro):	0.00
Freight (Flete):	0.00
Packing (Embalaje):	0.00
Handling (Manejo):	0.00
Other (Otros):	0.00
Invoice Total (Total):	80.00
Currency Code (Tipo de Moneda):	

Signature/Title (Firma del Declarante/Puesto) **Date** (Fecha)

TOXIC SUBSTANCE CONTROL ACT (TSCA)
CERTIFICATION

Date: July 20 2015

(CHECK ONE SECTION ONLY)

POSITIVE CERTIFICATION

_____ "I certify that all chemical substances in this shipment comply with all applicable rules or orders under TSCA and that I am not offering a chemical substance for entry in violation of TSCA or any applicable rules order thereunder."

● OR ●

NEGATIVE CERTIFICATION

X _____ "I certify that all chemical substances in this shipment are not subject to TSCA."

Company Name: KEMRON Environmental Services

Company Address: 1359A Ellsworth Industrial Boulevard

City/State: Atlanta, GA

Country/Zip: USA, 30318

Authorized Name: Charlie Taylor

Authorized Signature: _____

Title: Site Manager

Federal Express AWB#: _____

If the certifier is unsure if their chemical substance is subject to TSCA compliance, contact the Environmental Protection Agency, TSCA Assistance Office, Washington, D.C. (202) 554-1404 between 8:30 am and 5:00 pm EST.

Revised 04-2009

Microbac OVD
Received: 07/22/2015 10:06
By: BRENDA GREGORY

221000072929

Brenda Gregory

Internal Chain of Custody Report

Login: L15071205
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 31-JUL-2015

Samplenum	Container ID	Products
L15071205-01	605848	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	23-JUL-2015 07:48	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	23-JUL-2015 07:48	AWE	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	23-JUL-2015 07:48	AWE	CLS	

Samplenum	Container ID	Products
L15071205-01	605849	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		<2
2	ANALYZ	V1	ORG1	23-JUL-2015 07:48	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		<2
2	ANALYZ	V1	ORG1	23-JUL-2015 07:48	AWE	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		<2
2	ANALYZ	V1	ORG1	23-JUL-2015 07:48	AWE	CLS	

Samplenum	Container ID	Products
L15071205-01	605850	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	22-JUL-2015 11:21	CLS		
2	PREP	L1	SEM	22-JUL-2015 11:30	ALS	CLS	
3	STORE	SEM	A2	24-JUL-2015 09:01	BRG	ALS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L15071205
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 31-JUL-2015

Samplenum	Container ID	Products
L15071205-01	605851	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	22-JUL-2015 11:21	CLS		
2	ANALYZ	W1	WET	23-JUL-2015 08:16	EPT	CLS	
3	STORE	WET	A2	24-JUL-2015 08:25	BRG	EPT	

Samplenum	Container ID	Products
L15071205-01	605852	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	22-JUL-2015 11:21	CLS		

Samplenum	Container ID	Products
L15071205-02	605853	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	23-JUL-2015 07:48	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	23-JUL-2015 07:48	AWE	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	23-JUL-2015 07:48	AWE	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L15071205
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 31-JUL-2015

Samplenum	Container ID	Products
L15071205-02	605854	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		<2
2	ANALYZ	V1	ORG1	23-JUL-2015 07:48	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		<2
2	ANALYZ	V1	ORG1	23-JUL-2015 07:48	AWE	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		<2
2	ANALYZ	V1	ORG1	23-JUL-2015 07:48	AWE	CLS	

Samplenum	Container ID	Products
L15071205-02	605855	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	22-JUL-2015 11:21	CLS		
2	PREP	L1	SEM	22-JUL-2015 11:30	ALS	CLS	
3	STORE	SEM	A2	24-JUL-2015 09:01	BRG	ALS	

Samplenum	Container ID	Products
L15071205-02	605856	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	22-JUL-2015 11:21	CLS		
2	ANALYZ	W1	WET	23-JUL-2015 08:16	EPT	CLS	
3	STORE	WET	A2	24-JUL-2015 08:25	BRG	EPT	

Samplenum	Container ID	Products
L15071205-02	605857	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	DIG	22-JUL-2015 11:21	CLS		
2	STORE	DIG	A2	23-JUL-2015 13:09	CLS	ERP	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15071205
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 31-JUL-2015

Samplenum	Container ID	Products
L15071205-03	605858	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	23-JUL-2015 07:48	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	23-JUL-2015 07:48	AWE	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	23-JUL-2015 07:48	AWE	CLS	

Samplenum	Container ID	Products
L15071205-03	605859	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		<2
2	ANALYZ	V1	ORG1	23-JUL-2015 07:49	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		<2
2	ANALYZ	V1	ORG1	23-JUL-2015 07:49	AWE	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		<2
2	ANALYZ	V1	ORG1	23-JUL-2015 07:49	AWE	CLS	

Samplenum	Container ID	Products
L15071205-03	605860	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	L1	22-JUL-2015 11:21	CLS		
2	PREP	L1	SEM	22-JUL-2015 11:30	ALS	CLS	
3	STORE	SEM	A2	24-JUL-2015 09:01	BRG	ALS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L15071205
Account: 2820
Project: 2820.250
Samples: 4
Due Date: 31-JUL-2015

Samplenum	Container ID	Products
L15071205-03	605861	TOC-14

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	22-JUL-2015 11:21	CLS		
2	ANALYZ	W1	WET	23-JUL-2015 08:16	EPT	CLS	
3	STORE	WET	A2	24-JUL-2015 08:25	BRG	EPT	

Samplenum	Container ID	Products
L15071205-03	605862	CA K MG NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	DIG	22-JUL-2015 11:21	CLS		
2	STORE	DIG	A2	23-JUL-2015 13:09	CLS	ERP	

Samplenum	Container ID	Products
L15071205-04	605863	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	23-JUL-2015 07:48	AWE	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	22-JUL-2015 11:21	CLS		
2	ANALYZ	V1	ORG4	23-JUL-2015 07:48	AWE	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

ANALYTICAL SERVICES, INC.

Virginia Office
402 North West Street
Culpeper, Virginia 22701
540-829-5642 Office
540-829-5641 Fax

DATA CERTIFICATION

The attached laboratory report L15071256 consisting of 73 pages, has been certified by David E. Vandenberg, Managing Director, Microbac Laboratories. The data contained herein was completed in accordance with the requirements of the DoD QSM and other applicable contract terms and conditions.

I hereby certify that this laboratory report and associated documentation has been reviewed and approved.

Ralph Abbondanza, REM
Vice President
PR Chemist's License #3803

ESTADO LIBRE ASOCIADO DE PUERTO RICO
A 1448798
Ralph Abbondanza III
Zemaitis
Lic.#3803
QUIMICO LICENCIADO

Microbac

Laboratory Report Number: L15071256

Jeanette Hamm
Kemron Environmental Services
1359 Ellsworth Industrial Blvd.
Atlanta, GA 30082

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Stephanie Mossburg – Team Chemist/Data Specialist
(740) 373-4071
Stephanie.Mossburg@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on July 24 2015

David Vandenberg – Managing Director

State of Origin: PR
Accrediting Authority: N/A ID:N/A
QAPP: DOD Ver 4.2 without flagging

Microbac

Lab Report #: L15071256
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

There were no discrepancies.

Discrepancy	Resolution

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
00110165	I	2.0		1004161163310004575000808288276706	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	NA
12	Were VOA samples free of headspace (less than 6mm)?	NA

Microbac Laboratories ● Ohio Valley Division
158 Starlite Drive, Marietta, OH 45750 ● T: (740)373-4071 F: (740)373-4835
www.microbac.com

Microbac

Lab Report #: L15071256
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
FTB034-GM-MW1C-072215	L15071256-01	07/22/2015 13:06	07/23/2015 10:47
FTB034-GM-OP-3-072215	L15071256-02	07/22/2015 12:21	07/23/2015 10:47

Login Number: L15071256
Department: General Chromatography
Analyst: Adriane Steed

METHOD

Analysis EPA300.0/SW846 9056

HOLDING TIMES

Sample Analysis: Hold times for NO2 and NO3 are 48 hours and the hold times for F, Cl, Br, and SO4 are 28 days. The hold time forms calculate the hold time based on 48 hours. All samples were analyzed in hold.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The client did not specify an MS/MSD for this sample delivery group. The laboratory selected sample 01 for MS/MSD analysis and recoveries out of range were observed for Sulfate. Please see the applicable QC report for a detailed presentation of the failure.

SAMPLES

Samples: All acceptance criteria were met.

MANUAL INTEGRATION: No manual integration required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 101913
Approved By: Wade DeLong

Microbac

Lab Report #: L15071256
Lab Project #: 2820.250
Project Name: Ft Buchanan PR
Lab Contact: Stephanie Mossburg

Certificate of Analysis

Sample #:	L15071256-01	**PrePrep Method:**	N/A	**Instrument:**	IC1
Client ID:	FTB034-GM-MW1C-072215	**Prep Method:**	9056	**Prep Date:**	07/23/2015 13:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	04/21/2015 15:58
Workgroup #:	WG532423	**Analyst:**	ALS	**Run Date:**	07/23/2015 15:32
Collect Date:	07/22/2015 13:06	**Dilution:**	1	**File ID:**	I1_072315-07
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8		U	0.600	0.100
Sulfate	14808-79-8	35.9		1.00	0.500
U	Analyte was not detected. The concentration is below the reported LOD.				

Sample #:	L15071256-02	**PrePrep Method:**	N/A	**Instrument:**	IC1
Client ID:	FTB034-GM-OP-3-072215	**Prep Method:**	9056	**Prep Date:**	07/23/2015 13:00
Matrix:	Water	**Analytical Method:**	9056	**Cal Date:**	04/21/2015 15:58
Workgroup #:	WG532423	**Analyst:**	ALS	**Run Date:**	07/23/2015 16:43
Collect Date:	07/22/2015 12:21	**Dilution:**	1	**File ID:**	I1_072315-11
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	DL
Nitrate	14797-55-8		U	0.600	0.100
Sulfate	14808-79-8	26.8		1.00	0.500
U	Analyte was not detected. The concentration is below the reported LOD.				

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L15071256
Blank File ID: I1_072315-05
Prep Date: 07/23/15 13:00
Analyzed Date: 07/23/15 14:57
Analyst: ALS

Work Group: WG532423
Blank Sample ID: WG532423-01
Instrument ID: IC1
Method: 9056

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG532423-02	I1_072315-06	07/23/15 15:15	01
FTB034-GM-MW1C-072215	L15071256-01	I1_072315-07	07/23/15 15:32	01
DUP	WG532423-04	I1_072315-08	07/23/15 15:50	01
FTB034-GM-OP-3-072215	L15071256-02	I1_072315-11	07/23/15 16:43	01

Report Name: BLANK_SUMMARY
PDF File ID: 4299771
Report generated 07/24/2015 10:50

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L15071256 Prep Date: 07/23/15 13:00 Sample ID: WG532423-01
Instrument ID: IC1 Run Date: 07/23/15 14:57 Prep Method: 9056
File ID: I1 072315-05 Analyst: ALS Method: 9056
Workgroup (AAB#): WG532423 Matrix: Water Units: mg/L
Contract #: Cal ID: IC1 - 21-APR-15

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Nitrate	0.100	0.600	0.100	1	U
Sulfate	0.500	1.00	0.500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 4299772
24-JUL-2015 10:50

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L15071256 Run Date: 07/23/2015 Sample ID: WG532423-02
Instrument ID: IC1 Run Time: 15:15 Prep Method: 9056
File ID: I1 072315-06 Analyst: ALS Method: 9056
Workgroup (AAB#): WG532423 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD69216 Cal ID: IC1 - 21-APR-15

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrate	5.42	5.21	96.1	90 - 110	
Sulfate	40.0	39.2	98.0	90 - 110	

LCS - Modified 03/06/2008
PDF File ID: 4299773
Report generated: 07/24/2015 10:50

Microbac Laboratories Inc.
MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum: L15071256 Cal ID: IC1 - Worknum: WG532423
Instrument ID: IC1 Contract #: Method: 9056
Parent ID: WG532423-03 File ID: I1_072315-07 Dil: 1 Matrix: WATER
Sample ID: WG532423-05 MS File ID: I1_072315-09 Dil: 1 Units: mg/L
Sample ID: WG532423-06 MSD File ID: I1_072315-10 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Nitrate	ND	5.42	5.40	99.7	5.42	5.43	100	0.499	90 - 110	20	
Sulfate	35.9	40.0	79.7	109	40.0	80.4	111	0.892	90 - 110	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 05/26/2011
PDF File ID: 4299774
Report generated 07/24/2015 10:50

001 - BIO-CHEM TESTING WVDEP 220
002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental
004 - MICROBAC PITTSBURGH
005 - ES LABORATORIES
006 - ALCOSAN LABORATORIES
007 - ALS LABORATORIES
008 - BENCHMARK LABORATORIES
010 - MICROBAC CHICAGOLAND
AC - AMBER R. CARMICHAEL
ADC - ANTHONY D. CANTER
ADG - APRIL D. GREENE
AED - ALLEN E. DAVIS
ALS - ADRIANE L. STEED
AWE - ANDREW W. ESSIG
AZH - AFTER HOURS
BJO - BRIAN J. OGDEN
BKT - BRENDAN TORRENCE
BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY
CAA - CASSIE A. AUGENSTEIN
CAF - CHERYL A. FLOWERS
CEB - CHAD E. BARNES
CJR - COURTNEY J. REXROAD
CLC - CHRYS L. CRAWFORD
CLS - CARA L. STRICKLER
CLW - CHARISSA L. WINTERS
CPD - CHAD P. DAVIS
CSH - CHRIS S. HILL
DAK - DEAN A. KETELSEN
DCM - DAVID C. MERCKLE
DEV - DAVID E. VANDENBERG
DIH - DEANNA I. HESSON
DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE
DLW - DIANA L. WRIGHT
DSM - DAVID S. MOSSOR
ECL - ERIC C. LAWSON
ENY - EMILY N. YOAK
EPT - ETHAN P. TIDD
ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN
JBK - JEREMY B. KINNEY
JDH - JUSTIN D. HESSON
JDS - JARED D. SMITH
JJS - JOHN J. STE MARIE
JKP - JACQUELINE K. PARSONS
JLL - JOHN L. LENT
JMW - JEANA M. WHITE
JTP - JOSHUA T. PEMBERTON
JWR - JOHN W. RICHARDS
JWS - JACK W. SHEAVES
JYH - JI Y. HU
KAJ - KELLIE A. JOHNSON
KAT - KATHY A. TUCKER
KDW - KATHRYN D. WELCH
KEB - KATIE E. BARNES
KHR - KIM H. RHODES
KKB - KERRI K. BUCK
KRA - KATHY R. ALBERTSON
KRB - KAELY R. BECKER
KRP - KATHY R. PARSONS
LEC - LAURA E. CARPENTER
LKN - LINDA K. NEDEFF
LLS - LARRY L. STEPHENS
LSB - LESLIE S. BUCINA
MBK - MORGAN B. KNOWLTON
MDA - MIKE D. ALBERTSON
MDC - MIKE D. COCHRAN
MES - MARY E. SCHILLING
MLB - MEGAN L. BACHE
MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR
MSW - MATT S. WILSON
PDM - PIERCE D. MORRIS
PIT - MICROBAC WARRENDALE
PRL - PAIGE R. LAMB
PSW - PEGGY S. WEBB
QX - QIN XU
RAH - ROY A. HALSTEAD
REK - BOB E. KYER
RLB - BOB BUCHANAN
RM - RAYMOND MALEKE
RNP - RICK N. PETTY
RST - ROBIN S. TURNER
SAV - SARAH A. VANDENBERG
SCB - SARAH C. BOGOLIN
SDC - SHALYN D. CONLEY
SLM - STEPHANIE L. MOSSBURG
SLP - SHERI L. PFALZGRAF
TB - TODD BOYLE
TGF - TIM G. FELTON
TMB - TIFFANY M. BAILEY
TMM - TAMMY M. MORRIS
VC - VICKI COLLIER
WJB - WILL J. BEASLEY
WRR - WESLEY R. RICHARDS
WTD - WADE T. DELONG
XXX - UNAVAILABLE OR SUBCONTRACT

Microbac Laboratories Inc.
List of Valid Qualifiers
July 24, 2015

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B,H1	Analyte present in method blank. Sample analysis performed past holding time.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	Cooler temperature at sample reciept exceeded regulatory limit.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
E,CT1	Estimated results. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
H1	Sample analysis performed past holding time.
H1,CT1	Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guidelines for reque
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value ; the analyte concentration was less than the LOQ. Cooler temperature at sample reciept exceeded regu
J,H1	Estimated value ; the analyte concentration was less than the LOQ. Sample analysis performed past holding time.
J,H1	The reported result is an estimated value. Sample was analyzed past holding time.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentativlely identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL/MDL).
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
ND,H1	Not detected; Sample analysis performed past holding time.
ND,H1,CT1	Not detected; Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guide
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
Q,H1	One or more quality control criteria failed. Sample analyzed past holding time. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
T5	Laboratory not licensed for this parameter
TIC	Library Search Compound
TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.

Qualkey: DOD

TNTC,CT1	Too numerous to count. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
TNTC,H1	Too numerous to count. Sample analysis performed past holding time.
U	Analyte was not detected. The concentration is below the reported LOD.
U,CT1	Analyte was not detected. The concentration is below the reported LOD. Cooler temperature at sample reciept exceeded
U,H1	Not detected; Sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

COC No. A 46829

158 Starlite Drive
Marietta, OH 45750

MICROBAC®

CHAIN-OF-CUSTODY RECORD

Phone: 740-373-4071
Toll Free: 800-373-4071

Company Name: Kemron Environmental

Project Contact: Jeanette Hamm

Contact Phone #: 404-636-0958

Turn Around Requirements: STD

Location: Ft. Buchanan

Project ID: SH 4906.004

Sampler (print): Charlie Tolgh

Signature:

Program: ☐ CWA ☐ RCRA ☐ DOD ☐ AFCEE ☐ Other _____

Sample I.D. No.	Comp	Grab	Date	Time	Matrix*	NUMBER OF CONTAINERS	Hold	Anions sulfate/Nitrate 0106 ft	TOTAL # (LAB USE)	ADDITIONAL REQUIREMENTS
~~FTB034-GM-MW 8B 072215~~			~~7/22/15~~	~~1306~~	~~GW~~	~~1~~		~~✓~~		
FTB034-GM-MW1C072215			7/22/15	1306	GW	1		✓		MW1C*
FTB034-GM-OP-3072215			7/22/15	1221	GW	1		✓		

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time	Received by: (Signature)
	7/22/15	1400				
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Remarks:		

Microbac OVD
Received: 07/23/2015 10:47
By: BRENDA GREGORY 221000072994

Brenda Gregory

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

Page 1 of 1

COMMERCIAL INVOICE (Factura Comercial)

This invoice must be completed in English (Esta factura se debe llenar en ingles)

SHIPPED FROM (Envio de):
Tax ID/VAT No. (No de Identificación): 11-2393978
Contact Name (Nombre): Jeanette Hamm
Telephone No. (Teléfono): 404-643-2033
E-Mail (E-Mail): jhamm@kemron.com
Company Name/Address (Compania/Dirección):
KEMRON Environmental Services
1359A Ellsworth Industrial Boulevard
Atlanta, GA 30318

Country (Pais): United States
Parties to Transaction:
☑ **Related** (Vinculado) ☐ **Non-related** (No Vinculado)

Date (Fecha): 07/22/2015
Air Waybill No. (Conocimiento de Embarque):
Invoice No. (No de la Factura): Not Applicable
Purchase Order No. (No de Orden de Compra): Not Applicable
Payment Terms (Terminos de Pago): Paid when Paid
Incoterms (Incoterms): CPT=CARRIAGE PAID TO
Reason for Export:
Sold (Vendido) ✓ **Not Sold** (No Esta Vendido) **Other** (Otro)

SHIPPED TO (Destinatario):
Tax ID/VAT No. (No de Identificación): 25-1199642
Contact Name (Nombre): Stephanie Mossburg
Telephone No. (Teléfono): 1-800-373-4071
E-Mail (E-Mail): Stephanie.Mossburg@microbac.com
Company Name/Address (Compania/Dirección):
Microbac Laboratories, Inc.
158 Starlite Drive
Marietta, OH 45750

Country (Pais): USA

SOLD TO (Vendido a): **Same as SHIPPED TO (Igual que el Destinatario):**
Company Name/Address (Compania/Dirección):
Country (Pais): USA

No. of Packages (No de Paquetes)	No. of Units (No Unitario)	Unit of Measure (Unidad de Medida)	Description of Goods (Including Harmonized Tariff No.) (Descripción de la Mercancia [Con No de Clasificación Arancelaria])	Country of Origin (Pais de Origen)	Value Unit (Precio Unitario)	Total Value (Precio Total)
1	8	each	Groundwater Samples for analysis	PR	10.00	80.00
						0.00
						0.00

Total No. of Packages (Total de Paquetes): 1
Total Weight (Indicate LBS or KGS) (Peso Total [En Lbs o Kgs]): 50 LBS

Special Instructions (Instrucciones Especiales):
This package contains soil samples which will be used for destructive analysis.

Declaration Statement(s) (Declaración[es]):

Subtotal (Subtotal):	80.00
Insurance (Seguro):	0.00
Freight (Flete):	0.00
Packing (Embalaje):	0.00
Handling (Manejo):	0.00
Other (Otros):	0.00
Invoice Total (Total):	80.00
Currency Code (Tipo de Moneda):	

Signature/Title (Firma del Declarante/Puesto) **Date** (Fecha)

TOXIC SUBSTANCE CONTROL ACT (TSCA)
CERTIFICATION

Date: July 22, 2015

(CHECK ONE SECTION ONLY)

POSITIVE CERTIFICATION

_____ "I certify that all chemical substances in this shipment comply with all applicable rules or orders under TSCA and that I am not offering a chemical substance for entry in violation of TSCA or any applicable rules order thereunder."

● OR ●

NEGATIVE CERTIFICATION

X "I certify that all chemical substances in this shipment are not subject to TSCA."

Company Name: KEMRON Environmental Services

Company Address: 1359A Ellsworth Industrial Boulevard

City/State: Atlanta, GA

Country/Zip: USA, 30318

Authorized Name: Charlie Taylor

Authorized Signature:

Title: Site Manager

Federal Express AWB#:

If the certifier is unsure if their chemical substance is subject to TSCA compliance, contact the Environmental Protection Agency, TSCA Assistance Office, Washington, D.C. (202) 554-1404 between 8:30 am and 5:00 pm EST.

Revised 04-2009

Microbac OVD
Received: 07/23/2015 10:47
By: BRENDA GREGORY

221000072994

Brenda Gregory

Internal Chain of Custody Report

Login: L15071256
Account: 2820
Project: 2820.250
Samples: 2
Due Date: 03-AUG-2015

Samplenum	Container ID	Products
L15071256-01	606175	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER		23-JUL-2015 11:10	CLS		

Samplenum	Container ID	Products
L15071256-02	606176	9056

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER		23-JUL-2015 11:10	CLS		

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

APPENDIX F
IDW Disposal Manifest

– Intentionally Left Blank –

Penuelas Valley Landfill

ID: 1010 Version: 06

Original Ticket # 581128.181191

WASTE

Customer Name	KEMRON ENVIROMENTAL SERVI	Carrier	WET
Ticket Date	8/3/2015	Vehicle #	HP12554S40
Payment Type	Accounts	Container	Roll Off 40 Cubic Yards
Manual Ticket #		Driver	JUAN RIVERA
Route		Check/CC #	
Hauling Ticket#		Gen EPA ID	
Manifest		Billing #	103583
Destination	EC WASTE PENUELAS LANDFILL		Grid
Purchase Order #		Volume	
Profile	1436973194 IDW - Drill Cuttings and waste		
Generator	KEMRON ENVIROMENTAL SERVICES INC		

	Time		Scale	Operator	Inbound		
In	8/3/2015	10:08	84040	Scle-Pen		Gross	84,040.00 lb
Out	8/3/2015	14:13	50120	Scle-Pen		Tare	50,120.00 lb
						Net	33,920.00 lb
						Qty.	40.00 cy

Comments:Manifiesto con tablilla HP10048 firmado por Efrain Rodriguez
WET 48053-48054
2 CJAS DE 20 YDS Y UN SOLO MANIFIESTO

Product	LD%	Qty	UOM	Original
IDW - Drill Cuttings and waste	100	40.00	cy	

Driver's Signature

NON-HAZARDOUS WASTE TRANSPORTATION/ACCEPTANCE DOCUMENT

DATE 07/28/2015

TO: **PEÑUELAS VALLEY LANDFILL**
Carr. 385 KM 4.5 Barrio Tallaboa
Peñuelas, Puerto Rico 00624
1-787-836-3700

FACILITY PERMIT NO. **IDF-57-0020**

FROM: US Army Garrison Fort Buchanan
34 South Gate Road
Fort Buchanan, P.R. 0034-4206

P.O. NO.

No. of Units & Container Type	DESCRIPTION AND CLASSIFICATION OF WASTE MATERIAL	Waste Profile Sheet Code	TOTAL QUANTITY (Weight, Volume, Gallons, etc.)	WEIGHT (Subject to Correction)	RATE	CHARGES (For Carrier Use Only)
2 DM	Investigative Derivered Waste Soil drill cutting and well development water		40 cy			
	Site - FTB-034 Area					
	Profile # 1436973194					
	Two rolls off 20 cy each					
	Manifest dure adiones					
	Dos Dimeion 2 cajas sellado					
	de 2 wd Amue					

GENERATOR'S CERTIFICATION: This is to certify that the above named materials are properly classified, described, marked and labeled and are in proper condition for transportantion according to the applicable regulations of the Department of Transportation, U.S. EPA and the Commonwealth of P.R. The waste described above were consigned to the Transporter named. The Treatment, Storage or Disposal Facility can and will accept the shipment of waste, and has a valid permit to do so. I certify that the foregoing is true and correct to the best of my knowledge.

GENERATOR'S SIGNATURE	TITLE	DATE SHIPPED (MO. DAY YR)	EXPECTED ARRIVAL DATE (MO. DAY YR)
[signature]	[illegible]	07 28 15	07 28 15
TRANSPORTE SIGNATURE	**COMPANY NAME**	**VEHICLE ID. NO.**	**DATE RECEIVED (MO. DAY YR)**
Efrain Rodriguez	WET	HP-10048.	07 28 15
FACILITY SIGNATURE			**DATE RECEIVED (MO. DAY YR)**
[signature]			07 28 15

CUSTOMER BILLING

WET Inc. Waste Environmental Technologies

DATE: Mayo - 4 - 2015

VEHICLE ID NO: HP-12554

ROLL-OFF MANIFEST SHEET

46571

CLIENT / GENERATOR
Kemron Environmental Services
Fort Buchanan
KEMRON SITE
NPDES#
Cataño P.R.

WET, INC.
P.O. BOX 7671
PONCE, PR 00732-7671
TEL. (787) 836-8912
FAX (787) 836-8911

REFERENCE / PROJECT	TIME	OPERATOR NAME:	AMOUNT OF MATERIAL: YDS	GALS	TONS
(904) 343 9014 Joel Morales	IN OUT	Juan A Rivera			

OPERATOR REPORT:

Entrega de dos (2) cajas selladas de 20yds num 05172 y 05173 para Proyecto Fort Buchanan desde WET Ponce hasta Cataño.

(NON-HAZARDOUS WASTE MANIFEST) GENERATOR'S CERTIFICATION

WASTE SHIPPING NAME & DESCRIPTION:

Entrega de caja sellada 05172 y 05173

GENERATOR CERTIFICATION: I CERTIFY THAT THE MATERIALS INCLUDED IN THIS MANIFEST ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE MATERIAL AS DEFINED IN 40 CFR PART 261

GENERATOR: X Joel Morales (PRINT NAME); X [signature] (AUTHORIZED SIGNATURE) **DATE:** 5-4-15 **TIME:** 8:30am

OPERATOR: (WET, INC.) Juan A. Rivera (PRINT NAME); [signature] (AUTHORIZED SIGNATURE) **DATE:** 5-4-15 **TIME:** 8:30am

FINAL DISPOSAL FACILITY: _____

RECEIVING AGENT: (FINAL DISPOSAL FACILITY) _____ (PRINT NAME) _____ (AUTHORIZED SIGNATURE) **DATE:** _____ **TIME:** _____

WET - ORIGINAL • GENERATOR (CLIENT) - YELLOW • ACCOUNTS PAYABLE - PINK • PLANTS SUPERVISOR - BLUE • LANDFILL - GREEN • WET FILE - GOLD