Victoria County Groundwater Conservation District

# Victoria Aquifer Storage and Recovery Demonstration Project

**TWDB Contract No. 1600011958** 

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By Arcadis U.S., Inc., ASR Systems LLC

June 2019

# FINAL



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# **Texas Water Development Board**

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By:

Arcadis U.S., Inc.

ASR Systems LLC

June 2019

The contents of this report (including figures and tables) document the work of the following professionals.

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# List of Acronyms and Abbreviations

μg/L	micrograms per liter									
AF	acre-feet									
ANSI/ASME	American National Standards Institute / American Society of Mechanical Engineers									
Arcadis	Arcadis U.S., Inc.									
As	arsenic									
ASR	aquifer storage and recovery									
AWWA	American Water Works Association									
bgs	below ground surface									
CIP	Capital Improvements Program									
City	city of Victoria, Texas									
CSMR	chloride-sulfate mass ratio									
DBP	disinfection byproducts									
District	Victoria County Groundwater Conservation District									
DO	dissolved oxygen									
Fe	iron									
ft/day	feet per day									
ft²/day	square-feet per day									
GCDs	groundwater conservation districts									
gpm	gallons per minute									
gpm/ft	gallons per minute per foot									
HAA5	Haloacetic Acids									
HB 1	House Bill									
MCL	Maximum Contaminant Limit									
Mercer	Mercer Construction Co.									
MG	million gallons									
mgd	million gallons per day									
mg/L	milligrams per liter									
Mn	manganese									
msl	mean sea level									
NTU	Nephelometric Turbidity Units									

O&M Manual	Aquifer Storage Recovery Facilities for ASR Well 19 and Monitor Well 21 Startup and Cycle Testing Operations Manual								
O&M	operations and maintenance								
ORP	oxidation-reduction potential								
POE	Point of Entry								
Project	Victoria Aquifer Storage and Recovery Demonstration Project for Alternative Water Supply								
psi	pounds per square inch								
RISD	Radial Injection Surge Development								
SDADA	supervisory control and data acquisition								
SWTP	Surface Water Treatment Plant								
TCEQ	Texas Commission on Environmental Quality								
TDS	total dissolved solids								
TSV	Target Storage Volume								
TTHM(s)	Total Trihalomethane(s)								
TWDB	Texas Water Development Board								
UIC	Underground Injection Control								
VCGCD	Victoria County Groundwater Conservation District								
Weisinger	Weisinger, Inc.								

### **1** Executive summary

After experiencing the severe drought in late 2010 and early 2011, the City of Victoria, working with other water providers and users in the Golden Crescent Region of Texas, began to explore strategies to diversify the inventory of water sources in the region. A feasibility study evaluating aquifer storage and recovery (ASR) was completed with funding assistance from the Texas Water Development Board (TWDB). The study evaluated how ASR could improve water supply reliability in Victoria, Jackson, and Calhoun counties, and make more efficient use of the run-of-river water rights in the lower Guadalupe River Basin. The technical study, conducted by Arcadis U.S., Inc. (Arcadis) and ASR Systems, LLC (the "Arcadis team") concluded that the hydrogeology in the Victoria area would be suitable for an ASR project, due to the sandy deposits in the Gulf Coast Aquifer formation. The City of Victoria was especially well-suited because reliable hydrogeological data and municipal wells already exist in the area.

The 84<sup>th</sup> Texas Legislature appropriated \$1,000,000 from General Revenue to the TWDB to fund grants for demonstration projects for alternative water supplies (House Bill 1, General Appropriations Act, 2015 Legislature, Regular Session, page VI-60, Rider 25). The grants funded groundwater conservation districts (GCDs) for demonstration projects or feasibility studies that increased public knowledge of ASR and other technologies.

The Victoria County Groundwater Conservation District (VCGCD) and the City of Victoria (the "City") received funding provided through the TWDB to perform the Victoria Aquifer Storage and Recovery Demonstration Project for Alternative Water Supply ("the Project"). Tasks to be performed as part of this Project included: converting an existing City groundwater well, Well No. 19, into a full-scale operational ASR well; recharging and recovering treated water from the City's public water distribution system; providing operations and maintenance (O&M) and data collection training for the City, VCGCD, and the TWDB; conducting cycle testing by recharging and recovering treated water; delivering both an O&M manual and a final report documenting the Project and the data collection; and disseminating the research results through professional papers and presentations.

In April 2017, the City received a 5X25 authorization from the Texas Commission on Environmental Quality (TCEQ) for the operation of Well No. 19 as an experimental demonstration well. This authorization allows the City to inject and store up to 3,908 acre-feet of water from the City's distribution system during up to two cycle periods.

Well No. 19 was originally a production well with a pumping capacity of about 1,520 gallons per minute (gpm). As part of the Project, the retrofit included first rehabilitating the existing Well No. 19, equipping it with a new pump, motor, and electrical control panel, and installing the wellhead and disinfection facilities necessary for ASR operations. Because the well was a retrofit, many of the automation features generally included with design of a new ASR well were excluded for budgetary reasons.

During the early stages of Well No. 19's rehabilitation, video logging revealed severe corrosion damage to the well's liner at 587 feet below ground surface (bgs) and partial well blockage at about 834 feet bgs. Due to these discoveries, the Arcadis team modified the rehabilitation techniques to make them less intrusive (i.e., using air lifting and acidification instead of sonic jetting and wire brushing, as originally planned). After this was completed, the new pump and motor were installed, and interim recharge commenced in April 2018. Over the course of a

month, the total volume recharged was 19.8 million gallons (MG). Well redevelopment then began, as part of the City's training program; however, testing by recovering stored water was terminated after 30 minutes because the pump had discharged about two cubic yards of sand and some gravel with the produced water.

The City engaged the contractor to investigate the possible causes of the sand and gravel production. After the investigation, the contractor made repairs and modifications to the well. The contractor also replaced: two 10-foot sections of column pipe, which were in poor condition; rubber inserts, which were damaged by the sand; the pump bowl shaft; bowl bearings; suction case bearings; bowl wear rings; mechanical seal; and, suction strainer. After these repairs to the pump and pump column were made in the ASR well, a second round of pump testing began. This pump test totaled about six hours and indicated that the new well was capable of producing up to 1,600 gpm with a specific capacity of 7.5 gpm/foot, almost equivalent to the original specific capacity for the well (10 gpm/foot).

Of the 19.8 MG recharged in the initial recharge period, it is unclear how much of this water can be recovered. As part of the well modifications, the well was plugged to 830 feet bgs; although any water below this depth is not recoverable, it is believed that much of the remaining stored water will indeed be recoverable.

Following modifications to the well and repair of the pump, recharge recommenced in January 2019. The total recharged volume in this second period was 19.2 MG. Of the stored water volume, about half is initially assumed to be recoverable.

The City began recovering stored water after a storage period of seven days. Because the storage period was shortened from the originally planned month, ammonia levels in the recovered water were similar to those in the treated drinking water leaving the City's Surface Water Treatment Plant (SWTP). The recovery flow rate was reduced to account for these ammonia levels. The final volume recovered from storage was 6.7 MG. Laboratory testing of the recovered water indicated that the quality of the water recharged and recovered was generally the same.

Because of the successful recharge and recovery at Well No. 19, there is strong technical support for the City to move forward with the next phase of implementation for its ASR program. The City's Class V 5X25 authorization from TCEQ permits the City to conduct up to two cycle tests at Well No. 19. TCEQ representatives have indicated that, if needed, additional cycle tests would also be allowed to gather more data for future permitting and operations.

Conclusions from the demonstration Project for the Well No. 19 ASR retrofit include the following:

- The successful ASR retrofit of an existing production well demonstrated that existing municipal groundwater production wells can be modified for ASR use (although a new well construction specifically for ASR purposes would still be preferable, in general). Before a well is selected for conversion, an investigation should be conducted to examine the condition of the well, through pulling the pump and pump column and video logging.
- Applying for a TCEQ Class V 5X25 Experimental Injection Well authorization is acceptable when retrofitting a well, rather than applying for a Class V Underground Injection Control (UIC) permit for ASR. This Class V Experimental Injection Well authorization allowed the City to complete the Project and gather additional data needed in the future for a full ASR permit after the testing period.

- Coordination with the local groundwater conservation district fosters a productive relationship between the entity developing the ASR project and the groundwater conservation district. A good working relationship between the City and VCGCD allowed the parties to share the data needed to properly design and operate the ASR well.
- The provision of unit bid cost schedules allows the owner and engineer to modify the construction requirements to better suit the field conditions as the project progresses. This is ideal for projects with high levels of uncertainty, such as the rehabilitation of an existing well when the condition is unknown.
- Using multiple construction contractors can be managed if the owner is actively engaged in the construction management of the project, as the City was; however, using one qualified prime general contractor for the entire project is generally preferred.
- Trickle flow pipelines are necessary to ensure that a disinfectant residual is maintained in the ASR well. The Arcadis team recommended that, in parallel to the 12-inch treated water pipeline connecting the City's distribution system to Well No. 19, a 2-inch pipeline be constructed specifically to provide a trickle flow into the well during storage periods.
- Compliance with TCEQ design requirements and active TCEQ plan review involvement are necessary, because the TCEQ Plan Review Team does not have extensive experience with ASR system design. Additional time should be scheduled for review and approval of ASR plans and specifications.
- An emphasis on proper training and an O&M manual translates to ASR well operators being better able to guide startup, operations, maintenance and cycle testing. Classroom and field training for the City and a representative of TWDB was provided by ASR Systems.
- Recovery operations during testing took longer than planned because of a lower recovery flow rate. In this case, the recovered water flow rate is affected by the elevated water storage levels and the line pressures in the City's distribution system. It is important to consider these variations in the distribution system operations when developing the cycle testing program.

Based on the data collected and analyzed in this Project, the Arcadis team recommends moving forward with the next phases of the Victoria ASR program. Recommended next steps include the following:

- Moving into Phase 3 of the Victoria ASR program which will include a study to confirm the location of a new ASR well and any recommended monitoring wells, as well as an evaluation of whether the City's distribution system will need to be improved to accommodate the new ASR well.
- Preparing for Phase 4 of the ASR program, which will include permitting, designing, and constructing a third ASR well and wellhead facilities and any recommended monitor wells, and modifying the City's distribution system to better suit the ASR system, if needed.

- Continuing to cycle test and operate ASR Well No. 19 until December 31, 2020. Additional testing will provide the City with water level, pressure and volume data necessary for future ASR permitting.
- Conducting water quality testing on lab and field samples produced during the additional cycle testing. Supplementary water quality data will serve as the basis for the TCEQ permitting for permanent operation of Well No. 19 and the future ASR well, and can alert the City of the potential for nitrification and corrosion in its distribution system. Further evaluation should also include the establishment of a distribution system water quality monitoring plan, in addition to sampling the recharged and recovered water.
- Evaluating minor changes to the wellhead disinfection process and associated piping that account for the wide range of ammonia concentrations currently being seen in the water recovered from ASR storage. It would also be beneficial to provide the option to add the chlorine either before or after adding the ammonia, depending on the recovered water's ammonia levels.

As part of Phases 3 and 4 of the City's ASR program it would be valuable to develop a hydrogeologic analytical model to evaluate the recoverability of the stored water and the potential impacts, if any, of the operation of Well No. 19 and the new ASR Well. Such a model will likely be necessary before the wells are put into permanent operation under a TCEQ Class V UIC permit, and will provide a foundation for permitting future Victoria ASR wells.

# 2 Introduction

The severe drought starting in late 2010 and early 2011 had a significant impact on water utilities, wholesale water providers and industries, including those within the Golden Crescent Region of Texas, centered on the city of Victoria (the "City" or "Victoria"). Although water providers within the region have developed a diverse inventory of surface water and groundwater supply sources, meeting future water demand requirements will be challenging as municipal and industrial use continues to increase, even during periods of drought.

In order to address these issues in a strategic manner, a group of water providers and users in the region joined together to evaluate the potential for using aquifer storage and recovery (ASR) as a water management strategy. A feasibility study completed in July 2014 focused on the use of ASR to stretch existing water supplies and improve reliability, especially during periods of severe drought. The focus of the evaluation was to maximize the efficient use of existing run-of-river water rights in the Guadalupe River Basin.

The study area for the feasibility assessment consisted of Victoria, Jackson and Calhoun Counties. The study participants included:

- Victoria
- Victoria County Groundwater Conservation District (VCGCD or the "District")
- Guadalupe-Blanco River Authority
- Lavaca-Navidad River Authority
- Port of Victoria

The feasibility study was partially funded by a Regional Facility Planning Grant from the Texas Water Development Board (TWDB). The City of Victoria was the applicant for the TWDB grant.

The evaluation concluded that the hydrogeology in the study area is conducive to successful implementation of an ASR project. A primary reason for the suitability of the area is the sandy deposits that comprise the aquifer formations in the Gulf Coast Aquifer.

The technical study team for the feasibility assessment included Arcadis U.S., Inc. (Arcadis) and ASR Systems, LLC (the "Arcadis team"). The Arcadis team's analyses of the lithologic sequences indicated that sand beds with thicknesses greater than 40 feet are prevalent. Based on analyses of transmissivity values from aquifer tests, the thicker sand beds in the formations typically have hydraulic conductivity values between 8 feet per day (ft/day) and 40 ft/day, which translate into transmissivity values between 320 square-feet per day (ft²/day) and 1,600 ft²/day for a 40-foot thick sand bed. Application of the Theis solution for pumping groundwater from deposits within this transmissivity range indicated sustainable pumping rates of at least 160 gallons per minute (gpm) to 800 gpm for a pressure head of about 200 feet and a single 40-foot sand bed.

The feasibility study also confirmed that ASR development in Victoria County, especially in or near the City of Victoria, had additional benefits. Prior to switching to a surface water supply from the Guadalupe River, Victoria relied on groundwater wells in the Gulf Coast Aquifer. Therefore, the City had considerable existing data on the hydrogeology of the area, and the production capacity of municipal wells. In addition, water stored in an ASR wellfield within Victoria could be easily managed by the City. Any uncertainty about the impact on local municipal wells is manageable because the pumping of these wells is within Victoria's control.

In Victoria, the study determined that the targeted storage interval should be the Upper Goliad formation at approximately -200 feet mean sea level (msl) to -1,000 feet msl. Sand beds with thicknesses of at least 40 feet are prevalent. ASR wells would likely be screened in the middle to lower sections of the formation.

The aquifer properties of the Upper Goliad formation of the Gulf Coast Aquifer underlying the City are characterized with a high level of confidence as a result of: transmissivity estimates from 15 aquifer tests; consistency in the lithology and sand bed profiles from 14 geophysical logs; and significant water quality data. This information was provided in a report to the TWDB in completion of Contract No. 1348321576, entitled "Summary Report for the Development of a Regional Plan for Aquifer Storage and Recovery and Off Channel Storage in the Golden Crescent Region of Texas (Naismith Eng, Oct 2014).

The feasibility study recommended that Victoria initiate an ASR test program at or near two sites, one of which was the Victoria Surface Water Treatment Plant (SWTP). The test/demonstration program could include construction, testing and operation of a new full-scale ASR well and/or retrofitting of one of the existing production wells owned and operated by the City.

Because the feasibility study included a recommendation to initiate an ASR program for the City by rehabilitating and retrofitting one of the City's existing wells, the City decided to pursue that approach. Following the feasibility study, the City began discussions with the VCGCD about participating in an ASR demonstration project. The City also determined that a logical first step would be retrofitting Well No. 19 as an ASR well because: that production well is near the SWTP and a relatively new potable water pipeline; and the well was already scheduled for an overhaul under the City's Capital Improvements Program (CIP).

The purpose of this current report is to provide the results of the effort to document the process and issues related to modifying an existing groundwater production well for ASR purposes.

# 2.1 Background on Demonstration Projects for Alternative Water Supplies funding

In 2011 the Arcadis team completed a state-wide assessment of ASR for the TWDB. The focus of that effort was a technical, institutional and legal analysis of why ASR had not been implemented more often in Texas, when it was being widely used as a management strategy in other states. The results of that study indicated that the impediments to ASR development in Texas were legal and institutional, not technical. The study also concluded that there was a lack of education on ASR's benefits as a water management and storage strategy.

Following the 2011 study, the TWDB increased education about the benefits of ASR and how the technology was being implemented in other states. The Texas Legislature also increased funding for studies and demonstration projects.

The 84<sup>th</sup> Texas Legislature appropriated \$1,000,000 from General Revenue to the TWDB to fund grants for demonstration projects for alternative water supplies (House Bill 1 [HB 1], General Appropriation Act, 2015 Legislature, Regular Session, page VI-60, Rider 25). The grants would fund groundwater conservation districts (GCDs) for demonstration projects or feasibility studies

that will prove up aquifer storage and recovery. The legislation required that the applicants for funding must be GCDs and that the applicants must provide matching funds. The TWDB was to issue an application notice by September 22, 2015, with applications due on November 3, 2015.

The TWDB determined that projects would be selected for funding based on the following criteria: overall approach and organization; methodology; qualifications and resources of the applicant's team; the reports and deliverables to be provided to the TWDB; and the applicants ability to perform and complete the project.

The TWDB received six applications, including an application prepared by the Arcadis team for VCGCD and the City. The TWDB awarded three grants, including the demonstration project proposed by VCGCD and the City. The proposed VCGCD/City project had a total budget of \$570,225, with support from the TWDB being limited to \$285,112.

On September 26, 2016, the TWDB and VCGCD executed a contract (Contract No. 1600011958) for the performance of the Victoria Aquifer Storage and Recovery Demonstration Project for Alternative Water Supply (the "Project"). In the contract, VCGCD is shown as the Contractor, and the City is shown as a Participant. The results of that demonstration project are described in the following sections.

### 2.2 Project participants

As discussed above, the primary participants were VCGCD and the City of Victoria. They were supported by the Arcadis technical team comprised of:

- Arcadis U.S., Inc.; and
- ASR Systems, LLC from Gainesville, Florida.

As the project progressed, the following entities also participated in the demonstration project:

- Lynn Short, President of LSPS Solutions, who supported the City staff with construction management and inspection;
- Weisinger, Inc., (Weisinger) the contractor selected for the rehabilitation of Well No. 19; and
- Mercer Construction Co., (Mercer) the contractor selected for construction of the aboveground ASR facilities, including the metering and disinfection equipment.

### 2.3 Scope of work, and roles and responsibilities

The Project included the effort necessary to adequately and appropriately:

- Convert an existing City groundwater well into a full-scale operational ASR well;
- Recharge and recover treated water from the City's distribution system;
- Provide operations and maintenance (O&M) and data-collection training for the City, the VCGCD and the TWDB;
- Conduct cycle testing (and related data collection) by recharging and recovering treated water;
- Deliver both an O&M manual and a final report documenting the Project, the data collected, and the conclusions and recommendations of the demonstration; and

• Disseminate the research results through professional papers and presentations.

More specifically, the nine tasks making up the scope of work for the Project included the following:

#### **Task 1: Project Management**

Arcadis provided overall project management, which consisted of: communication among the City and VCGCD, and with the TWDB; project tracking; invoicing; scheduling; deliverables oversight; and quality control. This task also included scheduling and attending periodic meetings and conference calls with TWDB staff and among the Project team.

#### Task 2: Permitting

An Underground Injection Control (UIC) permit from the Texas Commission on Environmental Quality (TCEQ) was required to recharge treated water from the City's public distribution system. Arcadis initially submitted an application with supporting information from the feasibility study to TCEQ for a New Class V UIC Authorization for an ASR Project. However, after further discussions with TCEQ and agreement by the City and VCGCD, Arcadis amended the application. The amended application resulted in TCEQ issuing the City an Authorization for a Class V Injection Well as a 5X25 experimental well. That authorization was issued on April 28, 2017. The authorization is shown in **Appendix A**.

ASR Systems also submitted the plans and specifications for the well retrofit to TCEQ for the agency's approval.

#### Task 3: ASR Facilities Design

ASR Systems prepared the plans, specifications and bid documents necessary for the City to select and engage qualified contractors to convert Well No. 19 into a full-scale, operational ASR well. The design effort included:

- Evaluation of the existing facilities at Well No. 19, including a video log of the well;
- Preliminary design;
- Final design drawings, specifications and cost estimate; and
- Provision of design documents to TCEQ as part of the permitting process.

Copies of the plans and specifications were provided to the VCGCD and the TWDB.

#### Task 4: Retrofit of Well No. 19

With support from the Arcadis team, the City used its standard procurement procedures to advertise, evaluate and select qualified contractors to use the plans and specifications developed in Task 3 to convert Well No. 19 into an operational ASR well. The City selected Weisinger to do the below-ground work to rehabilitate the well. Weisinger also provided the new pump, pump column and motor for the ASR well. The City selected Mercer to construct the above-ground ASR and disinfection facilities, including all piping, valves and meters. The contractors provided the required bonds and insurance, stormwater protection plan, local permits, safety programs, equipment manuals, and as-built drawings and warranties.

# 4 Study area

The study area for the Project generally included Well No. 19 and the surrounding area, including the Victoria SWTP, Well No. 21 and the alignment of the potable water pipelines laid along West Red River Street from North Bluff Street to Well No. 19. As discussed above, the Victoria SWTP was the source of the treated water used for recharge into Well No. 19; and Well No. 21 served as a monitoring well for the Project.

Figure 4-1 shows the study area and the major components of the Project.

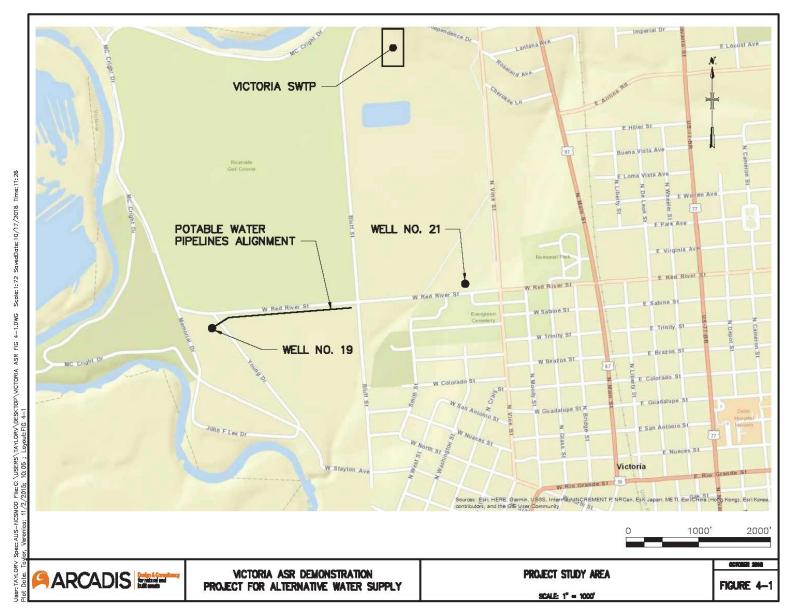


Figure 4-1. Project study area

# 5 Permitting

Because Well No. 19 was already permitted by the VCGCD for groundwater production, no additional permits were required from the District. The two major authorizations required for the Project were an injection permit from TCEQ, and approval by TCEQ of the plans and specifications for the well retrofit.

On November 8, 2016 the Arcadis team conducted a pre-application meeting with the TCEQ UIC permitting team. The purposes of the meeting were to introduce the team members, brief TCEQ on the feasibility study and the proposed Project, and to get guidance on submitting an application for recharge of water through the retrofitted Well No. 19.

Arcadis initially prepared an application for a Class V UIC Well for Aquifer Storage and Recovery. After additional discussions with TCEQ, the Arcadis team and the City decided to use the technical information gathered for the initial application to support an application for a Class V Injection Well authorization under the provisions for a 5X25 experimental well. Permitting Well No. 19 as an experimental well under TCEQ's rules significantly reduced the time required to get the authorization needed to inject water through the retrofitted well. The authorization also allowed the City to gather some of the additional data it will likely need to obtain the Class V UIC ASR well authorization required for long-term operation of Well No. 19 as an ASR well.

On April 25, 2017 the City submitted a letter with supporting information requesting a Class V Injection Well Authorization for the conversion and operation of the City's existing Well No. 19 as an ASR experimental demonstration well. The letter also described the scope of work for the Project, and the proposed cycle testing program.

On April 28, 2017, the City received an authorization from TCEQ for the operation of Well No. 19 as an experimental demonstration well. The purposes of the injection well authorization was to conduct cycle testing to determine the feasibility of storing water in the Evangeline aquifer for later recovery, and to determine the effects resulting from injection and recovery on water quality in the storage aquifer. The following were included among the authorizations and requirements by TCEQ:

- The City can inject and store up to 3,908 acre-feet of water at any one time from the City's distribution system at Well No. 19 during the Project and during up to two cycle testing periods;
- TCEQ authorized the City to inject, store and recover the water during a period from May 17, 2017 through September 30, 2020; and
- The City must submit quarterly reports, a well completion report and cycle testing reports to TCEQ.

The TCEQ authorization letter is **Appendix A**.

On May 15, 2017 ASR Systems submitted the following documents to TCEQ Water Supply Division Plan Review Team for its design review:

- Transmittal Letter
- Public Water System (PWS) Plan Review Submittal Form
- Bid Documents, including plans and specifications

• Preliminary Design Technical Memorandum

On July 17, 2017 ASR Systems received from TCEQ a Conditional Approval Letter for the detailed design and construction of the ASR facilities. The conditions included compliance with the UIC authorization.

# 6 Retrofit of Well 19

### 6.1 ASR facilities design

The ASR design task was authorized by the City with issuance of a Notice to Proceed effective October 27, 2016. Existing municipal production Well No. 19 had been previously selected by the City as the demonstration well for ASR rehabilitation, retrofit and cycle testing, with monitoring to be conducted at Well No. 21. Well No. 19 was a standby production well, constructed in 1970, that was utilized when needed to supplement flows diverted from the Guadalupe River to the City's SWTP. Well No. 21, located 3,200 feet from Well No. 19, is also a standby production well. As shown on **Figure 4-1**, Well No. 19 is located in the City's Riverside Park, near the Guadalupe River. The nearby SWTP is also located on City-owned property contiguous with the Park.

#### 6.1.1 Original well design and capacity

From the original well construction records, Well No. 19 had an 18-inch carbon steel casing to 450 feet bgs and a 10-inch carbon steel liner from 408 ft to 1,082 feet bgs with seven wire-wrapped screen intervals in the Evangeline aquifer, set opposite small holes drilled in the liner. Total screen length was 270 feet. The following screen intervals (all bgs) were obtained from well construction records provided by the City: 460 - 510 feet; 544 - 594 feet; 642 - 694 feet; 780 - 804 feet; 852 - 904 feet; 988 - 1,008 feet, and 1,026 - 1,048 feet. Screen slot size was 0.035 inches. Gravel pack surrounded the screen within an under-reamed borehole below the bottom of the 18-inch casing.

The well was originally capable of producing about 1,520 gpm with a pumping water level of 242 feet after 24 hours, as measured during a 24-hour pumping test in March 1970. Static water level prior to the test was not reported; however, two hours after the end of the test, water levels had recovered to 95 feet bgs, yielding a specific capacity of up to approximately 10.3 gallons per minute per foot (gpm/ft).

Prior to the beginning of this ASR demonstration project, the pump column was suspected of having one or more holes due to corrosion because the then-current production rate from the well in 2016 was significantly reduced. This was confirmed when the pump was subsequently pulled.

#### 6.1.2 Well retrofit design

Well No. 19 was equipped with a new pump, motor and electrical control panel in addition to ASR-related wellhead and disinfection facilities. A new 12-inch pipeline was constructed to bring treated drinking water from the City's distribution system to the wellhead. A parallel 2-inch trickle-flow pipeline was constructed to bring treated drinking water to the wellhead during any extended storage periods exceeding about one week. The trickle-flow pipeline enables the City to maintain a disinfectant residual in the well to control microbial growth in the casing and screen. A concrete pad with riprap was provided for occasional discharge of backflush water to an adjacent drainage swale. Disinfection facilities were provided so that water recovered from the well could be provided with a chloramine residual prior to entering the distribution system. Wellhouse modifications were also provided to accommodate the new facilities.

Certain features common to most designs for new ASR wells were not provided in order to manage costs. These features included: an adjustable frequency drive; a downhole flow control valve; wellhead piping design to provide for recharge down the casing annulus; a bypass filter; and supervisory control and data acquisition (SCADA) improvements to provide for remote control of ASR operations. All operation was therefore designed to be manual at Well No. 19.

Well rehabilitation was conducted prior to retrofitting Well No. 19. The rehabilitation was planned to include several different techniques to improve well yield. In addition, three video logs were to be obtained. The rehabilitation included the following general sequence of steps:

- Remove existing pump
- Remove any residual oil found in the well
- Video log well (initial)
- Wire and nylon brush well casing, screen and blank pipe sections
- Bail and/or airlift any debris to full depth of well
- Video log well (intermediate)
- Sonar jet the well
- Acidize, swab and air lift removal of debris
- Gentle swab or surge block well screens while airlifting
- Bail and/or airlift debris to full depth of well
- Video log well (final)
- Well casing repair (optional)
- Install new pumping and related equipment
- Chlorinate well
- Pump test and documentation

Depending upon initial results during the well rehabilitation process, provision was included in the specifications to delete or modify some of the subsequent sequence of steps, as appropriate.

Bid documents, including plans and specifications, were prepared. Through a conventional public bidding process, the City awarded construction contracts to Weisinger for work relating to the well and pump, and to Mercer for work relating to construction of wellhead facilities. The pre-construction meeting was held on August 10, 2017.

Copies of the technical plans and specifications have been provided to the TWDB and are not included in this report.

### 6.2 Rehabilitation and construction

The motor, pump and pump column were first removed from the well. Several holes were found in the pump column near the connection to the vertical turbine pump. Oil floating in the well from the oil-lubricated pump was removed. The well was flushed with potable water overnight through a 2-inch hose at a low flow rate estimated at less than 250 gpm. The flushing was to improve visibility for the subsequent video logging on September 14, 2017. Even at the low flow rate utilized for well flushing, the well overflowed. Subsequently the static water level was determined to be about 40 feet below the top of casing, much higher than previously reported. Historic records had indicated static water levels of approximately 80 to 100 feet bgs. Because the well overflowed during flushing at a rate less than 250 gpm, the Arcadis Team believed that the well was clogged.

From the subsequent video log, severe corrosion damage to the liner was evident at 587 feet bgs, with almost complete loss of the carbon steel, revealing the stainless steel, wire-wrap screen wrapped around the 10-inch liner. The screen appeared to be intact and undamaged. Visibility below about 600 feet bgs was poor and below 800 feet bgs was negligible. There were many places where the holes in the liner appeared to be completely encrusted and clogged, and other places where corrosion was evident. Calcium carbonate precipitation was widely evident.

Based upon analysis of the video log, the previously-planned well rehabilitation program required modification. Aggressive cleaning techniques such as sonic jetting and wire-brushing were deleted from the rehabilitation program because they could further damage or collapse the casing and liner. Less aggressive techniques were implemented, including acidification and airlifting, followed by a second video log.

The second video confirmed a previously-apparent partial well blockage at about 843 feet bgs, which was not opposite a screened interval. The well rehabilitation had definitely improved the condition of the liner and screened intervals; however, visibility was still minimal in the lower portions of the well, and corrosion damage was evident.

Following the modified rehabilitation process, the City, the Arcadis team and Weisinger determined that retrofitting of the well could continue. Weisinger completed installation of the pump and welding the flange on the top of the casing pipe during the week of January 22, 2018. Weisinger began installing the new motor on March 26, 2018.

Mercer began work on the ASR above-ground piping and facilities in early February 2018. Despite some continual light rain, Mercer made reasonable progress. Most of the work was completed by the week of March 12, 2018.

Interim recharge commenced on April 9, 2018. Potable water from the City's distribution system was recharged down the pump column while the remaining wellhead facilities were still under construction. The intention was to start getting some water into storage at as early a date as possible, prior to planned well redevelopment using the Radial Injection Surge Development (RISD) method. The RISD has been consistently effective at improving well performance, for both recharge and recovery.

Recharge continued at flow rates of 424 to 596 gpm and wellhead pressures of 38 to 64 pounds per square inch (psi) in the pump column at the wellhead. Casing annulus pressures varied from 10 to 20 psi at the wellhead, indicating substantial head loss through the pump column and pump bowls. The total volume recharged was 19.8 MG by the time that interim recharge was ended on May 7, 2018. No backflushing was conducted during this approximately one-month recharge period.

Well redevelopment was initiated on May 9, 2018 as part of the training program for the City. The purpose of redevelopment was to improve well performance and to verify the hydraulics (specific capacity during production and specific injectivity during recharge, gpm/ft) of the modified well during recharge and also during pumping. Cycle testing was to begin immediately following the redevelopment process.

The initial pump testing was terminated after about 30 minutes due to about two cubic yards of sand and some gravel in the produced water, which was being discharged to waste. During previous production the well had produced water that was sand-free. It was unclear at the time whether the produced material was due to a casing collapse resulting from the well rehabilitation, or failure of whatever plug or packing may have capped the gravel pack between the original 18-inch casing and the top of the 10-inch liner and well screen. Subsequent sounding of the gravel pack in the space between the casing and the liner indicated that gravel was absent from the top of the 10-inch liner at 400 feet bgs to a depth of 457 feet bgs, very near the top of the uppermost screen at 460 feet bgs. Uphole flow within the annular space had presumably mobilized and flushed out the gravel pack, suggesting that the original well construction did not include any K-packer or grout cap to hold the gravel pack in place.

Subsequently, the city council of Victoria approved a proposal from Weisinger to remove the pump and investigate the reason for the production of sand. Weisinger began work on this investigation effort on July 11, 2018. Weisinger pulled the motor and disassembled the pump; and sounded the well to the bottom, finding little sand. Inspection indicated some damage to the pump and pump column assembly and epoxy coating, caused by pumping the sand and gravel. In particular, the suction screen was bent, with pieces of gravel embedded in the wire screen.

On July 20, 2018 Weisinger took another video of the well. The gravel appeared to be angular and of various sizes, perhaps from the formation, not rounded and well-sorted gravel pack. The bottom of the well was at 1,027 feet bgs, 14 feet higher than the previous log in September 2017. An obstruction that appeared to include a hole in the casing was evident at 843 feet, partially but not totally blocking the well.

The City requested proposals from Weisinger to make necessary repairs to the well and the pump. Those proposals were provided to the City on August 9 and 15, 2018. On August 15, 2018 the City approved Weisinger making repairs to the well and the pump. Weisinger began work on the well on September 7, 2018.

The well repairs were implemented by Weisinger, as shown on **Figure 6-1** on page 19. The well was plugged back to 845 feet bgs with bentonite and then capped with coarse gravel to 835 feet bgs. Gravel (size 12-20) was utilized to refill the annular space between 400 and 457 feet bgs between the under-reamed 18-inch borehole below 450 feet bgs, the 18-inch casing from 400 to 450 feet bgs, and the original 10-inch liner. A 6-inch carbon steel liner was then set from 403 ft to 814 feet bgs, screened opposite four formation intervals, as provided by Weisinger (465 to 521 feet; 551 to 605 feet; 647 to 705 feet, and 785 to 814 feet bgs). A 14-inch carbon steel liner was set from the wellhead to the base of the 18-inch casing at 400 feet bgs and swaged to the top of the new 6-inch liner. The annular space between the original and new liners/casings was filled with 12-20 gravel and capped with a welded steel "doughnut" a few inches below the wellhead flange.

Weisinger found the pump to be in reusable condition. Two 10-foot sections of column pipe were in poor condition and had to be replaced. The rubber inserts in the spider bearings were also damaged by sand and were replaced. The following pump parts were also replaced: pump bowl shaft; bowl bearings; suction case bearing; bowl wear rings; mechanical seal; and suction strainer. Weisinger also balanced the impellers.

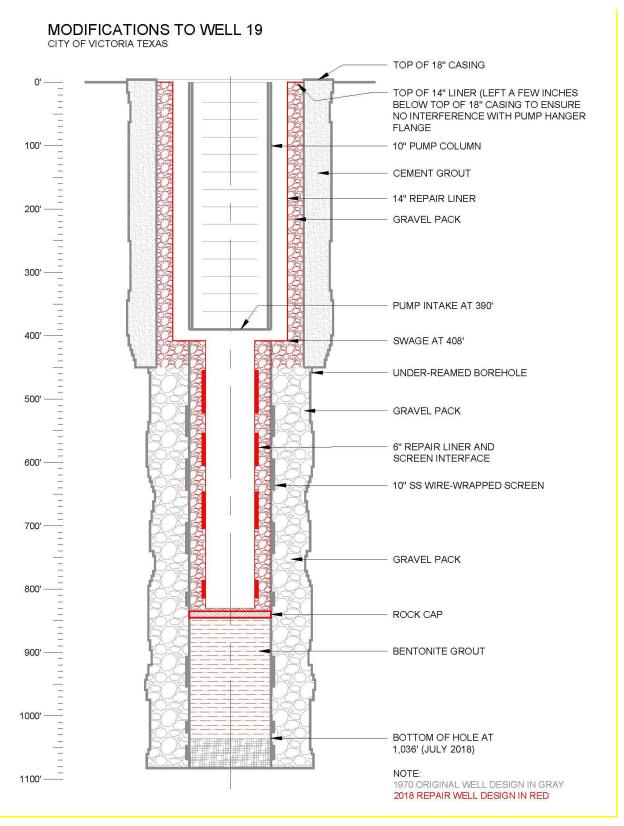


Figure 6-1. Well No. 19 repair diagram

On December 10, 2018 Weisinger began re-installing the repaired pump and pump column into the ASR well. On December 13, 2018 Weisinger re-installed the motor. On December 18, 2018, Mercer began re-installing the building and the above-ground piping.

A brief pump test in two parts, totaling about six hours had been conducted on November 13-14, 2018. That test indicated that the well produced 1,600 gpm with a specific capacity of 7.5 gpm/ft. Static water level was 44 feet bgs and pumping water level was 258 feet bgs. The original specific capacity of the well in 1970 was about 10 gpm/ft.

**Figure 6-1** suggests that there may be misalignment between the original (1970) well screen intervals in the 10-inch liner, the new (2018) well screen intervals in the 6-inch liner, and sand intervals as described in the original drillers log. Since the well was originally very productive and remains quite productive, a reasonable presumption is that the well was constructed appropriately but that the original drillers log has an incorrect diagram.

The small annular space between the 10-inch pump column and the 14-inch liner precluded installation of a transducer or measurements of depth to water level using a steel tape or electric tape. A bubbler tube attached to the pump column provides the only viable means for measuring depth to water level. A nitrogen tank is utilized for operation of the bubbler tube.

# 7 Operations and maintenance manual, and training

Toward the end of the well rehabilitation, reconstruction and redevelopment period a guidance document was prepared for City operations staff, to be utilized during cycle testing and initial operation of the ASR demonstration facilities. The document was titled *Aquifer Storage Recovery Facilities for ASR Well 19 and Monitor Well 21 Startup and Cycle Testing Operations Manual* and was dated April 2018 (the "O&M Manual").

Manual operation procedures were described in the O&M Manual for the various operating modes including: backflushing the well to waste prior to starting recharge; manual flushing the recharge piping to waste prior to starting recharge; startup of recharge down the well; recovery to waste; trickle flow during extended storage periods to control downhole microbial activity, and recovery of stored water to the water distribution system. Interim recharge goals and procedures were described, and the plans for well redevelopment at the end of the interim recharge period were discussed. The planned cycle testing program was presented, extending over a period of several months and including monitor program elements such as sample locations; constituents to be sampled; sampling frequencies; measurement of flows, pressures, volumes, water levels, etc. A format was provided for recording the data. Appendices included baseline water quality data for the recharge water, and the native groundwater from Wells No. 19 and 21. Appendices also included copies of applicable permits.

A copy of the O&M Manual was provided to the TWDB. Therefore, the O&M Manual is not included in this report.

A training program was conducted for Victoria operations staff and one representative of the TWDB on May 8, 2018. The training program was conducted by Tom Morris of ASR Systems. The classroom training was conducted at the Victoria SWTP. The training program consisted of four hours of classroom instruction, followed by approximately three hours of field instruction at Well No. 19.

The planned training at Well No. 19 was to include the start of RISD well redevelopment, which was expected to require a few hours and to be followed by starting the cycle testing program. As described in Section 6.2, the well redevelopment program was terminated after approximately 30 minutes due to sand and gravel in the produced water. This set up the need for design modifications and reconstruction of the well, as described above in Section 6.2.

Recharge of water from the City distribution system resumed on January 18, 2019.

### 8 Cycle testing and assessment

A single cycle test was conducted during this Project, reflecting the limitations imposed by the TWDB reporting schedule and the extensive time (eight months) spent rehabilitating and repairing Well 19. The cycle test was conducted by City water operations staff. Lab samples collected by the City were analyzed through B Environmental Lab, Victoria TX. Data were collected regarding flows, volumes, pressures, water levels and water quality at Well No. 19 and also at monitor Well No. 21. The data are presented in **Appendix G**. Cycle testing will continue following completion of this Project and is being implemented by the City.

The City's Class V 5X25 authorization from TCEQ (see **Appendix A**) permits the City to conduct up to two cycle tests at Well No. 19 through December 31, 2020. In recent discussions, TCEQ representatives have indicated their willingness to amend the authorization to allow the City to conduct additional cycle tests if needed to gather more data for future permitting and operations.

### 8.1 ASR - aquifer recharge

Recharge recommenced on January 18, 2019 at a recharge flow rate of 525 gpm and a wellhead pump column pressure of 42 psi. At that point 19.4 MG (59.5 AF) had already been recharged during April and May 2018, prior to apparent failure of the casing due to corrosion, combined with loss of the seal between the base of the inner casing at 400 feet bgs and the top screen interval outside the liner at 450 feet bgs. After the initial recharge period, well repairs required about eight months. It is unknown how much of the volume stored at that time is recoverable since the bottom of the original well was plugged back to 830 feet bgs to close off a possible hole in the casing below that depth. It is believed, but unconfirmed, that much of the water stored during April and May 2018 entered the top two screened intervals and is therefore recoverable.

Static water level in the casing annulus on January 18, 2019 was estimated at a depth of about 35 feet bgs. During the first week of recharge, wellhead pressure in the pump column was increased incrementally to match distribution system pressure of about 60 to 64 psi. The recharge flow rate varied from 542 to 582 gpm, showing a slow decline with time. Casing annulus pressure slowly increased from 8 psi to 17 psi, most likely reflecting well clogging and also local mounding of water levels. Due to the anticipated short duration of the cycle test, no backflushing was conducted. Recharge was terminated on February 12, 2019, at which point an additional 19.2 MG had been recharged.

The total recharged volume as of February 12, 2019 is between 19.2 and 39.0 MG (equivalent to between 59 and 120 acre-feet [AF]), reflecting uncertainty regarding the location of the previous volume of drinking water stored during April and May 2018. The most likely location of the initially-stored water is within the upper two screen intervals, particularly the upper screen interval because water would have been recharged through the screen and also through the annular space between the 18-inch borehole and the 10-inch liner, within which the gravel had been completely removed down to the top of the upper screened interval. However, some of the recharge flow may have entered the aquifer through the possible casing break at about 830 feet bgs or through other holes in the corroded 10-inch liner. Any water stored below 830 feet bgs would be lost for recovery purposes because the well was plugged back to that depth.

Although this may appear to be a substantial range of uncertainty as to the volume recharged to date, it should be compared with the estimated preliminary Target Storage Volume (TSV) for an ASR well at or near this location, as described in the *Victoria Area ASR Feasibility Report* (Arcadis, 2014). The TSV was estimated at 10,381 AF for a single ASR well (3,382 MG), associated with ensuring water supply reliability during a repeat of the Drought of Record for the Victoria area (1947 to 1957). This was at the upper end of a range of ASR options evaluated for the City. The estimated TSV radius was 1,560 feet, underlying an area of about 173 acres. Therefore, the cumulative volume stored to date is approximately 1 percent of the TSV for this well. As discussed below, about half of the volume of stored water is assumed to be recoverable as potable water for use in the City's distribution system. Actual recoverability will be determined during subsequent cycle testing for longer periods of time. The radial extent of the TSV will be determined on the basis of data collected from one or more monitoring wells.

Of the stored water volume, half is initially assumed to comprise the buffer zone and the remaining half would be recoverable. The radius of the recoverable water volume would be about 1,100 feet. The buffer zone volume should not be recovered. If it is recovered, the recovered water quality would tend to steadily transition from the recharge water quality (treated surface water) to the native groundwater quality, with potentially increasing concentrations of some constituents such as total dissolved solids (TDS). The buffer zone is analogous to the walls of a tank, separating the stored water from the surrounding ambient groundwater. Data from cycle testing and initial operations provides a basis for updating these preliminary estimates for the TSV, buffer zone volume, and associated radial distances. The more water in storage prior to achieving the TSV, the higher the level of water supply reliability that will have been achieved.

Three samples of the recharged water were collected at the Well No. 19 wellhead for lab analysis: one at the beginning of recharge on January 18, 2019; one at the middle of recharge on January 30, 2019 and one at the end of recharge on February 12, 2019. Lab results are summarized in **Table 8-1** and are included in **Appendix G.** Samples were also obtained at monitoring Well No. 21 prior to beginning recharge and at the end of cycle testing. The results of that sampling effort are also included in **Appendix G**.

#### Table 8-1. Cycle test water quality data

		Drinking Water Standard		Water Treatment Plant POE			Recharge Water at Wellhead			ASR Well 19	Recovered Water at Wellhead			Monitor Well 21	
Constituent	Units						Beginning	Middle	End	Baseline	Beginning	Middle	End	Baseline	End
Date		Primary	Secondary	2016	2017	2018	1.18.2019	1.30.2019	2.11.2019	2017	2.19.2019	3.12.2019	3.18.2019	2017	3.21.2019
Lab Sample ID				-	-	-	79978	80442	80885	-	81230	82163	82436	-	82604
Lab Measurements															
Fluoride	mg/l	4.00	2.00	0.62	0.46	0.50	0.63	0.55	0.83	0.53	0.75	0.56	0.50	0.54	0.38
Turbidity	NTU	1	-	-	-	-	< 0.3	-	<0.3	-	1.1	0.4	<0.3	-	19.5
Chloride	mg/l	-	300	49.0	37.0	49.0	59.6	54.6	62.8	108	61.8	58.8	59.4	92.0	111
Sulfate	mg/l	-	300	22.0	33.0	41.0	20.4	20.9	22.9	19.1	22.5	21.8	23.7	<2.00	0.6
Total Dissolved Solids	mg/l	-	1,000	305.0	266	309	364	308	336	504	328	324	308	455	488
Aluminum, Total	mg/l	-	0.05 to 0.2	-	-	-	0.004	0.009	0.009	-	0.036	0.012	0.003	-	3.26
Ammonia, as N	mg/l	-	-	0.010	-	-	0.631	0.483	0.855	0.2	0.462	0.229	0.158	< 0.10	0.090
Total Alkalinity, as CaCO <sub>3</sub>	mg/l	-	-	166	-	-	183	177	197	260	176	170	174	271	285
Total Suspended Solids	mg/l	-	-	0.06	-	-	<2.00	<2.00	2.00	0.13	<2.00	2.20	<2.00	1.17	41.7
Calcium	mg/l	-	-	48.0	50.2	62.8	39.1	42.5	43.5	22.3	42.4	41.7	39.5	35.2	36.3
Magnesium	mg/l	-	-	9.62	14.4	16.7	9.45	9.64	9.36	7.48	9.54	9.44	9.43	9.54	9.82
Sodium	mg/l	-	-	50.8	24.3	35.8	55.6	55.7	61.7	226	56.6	59.1	71.4	130	115
Potassium	mg/l	-	-	3.45	3.19	2.83	5.73	5.17	5.05	2.60	4.48	4.71	4.87	2.10	2.62
Total Silica, SiO <sub>2</sub>	mg/l	-	-	19.0	-	-	22.3	13.1	14.0	30.0	13.5	12.5	13.5	27.0	28.7
Total Hardness, as CaCO <sub>3</sub>	mg/l	-	-	159	185	226	137	146	147	88.0	145	143	137	135	131
Phosphorus	mg/l	-	-	1.08	-	-	-	-	-	0.07	0.24	0.24	0.14	0.03	0.04
Total Organic Carbon	mg/l	-	-	1.50	-	-	2.65	2.68	2.37	<1.00	2.73	2.35	1.90	<1.00	0.65
Total Trihalomethanes	μg/l	80	-	43.8	42.7	38.3	54.9	50.0	38.0	2.00	44.0	60.5	56.6	2.00	< 0.001
Haloacetic Acids 5	μg/l	60	-	16.4	16.6	16.5	7.0	29.0	10.0	<1.00	47.8	23.4	9.7	<1.00	< 0.005
Bromate	μg/l	10	-	< 0.002	-	-	< 5.00	< 5.00	< 5.00	< 0.002	< 5.00	-	< 5.00	< 0.002	< 5.00
Arsenic (filtered)	μg/l	10	-	<2.00	-	-	-	-	-	< 0.005	18.7	2.1	3.4	0.0072	16.4
Arsenic (unfiltered)	μg/l	10	-	0.0021	-	-	-	-	-	< 0.0029	18.6	2.5	3.76	0.0156	28.5
Iron (filtered)	mg/l	-	0.3	<20.00	-	-	-	-	-	< 0.005	0.012	< 0.005	0.01	0.0143	0.06
Iron (unfiltered)	mg/l	-	0.3	< 0.010	0.2	-	-	-	-	0.20	0.2	0.1	0.05	0.70	3.12
Manganese (filtered)	mg/l	-	0.05	< 0.005	-	-	-	-	-	0.0068	<2.63	0.013	0.00	0.0888	0.104
Manganese (unfiltered)	mg/l	-	0.05	< 0.0010	-	-	-	-	-	0.0076	<2.64	0.013	0.007	0.096	0.138
Lead	mg/l	0.015	-	< 0.00100	0.01000	-	-	-	-	< 0.00090	-	< 0.00025	< 0.00025	0.00680	0.00414
Field Measurements							. <u>.</u>								
Dissolved Oxygen	mg/l	-	-	9.10	-	-	9.51	9.60	-	3.10	-	7.40	7.10	1.30	-
Oxidation Reduction Potential	mv	-	-	442	-	-	455	472	-	131	-	355	286	201	-
Temperature	°C	-	-	-	-	-	17.8	16.1	-	-	-	20.2	20.4	-	-
pH	unit	-	>7	7.50	-	-	8.90	8.70	-	7.86	-	8.40	8.50	7.36	-
Conductivity	μS	-	-	592	504	644	556	422	-	-	-	469	444	-	721
Chlorine Residual	mg/l	-	-	-	-	-	3.20	3.00	-	-	-	0.100	0.030	-	-
Chloride	mg/l	-	-	_	-	-	80.0	100	-			100	100	-	220

Notes:

1. "-" signifies no data are available.

2. Units are reported as confirmed by the laboratory. Report authors suspect some units may be incorrect (e.g., Arsenic concentration of 0.0021 µg/L when the detection limit on the same day is noted as 2 µg/L).

3. The SWTP POE data are from annual water quality analyses at the POE to the distribution system, except TTHM and HAA5.

4. The Reacharge Water at the Wellhead data are from samples obtained at the Well 19 wellhead at the beginning, middle and end of recharge.

5. The ASR Well 19 Data are from a baseline sample from Well 19, pumped in 2017 prior to initiating any recharge.

6. The Recovered Water at Wellhead data are from samples collected at the Well 19 wellhead at the beginning, middle and end of recovery.

7. The Monitor Well 21 data are from samples pumped from Monitor Well 21 in 2017 prior to recharge at Well 19, and also at the end of the Well 19 cycle test recovery.

8. Rows beginning with "Fluoride" and ending with "Bromate" are List A constituents from the April 2018 ASR Operations and Maintenance Manual.

9. Rows beginning with "Arsenic (filtered)" and ending with "Lead" are List B constituents from the April 2018 ASR Operations and Maintenance Manual.

10. TTHM and HAA5 data presented are averages of eight sampling points in the distribution system.

# 8.2 ASR - storage period

A one-week storage period was planned, with recovery to start on February 19, 2019. The brief storage period was necessitated by the need to complete the Project by the TWDB contractual date. The original Project schedule called for a storage period of about one month.

For chlorine disinfection at a water treatment plant, the chlorine is typically added ahead of the ammonia feed point so that complete mixing and breakpoint disinfection can occur, prior to establishing a chloramine residual for flows entering the distribution system. For restoration of a chloramine residual in a distribution system where a chloramine residual already exists, the ammonia is added first and then the chlorine, thereby boosting the chloramine residual. Depending on the duration of ASR storage, the ammonia content of the recovered water may contain variable concentrations of ammonia in the form of chloramine. Cycle testing and operational experience at Victoria will indicate the likely concentration of ammonia in the recovered water, ranging from close to the recharge concentration associated with a very short storage period, to zero concentration after a long storage period of several weeks to months. Flexibility will need to be built into the design, operation and control systems for any ASR wellfield expansion to address these potentially changing needs. TCEQ Chapter 290.38 regulations address these requirements.

As a result of the shorter storage period, ammonia was present in the recovered water at concentrations similar to those in the treated drinking water leaving the Victoria SWTP, creating the need for more chlorine, or reduced recovery flow rates, in order to restore the chloramine residual in recovered water flows going to the distribution system.

# 8.3 ASR - recovery

Recovery of the stored water was restarted on February 21, 2019, after a storage period of seven days. Water quality data are provided for the beginning, middle and end of recovery. Laboratory results are included in **Appendix G** and a summary is provided in **Table 8-1**. Also shown in this table are representative water quality data for the SWTP at the Point of Entry (POE) to the distribution system, as obtained from the TCEQ Drinking Water Watch Database and baseline groundwater quality data for Wells No. 19 and 21 prior to beginning ASR recharge at Well No. 19.

After collection of the initial recovered water samples on February 21, 2019, a delay in recovery occurred due to operational constraints that became apparent after the start of recovery. One of the re-disinfection chemical feed pumps at the wellhead was not producing at the required rate and had to be replaced. Recovery was resumed on March 8, 2019 after replacement of the feed pump. The recovery flow rate was initially throttled and then gradually increased as the ammonia content of the recovered water steadily attenuated, requiring less chlorine to achieve breakpoint chlorination and establish the target chloramine residual for the distribution system. The middle of recovery and end of recovery samples were obtained March 12 and March 18, 2019. Total volume recovered was 6.7 MG, compared to the approximately 10 MG recovery volume previously planned.

### 8.3.1 Water quality tracers

Constituents of particular interest due to their value as conservative tracers include chloride and TDS, in that order of reliability. Substantial differences also exist in recharge water and groundwater concentrations for total alkalinity and sodium; however, both of these are less useful as tracers because changes in concentrations between ASR recharge and recovery may be due to either mixing or geochemical reactions, or both. Concentrations of all four parameters in the recovered water were similar to the SWTP POE and recharged water quality, and lower than the baseline groundwater quality. These data suggest that the quality of the water recharged and recovered was maintained.

# 8.3.1.1 Chloride

Chloride concentrations at the SWTP POE (i.e., 49 milligrams per liter (mg/L), 37 mg/L, and 49 mg/L for single samples obtained in 2016, 2017 and 2018, respectively) were similar to chloride concentrations in the recharged water measured at Well No. 19 at the beginning, middle and end of recharge (i.e., 60 mg/L, 55 mg/L and 63 mg/L, respectively). Baseline chloride concentrations at Wells No. 19 and 21 prior to beginning ASR operations were higher (i.e., 108 mg/L and 92 mg/L, respectively). Chloride concentrations in the recovered water at the beginning, middle and end of recovery (i.e., 62 mg/L, 59 mg/L and 59 mg/L, respectively) were similar to the recharged water and SWTP POE concentrations, and lower than the baseline groundwater concentrations.

### 8.3.1.2 Total dissolved solids

TDS concentrations at the SWTP POE (i.e., 305 mg/L, 266 mg/L and 309 mg/L for single samples obtained in 2016, 2017 and 2018, respectively) were similar to TDS concentrations in the recharged water measured at Well No. 19 at the beginning, middle and end of recharge (i.e., 364 mg/L, 308 mg/L and 336 mg/L, respectively). Baseline groundwater TDS concentrations at Wells No. 19 and 21 prior to beginning ASR operations were higher (i.e., 504 mg/L and 455 mg/L, respectively). TDS concentrations in the recovered water at the beginning, middle and end of recovery (i.e., 328 mg/L, 324 mg/L and 308 mg/L, respectively) were similar to the recharged water and SWTP POE concentrations, and lower than the baseline groundwater concentrations.

### 8.3.1.3 Total alkalinity

The alkalinity at the SWTP POE (i.e., 166 mg/L as CaCO<sub>3</sub> reported for a single sample in 2016) was similar to the alkalinity in the recharged water measured at Well No. 19 (i.e., a range of 177 to 197 mg/L as CaCO<sub>3</sub>). Baseline groundwater concentrations at Wells No. 19 and 21 prior to beginning ASR operations were higher (i.e., 260 and 271 mg/L as CaCO<sub>3</sub>, respectively). Total alkalinity in the recovered water at the beginning, middle and end of recovery (i.e., a range of 170 to 176 mg/L as CaCO<sub>3</sub>) were similar to the recharged water and SWTP POE concentrations, and lower than the baseline groundwater concentrations.

# 8.3.1.4 Sodium

Sodium concentrations at the SWTP POE (i.e., a range of 24 mg/L to 51 mg/L for single samples collected in 2016, 2017 and 2018, respectively) were similar to sodium concentrations in the recharged water measured at Well No. 19 at the beginning, middle and end of recharge (i.e., a range of 56 mg/L to 62 mg/L). Baseline groundwater concentrations at Wells No. 19 and 21 prior to beginning ASR operations were higher (i.e., 226 and 130 mg/L, respectively). Sodium concentrations in the recovered water at the beginning, middle and end of recovery (i.e., a range

of 57 to 72 mg/L as CaCO<sub>3</sub>) were similar to the recharged water and SWTP POE concentrations, and lower than the baseline groundwater concentrations.

# 8.3.2 Disinfection byproducts

Disinfection byproducts (DBPs), including total trihalomethanes (TTHMs) and haloacetic acids (HAA5), were also measured during recharge and recovery. Extensive published research supplemented by field observations has shown attenuation of preformed THMs over a period of several weeks during aquifer storage. After oxygen in the recharged water has been consumed due to microbial and geochemical reactions in the aquifer, anaerobic microbial activity results in attenuation of preformed THMs. Under anaerobic (not aerobic) conditions, recovered water TTHM concentrations are typically negligible after a few weeks of storage.

TTHM concentrations at the SWTP POE (i.e., a range of 38 micrograms per liter ( $\mu$ g/L) to 44  $\mu$ g/L for single samples obtained in 2016, 2017 and 2018, respectively) were similar to the TTHM concentrations in the recharged water measured at Well No. 19 at the beginning, middle and end of recharge (i.e., a range of 38 to 55  $\mu$ g/L). These concentrations are below the Maximum Contaminant Limit (MCL) of 80  $\mu$ g/L. TTHMs in the recovered water at the beginning, middle and end of recovery were 44 ug/L, 61 ug/L and 57 ug/L, respectively. Attenuation of TTHMs during ASR storage is typically expected over time. However, due to the variation in the recharged water quality and the short duration of this Project's cycle test, no clear trends are apparent.

HAA5 concentrations are typically reduced to below detection limits within a few days of recharge due to aerobic microbial activity fed by oxygen present in recharge water. HAA5 concentrations at the SWTP POE (i.e., a range of 16  $\mu$ g/L to 17  $\mu$ g/L for single samples obtained in 2016, 2017 and 2018, respectively) were similar to the HAA5 concentration in the recharged water measured at Well No. 19 at the beginning of recharge (i.e., a range of 7  $\mu$ g/L to 29  $\mu$ g/L). These concentrations are below the MCL of 60  $\mu$ g/L. Total HAAs in the recovered water at the beginning, middle and end of recovery were 48 ug/L, 23 ug/L and 10 ug/L. Although the trends in the recovered water suggest rapid attenuation during ASR storage, the large variation in the recharged water quality confounds these results. However, a reduction in HAA5 concentrations during the first few days of ASR storage has been observed for other ASR sites in the United States. The same trend is anticipated to be confirmed at Well No. 19 through additional cycle testing and monitoring.

# 8.3.3 Arsenic

The total arsenic concentration measured at the beginning, middle and end of recovery was 19, 2.1 and 3.4  $\mu$ g/L. Only the first recovered sample was above the 10  $\mu$ g/L MCL for drinking water. As similar concentrations were measured in both filtered and unfiltered samples, the arsenic was primarily dissolved. Thus, the arsenic was not associated with any particulate(s) in the recovered water (e.g., a small piece of arsenopyrite or a particle of rust from a corroded steel casing with an arsenic impurity). However, as the arsenic concentration in subsequent samples was below 4  $\mu$ g/L, it is possible that the high initial measurement reflected insufficient time to purge the well before beginning recovery (i.e., collecting the initial recovery sample).

Experience at many other operating ASR wells indicates that formation and maintenance of an adequate buffer zone is generally effective at controlling arsenic concentrations in the recovered

water. Arsenic moves naturally underground as a "rolling front." It is mobilized from arsenopyrite by oxygen in the recharge water, moves laterally with groundwater flow, adsorbs onto ferric hydroxide floc formed when oxygen in the recharge water combines with the iron that is also released from dissolution of the pyrite, and then gets physically trapped or adsorbed in the aquifer at a greater distance from the ASR well. An adequate buffer zone pushes this "front" a sufficient distance from the ASR well so that arsenic concentrations in the recovered water are well below the MCL. Research investigations into arsenic mobilization and attenuation in Florida ASR wells (ASRS, 2007; Pyne and others, 2008) showed that ASR wells with a storage volume sufficient to meet demands for 70 days or more did not have arsenic at detectable concentrations in the recovered water. An inverse linear relationship existed between the cumulative storage volume and arsenic concentration. These studies indicated that the "rolling front" of mobilized arsenic typically moved less than 200 feet in limestone aquifers. The movement would likely be less in a sand and gravel aquifer as the stored water typically extends further radially. Data from nearby monitor wells will be needed to better understand the potential for arsenic mobilization near Well No. 19.

For the initial recovered water sample from Well No. 19, the cumulative volume in storage was between 20 MG and 40 MG, as discussed above. At a probable recovery flow rate of about 2 mgd, this would be equivalent to 10 to 20 days of recovery capacity. Although the local hydrogeology is different than that of Florida, adding extra storage volume underground (i.e., creating a greater buffer) is expected to similarly reduce arsenic concentrations. Furthermore, creating a greater buffer is simpler and much less expensive than treating the recharge water to remove oxygen and, thereby, controlling arsenic mobilization. Additional cycle testing during the next year will provide a more thorough analysis of the potential for arsenic mobilization in Well No. 19.

### 8.3.4 Field measurements of water quality

Field measurements of water quality were obtained during the cycle test, including dissolved oxygen (DO), oxidation-reduction potential (ORP), temperature, pH, chloride, chlorine residual and conductivity. These measurements are utilized to aid in understanding any changes in water quality occurring during aquifer storage, whether due to physical changes, microbial activity or geochemical reactions. Reflecting the small volume stored and recovered, and the short duration of storage for the cycle test, no significant changes in water quality were evident between recharge and recovery, other than the apparent decline in ammonia concentration and the rapid attenuation of chlorine.

Careful control of chloramines in the recovered water will be important for preventing nitrification. Longer storage periods should ease operational control requirements as a result of lower ammonia concentrations in the recovered water.

Field measurements of turbidity were not collected, but are recommended. Laboratory measurements show elevated turbidity concentrations, but are limited to a high detection limit of 0.3 NTU. Turbidity data should be collected in the field during future recharge and recovery events to evaluate the recovered water turbidity concentrations.

### 8.3.5 Corrosion considerations

The City's corrosion control strategy includes maintaining a finished water pH between 7.6 and 8.1 and dosing orthophosphate at a concentration of 2.5 mg/L. The Arcadis Team conducted a

cursory evaluation of the concentration of common corrosion control water quality parameters during ASR recovery as compared to finished water quality. The results are summarized in the bulleted paragraphs below.

Because data were very limited and the duration of storage was short, a more detailed evaluation should be conducted by the City as it continues to recover stored water from Well No. 19 (i.e., the absence of differences in water quality presented in the brief evaluation as part of this Project does not imply optimal corrosion control conditions).

- **pH:** The pH of the recharged water (i.e., 8.7 to 8.9) was similar to the pH of the recovered water (i.e., 8.4 to 8.5). However, it should be noted that during both of these sampling events, the pH was above the target range noted by the City.
- Alkalinity: The alkalinity of the recharged water (i.e., 177 mg/L as CaCO<sub>3</sub> to 197 mg/L as CaCO<sub>3</sub>) was similar to the alkalinity of the recovered water (i.e., 170 mg/L as CaCO<sub>3</sub> to 176 mg/L as CaCO<sub>3</sub>).
- **Calcium and Hardness:** The calcium and hardness of the recharged water was similar to the hardness of the recovered water.
- Lead and Copper: Lead concentrations in the recovered water were below the detection limit of 0.25 µg/L. Copper concentrations were not measured in this evaluation.
- **Chloride-to-Sulfate-Mass-Ratio (CSMR):** The CSMR is used to predict shifts in corrosion in premise plumbing (i.e., impacts on brass fixtures and galvanic corrosion) rather than in the distribution system. The CSMR of the recharged water ranged from 2.6 to 2.9. The CSMR of the recovered water ranged from 2.5 to 2.7. Thus, the CSMR of the recharged and recovered water was similar.
- **Chlorine Residual:** Although the chlorine residual in the recovered water was low, a chemical system is available at the well for boosting the chloramine concentration in the recovered water. Careful control of total chlorine, monochloramine, and free ammonia concentrations will be critical prior to distribution.
- Orthophosphate: The phosphorus concentrations in the recovered water ranged from 0.14 mg/L to 0.24 mg/L. These concentrations are below the City's target concentration of 2.5 mg/L for orthophosphate. Phosphorus attenuation typically occurs during ASR storage over periods of several months. This is believed to be due to subsurface microbial activity and sometimes supplemented by geochemical reactions.
- Other Corrosion Parameters: No corrosion indices (e.g., calcium carbonate precipitation potential or Langelier Saturation Index) were evaluated. Additionally, lead and copper solubility were not evaluated.

The largest difference in the above parameters in the recharged and recovered water was due to declining phosphorus concentrations. The impact of reduced orthophosphate concentrations on corrosion control from ASR storage requires additional analysis and should consider potential blending ratios and the duration of recovery.

# 8.3.6 Well clogging and backflushing

Well No.19 was backflushed on March 27, 2019. The casing annulus pressure at the wellhead had increased slowly, reaching 19.5 psi on the previous day. A reference point of 20 psi had been established prior to cycle testing, above which backflushing would be implemented. Since the final recovered water sample was collected on March 18, 2019, recharge had continued, with

casing annulus pressures climbing from 13 psi on March 21 to 19.5 psi on March 27, 2019. Recharge flow rates had declined from 534 gpm to 513 gpm during this same period. The trend may have been due to mounding in pressures in the surrounding aquifer as a result of recharge, or well clogging, or a combination of both factors. Considering the recent history of this well, clogging is expected to be the predominant mechanism.

Specific injectivity is defined as the recharge flow rate in gpm divided by the pressure in the casing annulus as measured at the wellhead in psi. Specific injectivity of the well during the period of March 21 to March 27, 2019 declined from 41 gpm/psi to 26 gpm/psi, as measured at the wellhead. There are no field measurements of static water level in this well, other than for April 9, 2018, when a taped measurement was 24 feet below the wellhead flange. Incidental static water level measurements obtained during geophysical logging and well rehabilitation during 2018 were in the general range of 30 to 40 feet below the wellhead flange. Historic measurements of static water level were in the range of 80 to 100 feet below the wellhead.

During the March 27, 2019, backflushing, 43,620 gallons of stored water was pumped from the well. The flow rate or duration was not recorded, however a production rate of about 1,000 to 1,500 gpm is probably a reasonable estimate for discharge to waste at the wellhead with the new pump. Recharge resumed after the backflushing, with specific injectivity estimates of 39 gpm/psi and 46 gpm/psi during the following two days, at recharge flow rates of 399 gpm and 369 gpm. Wellhead pressures were 9.5 psi and 8.0 psi, respectively. Backflushing was successful for restoring recharge capacity.

Measurements of depth to water level are currently made with a bubbler tube extending to near the top of the pump and strapped to the pump column. Well modifications implemented during 2018 precluded installation of a transducer, or taped measurement of water levels. Future periodic measurements of static water level during ASR cycle testing and operations would enable calculation of a better-accepted, conventional measurement of specific injectivity in terms of gpm per foot of water level rise above static water level.

# 8.3.7 Trickle flow

A trickle flow of drinking water was intended to be directed into the well during storage periods exceeding about one week, with the goal of controlling downhole microbial activity. This occurred during April and May 2018 and may have also been implemented during March 2019 when recovery cycle testing was interrupted for approximately two weeks. Trickle flow was not shown on the daily records for the well. The flow rate was estimated by City personnel at about 6.5 gpm. The trickle flow is introduced through the pump shaft water lube tubing at the wellhead.

### 8.3.8 Monitor Well No. 21

Well No. 21 is located about 3,000 feet from Well No. 19. It is utilized infrequently by the City, supplementing surface water supplies from the Guadalupe River when needed.

As shown in **Table 8-1**, a baseline water sample was obtained from Well No. 21 during 2017, prior to any recharge into Well No. 19. A second sample was obtained from Well No. 21 three days after completion of the first recovery at Well No. 19. All but three water quality constituents were essentially unchanged.

Two of the three constituents showing change were total suspended solids (42 mg/L) and turbidity (20 NTU), both of which were high for groundwater. Well No. 21 had been idle for an unknown period of time and was pumped to waste for about 30 minutes prior to sampling. Considering that this is a very old, mild steel cased well, it is probable that 30 minutes was insufficient time to adequately purge the well of rusty water.

The third constituent with an elevated concentration was arsenic (28  $\mu$ g/L unfiltered; 16  $\mu$ g/L filtered). The baseline sample had results of total arsenic of 15.6  $\mu$ g/L and dissolved arsenic of 7.2  $\mu$ g/L.

In the most recent sample, the filtered concentration is lower than the unfiltered concentration. This indicates that at least some of the arsenic was associated with particulates in the sampled water. The remaining arsenic may have been associated with the original composition of the mild steel casing, and therefore present in the water pumped from the well. It is highly unlikely that ASR cycle testing at Well No. 19 caused any geochemical mobilization of arsenic at Well No. 21 given the distance between the two wells.

# 9 Conclusions and recommendations

One of the many advantages of ASR as a water management strategy is the opportunity to plan and implement an ASR program in incremental steps, with each phase building upon the knowledge gained in previous stages. In 2014 Victoria completed an ASR feasibility study that recommended moving to the next phase with the permitting and construction of a new ASR well, or the rehabilitation and retrofit of an existing City production well. The overall objectives of this Project were to provide data and information on the issues and costs associated with retrofitting an existing groundwater production well for ASR purposes. As discussed in this report, the Project fulfilled those objectives. The paragraphs below summarize the conclusions founded on the analysis of data and information, and provide recommendations based on those conclusions.

# 9.1 Conclusions

Summarized below are the major conclusions drawn from the data and information collected from the retrofit of Well No. 19 and from an abbreviated initial testing cycle.

### 9.1.1 Project tasks

The Project tasks were completed in conformance with the application submitted to the TWDB in November 2015, and Contract No. 1600011958 between the TWDB and Victoria County GCD. The completed tasks included: TCEQ permitting; design of ASR facilities; retrofit of Well No. 19 as an ASR well; construction of a potable water connection to the ASR well; training and preparation of an O&M manual; cycle testing and assessment of data; preparation of draft and final reports; and engagement in presentations with the TWDB related to the Project.

The City successfully completed a single cycle test at Well No. 19, demonstrating that recovered water quality was similar to the recharged water quality for most parameters, with the exception of orthophosphate, chlorine (prior to chemical addition), and ammonia. Because of the abbreviated cycle test, further testing is appropriate to build a basis of experience upon which to develop and implement an ASR program to provide water supply capacity and reliability for the City.

### 9.1.2 Project objectives

The objectives of the Project were met by providing data and information on the issues and costs associated with rehabilitating Well No. 19 and retrofitting that groundwater production well for ASR purposes. Despite the problems encountered during well rehabilitation and the cycle testing phase, the Project afforded valuable information for other municipalities and for others considering the conversion of production wells for ASR purposes.

During the cycle-testing phase the Project was able to address some of the potential impacts of operating an ASR well and storing water within the City, and potential concerns about the viability of the Gulf Coast Aquifer as a potential storage location. The analysis of water quality data allowed the study team to lay a foundation for addressing potential issues with mobilization of iron, manganese and arsenic in the native groundwater.

Through the professional papers and presentations described above, the TWDB, GCDs, water utilities, environmental groups and the general public benefited from the data and information collected during the Project.

The final report and presentations generated by the Project should provide valuable feedback through the TWDB to the Texas Legislature on the successful achievement of the Legislature's goals and legislative intent when it passed funding groundwater conservation districts for ASR demonstration projects (House Bill 1, General Appropriations Act, 2015 Legislature, Regular Session, page VI-60, Rider 25).

### 9.1.3 Successful production well retrofit for ASR

Existing municipal groundwater production wells can be successfully modified and used as operational ASR wells. It is important to have adequate information and investigate the wells prior to selecting a candidate for conversion. The investigation should include pulling the pump and pump column, and video-logging the selected well to confirm its condition. For this Project, Victoria selected Well No. 19 because it was scheduled and budgeted for maintenance and replacement of the pump and motor. Also, the City did not realize the well was in such bad condition.

Despite the problems encountered during rehabilitation of Well No. 19, the modified and retrofitted well is as productive as the original well, yielding up to about 1,500 gpm,

Although retrofitting an existing production well for ASR purposes can be successful, construction of a new well is typically preferable. There are several features of ASR well and wellhead design that are unique. One of the more important features is selection of construction materials that are not subject to corrosion under alternating recharge and recovery conditions. In addition, well diameters and selection of storage intervals tend to be different for ASR wells compared to production wells. Incorporating these features into the design and operation increases the potential for ASR success.

# 9.1.4 TCEQ permitting

In this Project the City initially applied to TCEQ for a Class V ASR permit because it had a significant amount of existing data about the groundwater and the existing production wells in the Victoria area. However, after subsequent discussions with TCEQ, the City and the Arcadis Team decided to use the submitted application data to request a Class V 5X25 Experimental Injection Well authorization. That authorization gave the City everything it needed for the Project and is allowing the City to gather additional data on recoverability during the cycle testing phase. The data gathered during this demonstration project and in subsequent test cycles should make it faster and easier to go back to TCEQ for a full ASR permit after the testing period.

### 9.1.5 Coordination with local groundwater conservation district

It is important to coordinate with any local groundwater conservation district. Under recent state legislation, TCEQ has sole permitting authority for ASR wells so long as water is not recovered from storage in excess of the cumulative volume previously stored. However, communicating with or partnering with the local groundwater district maintains a good working relationship and provides the opportunity to share data needed to properly design and operate the ASR well.

#### 9.1.6 Unit cost bid schedule

For projects with uncertainty, such as this demonstration project, it is important to use unit costs in the bid schedule. Having the bidders provide prices for units (e.g. feet of pump column; hours for wire brushing the casing pipe) allows the owner and its engineer to modify the construction requirements to fit the conditions found in the field as the project progresses.

#### 9.1.7 Construction contractors

For this Project different contractors were used for the downhole well work and for the ASR wellhead and disinfection facilities. Having two contractors worked well for Victoria because the City was actively engaged in the construction management of the Project, and the City had previous successful experience with both contractors. However, when possible it is preferable to have one qualified prime general contractor responsible for the entire project.

#### 9.1.8 Trickle flow pipeline

It is important to maintain some disinfectant residual in the ASR well. A major component of the Project was construction of 2,000 feet of new 12-inch treated water pipeline to connect the City's distribution system with Well No. 19. During storage periods between recharge and recovery operations, it is possible that the chloramine residual could be lost in the pipeline such that the pipeline cannot be used for trickle flow into the well to maintain a disinfectant. In the preliminary design process, the Arcadis Team recommended that a parallel 2-inch pipeline be constructed specifically to provide a trickle flow into the well during storage periods. The City constructed both pipelines at the same time.

### 9.1.9 TCEQ design requirements

The construction standards for Class V injection wells found in the TCEQ rules at 30TAC §331.132 (f) state that wells should not generally be located within the 100-year floodplain. Although Well No. 19 is within the 100-year floodplain of the Guadalupe River, as determined on FEMA Flood Hazard Maps, the well is located on an elevated earthen berm, and the top of the casing is 3.34 feet above the flood elevation of 63.60 feet mean sea level. In addition, the steel casing is fitted with a welded ANSI/ASME pattern flange for connection to the new pump. The flanged wellhead connection seals the well and allows recharge rates that may pressurize the well.

### 9.1.10 TCEQ plan review

Because the TCEQ Plan Review Team is not as familiar with ASR systems as the agency is with other water and wastewater facilities, it is prudent to schedule additional time for review and approval of ASR plans and specifications. ASR Systems submitted its design documents on May 18, 2017, and TCEQ approval was received on July 17, 2017.

#### 9.1.11 Training and O&M manual

It is important for the design engineer to provide the ASR well operator with proper training and an O&M manual to guide startup, operations, maintenance and cycle testing. Classroom and field training for the City was provided by ASR Systems. The presentation used for the training program is **Appendix F**.

### 9.1.12 Recovery operations during testing

It is important to consider potential variations in public distribution system operations in the cycle testing program. During the initial cycle testing, there were periods of time when elevated storage levels and line pressures in the City's distribution system affected the ability to recover water, and the recovered water flow rate. The City had to recover water for a longer-than-planned period because there were days when recovery had to be stopped or the flow rate decreased.

## 9.1.13 Conclusion

Based on the successful recharge and recovery at Well No. 19, and the data collection and analysis performed during the Project, there is strong technical support for Victoria moving ahead with the next phase in the implementation of its ASR program.

# 9.2 Recommendations

The following paragraphs describe the recommendations for the City's ASR program based on the results of the conclusions from the Project.

### 9.2.1 Phase 3 of ASR program development

The data collected and analyzed in this Project provide a basis for recommendations moving forward with the Victoria ASR program, and for design of proposed ASR facilities to be constructed during the following phases of the program. The next (third) phase will include a study to confirm the location for a new ASR well and any recommended monitoring wells, and to evaluate any improvements needed to the City's distribution system to accommodate the new ASR well. Phase 3 will also include completion of cycle testing and collection of data at Well No. 19, which will be needed for TCEQ permitting of both Well No. 19 (for permanent operation) and the new ASR well.

# 9.2.2 Following phases of ASR development

In the fourth phase, the City will permit, design and construct a new ASR well and wellhead facilities, any monitor wells needed to properly operate Well No. 19 and the new ASR well, and any needed improvements or modifications to the City's water distribution system.

### 9.2.3 Storage of water and continued cycle testing in Well No. 19

Under its current TCEQ 5X25 authorization, the City can continue to operate ASR Well No. 19 until December 31, 2020. The City can store water for recovery when needed to meet peak demand or during periods of drought. Although TCEQ has currently authorized only two cycle tests, TCEQ staff has stated that Victoria can request an amendment so it can conduct additional tests within the authorization period.

The City should continue ASR cycle testing, storing as much water as possible prior to needing the water to meet summer peak demands. The City could recover up to half of the cumulative volume in storage. The City will leave the remaining volume in storage as a contribution toward subsequent formation of a buffer zone and achieving the Target Storage Volume for this well. The City should continue the current practice of backflushing the well whenever the casing

annulus pressure at the wellhead reaches 20 psi. With TCEQ's approval, the City can conduct additional cycle tests as needed to operate the ASR well and gather data for permitting.

During these ASR operations, the City will gather water level, pressure and volume data, and provide quarterly reports to comply with the TCEQ requirements. A final report to TCEQ is also required at the end of each test cycle.

### 9.2.4 Water quality sampling and data collection

While the City is conducting the additional cycle testing, the Arcadis Team recommends that it continue to collect water quality lab samples and field data. The data collected during the cycle testing can serve as the basis for TCEQ permitting for permanent operation of ASR Well No. 19 and for permitting and design of the new ASR well. The data will also support the projections of recoverability that are important for Class V UIC permitting of an ASR well.

Measurement of both laboratory and field water quality constituents should continue to be incorporated into the ASR testing program. Monthly measurements together with data at the beginning and end of recharge and recovery periods will improve the understanding of any water quality changes during ASR storage of larger volumes and for longer storage times. Also, the City should monitor static water levels and pumping water levels when water samples are obtained.

The City should review and update the current format for ASR record keeping to better facilitate future data analysis. Similarly, it is prudent for the City to review and update the laboratory analytical list of constituents to be analyzed so that it best matches the City's ASR needs and objectives. Record keeping should allow for rapid decision-making based upon water quality and water level data.

The City should also use the existing data and the additional data recommended above to evaluate the impact of water quality differences (e.g., lower orthophosphate concentrations) during ASR recovery on the potential for nitrification and corrosion in the distribution system. The evaluation process should consider blending ratios and distribution system materials in the regions of the distribution system where recovered water will be distributed. The evaluation should also establish a distribution system water quality monitoring plan, in addition to monitoring the recharged and recovered water.

### 9.2.5 Disinfection processes

The City should evaluate possible minor changes to the wellhead disinfection process and associated piping that reflect variable ammonia concentrations in the water recovered from ASR storage. The ammonia concentration will vary, depending on storage time in the aquifer. It might also be helpful to provide the operational flexibility to add the chlorine either before or after adding the ammonia and/or to change the distance between the chemical feed points in the wellhead piping during ASR recovery. The City should also consider amending its Nitrification Action Plan to include specific triggers for actions relating to the recovered ASR water and the areas of the distribution system where stored water will likely be distributed.

### 9.2.6 Post demonstration well phase tasks

Later tasks should include construction of an hydrogeologic analytical computer model to evaluate recoverability of stored water, and the potential impacts, if any, of the operation of Well

No. 19 and the new ASR well. That model will likely be needed before Well No. 19 is put into permanent operation under a TCEQ Class V UIC permit. That model and all previous work will also be used as the basis for permitting the new ASR well and any future Victoria ASR wells.

# **10** Acknowledgements

The Arcadis team sincerely appreciates the support and cooperation of the leaders and staffs of the City and the Victoria County GCD; the TWDB; Mr. Lynn Short, President of LSPS Solutions, LLC; and contractors Weisinger and Mercer.

At the City, specific acknowledgement and appreciation go to: Director of Public Works Donald Reese; Operations & Maintenance Manager Roland Rodriguez; SWTP Manager Stephen Robinson; SWTP Construction/Project Manager Barry Huebner; SWTP Chief Operator Kevin Post; City Engineer Ken Gill, P.E.; and Public Works Engineer Darrell Seibert, P.E. We especially appreciate the leadership of Mr. Reese, and the time, effort and information provided by Barry Huebner during the rehabilitation, retrofit and cycle testing of Well No. 19.

Special thanks go to Mr. Lynn Short, President of LSPS Solutions. As former Director of Public Works for the City, Mr. Short was instrumental in getting the ASR feasibility study initiated, and he provided valuable leadership and assistance in the application to the TWDB for funding a portion of this demonstration project. During the well rehabilitation process and the retrofit of Well No. 19, Mr. Short provided very valuable construction supervision and technical input.

At the Victoria County GCD, we appreciate the support, input and continual cooperation of General Manager Tim Andruss.

At the TWDB, we particularly appreciate the support and valuable input of Ms. Erika Mancha, Manager of the Innovative Water Technologies Division.

Weisinger, Inc. of Willis, Texas has been a family-owned business since 1975. That company was responsible for the down-hole well rehabilitation and retrofit, as well as the necessary repairs to Well No. 19. We particularly appreciate the leadership and cooperation of President/CEO Scott Weisinger, and the technical input and assistance of Randy Hagen, B.J. Alldredge and Francisco Ochoa.

Mercer Construction Co. of Edna, Texas was responsible for the construction of the aboveground ASR facilities. We greatly appreciate the leadership of President David Gregory and the technical construction support provided by David Gabrysch.

# **11 References**

- Arcadis, U.S., Inc., July 2014, Victoria area ASR feasibility study final report: prepared under subcontract for Naismith Engineering, Inc. under TWDB Contract No. 1348321576.
- ASR Systems LLC, November 2007, Evaluation of arsenic mobilization processes occurring during aquifer storage recovery activities (H-046): report prepared for Southwest Florida Water Management District. Brooksville, Florida.
- Pyne, R.D.G., Brown, C.J., Powell, G.M. and Stuyfzand, P.J., July 2008, ASR arsenic surrogate model: Achieving high recovery efficiency and reducing arsenic concentrations in ASR wells through formation and maintenance of a buffer zone: report prepared for the South Florida Water Management District. West Palm Beach, Florida.
- Pyne, R.D.G., 2005, Aquifer storage recovery: A guide to groundwater recharge through wells. ASR Press, 608 p.
- Texas Water Development Board, February 2011, An assessment of aquifer storage and recovery in Texas. Report No. 0904830940.

# **12 Appendices**

# 12.1 Appendix A. TCEQ authorization

Bryan W. Shaw, Ph.D., P.E., *Chairman* Toby Baker, *Commissioner* Jon Niermann, *Commissioner* Richard A. Hyde, P.E., *Executive Director* 



# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

April 28, 2017

Ms. Charmelle Garrett City Manager City of Victoria, Texas PO Box 1758 Victoria, Texas 77902

RE: Authorization of a Class V Injection Well City of Victoria TCEQ Authorization No. 5X2500127 CN600243257/RN109688143 Underground Injection Control

Dear Ms. Garrett:

The Underground Injection Control (UIC) staff has completed review of the City of Victoria's April 25, 2017 letter requesting an authorization for a Class V UIC experimental well for the City's existing Water Well No.19. As requested in this letter, this authorization is based on information provided in the April 25, 2017 letter and on information provided in the city's application for Class V Underground Injection Control (UIC) Wells for an Aquifer Storage and Recovery (ASR) Project (proposed authorization no. 5R2100049), received on March 1, 2017, which was prepared by Arcadis U.S., Inc. The purpose of this injection well authorization is to conduct cycle testing to determine the feasibility of storing water in the Evangeline Aquifer for later recovery (aquifer storage and recovery, or ASR), and to determine any effects resulting from injection and recovery on water quality in the receiving aquifer.

Based on our review, approval is hereby given for operation of the City of Victoria's Water Well No. 19 for injection of water into the Evangeline Aquifer from 460 feet to 1,066 feet below ground level. Injection and recovery of water shall be in accordance with the information submitted in the April 25, 2017 letter and in the ASR Project application received March 1, 2017. In order to maintain authorization by rule for the injection operations, the project must meet all requirements of the UIC rules provided by 30 Texas Administrative Code (TAC) Chapter 331. Requirements for the authorization include:

- 1. The injection well must meet the standards provided in 30 TAC §331.132 or as approved otherwise.
- 2. All activities conducted under this authorization shall be completed by December 31, 2020.
- 3. Injected water must be from the City of Victoria's public water supply system.
- 4. The cumulative volume of injected water, including the buffer zone, shall not exceed 3,908 acre-feet at any one time.
- 5. The City of Victoria shall provide the following information to the UIC Permits Section, Radioactive Materials Division, at mail code MC233:

P.O. Box 13087 · Austin, Texas 78711-3087 · 512-239-1000 · tceq.texas.gov

- a. Quarterly progress reports to include, injection volumes, recovery volumes, injection rates, maximum injection pressure, and results of injectate and groundwater sampling and analysis;
- b. A well completion report detailing all conversion work performed Well No. 19
- c. Two paper copies of the project final report on the results of Cycle Test No. 1; and
- d. Two pager copies of the project final report on the results of Cycle Test No. 2, if Cycle Test No. 2 is conducted.
- 6. A report detailing all results from cycle testing and analyses, and all conclusions reached from this information, shall be submitted to the TCEQ UIC Permits Section within 60 days of completion of such testing and analyses for Cycle 1, and for Cycle 2, if performed.
- 7. Changes to the authorization including but not limited to the addition of wells or temporary injection points, different injectate, operational and status changes, or additional time to complete injection activities, shall be requested and approved by the UIC Permits Section by amending the authorization. Unless otherwise amended, this authorization expires December 31, 2020.
- 8. Closure (plugging) of injection wells, as applicable, shall comply with standards provided in 30 TAC §331.133. Closure reports including injection well monitoring data (injection volumes, pressures, and results) and plugging reports shall be submitted to the UIC Permits Section, Radioactive Materials Division, at mail code MC233 within 60 days of conclusion of injection activities.
- 9. All engineering and geoscience plans, specifications, calculations, analyses, reports and other related engineering and geoscience documents must be prepared, sealed, signed, and dated by a Texas professional engineer (P.E.) or a Texas professional geoscientist (P.G.), as appropriate.
- 10. All analytical data submitted to the TCEQ must be generated by a lab that the Texas Laboratory Accreditation Program (TLAP) has accredited under the National Environmental Laboratory Accreditation Conference (NELAC) standard for matrices, methods, and parameters of analysis, unless: (1) the lab is an in-house lab and either the lab performs work for its owner, for another company with a unit located on the same site, or without compensation for a governmental agency or charitable organization, or the lab is in another state and is accredited or inspected by that state; (2) the lab is accredited under federal law; (3) the data are needed for emergency-response activities and no TLAP-accredited lab is available; or (4) the lab supplies data for which the TCEQ does not offer accreditation. Refer to the list of laboratories<sup>1</sup> accredited by the State of Texas under the National Environmental Laboratory Accreditation Program (NELAP) on the TCEQ website.

Any information to be submitted under this authorization that the City of Victoria deems confidential shall be provided as a separate collective document and clearly labeled "**Confidential.**" The designation of material as confidential is frequently carried to excess. The Commission has a responsibility to provide a copy of each associated document to other review agencies and to interested persons upon request and to safeguard confidential material from becoming public knowledge. Thus, the

<sup>&</sup>lt;sup>1</sup> www.tceq.texas.gov/assets/public/compliance/compliance support/qa/txnelap lab list.pdf

Ms. Charmelle Garrett Page 3 April 28, 2017

Commission requests that the regulated entity (1) be prudent in the designation of material as confidential and (2) submit this material only when it might be essential to the staff in their development of a recommendation.

If you have any questions or comments regarding this matter please contact me at <u>david.murry@tceq.texas.gov</u> or (512) 239-6080. If you will be responding by letter, please include mail code MC233 in the mailing address.

Sincerely,

David H. Murry, P.G., Project Manager Underground Injection Control Permits Section Radioactive Materials Division Texas Commission on Environmental Quality

DHM/krh-d

cc: Fred Blumberg, Arcadis U.S., Inc. David Pyne, ASR Systems, LLC David Vance, Arcadis, U.S., Inc.

# 12.2 Appendix B. Preliminary design report

# Preliminary Design for the Aquifer Storage Recovery System (ASR) Demonstration Project for Alternative Water Supply for the City of Victoria, Texas

Lynn Short/City of Victoria

FROM: Fred Blumberg/Arcadis R. David G. Pyne, P.E./ASRS Ted L. Belser, P.E./ASRS

DATE: January 5, 2017



Digitally signed by Ted L. Belser, P.E. DN: cn=Ted L. Belser, P.E., o=Integrated Project Delivery Services, LLC, ou=IPDS, email=tbelser@atlantic.net, c=US Date: 2017.01.05 14:10:22 -05'00'

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# Background & Purpose

In recent years a drought in Texas created the need to assess the viability of a continuous water supply for the City of Victoria. In order to address the water supply issue the City joined other water providers in the region to evaluate the potential of using Aquifer Storage Recovery (ASR) as a water management strategy. The evaluation focused on the use of ASR and/or Off-Channel Storage (OCS) for management of existing water supplies. Refer to the report titled: *Victoria Area ASR Feasibility Study Final Report (ASR FS), July 2014*.

This project will concentrate on the implementation of a demonstration facility for the ASR option for water storage and recovery. The demonstration facility will consist of conversion of Well No. 19, which is one of the City's existing production wells, to serve as an ASR well. Refer to the detailed ASR FS for more detailed information pertaining to the overall study<sup>1</sup>. The converted well will include all features required for the various modes of ASR operations; however, due to budget limitations for the demonstration project, full automation utilizing motor operated process control valves will not be included. The City can add the motor operators and controls in the future when funds are available.

During an ASR Workshop on 12 September 2013 the study team discussed potential ASR applications believed to be beneficial to the operations of the City of Victoria system. The prioritized list of ASR applications for the City includes:

- 1. Seasonal storage to meet peak seasonal demands.
- 2. Long-term storage to increase system reliability during a drought.
- 3. Deferment of expansion of the City's existing water treatment plant (WTP) or the construction of a second WTP.
- 4. Emergency storage for relief during severe flooding or other events.
- 5. Reduction of disinfection by-product (DBP) concentrations within the system.

Water supply reliability is defined in terms of the number of days during a repeat of the Drought of Record (DOR) that the water system demands can be fully met, as a percentage of the total number of days during the DOR. The seventy-two year period of record from January 1940 through December 2012 was selected for the analysis. The period included the DOR for the area which included the ten-year period from 1947 to 1957, and 2011 which was one of the driest years on record. In order to achieve total reliability using ASR, a sufficient water volume must be

<sup>&</sup>lt;sup>1</sup> In Section 8, page 137, Table 8-1, of the ASR FS the City's existing production Well No. 14 was identified as the first well to convers as a part of the Phase 2 work. However; the City later decided to utilize Well No. 19 instead. The Well No. 14 conversion will be included as a part of a future phase.

maximum feed rate would result in an average consumption of approximately 72 gallons per day<sup>7</sup>. The corresponding ammonia feed system will be capable of the industry standard recommendation for a chlorine:ammonia mass ratio in the range of 4.2:1 to 5:1.. Based upon the stoichiometric ratio of 4.2:1, the ammonia system will be initially configured to supply ammonia at a rate of 0.95 mg/liter or 17.2 pounds per day. Therefore, for ammonia delivered as 38% liquid ammonium sulfate (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> (LAS) the resulting feed rate to deliver 17.2 pounds of NH<sub>3</sub> per day would be approximately 6.6 gallons of LAS per day<sup>8</sup>. If the recovery pump is controlled by an AFD allowing lower recovery rates, the corresponding chemical feed rates and on-site storage requirements<sup>9</sup> for 275 gallon totes would be as shown in the table below.

Recove	ry Flowrate	NaOCI Feed Rate	275 gal Totes	38%LAS Feed Rate	275 gal Totes
(gpm)	(mgd)	(gpd)	for 15 days	(gpd)	for 15 days
1,500	2.16	72.0	4.0	6.6	0.36
1,200	1.73	57.6	3.2	5.2	0.28
1,000	1.44	48.0	2.6	4.4	0.24

The chlorine and ammonia feed systems will each consist of simple weatherproof enclosures that will house a feed pump with connection to bulk containers of each of the chemicals located on an adjacent covered concrete slab. The 12.5% sodium hypochlorite (NaOCI) and the 38% LAS will each be delivered in 275 gallon totes which will require secondary containment<sup>11</sup>. The NaOCI totes will be stacked 2-high for a total of 4 totes to meet the 15 day storage requirement. The secondary containment for each chemical will consist of a duplex container heavy-duty plastic sump with capacity to contain the complete tote volume, and grating to support the totes. The two chemicals should never come in contact with each other because contact can result in an adverse reaction or even an explosion. Therefore, the storage areas for the totes will be separated by an 8" masonry partition wall.

The NaOCI feed pump and the LAS feed pump will be mounted adjacent to their respective containers. Each of the chemical feed pumps will be housed in individual weatherproof enclosures as shown on Drawing M-1. The chlorine feed system will utilize a positive displacement feed pump with degassing feature designed for 12.5% NaOCI delivery service. The system will be capable of rate adjustment over the range of the unit. The ammonia feed system will utilize a positive displacement peristaltic hose-type feed pump. The feed pump will be

<sup>&</sup>lt;sup>7</sup> Quantity of 12.5% NaOCI for a 4 ppm residual = 2.16 mgd x 4 ppm x 8.34 lb/mg/ppm =72 lb/day; 12.5% NaOCI has 1 lb chlorine /gallon; therefore = 72 gal/day. <sup>8</sup> 38% LAS, SG=1.23, 3.86 lb of LAS contains 1 lb NH<sub>3</sub>. Therefore, 17.2 x 3.86 = 66.4 lb LAS required =  $66.4/(8.34 \times 1.23) = 6.48$  gal/day

<sup>&</sup>lt;sup>9</sup> Minimum storage of a 15-day supply required as per TCEQ RG-195 §290.42(f)(1)(A).

<sup>&</sup>lt;sup>11</sup> Containment facilities are required for NaOCI and LAS containers of more than 55 gal per TCEQ RG-195 §290.42(f)(1)(E)(ii)(IV).

specifically selected for 38% LAS. Injectors designed for easy removal for cleaning will be provided at each of the injection points to the process piping.

# **Electrical System**

The existing pumping system utilizes a 480-volt, 3-phase, 60 Hz electrical service of sufficient capacity for the new 200 hp (240 amps full-load current) ASR recovery pump and appurtenances. The existing 400 amp disconnect for the well pump motor will be retained, and a new motor starter for the new ASR recovery pump will be included in the design. The base bid will be for a



**Existing Electrical Equipment & Control Panel** 

AFD which will provide a "soft-start" for the 200 hp motor, and will allow adjustment of the pump speed/pumping rate for recovery operations. In order to address budget limitations, a standard reduced-voltage starter will be included as a deduct alternate.

The existing 480V:208/120V transformer and panels for lighting, receptacles, controls, and appurtenances will remain in service. A new exhaust fan/inlet louver will provide additional ventilation and will be powered from this system. However; in the future if valve motor operators are added for automatic operation of the system, a new larger transformer and panelboard will be required for the additional load.

# Instrumentation and Controls

ASR facilities are typically automated to sequence the valves and pump for ease of operation. However; for this demonstration project the various modes of operation for the ASR Well No. 19 will initially be manually controlled. It is anticipated that the City may wish to automate operations in the future when funds are available. As much as possible, the design will include provisions to facilitate system automation in the future.

The well currently has capability to monitor flow and water level. These functions will be retained through use of the existing PLC control panel, working with a new bi-directional magneter for flow and a submersible pressure transducer for well water level.

The well head will be fitted with a submersible pressure transducer that will be set inside a 1.25inch polyethylene tube strapped to the pump column. The pressure transducer will be installed below the lowest water level expected in the casing during recovery and will be capable of reading the range of water levels (hydraulic grade line) within the well casing during recovery and recharge.

A pressure gauge on the well casing will provide local indication of pressure in the casing during recharge. A separate port on the wellhead flange connected to an empty tube strapped to the pump column will enable independent water level measurement via an electric tape, in case the pressure transducer fails.

The various modes of operation for the system are described below. The operator will choose from the following:

#### 1. Recharge Mode:

For this mode of operation the ASR well will be used to store potable water from the City distribution system by diversion of a portion of the water through the new 12-inch pipeline.

#### 2. Flushing Mode:

This mode of operation will be initiated at the operator's discretion prior to operating the ASR well in the Recharge Mode or Recovery Mode, or for periodic back flushing to control well clogging. Water from the well will be wasted to the on-site adjacent drainage ditch. An air-gap between the discharge pipe and the ditch will be provided to avoid cross connection with the potable system.

#### 3. Recovery Mode:

This mode of operation will use the recovery pump to recover previously stored water from the ASR well and pump it into the existing distribution system. The recovered water will be disinfected with chlorine and ammonia to provide a residual of chloramines.

#### 4. Storage Mode:

During this mode of operation no recharge or recovery occurs. A trickle flow of treated drinking water will be directed into the ASR well to maintain a small disinfectant residual in the casing, borehole and adjacent portion of the aquifer.

#### 5. Off Mode:

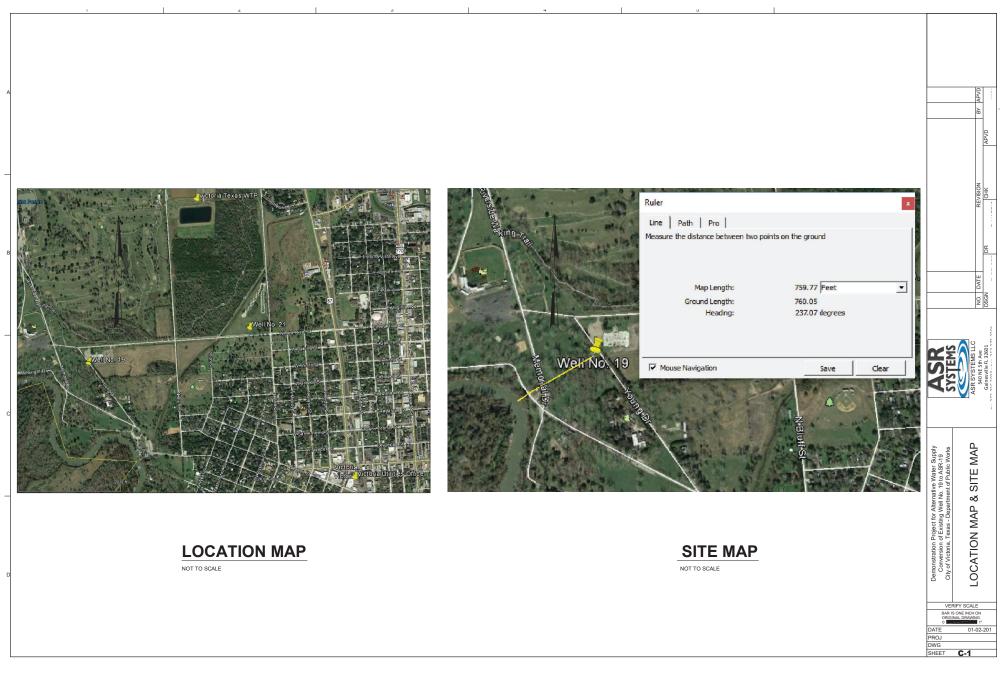
During this mode of operation the system is completely off, with all valves in the closed position the recovery pump and the chemical feed pumps are off.

The control scheme as described above will enable the City to meet the daily and seasonal needs of the service area. A detailed description of the operation of the facilities will be provided in the final O&M manual. The status of the various items of equipment during each of the five modes of operation will be as described in the following table.

TAG	EQUIPMENT ITEM	ASR SYSTEM MODE OF OPERATION				
		RECHARGE MODE	FLUSHING MODE	RECOVERY MODE	STORAGE MODE	OFF MODE
P-19-1	ASR RECOVERY PUMP	OFF	ON	ON	OFF	OFF
FCV-19-1	RECHARGE VALVE	OPEN (throttled)	CLOSED	CLOSED	CLOSED	CLOSED
FV-19-2	RECHARGE VALVE	OPEN	CLOSED	CLOSED	CLOSED	CLOSED
FV-19-3	AQUIFER FLUSH VALVE	CLOSED	OPEN	CLOSED	CLOSED	CLOSED
FV-19-4	RECOVERY VALVE	CLOSED	CLOSED	OPEN	CLOSED	CLOSED
FP-19-1	NaOCI FEED PUMP	OFF	OFF	ON	OFF	OFF
FP-19-2	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> . FEED PUMP	OFF	OFF	ON	OFF	OFF
FV-19-5	TRICKLE FLOW	CLOSED	CLOSED	CLOSED	OPEN	CLOSED

#### Attachment - Preliminary Drawings

- C-1 Location Map & Site Map
- FD-1 ASR Flow Diagram
- M-1 Wellhead Piping Plan & Section



Plan sheets "FD-1 ASR Flow Diagram" and "M-1 Wellhead Piping - Plan & Section" were previously provided to the TWDB.

#### 12.3 Appendix C. Final plans and specifications

Previously provided to TWDB by separate transmittal.

#### 12.4 Appendix D. Equipment manuals

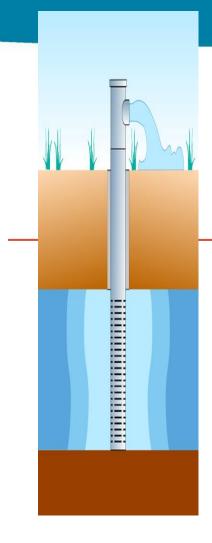
Equipment Manuals provided to TWDB as a separate electronic deliverable.

Equipment Warranties were provided to the City of Victoria by the Contractors.

#### 12.5 Appendix E. Operations and maintenance manual

Previously provided to TWDB by separate transmittal.

#### 12.6 Appendix F. Training program (PPT)



#### CITY OF VICTORIA, TEXAS AQUIFER STORAGE RECOVERY WELLASR-19

### **OPERATIONS & MAINTENANCE TRAINING SESSION**

### Introduction to ASR

R. David G. Pyne, P.E. and Ted Belser, P.E. ASR Systems LLC Gainesville, Florida

May 8, 2018



Global implementation of ASR since 1985 to achieve water supply sustainability and reliability

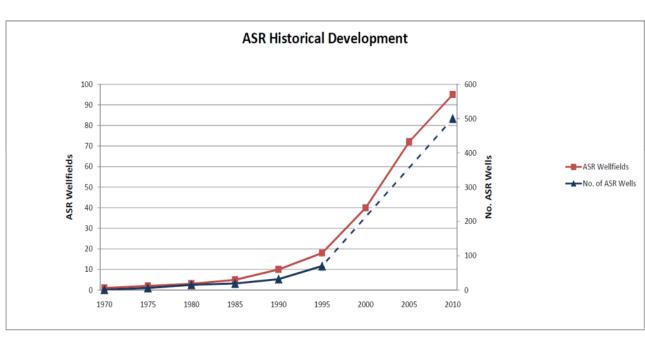
- Australia
- India
- Israel
- Canada
- England
- Netherlands
- South Africa
- Namibia
- United Arab Emirates
- Bangladesh



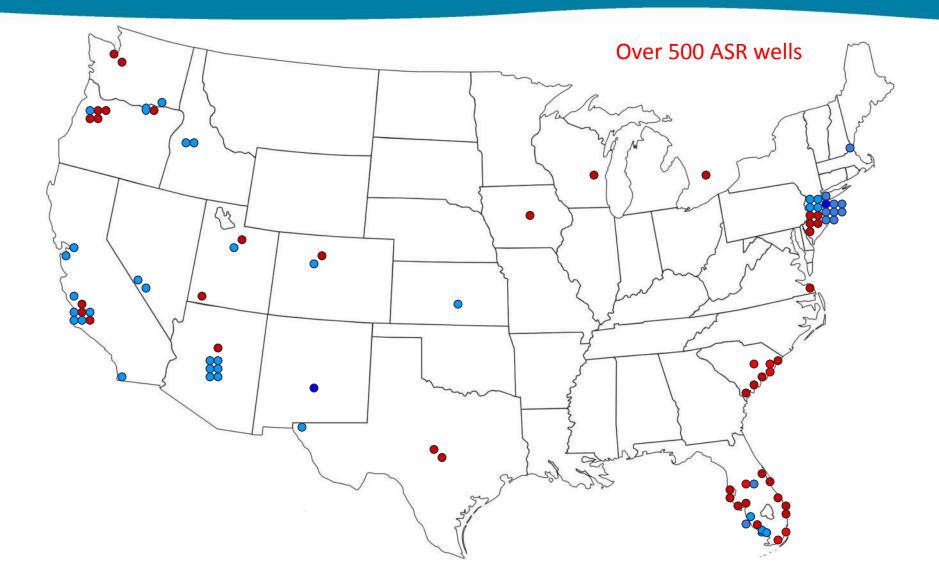
Adelaide, Australia ASR Well And others in development (Kuwait, Taiwan, Indonesia, Qatar, Serbia, China, Oman)

# ASR Development in the U.S. has been rapid during the past twenty years

- 29 different ASR applications
- Many different types of water sources for aquifer recharge
- Storage in many different types of aquifers and lithologic settings



### At least 120 Operational ASR Wellfields in the United States (2012)



# **Texas ASR Experience**

### Operational ASR Wellfields

- El Paso Water Utilities
- City of Kerrville
- San Antonio Water System

### ASR Wellfields in Development

- City of Victoria
- New Braunfels Utilities
- City of Corpus Christi
- City of Buda
- ASR Feasibility studies underway or completed
  - Barton Springs, Port Lavaca, Laredo, Lubbock, GBRA, HGSD
  - Several others

# A broad range of water sources and storage zones is utilized for ASR

- Water sources for ASR storage
  - Drinking water
  - Reclaimed water (AZ, TX, FL, NJ, CA)
  - Seasonally-available stormwater
  - Groundwater from overlying, underlying or nearby aquifers
- Storage zones
  - Fresh, brackish and saline aquifers
  - Confined, semi-confined and unconfined aquifers
  - Sand, clayey sand, gravel, sandstone, limestone, dolomite, basalt, conglomerates, glacial deposits
  - Vertical "stacking" of storage zones



Chandler, AZ

Tumbleweed ASR Wellfield

Storing Reclaimed Water for Aquifer Recharge

# **ASR Operating Ranges**

- Well depths
  - 30 to 3,000 feet
- Storage interval thickness
  - 20 to 400 feet
- Storage zone Total Dissolved Solids
  - 30 mg/L to 39,000 mg/L
- Storage Volumes
  - 100 ÅF to 60,000 AF
  - (30 MG to 20 BG)
- Bubble radius usually less than 1000 ft
- Individual wells up to 8 MGD capacity
- Wellfield capacity up to 157 MGD



Calleguas MWD, California ASR Well

### ASR has many applications to meet local needs

- Seasonal storage
- Peak, diurnal and emergency water needs
- Water banking, or long term storage
- Restore groundwater levels
- Reduce subsidence
- Maintain distribution system flows and pressures
- Improve water quality
- Prevent seawater intrusion
- Protect endangered species
- Agricultural water supply
- Temperature control
- Hydraulic control of contaminant plumes
- Defer expansion of water facilities
- Disinfection Byproduct reduction
- ....several other applications to date
- ....29 different applications to date



Kiawah Island, South Carolina, ASR-2

#### Identifying and prioritizing these applications is a logical first step in ASR planning

# Several factors have contributed to ASR global implementation

#### Economics

- Typically less than half the capital cost of alternative water supply sources
- Phased implementation
- Marginal cost pricing
- Proven Success
  - About 120 wellfields in over 20 states with over 500 operating, fully permitted ASR wells
- Environmental and Water Quality Benefits
  - Maintain minimum flows
  - Small storage footprint compared to surface reservoirs
- Adaptability to Different Situations
  - Fresh, brackish or saline storage aquifers
  - Drinking water, reclaimed water, stormwater or groundwater storage
  - Over 29 different applications



Mt Pleasant, SC – Well ASR-2

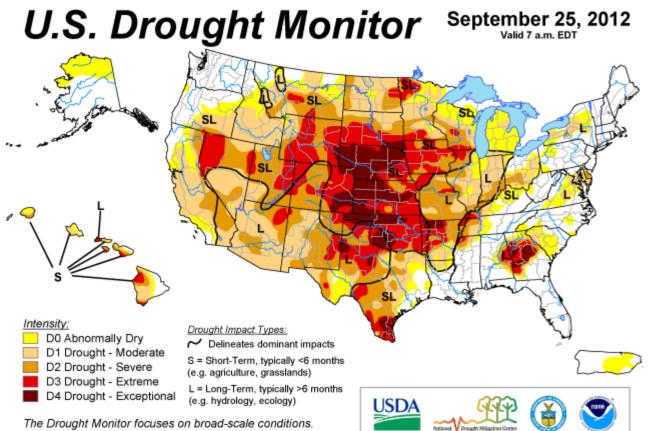
# Three case studies illustrate the range of applications for ASR to meet end-user needs

- San Antonio, Texas
- Orangeburg, South Carolina
- Hilton Head, South Carolina



Highlands Ranch, CO One of 26 ASR wells underground in vaults, storing drinking water to help meet peak summer demands

# Severe to Extreme Drought Affected 40% of the U.S. as of 8/31/12



Local conditions may vary. See accompanying text summary for forecast statements.

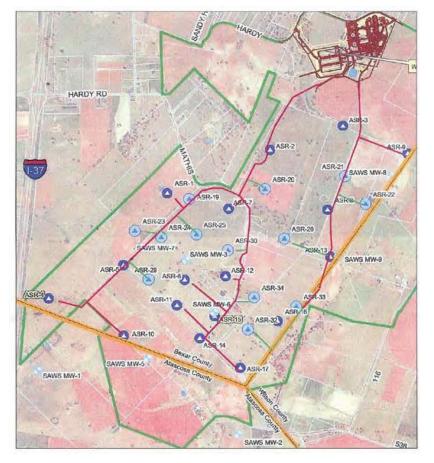
#### http://droughtmonitor.unl.edu/

Released Thursday, September 27, 2012 Author: Anthony Artusa, NOAA/NWS/NCEP/CPC

# San Antonio Water System, Texas

- Twin Oaks WTP and ASR wellfield
- Wellfield area is 3,200 acres
- 29 ASR wells and 3 production wells
- 1,800 to 2,500 gpm/well
- Total recovery capacity 60 mgd
- Third largest ASR wellfield in U.S.
- Carrizo-Wilcox is a semi-confined sand aquifer
- Began recharge in 2004; up to about 100,000 AF stored to date
- Total construction cost: \$238M ASR wellfield cost: \$52M ASR unit capital cost:

US\$0.87/gpd recovery capacity



SAWS ASR Wellfield, 2005

## San Antonio Water System (SAWS)

- ASR objectives are long term storage to meet the "Drought of Record" and providing emergency water supplies
- During the 2010-2011 extreme drought the SAWS ASR wellfield produced 40 mgd to augment local water supplies for several months, relieving pressure on groundwater withdrawals from the Edwards Aquifer which supplies Comal and San Marcos Springs, plus all local water supplies



SAWS Flow Control Facilities and Ground Storage Reservoir at Twin Oaks WTP and ASR Wellfield

## San Antonio Water System ASR

- Water recovered from ASR wells normally does not require retreatment other than disinfection
- Water pumped from the three production wells requires full treatment for Fe and Mn removal, plus disinfection
- Toward the end of the drought ASR recovered water required treatment for Fe and Mn removal, due to blending with ambient groundwater

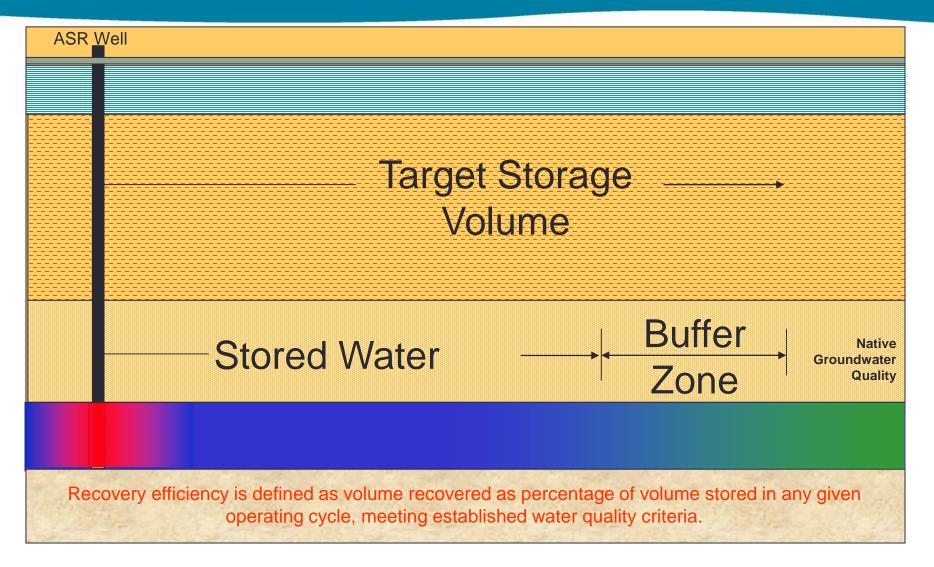


SAWS Twin Oaks Water Treatment Plant at the ASR Wellfield, 2006

## SAWS ASR: Lessons Learned

- Successful performance during the extreme drought a few years ago received enthusiastic local support and was noted by water managers statewide, galvanizing interest in ASR in Texas
- Mitigation plan has been effective for dealing with perceived offsite adverse impacts upon wells and groundwater levels
- An operating plan is needed to guide decisions regarding when to start and stop recharge and recovery; when is the "tank" full, etc.
- Legislation and rule-making has boosted interest in ASR development in Texas by addressing governance constraints.

## **Target Storage Volume**



In addition to water storage, treatment occurs in an aquifer due to natural processes.

NO<sub>3</sub>,NH<sub>3</sub>,P

Fe, Mn, As

Gross Alpha

THMs

HAAs

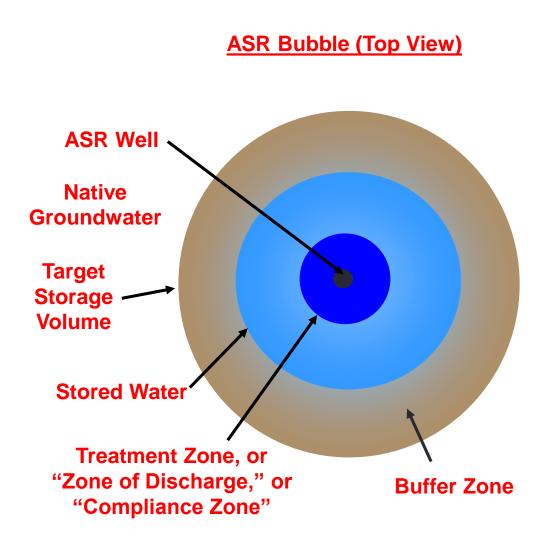
 $H_2S$ 

Rad.

Bacteria

Protozoa

Viruses



# Other ASR Issues for Consideration

- Interim Recharge
- Trickle flow
- Wellhead Pressure (pump column, casing annulus)
- Backflushing w/ VFD (frequency, procedures)
- Radial Injection Surge Development (RISD)
- Recharge flow rate variability
- Recovery flow rate variability
- Water level variability
- Water level and pressure measurement
- Lateral velocity of stored water movement
- Recovery efficiency
- Tracer testing
- Monitor well utilization (cycle testing; long term)
- Historian and manual data collection and reporting

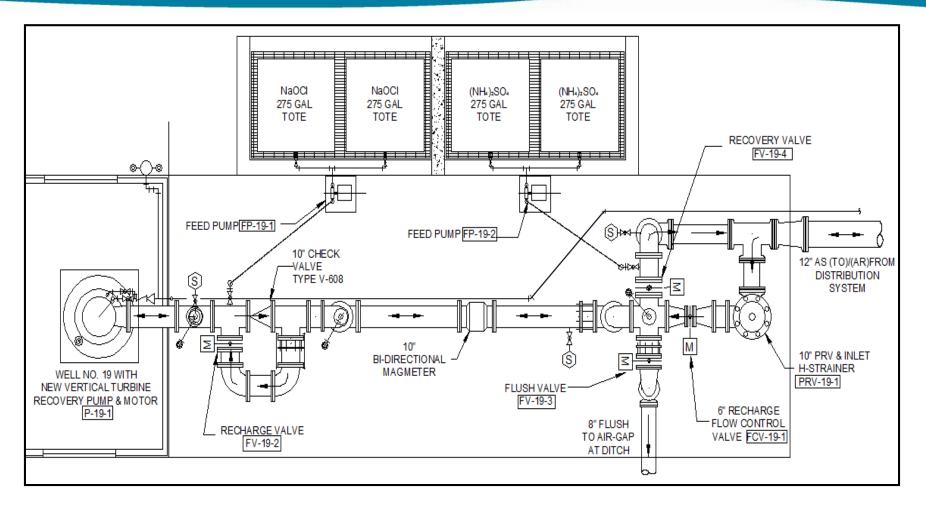
# Well ASR 19

- Constructed 1970; rehabilitated 1992, 2017
- 18-inch carbon steel casing to 400 ft
- Bottom hole depth 1,068 ft
- Pump set at 375 ft; design yield is 1,500 gpm
- Screened in Evangeline aquifer (clay, sand, gravel)
- 10-inch pipe-based, wire-wrap screens
  - Total length 270 ft; effective length 82 ft
  - 460 to 510 ft effective
  - 544 to 594 ft effective
  - 642 to 694 ft
  - 780 to 804 ft
  - 852 to 904 ft
  - 988 to 1,008 ft
  - 1,026 to 1,048 ft



Video Log: Pipe base at 587 ft has corroded and/or eroded, and is missing, exposing screen

# ASR Well 19 Piping Diagram



Operations Manual, p. 3

### Sampling and Water Level Measurement



#### Water Level Transducer, ASR-30

Water Level & Sampling for Monitor Well 21

### Well ASR-30 Wellhead Facilities



View at Strainer/PRV End of Wellhead Piping

View at Well End of Wellhead Piping



### Air Release Valves







## The Problem of Air Entrainment During Recharge of ASR Well

### Downhole Velocity V < 1 ft/sec

#### **No Problem**

If downward velocity is <u>less than 1 ft/sec</u> the air bubbles will rise to the top and be vented from the well.



### Downhole Velocity V > 1 ft/sec

#### **Air Entrainment Problem**

If downward velocity is <u>more than 1 ft/sec</u> the air bubbles will be carried down the well casing and into the formation of the aquifer.

### **Disinfection Equipment**



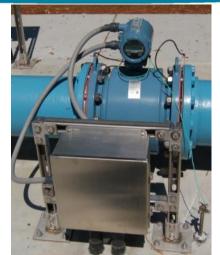
NaOCI and LAS Storage Tanks and Feed Pumps



**Chlorine Residual Analyzer** 

# Field Instruments: Pressure, Flowrate, Level













## **Electrical System Panels**



### Recovery Pump Adjustable Frequency Drive



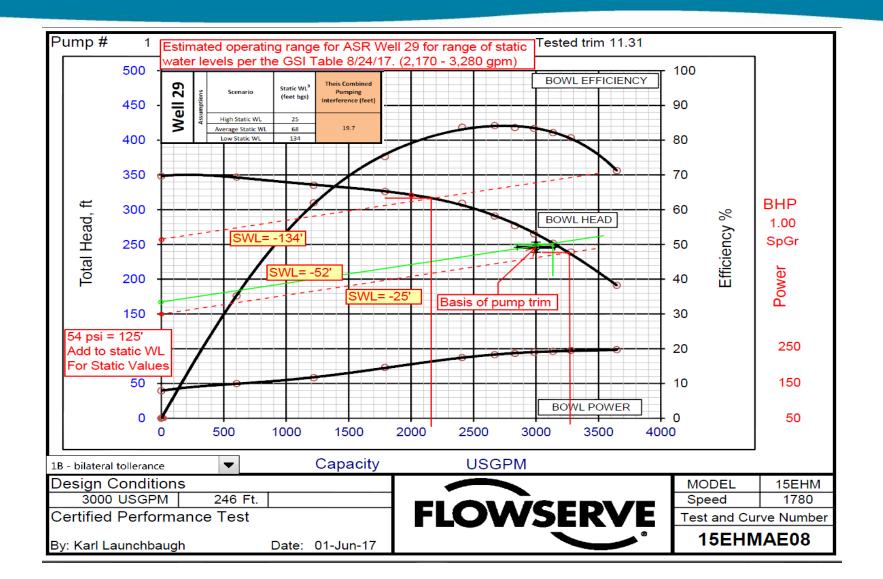
### Motor Control Center

## Flushing System Air-Gap Discharge





## Well ASR-29 Recovery Pump Curve



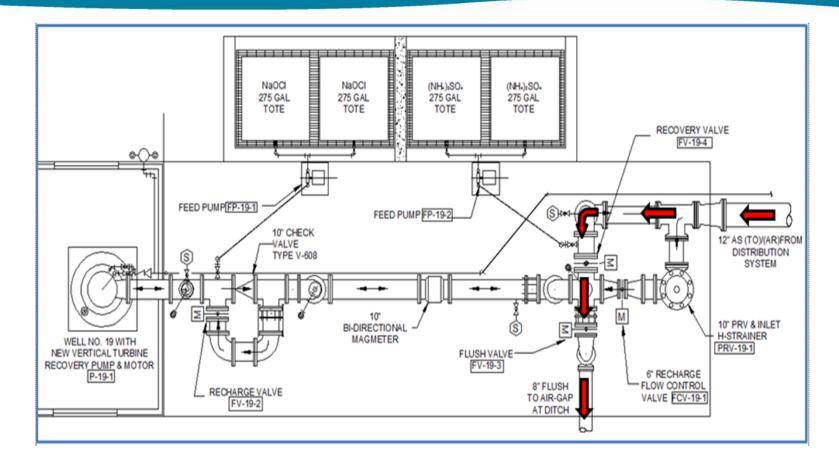
## Pump & Valve Status for Various Modes of Operation

Tag No.	Item	Recharge	Storage/TF	Flush	Recovery
PRV-19-1	Pressure Reducing Valve	Operating	N/A	N/A	N/A
FCV-19-1	Recharge Flow Control Valve	Manual Modulation	Closed	Closed	Closed
FV-19-2	Column Recharge Valve	Open*	Closed	Closed	Closed
FV-19-3	Flushing Valve	Closed	Closed	Open	Closed
FV-19-4	Recovery Valve	Closed	Closed	Closed	Open
P-19-1	ASR Pump	Off	Off	On - AFD	On - AFD
FP-19-1	NaOCI Pump	Off	Off	Off	On
FP-19-2	LAS Pump	Off	Off	Off	On

#### Exhibit 2 – Equipment Status Summary

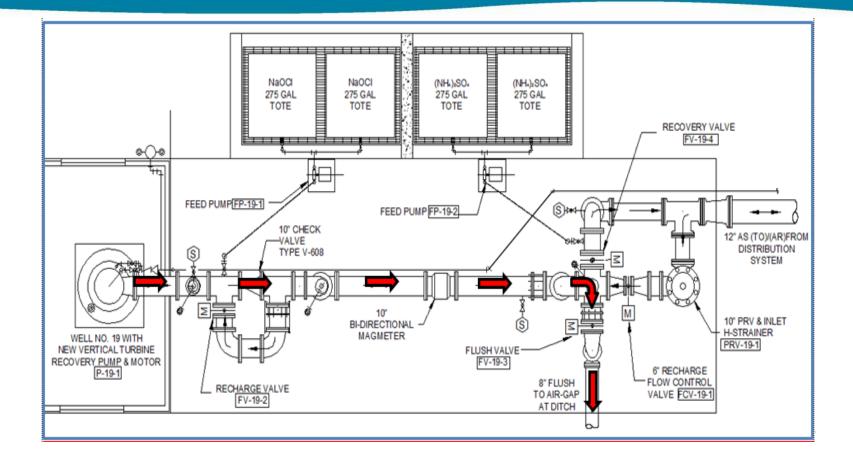
\* Open only after purging air from wellhead piping by manual control of FCV-19-1.

## Manual Flush: Recharge Path from Distribution System



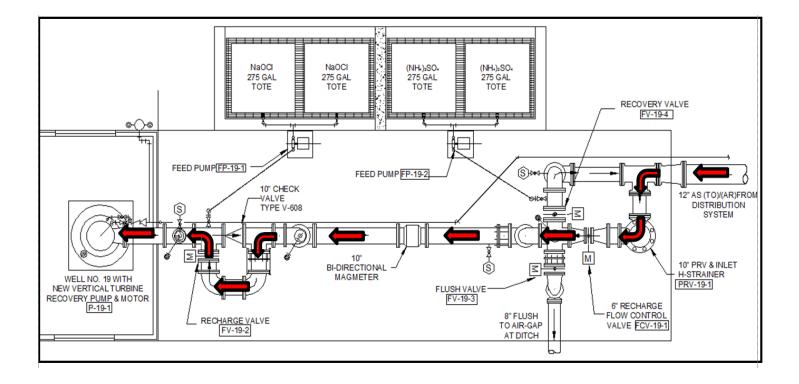
See Exhibit 4 on p. 7

## **Operating Mode: Manual Backflush of Well**



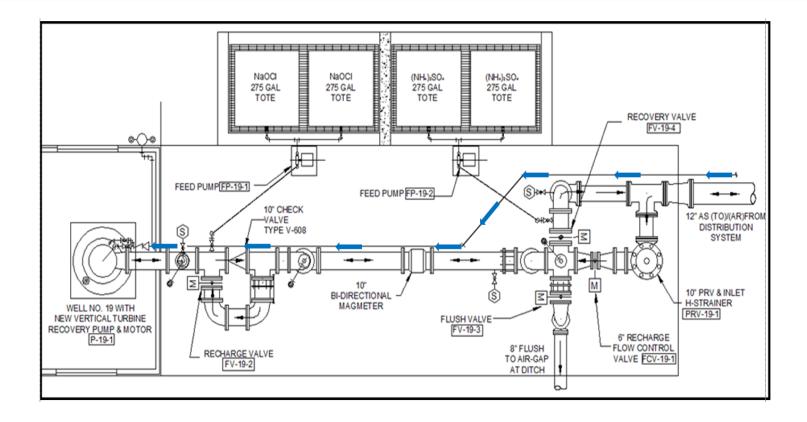
See Exhibit 3 on p. 5

## Recharge of Water from Distribution System



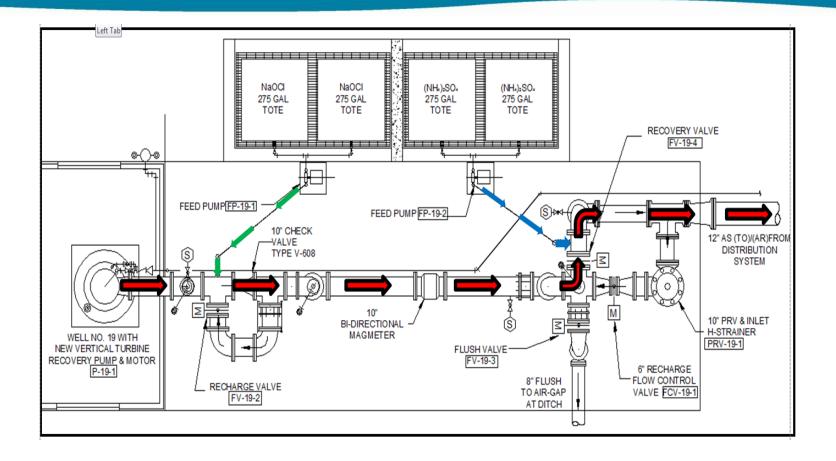
See Exhibit 5 on p. 8

# Storage and Trickle Flow



See Exhibit 6 on p. 10

# **Recovery to Distribution System**



See Exhibit 7 on p. 11

# Cycle Testing Program

				ycle Testing				
			City of Wo	odland We	II ASR-29			
		No	ovember 2	017 to Sept	ember 201	19		
Activity	Appr	oximate	Duration	(days)	Estima	ted Volur	ne (MG)	Comments
	Recharge	Storage	Recovery	Cumulative	Recharge	Recovery	Cumulative	
Cycle Test One	60	2	5	67	120	15	105	November 2017 to February 2018
Cycle Test Two	70	60	35	165	140	105	140	March 2018 to September 2018
Cycle Three	180	60	100		360	300	200	October 2018 to September 2019
Notes:								
1. Assumes average	recharge fl	ow rate (	of 2.0 MGI	D, varying be	etween 1.5	5 and 2.5 🕻	MGD	
2. Assumes recovery	/flow rate a	veragin	g 3.0 MGD	, varying be	tween 2.5	and 3.5 👷	IGD	
3. Assumes Cycle On	e occurs du	uring No	vember 20	17 to Febru	ary 2018 v	vith recov	ery to waste	
4. Assumes Cycles 2	and 3 recov	verwate	r to the di	stribution sy	/stem			
5. Flow rates, duration	ons and vol	umes wi	ll vary to n	natch opera	tional nee	ds, constr	aints and op	portunities
6. Assumed Target S	torage Volu	ıme is 50	0 MG, of	which 324 N	1G is availa	able for re	covery and	
176 MG is buffer z	one							

1



- Performance Testing (See p.5 12 of Operations Manual)
- Startup (See p. 20-23 of Operations Manual)
- Duration: April 2018 to December 2018 (tentative)
  - Recharge April to mid-October (about six months)
  - Storage period (about two weeks)
  - Recovery period (about one month)
  - Resume recharge for Summer 2019 (at option of City)
- Recharge rate 350 to 500 gpm (estimated)
- Recovery rate 1,500 gpm (design, adjustable)
  - Recover half of cumulative stored water volume, forming buffer zone
- August 2018 pause to confirm recovered water quality
  - Stop recharge for one week
  - Pump out 2 to 4 MG and get sample for PDWS and SDWS analysis
  - Resume recharge

# Cycle Testing Monitoring Program

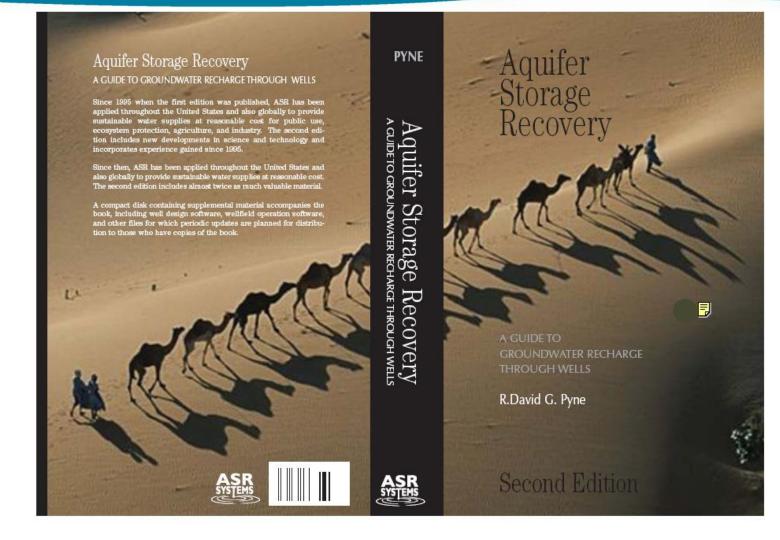
- See Operations Manual (pages 6-9, 6-10)
- List A constituents: beginning, end of recharge and monthly in between at Well 19 (about 6 samples)
- List B constituents from Well 19 at beginning, middle and end of recovery (3 samples)
- List C constituents from Well 19 at end of recovery (repeat complete Appendix A baseline analysis – 1 sample)
- List D constituents from Well 21 at beginning, middle, end of recharge into Well 19 (about six samples) plus
- Data Collection Form (Appendix B) (flows, levels, volumes, pressures, field water quality constituents)

# Appendix C – Permits and Authorizations

- TCEQ Construction Permit
- TCEQ Underground Injection Control (UIC) authorization for Class V Experimental Well
- UIC permit application pending upon completion of cycle testing, 2019

# ASR Book, Second Edition

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### 12.7 Appendix G. Water quality and hydraulic data

#### CITY OF VICTORIA, TEXAS ASR WELL 19 CYCLE TESTING PROGRAM DATA APRIL 2018 TO CURRENT

		Lab	Recharge/ Recovery	Mada of		Recharge	Recovery	Backflush	<b>Trickle Flow</b>	Trickle Flow	Daily	Cumulative	Casing Annulus	Pump Column	Depth to Water	Field	Field	Field	Field	Field	Field	Field	Field
Date	Time	Sampling	Meter	Mode of Operation	Flow Rate	Volume	Volume	Volume	Meter	Volume	Volume	Volume	Wellhead Pressure	Wellhead Pressure	Level Bubbler	DO	ORP	Conductivity	TCl <sub>2</sub>	Free Cl2	Temperature	рН	Chloride
		Yes/No	Reading	operation	(gpm)	(gallons)	(gallons)	(gallons)	Reading	(gallons)	(gallons)	(gallons)	(psi)	(psi)	(ft)	(mg/l)	(mv)	(µScm)	(mg/l)	(mg/L)	(°C)	(SU)	(mg/l)
04/01/18		No		Off		0	0	0		0	0	0										┢──┦	
04/02/18		No		Off		0	0	0		0	0	0										╏──┦	
04/03/18		No		Off		0	0	0		0	0	0										<b>├</b> ──┦	
04/04/18		No		Off		0	0	0		0	0	0											
04/05/18		No		Off		0	0	0		0	0	0											
04/06/18		No		Off		0	0	0		0	0	0											
04/07/18		No		Off		0	0	0		0	0	0											
04/08/18		No		Off		0	0	0		0	0	0											
04/09/18	2:30 PM	No	461179	Recharge	250	0	0	0		0	0	225220		0 40	#NI / A	7.96	595	607		3.25	21.8	8.32	90 90
04/10/18 04/11/18	9:00 AM 9:00 AM	No No	125940 -542249	Recharge Recharge	450 450	335239 668189		0		0	335239 668189	335239 1003428		38	#N/A #N/A	7.97 9.47	613.3 652	588 597		3.21 3.25	22.2 22.4	7.43 7.5	90 120
04/11/18	9:15 AM	No	-1172891	Recharge	430	630642	0	0		0	630642	1634070		40	#N/A #N/A	9.49	694.6	607		3.23	22.4	7.47	120
04/13/18	10:39 AM	No	-1840939	Recharge	437	668048	0	0		0	668048	2302117		40	#N/A	9.8	677	583		2.52	22.9	7.51	100
04/14/18	10:20 AM	No	-2459603	Recharge	436	618664	0	0		0	618664	2920782		40	#N/A	10	691	646		2.89	20.8	7.57	100
04/15/18	10:40 AM	No	-3091399	Recharge	434	631796	0	0		0	631796	3552578		40	#N/A	9.57	707.2	644		2.8	21.4	7.55	100
04/16/18	10:03 AM	No	-3699598	Recharge	433	608199	0	0		0	608199	4160776		40	#N/A	9.55	709.2	630		2.82	22.4	7.55	100
04/17/18	10:49 AM	No	-4343629	Recharge	434	644032	0	0		0	644032	4804808		40	#N/A	9.76	704	575		2.9	23.2	7.59	100
04/18/18	9:37 AM	No	-4917261	Recharge	435	573632	0	0		0	573632	5378440		39	#N/A	9.41	716.9	590		2.71	23.1	7.06	100
04/19/18	11:00 AM	No	-5576743	Recharge	433	659482	0	0		0	659482	6037921		40	#N/A	10.11	711.1	593		2.89	22.6	7.57	100
04/20/18 04/21/18	9:18 AM 1:45 PM	No No	-6155261 -6847242	Recharge Recharge	434 433	578519 691981	0	0		0	578519 691981	6616440 7308421		40 40	#N/A #N/A	9.33 9.85	722.1 735.3	586 570		2.44 2.96	22 23.2	7.54 7.53	100 100
04/21/18	3:05 PM	No	-7496934	Recharge	433	649692	0	0		0	649692	7958113		40	#N/A #N/A	9.83	735.5	526		2.90	23.2	7.55	100
04/23/18	10:00 AM	No	-7986444	Recharge	424	489510	0	0		0	489510	8447623		40	#N/A	10.37	713.2	516		2.65	24.2	7.3	100
04/24/18	8:30 AM	No	-8679103	Recharge	512	692659	0	0		0	692659	9140282	20	56	#N/A	10.47	713	506		2.55	22.4	7.54	80
04/25/18	10:31 AM	No	-9503835	Recharge	540	824732	0	0		0	824732	9965014	20	62	#N/A	10.15	727	541		2.99	23.5	7.57	80
04/26/18	10:36 AM	No	-10334190	Recharge	567	830355	0	0		0	830355	10795369	10	56	#N/A	10.13	727.5	544		2.71	22.3	7.79	80
04/27/18	7:25 AM	No	-11050744	Recharge	585	716554	0	0	2724	2724	719278	11514647	10	60	#N/A	9.62	740	565		3.12	22.5	7.16	80
04/28/18	7:45 AM	No	-11889958	Recharge	560	839214	0	0	7264	4540	843754	12358401	10	55	#N/A	10.11	733.6	569		2.64	22.8	7.34	80
04/29/18	7:07 AM	No	-12700291	Recharge	593	810333	0	0	12358	5094	815427	13173828	10	62	#N/A	9.95	743	545		2.91	22.9	7.21	80
04/30/18 5/1/2018	8:00 AM 11:30 AM	No No	-13555366 -14511023	Recharge Recharge	569 596	855075 955657	0	0	17572 23552	5214 5980	860289 961637	14034117 14995754	10 10	58 64	#N/A #N/A	9.77 9.86	735.4 480.6	555 5.49	1.59	2.49	23.3 24.2	6.76 7.8	80 100
5/2/2018	11:02 AM	No	-14311023	Recharge	557	805098	0	0	23552	4862	809960	15805714	10	56	#N/A #N/A	10.05	453.7	564	1.06		24.2	8.1	100
5/3/2018	10:28 AM	No	-16126308	Recharge	568	810187	0	0	33444	5030	815217	16620931	10	58	#N/A	10.36	459.2	560	1.88		25.6	7.9	100
5/4/2018	9:27 AM	No	-16913798	Recharge	582	787490	0	0	38187	4743	792233	17413164	10	60	#N/A	8.2	482.1	559	3.1		24.6	7.3	100
5/5/2018	10:05 AM	No	-17744980	Recharge	588	831182	0	0	43003	4816	835998	18249162	10	62	#N/A	7.8	493.6	580	3.11		24.5	7.83	100
5/6/2018	10:40 AM	No	-18581912	Recharge	580	836932	0	0	48000	4997	841929	19091091	10	60	#N/A	8.4	472.4	574	2.53		25.5	7.99	100
5/7/2018	9:20 AM	No	-19335938	Recharge	574	754026	0	0	52499	4499	758525		12	60	#N/A	8.1	467.5	559	3.15		25	8.06	100
5/8/2018		No		Off		0	0	0		0	0	19849616										╞╴╌┦	
5/9/2018		No		Off		0	0	0		0	0	19849616										┟──┦	
5/10/2018 5/11/2018		No		Off Off		0	0	0		0	0	19849616 19849616										╞──┦	
5/11/2018		No No		Off		0	0	0		0	0	19849616										┨──┦	
5/13/2018		No		Off		0	0	0		0	0	19849616										╏──┦	
5/14/2018		No		Off		0	0	0		0	0	19849616											
5/15/2018		No		Off		0	0	0		0	0	19849616											
5/16/2018		No		Off		0	0	0		0	0	19849616											
5/17/2018		No		Off		0	0	0		0	0	19849616											
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5/19/2018		No		Off		0	0	0		0	0	19849616				<u> </u>				ļ		⊢	I
5/20/2018		No		Off		0	0	0		0	0	19849616										╞──┦	I
5/21/2018		No		Off Off		0	0	0		0	0	19849616 19849616										┢──┦	I
5/22/2018 5/23/2018		No No		Off		0	0	0		0	0	19849616										┟──┦	]
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5/27/2010		NU				0	0	0		0	0	13043010				I				I			

#### CITY OF VICTORIA, TEXAS ASR WELL 19 CYCLE TESTING PROGRAM DATA APRIL 2018 TO CURRENT

		Lab	Recharge/ Recovery	Marda af		Recharge	Recovery	Backflush	Trickle Flow	Trickle Flow	Daily	Cumulative	Casing Annulus	Pump Column	Depth to Water	Field	Field	Field	Field	Field	Field	Field	Field
Date	Time	Sampling	Meter	Mode of Operation	Flow Rate	Volume	Volume	Volume	Meter	Volume	Volume	Volume	Wellhead Pressure	Wellhead Pressure	Level Bubbler	DO	ORP	Conductivity	TCl <sub>2</sub>	Free Cl2	Temperature	рН	Chloride
		Yes/No	Reading	•	(gpm)	(gallons)	(gallons)	(gallons)	Reading	(gallons)	(gallons)	(gallons)	(psi)	(psi)	(ft)	(mg/l)	(mv)	(µScm)	(mg/l)	(mg/L)	(°C)	(SU)	(mg/l)
5/25/2018		No		Off		0	0	0		0	0	19849616											
5/26/2018		No		Off		0	0	0		0	0	19849616											
5/27/2018 5/28/2018		No No		Off Off		0	0	0		0	0	19849616 19849616											
5/29/2018		No		Off		0	0	0		0	0	19849616											l
5/30/2018		No		Off		0	0	0		0	0	19849616											<b> </b>
5/31/2018		No		Off		0	0	0		0	0	19849616											
1/1/2019		No		Off		0	0	0		0	0	19849616											
1/2/2019		No		Off		0	0	0		0	0	19849616											
1/3/2019		No		Off		0	0	0		0	0	19849616											
1/4/2019		No		Off		0	0	0		0	0	19849616											
1/5/2019		No		Off		0	0	0		0	0	19849616											
1/6/2019		No		Off		0	0	0		0	0	19849616											<b>I</b>
1/7/2019		No		Off		0	0	0		0	0	19849616											<b> </b>
1/8/2019		No		Off		0	0	0		0	0	19849616											<b> </b>
1/9/2019		No		Off		0	0	0		0	0	19849616											l
1/10/2019		No		Off		0	0	0		0	0	19849616											l
1/11/2019 1/12/2019		No No		Off Off		0	0	0		0	0	19849616 19849616											<b> </b>
1/12/2019		No		Off		0	0	0		0	0	19849616											l
1/13/2019		No		Off		0	0	0		0	0	19849616											
1/15/2019		No		Off		0	0	0		0	0	19849616											
1/16/2019		No		Off		0	0	0		0	0	19849616											
1/17/2019		No		Off		0	0	0		0	0	19849616											
1/18/2019	14:16	Yes	-19788288	Recharge	522	452350	0	0		0	452350	20301966	0	42	100	9.51	455.1	556	3.16		17.8	8.94	80
1/19/2019	14:02	No	-20503836	Recharge	496	715548	0	0		0	715548	21017514		41	85	9.35	503.6	551	3.27		17.4	8.77	100
1/20/2019	11:23	No	-21117704	Recharge	489	613868	0	0		0	613868	21631382		41	165	9.03	490.9	548	3.18		15.6	9.26	80
1/21/2019	14:00	No	-21916456	Recharge	576		0	0		0	798752	22430134	0	58	165	9.82	488.1	527	3.3		18.2	8.71	80
1/22/2019		No		Recharge	577		0	0		0	346200	22776334	8										<b> </b>
1/23/2019		No		Recharge	575	828000	0	0		0	828000	23604334	10										<b> </b>
1/24/2019		No		Recharge	576		0	0		0	828965	24433298	10										l
1/25/2019 1/26/2019		No No		Recharge Recharge	582	837504	0	0		0	837504	25270802 25270802	10										
1/27/2019		No		Recharge		0	0	0		0	0	25270802											
1/28/2019		No		Recharge	570	820858	0	0		0	820858	26091660	10										<b> </b>
1/29/2019		No		Recharge	551	794030	0	0		0	794030	26885690	13										
1/30/2019	14:40	Yes	-29012807	Recharge	546	2640794	0	0		0	2640794	29526485	14	58	135	9.65	472	422	3		16.1	8.73	100
1/31/2019		No	-28799996	Recharge			0	0		0	-212811	29313674	14										
2/1/2019		No	-30413548	Recharge	563	1613552	0	0		0	1613552	30927226	14	62									
2/2/2019		No		Recharge		0	0	0		0	0	30927226											
2/3/2019		No		Recharge		0	0	0		0	0	30927226											I
2/4/2019		No	-32829166	Recharge	556		0	0		0	2415618	33342844	14	62		I	<b> </b>		<b> </b>				<b> </b>
2/5/2019	0.00 ***	No	-33640304	Recharge	558	811138	0	0		0	811138	34153982	14	62		0.70	407	440	2.47		467	0.40	60
	8:00 AM	No	-34392120	Recharge	557	751816	0	0		0	751816	34905798	14	62	82	9.76	487	449	3.17		18.7	8.48	80
2/7/2019 2/8/2019		No No	-35280016 -36190840	Recharge Recharge	558 542	887896 910824	0	0		0	887896 910824	35793694 36704518	14 16	62 62									<b> </b>
2/8/2019 2/9/2019		NO NO	-20190840	Recharge	542	910824	0	0		0	910824	36704518	10	02									I
2/10/2019		No		Recharge		0	0	0		0	0	36704518				1							
2/10/2019		Yes		Recharge	1	0	0	0		0	0	36704518	17	62									
2/12/2019		No	-39122140	Recharge	558	2931300	0	0		0	2931300	39635818	17	64		1			1				
2/13/2019		No		Storage		0	0	0		0	0	39635818										1	
2/14/2019		No		Storage		0	0	0		0	0	39635818											
2/15/2019		No		Storage		0	0	0		0	0	39635818											
2/16/2019		No		Storage		0	0	0		0	0	39635818											
2/17/2019		No		Storage		0	0	0		0	0	39635818											

#### CITY OF VICTORIA, TEXAS ASR WELL 19 CYCLE TESTING PROGRAM DATA APRIL 2018 TO CURRENT

		Lab	Recharge/ Recovery	Mada of		Recharge	Recovery	Backflush	<b>Trickle Flow</b>	Trickle Flow	Daily	Cumulative	Casing Annulus	Pump Column	Depth to Water	Field	Field	Field	Field	Field	Field	Field	Field
Date	Time	Sampling	Meter	Mode of Operation	Flow Rate	Volume	Volume	Volume	Meter	Volume	Volume	Volume	Wellhead Pressure	Wellhead Pressure	Level Bubbler	DO	ORP	Conductivity	TCl <sub>2</sub>	Free Cl2	Temperature	рН	Chloride
		Yes/No	Reading	Operation	(gpm)	(gallons)	(gallons)	(gallons)	Reading	(gallons)	(gallons)	(gallons)		(psi)	(ft)	(mg/l)	(mv)	(µScm)	(mg/l)	(mg/L)	(°C)	(SU)	(mg/l)
2/18/2019		No		Storage		0	0	0		0	0	39635818										$\square$	
2/19/2019		Yes	-39122140	Recovery	1071 /1035	0	0	0		0	0	39635818	0	4									
2/20/2019		No		Recovery		0	0	0		0	0	39635818											
2/21/2019		No		Recovery	1006 / 980	0	0	0		0	0	39635818	0	70									
2/22/2019	10:35 AM	No	-37565588	Recovery	935	0	1556552	0		0	-1556552	38079266											
2/23/2019		No		Storage		0	0	0		0	0	38079266											
2/24/2019		No		Storage		0	0	0		0	0	38079266											
2/25/2019		No		Storage		0	0	0		0	0	38079266											
2/26/2019		No		Storage		0	0	0		0	0	38079266											
2/27/2019		No		Storage		0	0	0		0	0	38079266											<b>└───</b> ┦
2/28/2019		No	-37350028	Storage		0	0	0		0	0	38079266											<b>└───</b> ┦
3/1/2019		No		Storage		0	0	0		0	0	38079266										⊢!	┢────┦
3/2/2019		No		Storage		0	0	0		0	0	38079266										⊢!	<b>└───</b> ┦
3/3/2019 3/4/2019		No		Storage		0	0	0		0	0	38079266 38079266										┝──┦	
3/4/2019		No No		Storage Storage	-	0	0	0		0	0	38079266										┌──┦	<b>┌───</b> ┦
3/6/2019		No		Storage		0	0	0		0	0	38079266										<b>┌──┦</b>	
3/7/2019		No		Storage		0	0	0		0	0	38079266										<b></b>	
3/8/2019	10:35 AM	No	-37114208	Recovery		0	235820	0		0	-235820	37843446										<b></b>	I
3/9/2019	10.00740	No	37111200	Recovery		0	0	0		0	0	37843446										<b>— 1</b>	
3/10/2019		No		Recovery		0	0	0		0	0	37843446										<b> </b>	I
3/11/2019		No		Recovery		0	0	0		0	0	37843446											
3/12/2019	9:20 AM	Yes	-36987940	Recovery	1071	0	126268	0		0	-126268	37717178			135	7.4	354.9	469	0.13		20.2	8.43	100
3/13/2019	8:02 AM	No	-36097516	Recovery	636	0	890424	0		0	-890424	36826754			105							<b>!</b>	
3/14/2019	10:10 AM	No	-35119604	Recovery	619	0	977912	0		0	-977912	35848842			105								
3/15/2019	8:32 AM	No	-33797940	Recovery	983	0	1321664	0		0	-1321664	34527178			85							$\square$	
3/16/2019	11:37 AM	No	-32988326	Recovery	619	0	809614	0		0	-809614	33717564			105								
3/16/2019	11:00 PM	No	-32569444	Recovery	637	0	418882	0		0	-418882	33298682			105								
3/18/2019	15:25	Yes	-32413934	Recovery	668	0	155510	0		0	-155510	33143172			105	7.1	285.5	444	0.03		20.4	8.48	100
3/19/2019	8:27	No	-31753178	Recovery	632	0	660756	0		0	-660756	32482416			105								
3/20/2019	9:20	No	-30798752	Recovery	625	0	954426	0		0	-954426	31527990			105	7.9	269.1	569	0.02		20.7	7.34	100
3/21/2019	12:44	Yes	-31715196	Recharge	534	916444	0	0		0	916444	32444434	13	59	60	8.9	470.9	479	2.58		18.8	8.68	80
3/22/2019	2:44 PM	No	-32556840	Recharge	530	841644	0	0		0	841644	33286078	14	58	87								
3/23/2019	1:00 PM	No	-33305598	Recharge	534	748758	0	0		0	748758	34034836	14.5	60	115								
3/24/2019	1:00 PM	No	-33988728	Recharge	528	683130	0	0		0	683130	34717966	15	60	75								
3/25/2019	1:00 PM	No	-34696244	Recharge	515	707516	0	0		0	707516	35425482	16	56	62							<b>└──</b> ┦	
3/26/2019	1:00 PM	No	-35418396	Recharge	511	722152	0	0		0	722152	36147634	18	60	120							⊢!	
3/27/2019		No	-36118664	Recharge	513	700268	0	0		0	700268	36847902	19.5	61	78							┢───┦	
3/27/2019		No	-36075044	Backflush	200	0	0	43620		0	-43620	36804282		22	105	0.2	474.4	447	2.17		10.2	0.5	80
3/27/2019		No	-36078804	Recharge	399	3760		0		0	3760	36808042	5	32	165	9.2	474.1	447	3.17		19.2	8.5	80
3/28/2019 3/29/2019		No	-36537564	Recharge	369	458760	0	0		0	458760 657804	37266802	9.5	31	146							┍──┦	
3/29/2019 3/30/2019		No	-37195368 -37601756	Recharge	365 364	657804 406388	0	0		0	406388	37924606 38330994	8	31	105							┍──┦	<b>┌────</b> ┤
3/30/2019	10:42	No No	-37601756	Recharge Recharge	364	406388 2376		0		0	2376	38330994 38333370	8 0	31 69	135 127							┍──┦	┟────┦
3/30/2019	11.13 AIVI	INO	-37604132	Recharge	0	23/6	0	0		0	2376	30333370	U	09	127							I	

#### **DOCUMENT UNDER REVIEW**

#### CITY OF VICTORIA, TEXAS MONITOR WELL 21 CYCLE TESTING PROGRAM DATA APRIL 2018 TO DECEMBER 2018

		FLOWMETER	DEPTH TO WATER	FIELD	FIELD	LAB
DATE	TIME		TAPE	CONDUCTIVITY	TDS	CHLORIDE
		(GALLONS)	(FT)	(µScm)	(mg/L)	(mg/l)
1/20/2019	11:30			871	566.15	140
1/21/2019	14:30			878	570.7	120
1/30/2019	15:30			874	568.1	120
2/6/2019	8:45			876	569.4	120
2/12/2019	10:35			872	566.8	120
3/21/2019	13:30			721	468.65	220



### WELL CAMERA SURVEY REPORT

Customer	r:	City of Victoria	Date:	9/14/2017
Well Name	:	Well #19	Work Order #:	
Performed By	/:	Bobby McClure	Witnessed By:	Francisco Ochoa
Well Case Lap	ping:	410' - 470'	Suface Oil:	Trace
Static Water L		24'	Total Depth:	1041'
	Well Ins	spection Notes		Casing / Screen Intervals
Depth		Comments	Depth	Description
84'	Coll	ar rub	0' - 410'	18" Blank
129'	Cori	rosion	410'	Top of 12" liner
250' +	Clou	udy, poor visibility	410' - 470'	10" Blank
290'	Wel	ded joint	470' - 520'	10" Screen (pipe-based)
311', 324'+	Pos	sible Scale	520' - 554'	10" Blank
423', 463', 503'	Wel	ded joint	554' - 604'	10" Screen (pipe-based)
544', 665', 835'	Wel	ded joint	604' - 652'	10" Blank
498', 502'	enla	arged holes in pipe-base	652' - 704'	10" Screen (pipe-based)
504', 538'	Hea	vy corrosion	704' - 790'	10" Blank
505', 510', 515'	Enlar	rged holes, questionable area	790' - ???	10" Screen (pipe-based)
518', 555'-561'	Enlar	rged holes, questionable area	??? - 863'	10" Blank
567', 583', 653'	Enlar	rged holes, questionable area	863' - 915'	10" Screen (pipe-based)
554'	Que	estionable area	915' - 1000'	10" Blank
586'	Pipe	e-base screen deteriorated	1000' - ???	10" Screen (pipe-based)
586'	Pos	sible break in screen	1041'	Total depth viewed
667'	Que	estionable area		
701'	Тар	e		
815'	Que	estionable area		

#### COMMENTS

Water was run into the well for better visibility. Upon arrival, water was coming out of the top, therefore the static water level is questionable.



### WELL CAMERA SURVEY REPORT

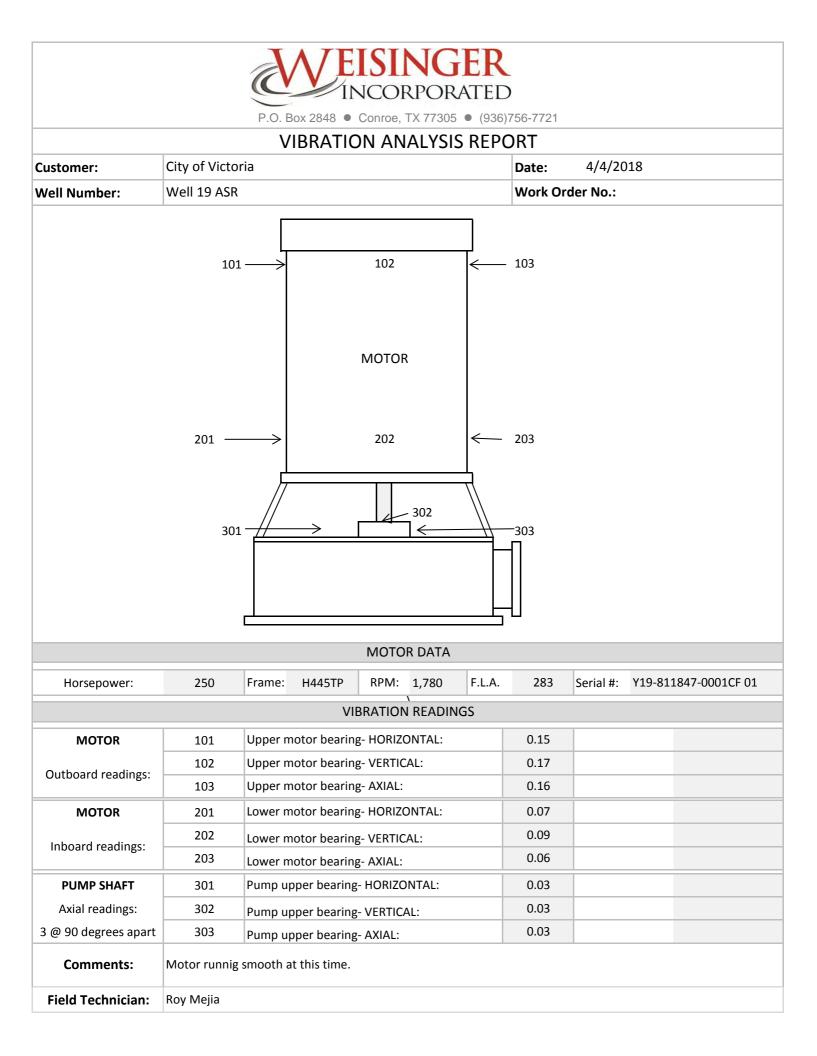
Custome	er:	City Of Victoria	Date:	1/9/2018
Well Nam	e:	#19	Work Order #:	
Performed B	y:	Daniel Foerster	Witnessed By:	Francisco Ochoa
Well Case Lap	oping:	408' - 468'	Suface Oil:	None
Static Water	Level:	22'	Total Depth:	1035' (soft bottom)
	Well Ins	pection Notes		Casing / Screen Intervals
Depth		Comments	Depth	Description
84'	Colla	ar rub	0' - 408'	18" Blank
300 +	Mino	or scales	408'	Top of 12" liner
378', 408'	Scale	e build up	408' - 468'	12" Blank
194' - 664'	Elon	gated holes in screen	468' - 518'	12" Screen (pipe-based)
587'	Pipe	base erroded	518' - 554'	12" Blank
694' +	Clou	dy	554' - 602'	12" Screen (pipe-based)
734' +	Poor	· visibility	602' - 650'	12" Blank
850' +	Little	e to no visibility	650' - 702'	12" Screen (pipe-based)
967', 971'	Mino	or scale build up	702' - 788'	12" Blank
			788' - 811'	12" Screen (pipe-based)
			811' - 859'	12" Blank
			859' - 913'	12" Screen (pipe-based)
			913' - 1000'	12" Blank
			1000' - 1020'	12" Screen (pipe-based)
			1020' - 1035'	12" Blank
			1035'	Total depth viewed
		C	OMMENTS	



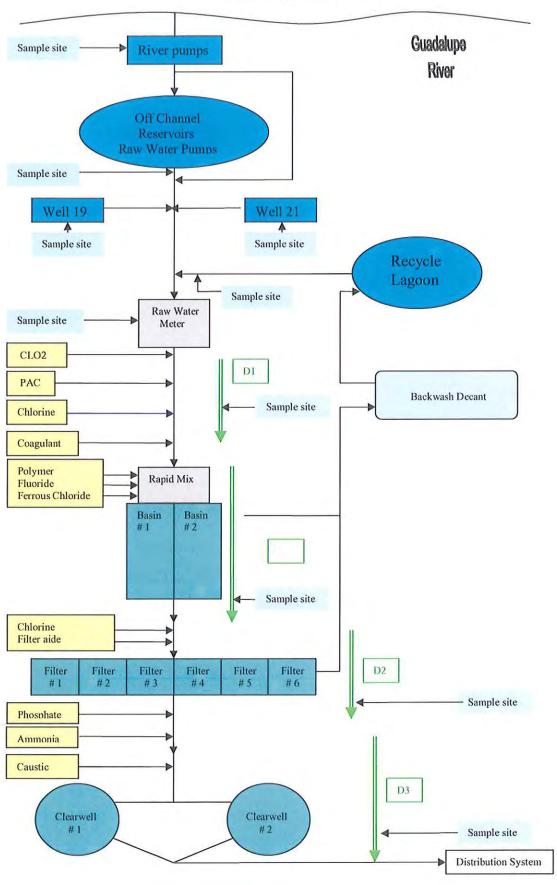
P.O. Box 2848 • Conroe, TX 77305 • (936)756-7721

### PERFORMANCE TEST REPORT

Customer:	City of Victoria Date: 4/4/2018												
Well Number:	Well 19 ASR						Work Ord	er No.:					
MOTOR DAT	4												
Manufacturer:	USEM		Serial no.:		Y19-81184	7-0001CF 02	1	Horse	power:	250			
Frame:	H445TP		Full Load A	Amps:	283	Volts:		Namepl	ate RPM:	1,780			
EFFICIENCY	Standard:		Energy eff	icient:		Premium:	95.80%						
WELL PUMP I	DATA												
Manufacturer:	American-Ma	rsh	Serial No.:	W01981	L		Mo	del:	13MC				
Design Point:	1,500	g.p.m. @	385	5 ft. TDH			No. of	stages:	7				
Column Size (in.)	: 10"	I	Tube/Shaf	ft (in):	1 11/16"	W/L	Settin	g (ft.):	375				
PERFORMAN	CE TEST DAT	ГА											
Static water leve	(ft.):		21.57		Ori	fice:	10 x 8	Syste	m psi:				
Discharge pressu	re (psi):		6			60			30				
Pumping Rate (g.	p.m.):		1,845			1,623			1,757				
Pumping water le	evel (ft.):		217.9			197.1			213.3				
Drawdown (ft.):			196.4			175.6			191.7				
Specific capacity	(g.p.m./ft.):		9.4			9.2			9.2				
Sand production	(p.p.m.):		0.05			trace			trace				
Water color:			clear			clear			clear				
Field Head (ft.):			231.8			335.7			282.6				
Water horsepow	er:		108.0			137.6			125.4				
Wire/water effic	ency:		54.5%			66.4%			62.2%				
Horsepower inpu	ıt:		198.3			207.3			201.5				
Kilowatt input:			147.9			154.7			150.3				
Voltage (per lead	):	473	474	473	471	472	471	472	473	472			
Amperage (per le	ad):	212.8	213.8	213.9	223.1	225.4	224.2	217.2	216.9	218.2			
Time (minutes):			30 minute	S		45 minute	S		30 minute	5			
ADDITIONAL	DATA												
Pump submergei	nce (ft.):	177.9		Metal:		None		Star	t-up Sand:	.1 ML			
Flow meter accu	acy:			Abnorma	l vibration:	No		Airline	functional:	Yes			
Amperage imbala		0.5%		H.P. utiliz	ation:	198.1		Oil (c	lrops/min):	N/A			
<pre><wh gall<="" million="" pre=""></wh></pre>	ons:	1,593.6		Abnorma	l noise:	No		Vent Screen:					
Flow meter read	ng:												
Comments:													
Technician:	Roy Mejia					sed by:							



#### City of Victoria SWTP Treatment Scheme



Laboratory Reports

	TCE	Q		N	NICR	OBI	AL MC	NITO	RIN	G F	ORN	N			Stap A	CCRE	24	ENVI	RODYNE LABOR	ATORIES IN		ENVIRODYNA
	Public/	Private W	ater System Identificatio	n & S	ample	e Coll	ection In	formatio	on (P	lease	e type	oru	se blo	ock print)	N. S.	4	E		1011 BROOKLET	T, STE 230		ELOS
	Publi	ic Wate	r System ID:	Γ		Τ										TN			HOUSTON, TX (281) 568-7			
	(Mu	st be 7 digits	include all zeros)												LAD		at	NE	LAP Certificate #	T104704265		LABORATORIES, INC.
Pu	blic Water Name														100	RATO	TCEO	Lab ID:	TX-288			Test results meet all requirements of NELAC unless stated otherwise.
	55.07			-									-							TO THE RIGH	T OF THE E	BOLD CENTER LINE
	Count	ty:													Sample I			C5				- 17:00
To:	Name:	City	of Victoria - I	Jyn	n S	hor	rt								Yes	No	Received By:	cs	Date / Time Received:	141	17 .	MO 1/4/17
Send Results To:	Address:	700	Main Center												lf no, tempera receipt		t Tested By:	TOP	Date / Time Tested:	1/4	12	1740
end R	City:	Vict	oria														Reported	Ik	Date / Time	119	(17	1790
	State:		тх		Z	lip:	1	7 7	9	0	1	-				°C	By:	M)	Reported:		-10	1701554
Pho	ne #: 36	51-48	5-3381			Fa	x#: ]	lshor	t@	vic	tor	iatz	k.or	g	Report							
Sam	pler Name	:	David Bar	rg	er	_	-		_			_			-		ue:			1	-	
Sam	pler Conta		3485-3415				0	Owner			rator	00	ther: _		Approving Technical	C/	в			Date of Approval		1-5-17
X	Public		vate 🛛 Bottled/Ver	nded		_	undwate	er					Wate	r	Director: Chlorine			1	Lab R	esults	-	
	Other	dentifi	cation/Location	1			oundwal	ter with	Surfa	ace V	1.1			10	Residual		Unsuitable mple - Please	Note: Al Test Me	I test results relate on	ly to the samples a	is received.	
-			ddress/Location		Date		1	ime	E		6	mple		·: (√)	Free mg/L		Resubmit*	Test Me	Dil	u+12	)	Laboratory Sample ID
		NOT S		÷	×	L	Please	e circle	Distribution	tructio	Raw Well	Special	Repeat:	Include Lab ID of Originating Positive on all Repeat and	🖾 Total	Re	jection Criteria	Tota	l Coliform	E. c	oli	Number
Rav	Wells Us	e Source G1234	ID for Well Sampled Ex: 4567A	Month	Day	Year		or PM	Distr	Constru	Rav	Sp	Re	Triggered Samples	mg/L		#	Present	Absent	Present	Absent	
	Wel	(#	19	1	3	17	132	Z pm			X				0							17.AUTOU.01
								am pm							1		1					
								am pm							15							6
				-			1	am pm							1							1.
	-		1. C					am pm								1						42
			1.					am pm														11
					1			am								1						
-				-	-	-	-	pm am								-						
-				-		-		pm am						1. 1.	-	+						
						0		pm am								-						
0								pm														
1.00	Q Form:	*Unsui	table Sample Analysis-				d. Exceed	ded hold	time.		1				e chlorine pres			5) 1	Form Incomplete	/ Date Discre	pancy (Erro	ors Circled)
	0525 5/2012	Rejecti	on Criteria # Definitions	2) Ir	suffici	ent vo	lume							4) Heavy si	It/turbidity prese	ent.	6) Other:					



Envirodyne Laboratories, Inc 11011 Brooklet Dr., # 230 Houston, TX 77099 281.568.7880 Phone www.envirodyne.com

21 January 2017

Victoria, City of Lynn Short 700 Main Center Victoria, TX 77901

#### Victoria, City of - Surface and Raw Water Testing

Enclosed are the results of analyses for samples received by the laboratory on 04-Jan-17 07:00. The analytical data provided relates only to the samples as received in this laboratory report.

ELI certifies that all results are NELAP compliant and performed in accordance with the referenced method except as noted in the Case Narrative or as noted with a qualifier. Any reproductions of this laboratory report should be in full and only with the written authorization from the client.

The total number of pages in this report is 18

Thank you for selecting ELI for your analytical needs. If you have any questions regarding this report, please contact us.

Sincerely,

onica Smith

Monica Smith Project Manager



Certificate No: TX104704265

		Envirodyne Laboratories, Inc 11011 Brooklet Dr., # 230 Houston, TX 77099 281.568.7880 Phone www.envirodyne.com
Client:	Victoria, City of	
Project:	Victoria, City of - Surface and Raw Water Testing	Reported:
Work Order:	17A0767	21-Jan-17 17:30

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received							
Raw	17A0767-01	Water	03-Jan-17 12:57	04-Jan-17 07:00							
I - Analyzed by NELAP certifie	Analyzed by NELAP certified lab: T104704215-15-19										

L - Analyzed by NELAP certified lab: T104704215-15-19

L - Sample analyzed by NELAP certified lab: T104704218

L - Sample analyzed by NELAC certified lab: T104704527-14-1

L - Sample analyzed by NELAP accredited lab: T104704466-11-5

Envirodyne Laboratories, Inc.

onica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Victoria, City of

17A0767

Victoria, City of - Surface and Raw Water Testing

Client:

Project:

Work Order:

Envirodyne Laboratories, Inc 11011 Brooklet Dr., # 230 Houston, TX 77099 281.568.7880 Phone www.envirodyne.com

**Reported:** 21-Jan-17 17:30

				Raw	V					
		17A076	57-01 (Wate	er) Sam	pled: 03-J	an-17 12:57				
		Reporting	σ							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
			Envirody	ne Labo	oratories, I	nc.				
Mercury by EPA 245.1										
Mercury	< 0.20	0.20	ug/L	1	B7A1322	10-Jan-17	10-Jan-17 11:33	EPA 245.1	IZW	L
Wet Chemistry										
Acidity	<20	20	mg/L	1	B7A2440	19-Jan-17	19-Jan-17 16:46	SM 2310B	XQH	
Alkalinity (m) as CaCO3	168	20	mg/L	1	B7A2433	19-Jan-17	19-Jan-17 16:15	SM 2320 B	MPS	
Alkalinity (p) as CaCO3	<20	20	mg/L	1	B7A2433	19-Jan-17	19-Jan-17 16:15	SM 2320 B	MPS	
Total Alkalinity as CaCO3	168	20	mg/L	1	[CALC]	19-Jan-17	19-Jan-17 16:15	[CALC]	MPS	
Ammonia-N (NH3-N)	0.22	0.10	mg/L	1	B7A0851	10-Jan-17	10-Jan-17 08:19	SM 4500-NH3 D	JAS	
Bicarbonate Alkalinity as HCO3-	205	1.0	mg/L	1	B7A2462	19-Jan-17	19-Jan-17 18:57	Calc	MPS	
Bromate	< 0.002	0.002	mg/L	1	B7A2051	11-Jan-17	11-Jan-17 00:00	EPA 300.1	IZW	L
Bromide	0.34	0.12	mg/L	1	B7A2051	03-Jan-17	03-Jan-17 12:57	EPA 300.0	CLT	L
Carbonate Alkalinity as CO3 2-	0.0		mg/L	1	B7A2620	19-Jan-17	19-Jan-17 18:57	Calc	CLO	
Chloride	108	3.0	mg/L	1	B7A1118	10-Jan-17	11-Jan-17 06:58	SM4500-Cl B	XQH	
Color	<1.0	1.0	Color Units	1	B7A0648	06-Jan-17	06-Jan-17 11:50	SM2120C	XQH	Н
Cyanide, Total	< 0.005	0.005	mg/L	1	B7A1301	09-Jan-17	09-Jan-17 13:30	EPA 335.4	IZW	L
Dissolved Oxygen (DO)	12.0		mg/L	1	B7A2051	03-Jan-17	03-Jan-17 13:00	SM4500-O C	CLT	
рН	7.86		SU	1	B7A2051	03-Jan-17	03-Jan-17 13:00	SM4500H+ B	CLT	
Temperature	25.2	10.0	°C	1	B7A2051	03-Jan-17	03-Jan-17 13:00	SM2250 B	CLT	
Fluoride	0.53	0.10	mg/L	1	B7A1541	12-Jan-17	20-Jan-17 14:51	SM 4500-F C	JAS	
Hydrogen Sulfide	0.0220	0.0100	mg/L	1	B7A2622	09-Jan-17	09-Jan-17 13:32	Calc	IZW	
Nitrate-N	24.5	0.10	mg/L	1	B7A0627	04-Jan-17	04-Jan-17 19:46	SM 4500-NO3 D	JAS	
Nitrite-N	< 0.05	0.05	mg/L	1	B7A0426	05-Jan-17	05-Jan-17 10:30	SM 4500-NO2 B	XQH	
ORP	131	1.0	mV	1	B7A2448	19-Jan-17	19-Jan-17 16:50	SM2580 B	JMM	
OrthoPhoshate as P	< 0.10	0.10	mg/L	1	B7A0630	06-Jan-17	06-Jan-17 11:10	SM4500-P E	XQH	Н
Silica	0.67	0.10	mg/L	0.5	B7A1158	09-Jan-17	10-Jan-17 15:34	EPA 200.5	ACB	Q
Sulfate	19.1	2.00	mg/L	1	B7A1132	10-Jan-17	10-Jan-17 11:50	ASTM D516-07	XQH	
Sulfide	0.02	0.01	mg/L	1	B7A0980	09-Jan-17	09-Jan-17 13:32	SM4500-S2 D	XQH	В
TDS	568	10.0	mg/L	1	B7A0619	06-Jan-17	06-Jan-17 16:30	SM2540 C	BFM	
Total Organic Carbon (TOC)	<1.00	1.00	mg/L	1	B7A2017	09-Jan-17	09-Jan-17 16:40	SM 5310 C	IZW	L
5										

Envirodyne Laboratories, Inc.

onica Smith

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Monica Smith, Project Manager



Envirodyne Laboratories, Inc 11011 Brooklet Dr., # 230 Houston, TX 77099 281.568.7880 Phone www.envirodyne.com

Client:Victoria, City ofProject:Victoria, City of - Surface and Raw Water TestingWork Order:17A0767

**Reported:** 21-Jan-17 17:30

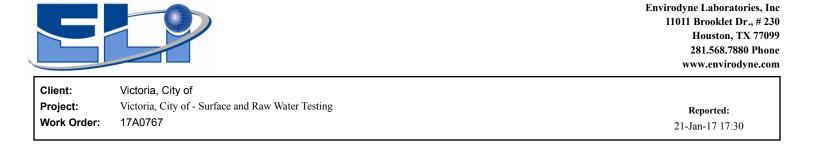
r		17A0767-	-01 (Wat	er) Sam	pled: 03-Ja	an-17 12:57				
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
			Envirod	yne Labo	ratories, Iı	nc.				
Wet Chemistry										
Total Phosphorus	1.70	0.20	mg/L	2	B7A0673	06-Jan-17	06-Jan-17 16:40	SM4500-P E	AT	
TSS	17.0	2.0	mg/L	1	B7A0929	09-Jan-17	09-Jan-17 13:50	SM2540 D	AA	
Turbidity	0.63	0.10	NTU	1	B7A1055	06-Jan-17	06-Jan-17 09:37	SM 2130 B	XQH	Н
Total Metals by ICP										
Aluminum	0.0158	0.0018	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:51	EPA 200.7	JMM	
Antimony	< 0.0018	0.0018	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Arsenic	< 0.0029	0.0029	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Arsenic, Dissolved	< 0.00500	0.00500	mg/L	1	B7A1837	16-Jan-17	18-Jan-17 19:40	EPA 200.7	ACB	
Barium	0.190	0.0005	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Beryllium	< 0.0005	0.0005	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Cadmium	< 0.00050	0.00050	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Calcium	22.3	2.00	mg/L	1	B7A0979	09-Jan-17	10-Jan-17 11:30	EPA 200.7	ACB	
Calcium as CaCO3	55.6		mg/L	1	[CALC]	09-Jan-17	10-Jan-17 11:30	Calc	ACB	
Chromium	0.0006	0.0005	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Copper	0.0041	0.0006	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	В
Total Hardness as CaCO3	86.4	13.2	mg/L	1	[CALC]	09-Jan-17	10-Jan-17 11:30	Calc.	ACB	
Iron	0.198	0.0018	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	В
Iron, Dissolved	< 0.0050	0.0050	mg/L	1	B7A1837	16-Jan-17	18-Jan-17 19:40	EPA 200.7	ACB	
Lead	< 0.0009	0.0009	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Magnesium	7.48	2.00	mg/L	1	B7A0979	09-Jan-17	10-Jan-17 11:30	EPA 200.7	ACB	
Magnesium as CaCO3	30.8	8.23	mg/L	1	[CALC]	09-Jan-17	10-Jan-17 11:30	EPA 200.7	ACB	
Manganese	0.0076	0.0004	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Manganese, Dissolved	0.0068	0.0050	mg/L	1	B7A1837	16-Jan-17	18-Jan-17 19:40	EPA 200.7	JMM	
Nickel	< 0.0005	0.0005	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Potassium	2.6	2.0	mg/L	1	B7A0979	09-Jan-17	10-Jan-17 11:30	EPA 200.7	ACB	
Selenium	< 0.0038	0.0038	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Silver	< 0.0005	0.0005	mg/L	1	B7A0978	09-Jan-17	10-Jan-17 09:33	EPA 200.7	ACB	
Sodium	226	2.0	mg/L	1	B7A0979	09-Jan-17	10-Jan-17 11:30	EPA 200.7	ACB	E, Q
Thallium	< 0.0020	0.0020	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	

Raw

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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



#### Raw 17A0767-01 (Water) Sampled: 03-Jan-17 12:57

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
			Envirod	yne Labo	ratories, Iı	nc.				
Total Metals by ICP										
Zinc	< 0.0032	0.0032	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Miscellaneous Subcontracted	Analyses									
Dibromoacetic acid	<1.00	1.00	ug/L	1	B7A2015	11-Jan-17	12-Jan-17 20:00	EPA 552.2	IZW	L
Dichloroacetic acid	<1.00	1.00	ug/L	1	B7A2015	11-Jan-17	12-Jan-17 20:00	EPA 552.2	IZW	L
HAA-5	<1.00	1.00	ug/L	1	[CALC]	11-Jan-17	12-Jan-17 20:00	EPA 524.2	IZW	
Monobromoacetic acid	<1.00	1.00	ug/L	1	B7A2015	11-Jan-17	12-Jan-17 20:00	EPA 552.2	IZW	L
Monochloroacetic acid	<1.00	1.00	ug/L	1	B7A2015	11-Jan-17	12-Jan-17 20:00	EPA 552.2	IZW	L
Trichloroacetic acid	<1.00	1.00	ug/L	1	B7A2015	11-Jan-17	12-Jan-17 20:00	EPA 552.2	IZW	L

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onica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



#### CERTIFICATE OF ANALYSIS

CLIENT:	City of Victoria	LAB NUMBER:	17A0767B
DATE COLLECTED:	03-Jan-17	DATE RECEIVED:	04-Jan-17
DATE COMPLETED:	09-Jan-17	SAMPLED BY:	COV

LOCATION: PARAMETERS:	Raw Water @ 1313	MDL LIMITS (ug/l)
VINYL CHLORIDE (ug/l) trans-1,2-DICHLOROETHYLENE (ug/l) 1,1,1-TRICHLOROETHANE (ug/l) CARBON TETRACHLORIDE (ug/l) 1,2-DICHLOROETHANE (ug/l) BENZENE (ug/l) 1,2-DICHLOROPROPANE (ug/l) TOLUENE (ug/l) 1,1,2-TRICHLOROETHANE (ug/l) CHLOROBENZENE (ug/l) ETHYLBENZENE (ug/l) XYLENE (ug/l) 1,2,4-TRICHLOROBENZENE (ug/l) DICHLOROMETHANE (ug/l) o-DICHLOROBENZENE (ug/l) 1,1- DICHLOROETHYLENE (ug/l) TRICHLOROETHYLENE (ug/l) TETRACHLOROETHYLENE (ug/l) STYRENE (ug/l) cis- 1,2-DICHLORETHYLENE (ug/) ETHYLENE DIBROMIDE (ug/)	$\begin{array}{c} 0.5 \ U \\ 0.5 \ U \ 0.5 \ U \$	(ug/r) 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5
DIBROMOCHLOROPROPANE (ug/)	0.5 U	0.5

Ref. EPA-8260C (VOLATILES)

Monica Smith LAB REPRESENTATIVE

U - Analyte Not Detected at the Listed Detection Limit

J - Analyte Present but Below Detection Limit

(281) 568-7880

11011 Brooklet Dr. #230, Houston, TX 77099



#### CERTIFICATE OF ANALYSIS

		GERTIFIC	ATE OF ANALISIS		
CLIENT:	City of Victoria		LAB NUMBER:	17A0767C	
DATE COLLECTED:	03-Jan-17		DATE RECEIVED:	04-Jan-17	
DATE COMPLETED:	10-Jan-17		SAMPLED BY:	cov	
PARAMETERS: BNA/Pest		Maximum Contaminant (MCLs) in ug			Maximum Contaminant Levels (MCLs) in ug/l
LOCATION:	RAW WATER			RAW WATER	
Atrazine (ug/l)	< 0.1	3.0	Alachlor (ug/l)	< 0.1	2
Hexachlorobenzene (ug/l)	< 0.1	1.0	Heptachlor (ug/l)	< 0.1	0.4
Hexachlorocyclopentadiene (ug/l)	< 0.1	50.0	Heptaclor Epoxide (ug/I)	< 0.11	0.2
Benzo (a) PYRENE (ug/l)	< 0.11	0.2	Gamma-BHC (Lindane) (ug/l)	< 0.11	0.2
PENTACHLOROPHENOL (ug/l)	< 1.0	0.04	Chlordane (ug/l)	< 0.1	2
Di (2-ETHYLHEXYL) PHTHALATE (ug/l)	< 0.5	6.0	Toxaphene (ug/l)	< 0.1	3
Di (2-ETHYLHEXYL) ADIPATE (ug/l)	< 0.5	400.0	Methoxychlor (ug/l)	< 0.1	40
Simazine (ug/l)	< 0.11	4.0	Oxamyl (ug/l)	< 100.0	2.0
Endrin (ug/l)	<0.11	2.0	Picloram (ug/l)	< 100.0	0.1
Carbofuran (ug/l)	< 0.04	40.0	*2,4,5-TP (SILVEX) (ug/l)	< 4.0	0.2
Dalapon (ug/l)	< 0.20	1.0	*2,4-D (ug/l)	< 10.0	0.1
Dinoseb (ug/l)	< 1.0	0.2	Total PCBs (mg/l)	< 0.1	0.5

Monica Smith

LAB REPRESENTATIVE

Analyzed by NELAP accredited lab T104704218

Ref. EPA-525.2 , EPA 508.1, EPA 8260C

U - Analyte Not Detected at the listed Detection Limit

J - Analyte Present but below Detection Limit

(281) 568-7880

11011 Brooklet Dr. #230, Houston, TX 77099



DOH Certification #E84025 Cert.# T104704527-14-1

Report Date: January 18, 2017

Envirodyne Laboratories, Inc. 11011 Brooklet, Ste 230 Houston, TX 77099-3543 Sample Collection:1-3-17/1310 Lab ID No: 17.169 Lab Custody Date: 1-6-17/1430 Sample description:Water

#### CERTIFICATE OF ANALYSIS

Parameter	Units	Results	Analysis Date	Method	Detection Limit
Gross Alpha	pCi/l	6.5 ± 0.8	1-13-17/1634	EPA 900.0	2.5
Gross Beta	pCi/l	3.5 ± 1.3	1-13-17/1634	EPA 900.0	2.8
Radium-226	pCi/l	0.8 ± 0.3	1-17-17/1013	EPA 903.0	0.4
Radium-228	pCi/l	0.0 ± 0.4	1-16-17/1112	EPA Ra-05	0.7
Uranium	pCi/l	4.9 J ± 0.7	1-16-17/1553	EPA 908.0	0.6
Uranium	ug/l	7.3 ± 1.0	calc	EPA 908.0	0.9
		•	•		

Alpha Standard: Th-230 Beta Standard: Cs-137

J = the reported value failed to meet the established quality control criteria for either precision or accuracy.

w W Hager

James W. Hayes Laboratory Manager

Test results meet all requirements of the NELAC standards. Statement of estimated uncertainty available upon request. Test results refer only to sample(s) listed. Contact person: Jim Hayes (813) 229-2879.

#### Page 1 of 1

KNL ENVIROMENTAL TESTING, INC. | 3202 NORTH FLORIDA AVENUE | TAMPA, FLORIDA 33603 813.229.2879 | KNLENVIRONMENTAL.COM

Envirodyne Laboratories, Inc. 11011 Brooklet, Ste. 230 Houston, Texas 77099-3543 Phone (281)568-7880 - Fax (281)568-8004

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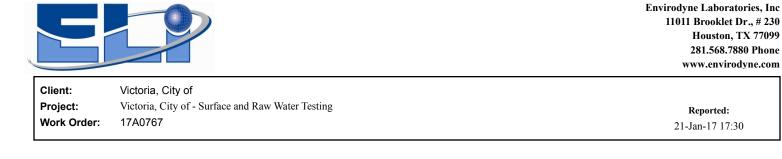
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Envirodyne Laboratories Inc.

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Addre: City: Conta	Houston, TX 7	7099	230		Phone:	281-56	8-7880 Fax: 281-568-800	)4			
Projec	• • •			Clier	nt/Project	C	oFV			Temp.	Analysis Time
Lab ID No.	Field Sample No./ Indentification	Date & Time	Grab	Sample Containe (Size/Mat')	r Sample Type (Liquid, Sludge, etc.)	Preservative	ANALYSIS REQUESTED	Hd	D.O.	Ĕ	A
	RAW WATER	1-3-17 1310	-	19AL Cubie	Liquid	ILE HNO3	G. Alpha. G. Beba. T. U., RA 226-22	p			
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	KNL	Mn Correct	ion:				pito i topi ocontanti i	ite: ne:			



#### **Envirodyne Laboratories, Inc.**

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B7A0426 - Inorganics										
Blank (B7A0426-BLK1)				Prepared &	Analyzed:	05-Jan-17				
Nitrite-N	<0.05	0.05	mg/L							
LCS (B7A0426-BS1)				Prepared &	Analyzed:	05-Jan-17				
Nitrite-N	0.09		mg/L	0.0997		94.3	90-110			
Matrix Spike (B7A0426-MS1)	Sourc	e: 17A0585-	-01	Prepared &	Analyzed:	05-Jan-17				
Nitrite-N	0.12	0.05	mg/L	0.0997	ND	115	80-120			
Matrix Spike Dup (B7A0426-MSD1)	Sourc	e: 17A0585-	-01	Prepared &	Analyzed:	05-Jan-17				
Nitrite-N	0.11	0.05	mg/L	0.0997	ND	114	80-120	0.873	20	
Batch B7A0619 - Inorganics										
Blank (B7A0619-BLK1)				Prepared &	Analyzed:	06-Jan-17				
TDS	<10.0	10.0	mg/L							
Duplicate (B7A0619-DUP1)	Sourc	e: 17A0450-	-01	Prepared &	Analyzed:	06-Jan-17				
TDS	468	10.0	mg/L		480			2.53	20	
Batch B7A0627 - Inorganics										
Blank (B7A0627-BLK1)				Prepared &	Analyzed:	04-Jan-17				
Nitrate-N	<0.10	0.10	mg/L	-	-					
LCS (B7A0627-BS1)				Prepared &	Analyzed:	04-Jan-17				
Nitrate-N	24.0		mg/L	25.0	-	96.0	90-110			

Envirodyne Laboratories, Inc.

onica Smith

Monica Smith, Project Manager



Envirodyne Laboratories, Inc 11011 Brooklet Dr., # 230 Houston, TX 77099 281.568.7880 Phone www.envirodyne.com

Client:	Victoria, City of
Project:	Victoria, City of - Surface and Raw Water Testing
Work Order:	17A0767

**Reported:** 21-Jan-17 17:30

#### Wet Chemistry - Quality Control

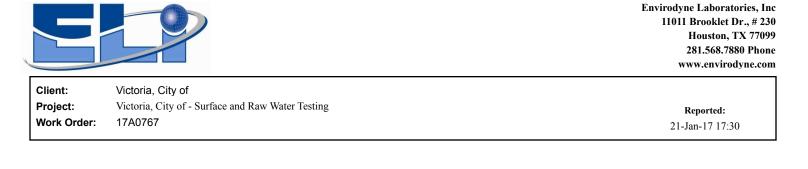
#### **Envirodyne Laboratories, Inc.**

	Result	Reporting Limit	Units	Spike	Source	%REC	%REC Limits	RPD	RPD Limit	NT (
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B7A0627 - Inorganics										
Matrix Spike (B7A0627-MS1)	Sour	ce: 17A0450	-04	Prepared &	Analyzed:	04-Jan-17				
Nitrate-N	26.4	0.10	mg/L	25.0	ND	106	80-120			
Matrix Spike Dup (B7A0627-MSD1)	Sour	ce: 17A0450	-04	Prepared &	Analyzed:	04-Jan-17				
Nitrate-N	26.2	0.10	mg/L	25.0	ND	105	80-120	0.760	20	
Batch B7A0630 - Inorganics										
Blank (B7A0630-BLK1)				Prepared &	Analyzed:	06-Jan-17				
OrthoPhoshate as P	<0.10	0.10	mg/L							
LCS (B7A0630-BS1)				Prepared &	Analyzed:	06-Jan-17				
OrthoPhoshate as P	0.320		mg/L	0.333		96.1	80-120			
Matrix Spike (B7A0630-MS1)	Sour	ce: 17A0767	-01	Prepared &	Analyzed:	06-Jan-17				
OrthoPhoshate as P	0.330	0.10	mg/L	0.330	ND	100	80-120			
Matrix Spike Dup (B7A0630-MSD1)	Sour	ce: 17A0767	-01	Prepared &	Analyzed:	06-Jan-17				
OrthoPhoshate as P	<0.10	0.10	mg/L	0.330	< 0.10	93.9	80-120	6.25	20	
Batch B7A0648 - Inorganics										
Blank (B7A0648-BLK1)				Prepared &	Analyzed:	06-Jan-17				
Color	<1.0	1.0	Color Units							
LCS (B7A0648-BS1)				Prepared &	Analyzed:	06-Jan-17				
Color	41.8		Color Units	40.0		105	80-120			

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Monica Smith, Project Manager



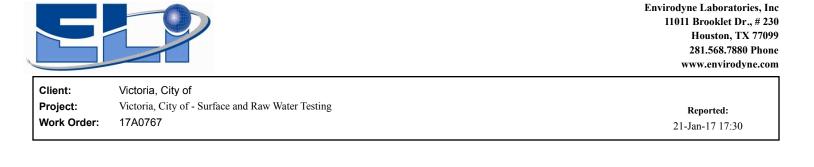
# Envirodyne Laboratories, Inc.

	Reporting		Spike	Source		%REC		RPD	
Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Sou	rce: 17A0767-	-01	Prepared &	& Analyzed:	06-Jan-17				
<1.0	1.0	Color Units		<1.0			0	20	
			Prepared &	& Analyzed:	06-Jan-17				
<0.10	0.10	mg/L							
			Prepared &	& Analyzed:	06-Jan-17				
3.13		mg/L	3.00		104	80-120			
Sour	rce: 17A0146-	-01	Prepared &	& Analyzed:	06-Jan-17				
7.32	0.20	mg/L	1.50	2.90	295	80-120			Q
Sour	rce: 17A0146	-01	Prepared &	& Analyzed:	06-Jan-17				
6.58	0.20	mg/L	1.50	2.90	245	80-120	10.6	20	Q
			Prepared 8	& Analyzed:	: 10-Jan-17				
<0.10	0.10	mg/L							
			Prepared &	k Analyzed:	10-Jan-17				
5.11		mg/L	5.00		102	90-110			
Sou	rce: 17A0754	-01	Prepared &	& Analyzed:	: 10-Jan-17				
4.18	0.10	mg/L	4.10	ND	102	80-120			
	<1.0 <0.10 3.13 5.000 6.58 <0.10 5.11 Sour	Result         Limit           Source:         17A0767-           <1.0	Result         Limit         Units           Source: 17A0767-01           <1.0	Result         Limit         Units         Level           Source:         17A0767-01         Prepared &           <1.0	ResultLimitUnitsLevelResultSource: 17A0767-01Prepared & Analyzed:<1.0	Result         Limit         Units         Level         Result         %REC           Source:         17A0767-01         Prepared & Analyzed: 06-Jan-17           <1.0	Result         Limit         Units         Level         Result         %REC         Limits           Source:         17A0767-01         Prepared & Analyzed: 06-Jan-17	Result         Limit         Units         Level         Result         %REC         Limits         RPD           Source:         17A0767-01         Prepared & Analyzed: 06-Jan-17         0         0           <1.0	ResultLimitUnitsLevelResult%RECLimitsRPDLimitSource: 17A0767-01Prepared & Analyzed: 06-Jan-17 $<1.0$ 1.0Color Units $<1.0$ 020Prepared & Analyzed: 06-Jan-17 $<0.10$ 0.10mg/L $<1.0$ 020Prepared & Analyzed: 06-Jan-17 $<0.10$ 0.10mg/L $<1.0$ $<104$ 80-120Source: 17A0146-01Prepared & Analyzed: 06-Jan-17Source: 17A0146-01Prepared & Analyzed: 06-Jan-17Prepared & Analyzed: 06-Jan-177.320.20mg/L $1.50$ $2.90$ $295$ $80-120$ Source: 17A0146-01Prepared & Analyzed: 06-Jan-17Prepared & Analyzed: 06-Jan-17 $<0.10$ mg/L $1.50$ $2.90$ $245$ $80-120$ $10.6$ $20$ Prepared & Analyzed: 10-Jan-17 $<<1.50$ $2.90$ $245$ $80-120$ $10.6$ $20$ Prepared & Analyzed: 10-Jan-17 $<<1.50$ $2.90$ $245$ $80-120$ $10.6$ $20$ Prepared & Analyzed: 10-Jan-17 $<<1.50$ $102$ $90-110$ $<<1.50$ $102$ $90-110$ $<<1.50$ $102$ $90-110$ $<<1.50$ $102$ $90-110$ $<<1.50$ $102$ $90-110$ $<<1.50$ $102$

Envirodyne Laboratories, Inc.

onica Smith

Monica Smith, Project Manager



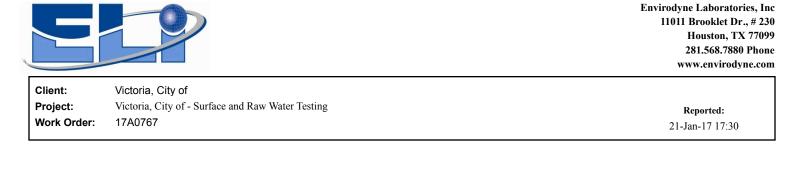
#### **Envirodyne Laboratories, Inc.**

		D (		G 1	9		N/DEC		RPD	
Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	Limit	Notes
Batch B7A0851 - Inorganics										
Matrix Spike Dup (B7A0851-MSD1)	Sou	rce: 17A0754-	-01	Prepared &	Analyzed:	10-Jan-17				
Ammonia-N (NH3-N)	4.11	0.10	mg/L	4.10	ND	100	80-120	1.69	20	
Batch B7A0929 - Inorganics										
Blank (B7A0929-BLK1)				Prepared &	Analyzed:	09-Jan-17				
TSS	<2.0	2.0	mg/L							
Duplicate (B7A0929-DUP1)	Sou	rce: 17A0028-	-03	Prepared &	Analyzed:	09-Jan-17				
TSS	163	2.0	mg/L		178			8.80	20	
Batch B7A0980 - Inorganics										
Blank (B7A0980-BLK1)				Prepared &	Analyzed:	09-Jan-17				
Sulfide	0.0210	0.01	mg/L							]
LCS (B7A0980-BS1)				Prepared &	Analyzed:	09-Jan-17				
Sulfide	0.368		mg/L	0.400		92.0	90-110			]
Duplicate (B7A0980-DUP1)	Sou	rce: 17A0767-	-01	Prepared &	Analyzed:	09-Jan-17				
Sulfide	0.0210	0.01	mg/L	*	0.0210			0.00	20	]
Batch B7A1055 - Inorganics										
Blank (B7A1055-BLK1)				Prepared &	Analyzed:	06-Jan-17				
Turbidity	< 0.10	0.10	NTU							

Envirodyne Laboratories, Inc.

onica Smith

Monica Smith, Project Manager



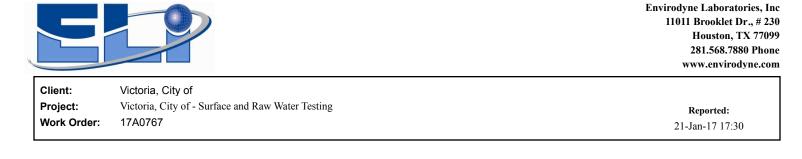
#### **Envirodyne Laboratories, Inc.**

		Reporting	<b></b>	Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B7A1055 - Inorganics										
LCS (B7A1055-BS1)				Prepared &	Analyzed:	06-Jan-17				
Turbidity	19.8		NTU	20.0		99.0	80-120			
Duplicate (B7A1055-DUP1)	Sour	-ce: 17A0536-	·01	Prepared &	Analyzed:	06-Jan-17				
Turbidity	1.06	0.10	NTU		1.03			2.87	20	
Batch B7A1118 - Inorganics										
Blank (B7A1118-BLK1)				Prepared:	10-Jan-17 A	nalyzed: 1	l-Jan-17			
Chloride	<3.0	3.0	mg/L							
LCS (B7A1118-BS1)				Prepared:	10-Jan-17 A	nalyzed: 1	l-Jan-17			
Chloride	94.0		mg/L	100		94.0	80-120			
Matrix Spike (B7A1118-MS1)	Sou	·ce: 16L3304-	01	Prepared:	10-Jan-17 A	nalyzed: 1	l-Jan-17			
Chloride	48.0	3.0	mg/L	20.0	29.9	90.4	80-120			
Matrix Spike Dup (B7A1118-MSD1)	Sou	·ce: 16L3304-	01	Prepared:	10-Jan-17 A	nalyzed: 1	l-Jan-17			
Chloride	48.0	3.0	mg/L	20.0	29.9	90.4	80-120	0.00	20	
Batch B7A1132 - Inorganics										
Blank (B7A1132-BLK1)				Prepared &	Analyzed:	10-Jan-17				
Sulfate	<2.00	2.00	mg/L							
LCS (B7A1132-BS1)				Prepared &	Analyzed:	10-Jan-17				
Sulfate	18.0		mg/L	20.0		90.2	90-110			

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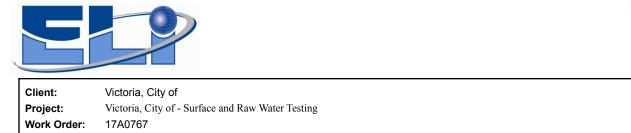
# Envirodyne Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
/ mary c	Result	Liint	Onits	Level	Result	70REC	Linits	МЪ	Emilt	Notes
Batch B7A1132 - Inorganics										
Matrix Spike (B7A1132-MS1)	Sour	ce: 17A0585-	-01	Prepared &	k Analyzed:	10-Jan-17				
Sulfate	32.0	2.00	mg/L	20.0	16.0	80.2	80-120			
Matrix Spike Dup (B7A1132-MSD1)	Sour	ce: 17A0585-	-01	Prepared &	k Analyzed:	10-Jan-17				
Sulfate	38.1	2.00	mg/L	20.0	16.0	111	80-120	17.4	20	
Batch B7A1158 - Metals - EPA 200.2										
Blank (B7A1158-BLK1)				Prepared: (	09-Jan-17 A	nalyzed: 1	0-Jan-17			
Silica	< 0.10	0.10	mg/L							
LCS (B7A1158-BS1)				Prepared: (	09-Jan-17 A	nalyzed: 1	0-Jan-17			
Silica	4.97		mg/L	5.00		99.4	90-110			
Matrix Spike (B7A1158-MS1)	Sour	ce: 17A0767-	-01	Prepared: (	09-Jan-17 A	nalyzed: 1	0-Jan-17			
Silica	9.65	0.10	mg/L	10.8	0.670	83.1	85-115			(
Matrix Spike Dup (B7A1158-MSD1)	Sour	ce: 17A0767-	-01	Prepared: (	09-Jan-17 A	nalyzed: 1	0-Jan-17			
Silica	9.65	0.10	mg/L	10.8	0.670	83.1	85-115	0.00	20	(
Batch B7A1541 - Inorganics										
Blank (B7A1541-BLK1)				Prepared:	12-Jan-17 A	nalyzed: 2	0-Jan-17			
Fluoride	<0.10	0.10	mg/L							
Blank (B7A1541-BLK2)				Prepared:	12-Jan-17 A	nalyzed: 2	0-Jan-17			
Fluoride	< 0.10	0.10	mg/L							

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#### Wet Chemistry - Quality Control

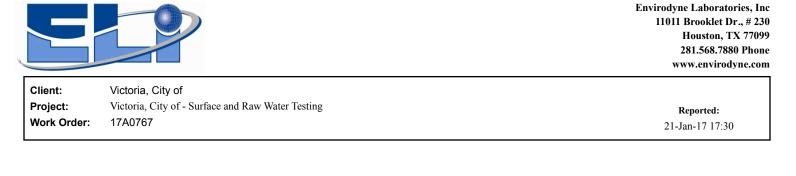
# Envirodyne Laboratories, Inc.

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B7A1541 - Inorganics										
LCS (B7A1541-BS1)				Prepared: 1	12-Jan-17 A	nalyzed: 20	)-Jan-17			
Fluoride	0.52		mg/L	0.500		104	90-110			
Matrix Spike (B7A1541-MS1)	Sourc	e: 17A0270-	-01	Prepared: 1	12-Jan-17 A	nalyzed: 20	)-Jan-17			
Fluoride	2.29	0.10	mg/L	0.500	1.77	104	80-120			
Matrix Spike Dup (B7A1541-MSD1)	Sourc	e: 17A0270-	-01	Prepared: 1	12-Jan-17 A	nalyzed: 20	)-Jan-17			
Fluoride	2.30	0.10	mg/L	0.500	1.77	106	80-120	0.436	20	
Batch B7A2433 - Inorganics										
Blank (B7A2433-BLK1)				Prepared &	Analyzed:	19-Jan-17				
Alkalinity (m) as CaCO3	<20	20	mg/L							
Alkalinity (p) as CaCO3	<20	20	"							
LCS (B7A2433-BS1)				Prepared &	Analyzed:	19-Jan-17				
Alkalinity (m) as CaCO3	52		mg/L	50.0		104	80-120			
Alkalinity (p) as CaCO3	49		"	50.0		98.0	80-120			
Duplicate (B7A2433-DUP1)	Sourc	e: 17A1467-	-01	Prepared &	Analyzed:	19-Jan-17				
Alkalinity (m) as CaCO3	61	20	mg/L		62			1.63	20	
Alkalinity (p) as CaCO3	<20	20	"		<20			0	20	
Batch B7A2440 - Inorganics										
Blank (B7A2440-BLK1)				Prepared &	Analyzed:	19-Jan-17				
Acidity	<20	20	mg/L							

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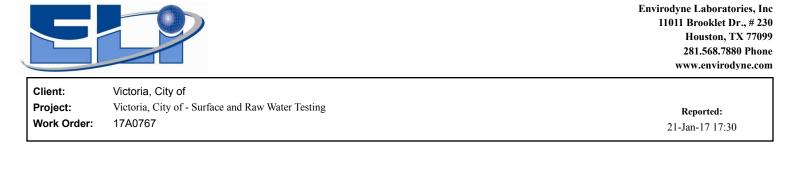
# Envirodyne Laboratories, Inc.

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B7A2440 - Inorganics										
LCS (B7A2440-BS1)				Prepared &	Analyzed:	19-Jan-17				
Acidity	980		mg/L	1000		98.0	80-120			
Duplicate (B7A2440-DUP1)	Sour	ce: 17A0767-0	01	Prepared & Analyzed: 19-Jan						
Acidity	<20	20	mg/L		<20			0	20	Н
Batch B7A2448 - Inorganics										
Blank (B7A2448-BLK1)				Prepared &	Analyzed:	19-Jan-17				
ORP	<1.0	1.0	mV							
Duplicate (B7A2448-DUP1)	Sour	ce: 17A0767-0	01	Prepared &	Analyzed:	19-Jan-17				
ORP	130	1.0	mV		131			0.766	20	

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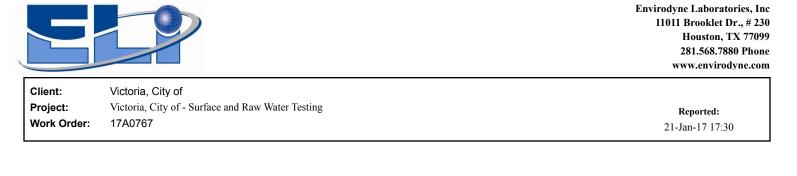
		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Reporting Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

#### Batch B7A0974 - Metals - EPA 200.2

Blank (B7A0974-BLK1)				Prepared: 09-Jai	n-17 Analyzed: 10	)-Jan-17	
Copper	0.00723	0.0006	mg/L				В
Zinc	< 0.0032	0.0032	"				
Aluminum	< 0.0018	0.0018	"				
Lead	< 0.0009	0.0009	"				
Thallium	< 0.0020	0.0020	"				
Chromium	< 0.0005	0.0005	"				
Iron	0.00893	0.0018	"				В
Manganese	< 0.0004	0.0004	"				
Cadmium	< 0.00050	0.00050	"				
Beryllium	< 0.0005	0.0005	"				
Barium	< 0.0005	0.0005	"				
Arsenic	< 0.0029	0.0029	"				
Nickel	< 0.0005	0.0005	"				
Selenium	< 0.0038	0.0038	"				
Antimony	< 0.0018	0.0018	"				
LCS (B7A0974-BS1)				Prepared: 09-Jai	n-17 Analyzed: 10	)-Jan-17	
Cadmium	240		ug/L	250	96.8	85-115	
Beryllium	246		"	250	98.2	85-115	
Barium	242		"	250	96.7	85-115	
Chromium	243		"	250	97.3	85-115	
Arsenic	243		"	250	97.1	85-115	
Aluminum	0.246	0.0018	mg/L			85-115	
Copper	247		ug/L	250	98.8	85-115	В
Iron	245		"	250	98.1	85-115	В
Manganese	243		"	250	97.1	85-115	
Zinc	251		"	250	100	85-115	
Thallium	233		"	250	93.0	85-115	
Lead	240		"	250	96.4	85-115	
Nickel	243		"	250	97.1	85-115	
Selenium	244		"	250	97.8	85-115	
Antimony	245		"	250	98.2	85-115	

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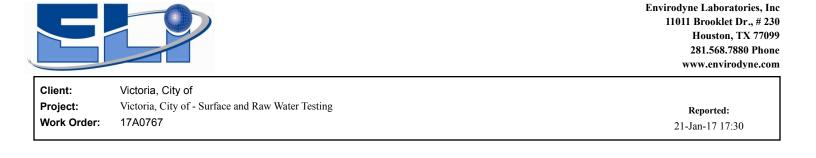
		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

#### Batch B7A0974 - Metals - EPA 200.2

Matrix Spike (B7A0974-MS1)	Sou		01	Prepared:	09-Jan-17 Ar	alyzed: 1	0-Jan-17			
Nickel	0.477	0.0005	mg/L	0.500	ND	95.3	70-130			
Cadmium	0.48	0.00050	"	0.500	ND	96.0	70-130			
Beryllium	0.479	0.0005		0.500	ND	95.8	70-130			
Barium	0.669	0.0005		0.500	0.190	95.7	70-130			
Manganese	0.489	0.0004	"	0.500	0.00757	96.2	70-130			
Arsenic	0.501	0.0029		0.500	ND	100	70-130			
Aluminum	0.547	0.0018			0.0158		70-130			
Zinc	0.483	0.0032		0.500	ND	96.6	70-130			
Selenium	0.493	0.0038		0.500	ND	98.6	70-130			
Chromium	0.474	0.0005		0.500	0.000575	94.8	70-130			
Iron	0.681	0.0018		0.500	0.198	96.6	70-130			В
Copper	0.517	0.0006		0.500	0.00406	103	70-130			В
Lead	0.49	0.0009		0.500	ND	98.6	70-130			
Thallium	0.491	0.0020		0.500	ND	98.2	70-130			
Antimony	0.508	0.0018	"	0.500	ND	102	70-130			
Matrix Spike Dup (B7A0974-MSD1)	Sou	ce: 17A0767-	01	Prepared:	09-Jan-17 Ar	alyzed: 1	0-Jan-17			
Lead	0.50	0.0009	mg/L	0.500	ND	100	70-130	1.71	20	
Thallium	0.500	0.0020		0.500	ND	100	70-130	1.88	20	
Iron	0.681	0.0018		0.500	0.198	96.6	70-130	0.00457	20	В
Barium	0.681	0.0005		0.500	0.190	98.2	70-130	1.83	20	
Nickel	0.483	0.0005		0.500	ND	96.6	70-130	1.31	20	
Arsenic	0.510	0.0029	"	0.500	ND	102	70-130	1.83	20	
Beryllium	0.486	0.0005	"	0.500	ND	97.3	70-130	1.51	20	
Selenium	0.511	0.0038	"	0.500	ND	102	70-130	3.57	20	
				0.500	ND	97.8	70-130	1.90	20	
Cadmium	0.49	0.00050		0.500						
	0.49 0.497	0.00050 0.0004		0.500	0.00757	98.0	70-130	1.79	20	
Cadmium							70-130 70-130	1.79 0.242	20 20	
Cadmium Manganese	0.497	0.0004			0.00757					В
Cadmium Manganese Aluminum	0.497 0.546	0.0004 0.0018	"	0.500	0.00757 0.0158	98.0	70-130	0.242	20	В
Cadmium Manganese Aluminum Copper	0.497 0.546 0.525	0.0004 0.0018 0.0006	" "	0.500 0.500	0.00757 0.0158 0.00406	98.0 104	70-130 70-130	0.242 1.52	20 20	В

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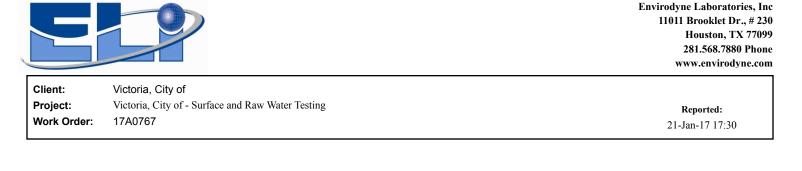
#### **Envirodyne Laboratories, Inc.**

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B7A0978 - Metals - EPA 200.2										
Blank (B7A0978-BLK1)				Prepared: 0	)9-Jan-17 A	Analyzed: 10	)-Jan-17			
Silver	< 0.0005	0.0005	mg/L							
LCS (B7A0978-BS1)				Prepared: 0	)9-Jan-17 A	Analyzed: 10	)-Jan-17			
Silver	52.7		ug/L	50.0		105	85-115			
Matrix Spike (B7A0978-MS1)	Sou	rce: 17A0767-	01	Prepared: 0	)9-Jan-17 A	Analyzed: 10	)-Jan-17			
Silver	0.0582	0.0005	mg/L	0.0500	ND	116	70-130			
Matrix Spike Dup (B7A0978-MSD1)	Sou	rce: 17A0767-	-01	Prepared: 0	)9-Jan-17 A	analyzed: 10	)-Jan-17			
Silver	0.0577	0.0005	mg/L	0.0500	ND	115	70-130	0.863	20	
Batch B7A0979 - Metals - EPA 200.2										
Blank (B7A0979-BLK1)				Prepared &	Analyzed:	: 10-Jan-17				
Sodium	<2.0	2.0	mg/L							
Potassium	<2.0	2.0	"							
Magnesium	<2.00	2.00	"							
Calcium	<2.00	2.00	"							
LCS (B7A0979-BS1)				Prepared &	Analyzed:	: 10-Jan-17				
Sodium	21.5		mg/L	20.0		107	85-115			
Potassium	19.6		"	20.0		97.9	85-115			
Magnesium	19.9		"	20.0		99.6	85-115			
Calcium	20.5		"	20.0		103	85-115			
Matrix Spike (B7A0979-MS1)	Sou	rce: 17A0767-	-01	Prepared &	Analyzed:	: 10-Jan-17				
Potassium	23.0	2.0	mg/L	20.0	2.57	102	70-130			
Calcium	43.0	2.00	"	20.0	22.3	103	70-130			
Sodium	261	2.0	"	20.0	226	173	70-130			E

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#### **Envirodyne Laboratories, Inc.** Reporting Spike Source %REC RPD Result Units %REC RPD Analyte Limit Level Result Limits Limit Notes Batch B7A0979 - Metals - EPA 200.2 Matrix Spike Dup (B7A0979-MSD1) Source: 17A0767-01 Prepared & Analyzed: 10-Jan-17 42.3 Calcium 2.00 mg/L 20.0 22.3 100 70-130 1.52 20 22.8 Potassium 2.0 " 20.0 2.57 101 70-130 0.524 20 27.2 20.0 7.48 98.7 70-130 0.220 20 Magnesium 2.00 254 226 20.0 Sodium 2.0142 70-130 2.41 20E, Q Batch B7A1837 - Metals - EPA 200.2 Blank (B7A1837-BLK1) Prepared & Analyzed: 18-Jan-17 < 0.00500 0.00500 Arsenic, Dissolved mg/L Manganese, Dissolved < 0.0050 0.0050 ... ... < 0.0050 0.0050 Iron, Dissolved LCS (B7A1837-BS1) Prepared & Analyzed: 18-Jan-17 Arsenic, Dissolved 0.247 0.00500 mg/L 85-115 0.244 0.0050 .. 85-115 Manganese, Dissolved .. Iron, Dissolved 0.244 0.0050 85-115 Source: 17A1078-03 Matrix Spike (B7A1837-MS1) Prepared & Analyzed: 18-Jan-17 0.509 ND Arsenic, Dissolved 0.00500 70-130 mg/L 0.493 0.00493 Manganese, Dissolved 0.0050 ... 70-130 0.574 ... 0.0968 Iron, Dissolved 0.0050 70-130 Matrix Spike Dup (B7A1837-MSD1) Source: 17A1078-03 Prepared & Analyzed: 18-Jan-17 Manganese, Dissolved 0.488 0.0050 mg/L 0.00493 70-130 1.02 20 0.567 0.0050 .. 0.0968 1.23 20 Iron, Dissolved 70-130 .. Arsenic, Dissolved 0.501 0.00500 ND 70-130 1.58 20

Envirodyne Laboratories, Inc.

mica Smith

Monica Smith, Project Manager



**Envirodyne Laboratories, Inc** 11011 Brooklet Dr., # 230 Houston, TX 77099 281.568.7880 Phone www.envirodyne.com

Client:	Victoria, City of	
Project:	Victoria, City of - Surface and Raw Water Testing	Reported:
Work Order:	17A0767	21-Jan-17 17:30

#### **Notes and Definitions**

Q	QC did not meet ELI acceptance criteria
L	Analyzed by third party laboratory
Н	Hold time exceeded
Е	Estimated value
В	Target detected in method blank
-	-
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis

- RPD Relative Percent Difference
- Client Representative CLT

Envirodyne Laboratories, Inc.

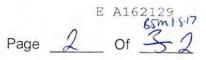
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Monica Smith, Project Manager

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17HD/67

## Envirodyne Laboratories, Inc. 11011 Brooklet, Ste. 230 Houston, Texas 77099-3543 Phone (281)568-7880 - Fax (281)568-8004



18

TCEQ Certification # T104704265

Name Addre		er					Analysis Request and Chain	of C	usto	dy R	ecor	b
City:	Victoria, TX 779											
Conta					Phone:	361-485	-3381 Fax: 361-485-33	85				
Projec	st No.			Clier	nt/Project	R	AW WATER				Temp.	Analysis Time
Lab ID No.	Field Sample No./ Indentification	Date & Time	Grab	C. Sample Container	Sample Type (Liquid Sludge, otc.)	Preservative	ANALYSIS REQUESTED		Hd	D.O.	Ter	Ana Tir
	Raw	1/3/19 12:57 PM	V	1L/P	Liquid	NA	pH, Temperature,H2S,DO (Field	de d)	7.86	12,0	25.Z	1300
		1/3/17	1	500 ml/P	Liquid	Ice,HNO3	Sb,Fe,Al,As,Mn,Be,Cd,Cr,Ca,Cu,Pt	b,Mg,	[			
					Liquid	Ice,HNO3	Ni,Se,Ag,TI,Zn,Ba,K,Na,Hg,Si,Hard	Iness				
		i/3/17 13/1	V	500 ml/P	Liquid	Ice,NaoH	Cyanide	/				
		1/3/17 1310	1	1 gal/cubie	Liquid	Ice,HNO3	G.alpha,G.beta,T.U,Ra226-228	3 /	-			
		1317	V	-40ml/vial	Liquid	Ice,HCI	VOC	1				
		1/3/17	V	3-1 It/amb	Liquid	Ice	SOCs (BNA,Pest,PCBs)	1				
					Liquid		1	_				
Sa	amplers: (Signature)	Relinquish (Signatur		SR		te: 1.3.17 ne: 1530		Date: Time:		Seal Int	tact?	
	Affiliation	Relinquish (Signatur		0	Da Tin	ne:	(Signature)	Date: Time:		Seal Int	tact?	
		Relinquish (Signatur		- 68	Tin Tin	1e:1700	(Signature) ENSE SMART	Date: <b> </b> · Time: <b> </b>		Seal Int	tact?	_
Remarl	ks:	FLOW: Meter Readi Cl <sub>2</sub> Residual	14	-	Arr 4	ival Temp. 2/3.5	Data Results To: 1 1.			Laborat	tory No.	
		Mn Correctio	m;		-	LK#3	•	Date: Time:		a and		

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### Envirodyne Laboratories, Inc. 11011 Brooklet, Ste. 230 Houston, Texas 77099-3543 Phone (281)568-7880 - Fax (281)568-8004

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	ertification # T1047	04265			Phone	(281)568-788	30 - Fax (:	281)568-8004			-	
Name Addre City:								Analysis Request and Chain of (	Custo	dy Re	ecor	d
Conta	ct: Mr. Lynn Short					Phone:	361-485	5-3381 Fax: 361-485-3385				
Projec	ct No.				Clier	nt/Project	RA	AW WATER			Temp.	Analysis
Lab ID No.	Field Sample No./ Indentification	Date & Time	Grab	Comp	Sample Container ( Size/Mat'0	Sample Type (Liqui Sludge, etc.)	id. Preservative	ANALYSIS REQUESTED	Hd	D.O.	Ter	Ana
	Raw	1/3/17 1316	V		1 Lt/P	Liquid	lce	Alk,(HCO3 & CO3)NO3N,NO2N,Color,ORP	,			
-								CI,OPO4,SO4,Bromate,Bromide,TSS,F	1			
								TDS,Turb.Acidity,S2,Diss.Fe,As&Mn*	1			
		1/3/17 1316	V		1 Lt/P	Liquid	Ice,H2S04	NH3N,TPO4				
		1/3/17 13/7	1		1 Lt/Amb	Liquid	Ice,H2S04	тос				
		1/3/17 1320	V		-40ml/Aml VOA	Liquid	Ice,NH4CI	HAA5 -				
												-
							1					
5	amplers: (Signature)	Relinquish (Signatur		y:	S.R	Ti	me: 1530	Received by: Date: (Signature) Time:		Seal Int	act?	
	Affiliation	Relinquish (Signatur		y:		Ti	ate: me:	Received by: Date: (Signature) Time:		Seal Int	act?	
		Relinquish (Signatur		y:		LSU		Received by Lab: Elise Shiplet Time:		Seal Int	act?	
Remar	ks:	FLOW: Meter Read C1 <sub>2</sub> Residua				2	rrival Temp. 1.2/35	Data Results To: 1.		Laborat	ory No.	
		Mn Correctin				-	LAAS	Site Representative: Date: Time:				

Page 20 of 20



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20 January 2017

Victoria, City of Lynn Short 700 Main Center Victoria, TX 77901

# Victoria, City of - Surface and Raw Water Testing

Enclosed are the results of analyses for samples received by the laboratory on 04-Jan-17 17:00. The analytical data provided relates only to the samples as received in this laboratory report.

ELI certifies that all results are NELAP compliant and performed in accordance with the referenced method except as noted in the Case Narrative or as noted with a qualifier. Any reproductions of this laboratory report should be in full and only with the written authorization from the client.

The total number of pages in this report is 5

Thank you for selecting ELI for your analytical needs. If you have any questions regarding this report, please contact us.

Sincerely,

onica Smith

Monica Smith Project Manager



Certificate No: TX104704265

		Envirodyne Laboratories, Inc 11011 Brooklet Dr., # 230 Houston, TX 77099 281.568.7880 Phone www.envirodyne.com
Client:	Victoria, City of	
Project:	Victoria, City of - Surface and Raw Water Testing	Reported:
Work Order:	17A0768	20-Jan-17 16:53

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Surface Water	17A0768-01	Water	03-Jan-17 15:00	04-Jan-17 17:00
Analyzed by NELAP cort	ified lab: T104704215 15 10			

L - Analyzed by NELAP certified lab: T104704215-15-19

L - Sample analyzed by NELAC certified lab: T104704527-14-1

L - Sample analyzed by NELAP accredited lab: T104704466-11-5

Envirodyne Laboratories, Inc.

onica Smith

Monica Smith, Project Manager



Envirodyne Laboratories, Inc 11011 Brooklet Dr., # 230 Houston, TX 77099 281.568.7880 Phone www.envirodyne.com

Client:Victoria, City ofProject:Victoria, City of - Surface and Raw Water TestingWork Order:17A0768

**Reported:** 20-Jan-17 16:53

#### Surface Water 17A0768-01 (Water) Sampled: 03-Jan-17 15:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
			Envirod	yne Labo	ratories, Iı	ıc.				
Metals by ICP-MS										
Arsenic, Dissolved	<2.00	2.00	ug/L	1	B7A2331	18-Jan-17	18-Jan-17 16:11	EPA 200.8	IZW	1
Iron, Dissolved	<20.0	20.0	ug/L	1	B7A2331	18-Jan-17	18-Jan-17 16:11	EPA 200.8	IZW	1
Wet Chemistry										
Bromate	< 0.002	0.002	mg/L	1	B7A2051	11-Jan-17	11-Jan-17 00:00	EPA 300.1	IZW	1
Bromide	< 0.12	0.12	mg/L	1	B7A2051	11-Jan-17	16-Jan-17 00:00	EPA 300.0	IZW	1
Cyanide, Total	< 0.005	0.005	mg/L	1	B7A2022	09-Jan-17	09-Jan-17 13:37	EPA 335.4	IZW	1
Hydrogen Sulfide	0.0230	0.0100	mg/L	1	B7A2622	09-Jan-17	09-Jan-17 13:32	Calc	IZW	
Sulfide	0.02	0.01	mg/L	1	B7A0980	09-Jan-17	09-Jan-17 13:32	SM4500-S2 D	XQH	I
Organochlorine Pesticides a	nd PCBs by EPA 60	8								
Arochlor-1016	< 0.51	0.51	ug/L	1	B7A2021	09-Jan-17	11-Jan-17 14:42	EPA 608	IZW	1
Arochlor-1221	< 0.51	0.51	ug/L	1	B7A2021	09-Jan-17	11-Jan-17 14:42	EPA 608	IZW	1
Arochlor-1232	< 0.51	0.51	ug/L	1	B7A2021	09-Jan-17	11-Jan-17 14:42	EPA 608	IZW	1
Arochlor-1242	< 0.51	0.51	ug/L	1	B7A2021	09-Jan-17	11-Jan-17 14:42	EPA 608	IZW	1
Arochlor-1248	< 0.51	0.51	ug/L	1	B7A2021	09-Jan-17	11-Jan-17 14:42	EPA 608	IZW	1
Arochlor-1254	< 0.51	0.51	ug/L	1	B7A2021	09-Jan-17	11-Jan-17 14:42	EPA 608	IZW	1
Arochlor-1260	< 0.51	0.51	ug/L	1	B7A2021	09-Jan-17	11-Jan-17 14:42	EPA 608	IZW	1

Envirodyne Laboratories, Inc.

onica Smith

Monica Smith, Project Manager



DOH Certification #E84025 Cert.# T104704527-14-1

Report Date: January 18, 2017

Envirodyne Laboratories, Inc. 11011 Brooklet, Ste 230 Houston, TX 77099-3543 Envirodyne Client/Field ID: Envirodyne City of Victoria Surface Water Sample Collection:1-3-17/1500 Lab ID No: 17.170 Lab Custody Date: 1-6-17/1430 Sample description:Water

#### CERTIFICATE OF ANALYSIS

Parameter	Units	Results	Analysis Date	Method	Detection Limit
Gross Alpha	pCi/l	0.7 ± 0.9	1-13-17/1634	EPA 900.0	1.9
Gross Beta	pCi/l	3.1 ± 1.1	1-13-17/1634	EPA 900.0	2.4
Radium-226	pCi/l	0.4 ± 0.2	1-16-17/1216	EPA 903.0	0.3
Radium-228	pCi/l	1.0 ± 0.4	1-17-17/0938	EPA Ra-05	0.6
Uranium	pCi/l	0.2 J ± 0.3	1-16-17/1553	EPA 908.0	0.7
Uranium	ug/l	0.3 ± 0.5	calc	EPA 908.0	1.0
Alpha Standard: Th-230 Beta Standard: Cs-137					

J = the reported value failed to meet the established quality control criteria for either precision or accuracy.

James W Hager

James W. Hayes

Test results meet all requirements of the NELAC standards. Statement of estimated uncertainty available upon request. Test results refer only to sample(s) listed. Contact person: Jim Hayes (813) 229-2879.

#### Page 1 of 2

KNL ENVIROMENTAL TESTING, INC. | 3202 NORTH FLORIDA AVENUE | TAMPA, FLORIDA 33603 813.229.2879 | KNLENVIRONMENTAL.COM Envirodyne Laboratories, Inc. 11011 Brooklet, Ste. 230 Houston, Texas 77099-3543 Phone (281)568-7880 - Fax (281)568-8004

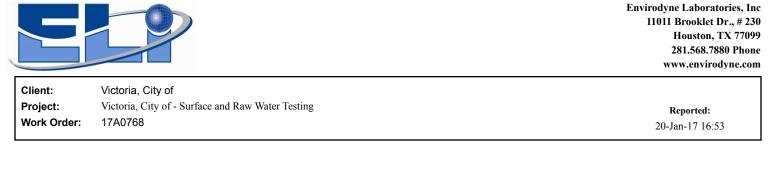
E A162017

Of \_\_\_\_

Page

T104704265

Name Addre City: Conta	ess: 11011 Brookle Houston, TX 7	t Dr. Ste 3 7099				Phone:	281-56	Analysis Request and Chair 8-7880 Fax: 281-568-		sto	dy R	ecor	d
	ct No.				Clier	nt/Project		COFV				Temp.	Analysis Time
Lab ID No.	Field Sample No./ Indentification	Date & Time	Grab	G Sample ( Size/		Sample Type (Liquid, Sludge, etc.)	Preservative	ANALYSIS REQUESTED		Hd	D.O.	Te	Ana Ti
	SURFACE WATER Jest	1-3-11 1500	<	( 90) Cub		Liquid	HND3		, T. V.				
								and and a second se					
			7 6 22					17.170		-			
			is place we are interpretented in										
			1					# SJANdard TAT		_			-
							_	9tt 1-19-17					
	Samplers: (Signature)	Relinquish			(5,-		te:1-5-11	Received by: (Signature)	Date:7-5- Time:-76		Seal Inta	act?	
1	Affiliation	Relinquish (Signatur		Pron	x	Da		Received by: (Signature)	Date: Time:	0)	Seal Inta		
		Relinquish (Signatur		r.		Da Tin	ne:	(Signature)	Date:/-6-	30			
Rema 54	arks: 13 to KNC	FLOW: Meter Readi Cl₂ Residua Mn Correctio	il:			Arr	1	Data Results To: 1. Site Representative:	Date: Time:		aborato.	ory No.	



#### **Envirodyne Laboratories, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7A0980 - Inorganics										
Blank (B7A0980-BLK1)				Prepared &	Analyzed:	09-Jan-17				
Sulfide	0.0210	0.01	mg/L							В
LCS (B7A0980-BS1)				Prepared &	Analyzed:	09-Jan-17				
Sulfide	0.368		mg/L	0.400		92.0	90-110			В
Duplicate (B7A0980-DUP1)	<b>Source: 17A0767-01</b> Prej		Prepared &	Analyzed:	09-Jan-17					
Sulfide	0.0210	0.01	mg/L		0.0210			0.00	20	В

Envirodyne Laboratories, Inc.

onica Smith

Monica Smith, Project Manager



Envirodyne Laboratories, Inc 11011 Brooklet Dr., # 230 Houston, TX 77099 281.568.7880 Phone www.envirodyne.com

Client:	Victoria, City of	
Project:	Victoria, City of - Surface and Raw Water Testing	Reported:
Work Order:	17A0768	20-Jan-17 16:53

#### Notes and Definitions

L Analyzed b	by third party laboratory
--------------	---------------------------

- B Target detected in method blank
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- CLT Client Representative

Envirodyne Laboratories, Inc.

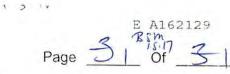
onica Smith

Monica Smith, Project Manager

740768

CL Corrected

#### Envirodyne Laboratories, Inc. 11011 Brooklet, Ste. 230 Houston, Texas 77099-3543 Phone (281)568-7880 - Fax (281)568-8004



TCEQ Certification # T104704265 Name: City of Victoria Analysis Request and Chain of Custody Record 700 Main Center Address: City: Victoria, TX 77901 Mr. Lynn Short Contact: Phone: 361-485-3381 361-485-3385 Fax: Project No. Client/Project Analysis Temp. Time Water WeLL Test Surface W ater Test Field Sample No./ Comp D.O. Lab ID Grab Date & Sample Container Sample Type (Liquid, Hd Preservative ANALYSIS REQUESTED Indentification (Size/Mat') Sludge, etc.) No. Time 1-3-17 H2S (Field) total suifide Surface Water 1500 NA NA NA 1-3-17 500 ml/P Liquid As (Dissolved), Fe (Dissolved) Ice 1500 1-3-17 500 ml/P Liquid Bromate, Bromide Ice 1500 Gross Alpha, Gross Beta, T.U, Ra 1-3-17 1 Liquid Ice, HNO3 1500 gal/cubie 226-228 1-3-17 1Lt/Amb Liquid PCBs Ice 1500 1-3-17 500 ml/P Liquid Cyanide Ice,NaOH 1500 Date: 1-3-17 Received by: Samplers: (Signature) Date: Relinguished by: Seal Intact? (Signature) / tepher Roburn Stupher Robinson Time: 1530 Time: (Signature) Date: Date: Relinguished by: Received by: Seal Intact? Time: Time: Affiliation (Signature) (Signature) Date: )-4/7 Date: 1.417 Seal Intact? Relinquished by: Received by Lab: \_50 ist Shall 1 HTime Time: 1700 (Signature) 1700 (Signature) FLOW Arrival Temp Remarks: Data Results To: aboratory No. Meter Reading: 4.2/3.5 Cl<sub>2</sub> Residual: Site Representative: Date: Mn Correction. Time

Final Report Page 1 of 25

BatchNo: 79978

# SAMPLE REPORT

Batch # 79978



T104704328-18-15

#### Business

Victoria, City of - Stephen Robinson P O Box 1758 Victoria Tx 77902 Att: Stephen Robinson



# Laboratory

B Environmental, LLC. 1606 E Brazos, Suite D Victoria TX 77901 ph. 361-572-8224

#### **Reference Information**

Project: ASR Tabl 1, List A Printed: Friday, February 01, 2019

Re: Victoria, City of - Stephen Robinson

Dear: Stephen Robinson

Attached are the results for sample(s) received on 1/18/2019

The analytical results relate only to the samples tested. All supporting quality data meets the requirements of NELAC unless noted in the case narrative section of the report.

This report contains 25 pages (including the cover page)

If you have any questions concerning this report, please do not hesitate to call (361) 572-8224 or Fax us at (361) 572-4115

Respectfully Submitted,

Kevin Baros

Kevin Baros Laboratory Director



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77901

606 E Brazos, Suite D /ictoria TX 7	7901						
Batch No: 79	978 Sa	mple Rec	eint C	hec	klie	54	
			Date Rec			1/18/20	019
Project	ASR Tabl 1, List A		Received	By:	Val	nrenkar	np
ogin completed by:	Vahrenkamp	1/18/2019	]				
	Signature	LoginDate:	Ī				
		Carrier Name	Wall	<u>c In</u>			
Shipping container	/cooler in good o	ondition?		YES		NO	Not Present
Custody seals intac	ct on shipping co	ntainer/cooler?		YES		NO	Not Present
Custody seals intac	ct on sample bot	tles?		YES	_	NO	Not Present
Chain of Custody p	present?			YES		NO	
Chain of Custody s	igned when relin	quished and rece		YES	-	NO	
Chain of Custody a	grees with samp	le labels?		YES		NO	
Samples in proper	container/bottles	?		YES	-	NO	
Sample containers	intact?			YES		NO	
Sufficient sample v	olume for indicat	ted tests?		YES		NO	
All samples receive	ed within holding	times?		YES		NO	
Container/Temp Bl	ank - temperatur	e in compliance?		YES	_	NO	>0 <6 °C On Ice
Water - VOA vials I	have zero heads	pace? Bubble < 6		YES	_	NO	No VOA Vials submitte
Water - pH accepta	able upon receipt	?		YES		NO	Not Applicable
*TEMP 22.0/22.0	pH Adjuste	d? No		cked B			enkamp
Any No and/or N/A (not ap	plicable) response m	ust be detailed in the					
client contacted			Person	Contac	ted		
ontacted by:			Date Co	ontacte	d:		
Regarding							
Comments							the second second
Therm #4. The sample from Ana-Lab.	s were received the	same day they were o	collected and w	vere in th	e proc	cess of	cooling. Bottles were
Corrective Action							



1606 E Brazos, Suite D

Victoria TX

77901

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	Ana-Lab Corp. P.		_		Kilgore,		000				
ANALAB I	Phone 903/984-0551 FAX 903/ Em	1984-59		fail corp			al Improven	nent			
CORP. HE COMPLETE SERVICE LAB	Results						31/2019		Page 1 of		
	Victoria, City o	of			Acc	ount		Pr	oject		
Report To	violona, oky o	~			BEN	VV-G		8	59740		
B-Environmental Kevin C. Baros 1606 E Brazos St., Suite D Victoria, TX 77901											
		R	Results	5							
1752260 Well 19								Received:	01/10/2010		
Drinking Water	<i>Collected by:</i> Client <i>Taken:</i> 01/18/2019 14:34:00		Environm	iental			PO		01/19/2019	,	
Calculation	Prepared:		01/2	23/2019	10:11:43	Calculatea	1	01/23/2019	10:11:43	C.	
Parameter	Results		Units	RL		Flag		CAS	Boi	ule	
Z Phosphorus (as Phosphate)	0.802		mg/L	0.306							
EPA 200.7 4.4	Prepared:	819264	01/2	22/2019	12:45:00	Analyzed	819372	01/22/2019	16:44:00	LI	
Parameter	Results		Units	RL		Flag	04.0	CAS	Bot	ttle	
V Phosphorus z Silicon Recoverable	0.262		mg/L	0.100				7723-14-0	13		
EPA 200.7 4.4	6.30 Prepared:	810761	mg/L	0.100	12.15.00	desident of	010107	7740-21-3	13		
		019204		1. A.A.	12:45:00	Analyzed	819407	01/23/2019	09:48:00	LI	
Parameter V Calcium	Results 39.1		Units	RL 0.500		Flag		CAS	Bot	tle	
V Magnesium, Total	9.45		mg/L mg/L	0.020				7440-70-2 7439-95-4	13 13		
V Potassium	5.73		mg/L	0.500				7440-09-7	13		
EPA 200.7 4.4	Prepared:	819264	01/2	2/2019	12:45:00	Analyzed	819476	01/23/2019	10:32:00	LI	
Parameter	Results	-	Units	RL		Flag		CAS	Bot	-	
V Sodium	55.6		mg/L	2.50		Flug		7440-23-5	13	ue	
EPA 200.7 4.4 - Calc	Prepared:		01/2	23/2019	10:11:43	Calculated		01/23/2019	10:11:43	C/	
Parameter	Results		Units	RL		Flag		CAS	Bot	lle	
V Silica (SiO2)	13.5		mg/L	0.214							
EPA 200.8 5.4	Prepared:	819264	01/2	2/2019	12:45:00	Analyzed	819379	01/22/2019	20:55:00	JB	
Parameter	Results		Units	RL		Flag	-	CAS	Bot	tle	
V Aluminum, Total	0.00436		mg/L	0.005		1		7429-90-5	13		
EPA 300.0 2.1	Prepared:	819462	01/2	2/2019	14:41:00	Analyzed	819462	01/22/2019	14:41:00	AA	
Parameter	Results		Units	RL	-	Flag		CAS	Bot	tle	
V Chloride	59.6		mg/L	1.50					01		

17

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662



Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

1

Final	I Report Page 4 of 25	Ana-Lab Corp. P.	0. B	ox 9	000	Kilgore,		Batch #	79978 Repo	ort Page 3	of 26
A	CORP. COMPLETE SERVICE LAB	Phone 903/984-0551 FAX 903/		14 e-		@ana-lab.c Caring	0m Continu	al Improven 31/2019	nent	Page	2 of 9
1	1752260 Well 19		-						Received:	01/19/201	9
D	Prinking Water	Collected by: Client Taken: 01/18/2019 14:34:00		Environ	mental			PC	): 		
E	PA 300.0 2.1	Prepared:	819462	01	1/22/2019	14:41:00	Analyzed	819462	01/22/2019	14:41:00	AM
	Parameter	Results		Units	RL		Flag	1	CAS	Во	ottle
N	Sulfate	20.4		mg/L	1.50					01	
E	PA 300.1 1	Prepared:	820679	01	1/30/2019	15:30:00	Analyzed	820679	01/30/2019	15:30:00	AM
ς.	Parameter	Results		Units	RL		Flag		CAS	Во	ottle
Ν	Bromate	<5.00		ug/L	5.00					09	01
E	PA 350.1 2	Prepared:	818925	01	/21/2019	09:30:00	Analyzed	819204	01/22/2019	09:00:00	RSV
	Parameter	Results		Units	RL		Flag		CAS	Во	ottle
N	Ammonia (as N)	0.631		mg/L	0.020					10	
E	PA 524.2 4.1	Prepared:	819140	01	/21/2019	18:36:00	Analyzed	819140	01/21/2019	18:36:00	KLE
	Parameter	Results		Units	RL		Flag		CAS	Во	ttle
	Bromodichloromethane	20.8		ug/L	1.00				75-27-4	04	
	Bromoform Chloroform	2.61		ug/L	1.00				75-25-2	04	
	Dibromochloromethane	15.1		ug/L	1.00				67-66-3	04	
		16.4		ug/L	1.00				124-48-1	04	
E	PA 524.2 4.1	Prepared:	819140	01	/22/2019	13:30:30	Calculated	819140	01/22/2019	13:30:30	CAL
	Parameter	Results	1	Units	RL		Flag	2	CAS	Bo	ttle
N	Trihalomethanes	0.05491		mg/L	0.001					04	
E	PA 552.2 1	Prepared:	819669	01	/24/2019	11:50:27	Analyzed	820069	01/25/2019	22:25:00	EM
	Parameter	Results		Units	RL		Flag	4	CAS	Boi	ttle
	Bromoacetic acid	<5.00		ug/L	5.00				79-08-3	16	
12011	Chloroacetic acid	<5.00		ug/L	5.00				79-11-8	16	
	Dibromoacetic acid	<5.00		ug/L	5.00				631-64-1	16	
	Dichloroacetic acid	6.57		ug/L	5.00				79-43-6	16	
	Trichloroacetic acid	<5.00		ug/L	5.00				76-03-9	16	
EF	PA 552.2 1	Prepared:	819669	01	24/2019	11:50:27	Calculated	820069	01/28/2019	13:47:59	CAL
	Parameter	Results		Units	RL		Flag		CAS	Bot	ttle
N	HAA5	0.00657		mg/L	0.005					16	
SA	M 2130 B-2001	Prepared:	819053	01/	/20/2019	14:25:00	Analyzed	819053	01/20/2019	14:25:00	DWA
	Parameter	Results		Units	RL		Flag		CAS	Bot	ule
	Turbidity	<0.300									1.00

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

#### Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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Form rptPROJRES Created 10/13/2004 v1.2

Phone 903/984-0551 F.XX 903/984-0514 e-Mail corp@nam-lab.com         Employse Owned       Integrity       Carling       Continual Improvement         Rescults       Printed:       01/31/2019       F         Officient of the content of the	0 Bott 01 4
THE COMPLETE SERVICE LAS       Results         1752260       Well 19       Received: 01/19/         Drinking Water       Callected by: Client       B-Environmental       PO:         3M 2320 B-2011       Prepared: 819494       01/23/2019       09/11:00       Analyzed       819494       01/23/2019       09/11         Parameter       Results       Units       RL       Flag       CAS         SM 2340 B-97       Prepared:       01/23/2019       12:06:24       Calculated       01/23/2019       12:06         Parameter       Results       Units       RL       Flag       CAS         N Total Alkalinity (as CaCO3)       183       mg/L       0.00       12:06:24       Calculated       01/23/2019       12:06         Parameter       Results       Units       RL       Flag       CAS         N Total Alkalinity (as CaCO3 - Cal/MgEq       137       mg/L       0.500       06:15:00       Analyzed       819495       01/22/2019       06:05:00         N Total Dissolved Solids       364       mg/L       20.0       50       50       50       50       50       50       50       50       50       50       50       50       50       50       50       50 </th <th>0 0 Bott 01 4</th>	0 0 Bott 01 4
Drinking Water         Collected by:         Client Taken:         B-Environmental OU182019         PO:           SM 2320 B-2011         Prepared:         819494         01/23/2019         09:11:00         Analyzed         01/23/2019         09:11:00           SM 2340 B-97         Prepared:         01/23/2019         12:06:34         Calculated         01/23/2019         12:06           SM 2340 B-97         Prepared:         819495         01/22/2019         10:61:00         Analyzed         819495         01/22/2019         06:15:00         Analyzed         819495         01/22/2019         06:15:00         Analyzed         819495         01/22/2019         14:00:00           SM 2540 D-97         Prepared:         819626         01/23/2019         14:00:00         Analyzed         819626         01/23/2019         14:00:00           N Total Suspended Solids	0 Bott 01 4
Drinking Water     Collected by:     Clear     B-Environmental     PC:       SM 2320 B-2011     Prepared:     8/1944     0/23/2019     09:11:00     Analyzed     8/1949     0/123/2019     09:11.       Formameter     Results     Units     RL     Flag     CAS       SM 2320 B-2011     Prepared:     8/1944     0/23/2019     09:11:00     Analyzed     8/1949     0/12/3/2019     09:11.       Formameter     Results     Units     RL     Flag     CAS       SM 2340 B-97     Prepared:     0/12/3/2019     12:06:34     Calculated     0/12/3/2019     12:06       SM 2340 B-97     Prepared:     0/12/3/2019     12:06:34     Calculated     0/12/3/2019     12:06       SM 2340 B-97     Prepared:     8/19495     0/12/2/2019     06:15:00     Analyzed     8/1945     0/12/2/2019       SM 2540 C-97     Prepared:     8/19450     0/12/2/2019     06:15:00     Analyzed     8/19450     0/12/2/2019     06:15:00       SM 2540 D-97     Prepared:     8/19450     0/12/2/2019     14:00:00     Analyzed     8/19450     0/12/2/2019     14:00:00       SM 5510 C-2000     Prepared:     8/19450     0/12/2/2019     10:46:00     Analyzed     8/19450     0/12/2/2019     10:46:00 <th>0 Bott 01 4</th>	0 Bott 01 4
Increase         Internation         Internation <thinternation< th=""> <thinternation< th=""> <t< th=""><th><i>Bott</i> 01 4</th></t<></thinternation<></thinternation<>	<i>Bott</i> 01 4
N       Total Alkalinity (as CaCO3)       183       mg/L       1.00         SM 2340 B-97       Prepared:       0/12/3/2019       12:06:24       Calculated       0/12/3/2019       12:06         Parameter       Results       Units       RL       Flag       CAS         N       Total Hardness as CaCO3 - Cal/MgEq       137       mg/L       0.500       06:15:00       Analyzed       819495       01/22/2019       06:15:         SM 2540 C-97       Prepared:       819495       01/22/2019       06:15:00       Analyzed       819495       01/22/2019       06:15:         Parameter       Results       Units       RL       Flag       CAS         N       Total Dissolved Solids       364       mg/L       20.0       312/2019       14:00:00       Analyzed       819456       01/22/2019       14:00:00         SM 2540 D-97       Prepared:       819626       01/22/2019       14:00:00       Analyzed       819626       01/22/2019       14:00:00         SM 2540 D-97       Prepared:       819626       01/22/2019       14:00:00       Analyzed       819626       01/22/2019       14:00:0         SM 5310 C-2000       Prepared:       819450       01/22/2019       10:46:00       Analy	01 4
Parameter         Results         Units         RL         Flag         CAS           SM 2540 C-97         Prepared:         819495         01/22/2019         06:15:00         Analyzed         819495         01/22/2019         06:15:           Parameter         Results         Units         RL         Flag         CAS           SM 2540 C-97         Prepared:         819495         01/22/2019         06:15:00         Analyzed         819495         01/22/2019         06:15:           Parameter         Results         Units         RL         Flag         CAS            N Total Dissolved Solids         364         mg/L         20.0  <	_
N       Total Hardness as CaCO3 - Ca/MgEq       137       mg/L       0.500         SM 2540 C-97       Prepared: 819495       01/22/2019       06:15:00       Analyzed       819495       01/22/2019       06:15:         Parameter       Results       Units       RL       Flag       CAS         N       Total Dissolved Solids       364       mg/L       20.0       06:15:00       Analyzed       819495       01/22/2019       06:15:00         SM 2540 D-97       Prepared:       819626       01/23/2019       14:00:00       Analyzed       819626       01/23/2019       14:00:00         Parameter       Results       Units       RL       Flag       CAS         N       Total Suspended Solids       -2.00       mg/L       2.00       14:00:00       Analyzed       819626       01/23/2019       10:40:00       16:00       16:00       16:00       16:00       16:00       16:00       16:00       16:00       16:00       16:00       16:00       16:00	n
Parameter         Results         Units         RL         Flag         CAS           N         Total Dissolved Solids         364         mg/L         20.0         44.00:00         Analyzed         819626         01/23/2019         14:00:00         Analyzed         819626         01/23/2019         10:46:00         Analyzed         819450         01/22/2019         10:46:00         Analyzed         819450         01/22/2019         10:46:00         Analyzed         819450         01	Bott
N         Total Dissolved Solids         364         mg/L         20.0           SM 2540 D-97         Prepared:         819626         01/23/2019         14:00:00         Analyzed         819626         01/23/2019         14:00:           Parameter         Results         Units         RL         Flag         CAS           N         Total Suspended Solids         <2.00	0
Parameter     Results     Units     RL     Flag     CAS       N     Total Suspended Solids     <2.00	<i>Boll</i> 01
N       Total Suspended Solids       Quarter       Prepared:       819450       01/22/2019       10:46:00       Analyzed       819450       01/22/2019       10:46:         Parameter       Results       Units       RL       Flag       CAS         N       Total Organic Carbon       2.65       mg/L       0.500       0.500         1752261       Well 21       Received:       01/19/2         Drinking Water       Collected by:       Client       B-Environmental       PO:         Taken:       01/18/2019       15:11:00       01/18/2019       15:11:00	2
Parameter     Results     Units     RL     Flag     CAS       N Total Organic Carbon     2.65     mg/L     0.500     0.1222019     10:40:       1752261     Well 21     Received:     01/19/2       Drinking Water     Collected by:     Client     B-Environmental     PO:       Taken:     01/18/2019     15:11:00     01/18/2019     01/18/2019	Bott 01
N     Total Organic Carbon     2.65     mg/L     0.500       1752261     Well 21     Received:     01/19/2       Drinking Water     Collected by:     Client     B-Environmental     PO:       Taken:     01/18/2019     15:11:00     PO:	,
Drinking Water Collected by: Client B-Environmental PO: Taken: 01/18/2019 15:11:00	Botta 08
Taken: 01/18/2019 15:11:00	)19
Calculation Prepared: 01/23/2019 10:11:43 Calculated 01/23/2019 10:11:	
	-
Parameter     Results     Units     RL     Flag     CAS       z     Phosphorus (as Phosphate)     <0.119	Bottl
EPA 200.7 4.4 Prepared: 819264 01/22/2019 12:45:00 Analyzed 819372 01/22/2019 16:52:	
Parameter Results Units RL Flag CAS	Bottl
N Phosphorus <0.0388 mg/L 0.0388 7723-14-0	11
EPA 200.7 4.4 Prepared: 819264 01/22/2019 12:45:00 Analyzed 819476 01/23/2019 10:18:0	6
Parameter Results Units RL Flag CAS	Bottl
N         Magnesium, Total         10.0         mg/L         0.020         7439-95-4           N         Potassium         3.40         mg/L         0.500         7440-09-7	11



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Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

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Employee Owned Integrity Caring Continual Improvement

Results

Printed: 01/31/2019

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1752261 Well 21								Received:	01/19/2019	9
Drinking Water	Collected by: Client Taken: 01/18/2019 15:11:00		Environn	nental			PC	2:		
EPA 200.7 4.4	Prepared:	81926-	4 01/	22/2019	12:45:00	Analyzed	819476	01/23/2019	10:42:00	LP
Parameter	Results		Units	RL		Fla	g	CAS	Boi	ttle
N Sodium	120		mg/L	5.00				7440-23-5	11	
EPA 200.7 4.4	Prepared:	81926-	ŧ 01/.	22/2019	12:45:00	Analyzed	819587	01/23/2019	17:22:00	LF
Parameter	Results		Units	RL	-	Flag	g	CAS	Bot	ule
N Calcium	31.8		mg/L	5.00				7440-70-2	11	
EPA 200.7 4.4	Prepared:	81926-	01/	22/2019	12:45:00	Analyzed	819905	01/25/2019	11:23:00	LP
Parameter	Results		Units	RL		Flag	ø	CAS	Bot	ula
z Silicon Recoverable	10.4		mg/L	0.500				7740-21-3	11	ne
EPA 200.7 4.4 - Calc	Prepared:		01/2	25/2019	16:00:22	Calculated	1	01/25/2019	16:00:22	CA
Parameter	Results		Units	RL		Flag	2	CAS	Bot	al.
N Silica (SiO2)	22.3		mg/L	1.07				CAS	Don	ne
EPA 200.8 5.4	Prepared:	819264	01/2	22/2019	12:45:00	Analyzed	819379	01/22/2019	21:06:00	JB
Parameter	Results	-	Units	RL		Flag	,	CAS	Bott	ila
N Aluminum, Total	<0.0025		mg/L	0.0025				7429-90-5	11	iic.
EPA 300.0 2.1	Prepared:	819462	01/2	2/2019	15:04:00	Analyzed	819462	01/22/2019	15:04:00	AM
Parameter	Results		Units	RL		Flag	,	CAS	Bott	Ha
V Chloride	115		mg/L	1.50				Cho	01	ie
N Fluoride	0.550		mg/L	0.500					01	
V Sulfate	7.85		mg/L	1.50					01	
EPA 300.1 1	Prepared:	820679	01/3	0/2019	15:43:00	Analyzed	820679	01/30/2019	15:43:00	AM
Parameter	Results		Units	RL		Flag	-	CAS	Both	le
V Bromate	<5.00		ug/L	5,00					08	
EPA 350.1 2	Prepared:	818925	01/2	1/2019	09:30:00	Analyzed	819204	01/22/2019	09:00:00	RSV
Parameter	Results		Units	RL	_	Flag		CAS	Botti	le
V Ammonia (as N)	0.034		mg/L	0.020					10	
EPA 524.2 4.1	Prepared:	819140	01/2	1/2019	18:58:00	Analyzed	819140	01/21/2019	18:58:00	KLE
Parameter	Results		Units	RL	-	Flag		CAS	Bottl	le
V Bromodichloromethane	<1.00		ug/L	1.00				75-27-4	04	
N Bromoform	<1.00		ug/L	1.00				75-25-2	04	
V Chloroform	<1.00		ug/L	1.00				67-66-3	04	

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Gulf Coast Region: 4141 Directors Row Ste C Houston TX, 77092

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ANA-LAD	hone 903/984-0551 FAX 903 Er	nployee		Integrit			al Improve	ment		
THE COMPLETE SERVICE LAB	Results	Printed: 01/31/2019						Page 5 of		
1752261 Well 21				_				Received:	01/19/201	0
Drinking Water	Collected by: Client Taken: 01/18/2019 15:11:00		Environ	umental			PC		01/19/201	9
EPA 524.2 4.1	Prepared:	81914	0 01	1/21/2019	18:58:00	Analyzed	819140	01/21/2019	18:58:00	K
Parameter	Results		Units	RL		Flag	;	CAS	Be	ottle
N Dibromochloromethane	<1.00		ug/L	1.00				124-48-1	04	
EPA 524.2 4.1	Prepared:	81914	0 01	/22/2019	13:30:31	Calculated	819140	01/22/2019	13:30:31	C
Parameter	Results		Units	RL		Flag		CAS	Pa	ottle
N Trihalomethanes	<0.001		mg/L	0.001				Сло	04	
EPA 552.2 1	Prepared:	819665	01	/24/2019	11:50:27	Analyzed	820069	01/25/2019	22:55:00	E
Parameter	Results	-	Units	RL		Flag		CAS	Bo	ottle
V Bromoacetic acid	<5.00		ug/L	5.00				79-08-3	12	
V Chloroacetic acid V Dibromoacetic acid	<5.00		ug/L	5.00				79-11-8	12	
N Dibromoacetic acid N Dichloroacetic acid	<5.00		ug/L	5.00				631-64-1	12	
N Trichloroacetic acid	<5.00 <5.00		ug/L	5.00				79-43-6	12	
EPA 552.2 1		910000	ug/L	5.00				76-03-9	12	
Parameter	Prepared:	819009		/24/2019	11:50:27	Calculated	820069	01/28/2019	13:47:59	C.
N HAA5	Results		Units mg/L	RL 0.005		Flag		CAS	Boi	ttle
SM 2130 B-2001	Prepared:	819053	-	21/2019	14:00:00	Analyzed	819053	01/21/2019	12	-
Parameter	Results		Units	RL	17.00.00			10101010	14:00:00	D
V Turbidity	1.80		NTU	0.300		Flag H		CAS	Bot 01	tle
SM 2320 B-2011		1		-0-1 	-					_
	Prepared:	819494	01/	23/2019	09:11:00	Analyzed	819494	01/23/2019	09:11:00	El
Parameter V Total Alkalinity (as CaCO3)	Results 300		Units mg/L	<i>RL</i> 1.00		Flag		CAS	Boti 01	tle
SM 2340 B-97	Prepared:		01/.	24/2019	12:47:33	Calculated	1.17	01/24/2019	12:47:33	C,
Parameter	Results	1	Units	RL		Flag		CAS	Bott	tle
V Total Hardness as CaCO3 -Ca/MgEq	121		mg/L	5.00						
SM 2540 C-97	Prepared:	819495	01/2	22/2019	06:15:00	Analyzed	819495	01/22/2019	06:15:00	TH
Parameter	Results		Units	RL		Flag		CAS	Bott	le
/ Total Dissolved Solids	470		mg/L	50.0					01	
SM 2540 D-97	Prepared:	819626	01/2	23/2019	14:00:00	Analyzed	819626	01/23/2019	14:00:00	AL
Parameter Total Suspended Solids	Results		Units	RL		Flag		CAS	Bott	la

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	Ana-Lab Corp. Phone 903/984-0551 FAX 9	C					1000			_
ANALAB CORP. HE COMPLETE SERVICE LAB	Results	Employee		Integrity	Caring	Continua	al Improver 31/2019	nent	Page	6 of
1752261 Well 21 Drinking Water	Collected by: Client Taken: 01/18/2019 15:1		-Environm	ental			PC	Received:	01/19/2019	)
						-		6231.122		_
SM 5310 C-2000 Parameter		red: 81945		2/2019	11:10:00	Analyzed	819450	01/22/2019	11:10:00	A
V Total Organic Carbon	Results 0.620		Units mg/L	RL 0.500		Flag	3	CAS	Boi 07	ttle
		Sample	e Prepa	ration						
1752260 Well 19								Received:	01/19/2019	)
	Prance	red: 81890	7 0.0		00.00.00	Analyzed	818907	01/19/2019	00:00:00	k
	Treput	rea. 01090	/ 01/1	9/2019	00:00:00	Analyzeu	010207	01/19/2019		
Bottle pH		eu. 01090	SU	9/2019	00:00:00	Anaryzeu	010707	01/19/2019	02	
Bottle pH	2 2	rea. 61690	SU SU	9/2019	00:00:00	Анагузеа		01/19/2019		
Bottle pH Bottle pH	42 <2 <2	. 61690	SU SU SU	9/2019	00:00:00	лнаузей		01/19/2019	02 03 08	
Bottle pH Bottle pH Cooler Temperature	<2 <2 <2 0.8	. 61090	SU SU SU degrees C	9/2019	00:00:00	лицузей		01/19/2019	02 03 08 01	
Bottle pH Bottle pH Cooler Temperature Cooler Temperature	42 <2 <2	<i>ea.</i> 51590	SU SU SU degrees	9/2019	00:00:00	Analyzea		01/19/2019	02 03 08	
Bottle pH Bottle pH Cooler Temperature	<2 <2 <2 0.8 0.8	<i>ea.</i> 51590	SU SU SU degrees C degrees C degrees	9/2019	00:00:00	лицугеа		01/19/2019	02 03 08 01	T
E Bottle pH Bottle pH Cooler Temperature Cooler Temperature	<2 <2 <2 0.8 0.8	<i>ea.</i> 51590	SU SU SU degrees C degrees C degrees C degrees	9/2019	00:00:00	лпацугеа		01/19/2019	02 03 08 01 02	
Bottle pH Bottle pH Cooler Temperature Cooler Temperature Cooler Temperature	<2 <2 <2 0.8 0.8 0.8	<i>ea.</i> 51590	SU SU SU degrees C degrees C degrees C degrees C degrees	9/2019	00:00:00	лицугеа		01/19/2019	02 03 08 01 02 03	
Bottle pH Bottle pH Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature	<2 <2 <2 0.8 0.8 0.8 0.8	<i>ea.</i> 51590	SU SU SU degrees C degrees C degrees C degrees C	9/2019	00:00:00	лицугеа		01/19/2019	02 03 08 01 02 03 07 08	
E Bottle pH Bottle pH Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature	<2 <2 <2 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8	<i>ea.</i> 51590	SU SU SU degrees C degrees C degrees C degrees C degrees C degrees C	9/2019	00:00:00	лицугеа			02 03 08 01 02 03 07 08 09	
<ul> <li>Z Bottle pH</li> <li>Z Bottle pH</li> <li>Cooler Temperature</li> </ul>	<2 <2 <2 0.8	<i>ea.</i> 51590	SU SU SU degrees C degrees C degrees C degrees C degrees C degrees C degrees C degrees C degrees C	9/2019	00:00:00	лицугеи			02 03 08 01 02 03 07 08	A
Z Bottle pH Z Bottle pH Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature	<2 <2 <2 <2 0.8	<i>ea.</i> 51590	SU SU SU degrees C degrees C degrees C degrees C degrees C degrees C degrees C degrees C degrees	9/2019	00:00:00	лицугеи			02 03 08 01 02 03 07 08 09	A
Bottle pH Bottle pH Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature	<2 <2 <2 0.8	<i>ea.</i> 51590	SU SU SU degrees C C degrees C degrees C degre C degre C degrees C degrees C degrees C	9/2019	00:00:00	лпацугеа		01/19/2019	02 03 08 01 02 03 07 08 09 04	
E Bottle pH Bottle pH Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature	<2 <2 <2 <2 0.8	ed: 81926.	SU SU SU degrees C degrees C degrees C degrees C degrees C degrees C degrees C degrees C degrees C degrees C	2/2019	12:45:00	Analyzed	819264	01/22/2019	02 03 08 01 02 03 07 08 09 04 05	
Bottle pH Bottle pH Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature	<2 <2 <2 <2 0.8		SU SU SU degrees C degrees C degrees C degrees C degrees C degrees C degrees C degrees C degrees C degrees C						02 03 08 01 02 03 07 08 09 04 05 06	
E Bottle pH Bottle pH Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature	2 2 2 2 2 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8		SU SU SU degrees C C degrees C degrees C degrees C degrees C degrees C degrees C degre						02 03 08 01 02 03 07 08 09 04 05 06 12:45:00	TI

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Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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	Ana-Lab Corp. P Phone 903/984-0551 FAX 903			Kilgore,		5663	Tiep	ort Page 8 (	
ANA-LAD COKP. HE COMPLETE SERVICE LAB		iployee Ov		y Caring	Continu	al Improver /31/2019	nent	Page	7 of
1752260 Well 19							Received:	01/19/2019	)
EPA 524.2 4.1	Prepared:	819140	01/21/2019	18:36:00	Analyzed	819140	01/21/2019	18:36:00	KL
V Trihalomethane Expansion Code	Entered							04	
EPA 552.2 1	Prepared:	819669	01/24/2019	11:50:27	Analyzed	819669	01/24/2019	11:50:27	EN
V Haloacetic Acids Extraction EPA 552.2 1	3/40 Prepared:		nl 01/24/2019	11:50:27	Analyzed	820060	01/25/2019	07	
V Haloacetic Acids (HAA5)	Entered		57272019	11.50.27	Analyzea	820009	01/25/2019	22:25:00	EM
SM 2540 C-97	Prepared:	819006	01/22/2019	06:15:00	Analyzed	819006	01/22/2019	06:15:00	TH
V Total Dissolved Solids Started	Started								
SM 2540 D-1997	Prepared:	819373	01/23/2019	14:00:00	Analyzed	819373	01/23/2019	14:00:00	AL
V TSS Set Started	Started								
1752261 Well 21						1	Received:	01/19/2019	
	Prepared:	818907	01/19/2019	00:00:00	Analyzed	818907	01/19/2019	00:00:00	KA
Bottle pH Bottle pH	2	s						02	
Bottle pH Bottle pH	<2 <2	s						03 07	

Gulf Const Region: 4141 Directors Row Ste C Houston TX 77092



**Cooler Temperature** 

**Cooler Temperature** 

**Cooler Temperature** 

**Cooler Temperature** 

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

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inal Report Page 10 of 25	Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663 Report Page 9 of 2										
ANALAB Phone 90	Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com Employee Owned Integrity Caring Continual Improvement Printed: 01/31/2019								Page 8 of		
1752261 Well 21							Received:	01/19/2019	)		
	Prepared:	818907	01/19/2019	00:00:00	Analyzed	818907	01/19/2019	00:00:00	K		
Cooler Temperature	0.8		degrees					09	6		
Cooler Temperature	0.8		C legrees					04			
Cooler Temperature	0.8		C legrees					05			
Cooler Temperature	0.8		C legrees C					06			
EPA 200.2 2.8	Prepared:	819264	01/22/2019	12:45:00	Analyzed	819264	01/22/2019	12:45:00	7		
V Liquid Metals Digestion	50/50	1	nl					02			
EPA 350.2, Rev. 2.0	Prepared:	818925	01/21/2019	09:30:00	Analyzed	818925	01/21/2019	09:30:00	J		
V Ammonia Distillation	50/50	r	nl					03			
EPA 524.2 4.1	Prepared:	819140	01/21/2019	18:58:00	Analyzed	819140	01/21/2019	18:58:00	ĸ		
V Trihalomethane Expansion Code	Entered							04			
EPA 552.2 1	Prepared:	819669	01/24/2019	11:50:27	Analyzed	819669	01/24/2019	11:50:27	E		
V Haloacetic Acids Extraction	3/40	n	nl					09			
EPA 552.2 1	Prepared:		01/24/2019	11:50:27	Analyzed	820069	01/25/2019	22:55:00	E		
V Haloacetic Acids (HAA5)	Entered							12			
SM 2540 C-97	Prepared:	819006	01/22/2019	06:15:00	Analyzed	819006	01/22/2019	06:15:00	T		
V Total Dissolved Solids Started	Started										
SM 2540 D-1997	Prepared:	819373	01/23/2019	14:00:00	Analyzed	819373	01/23/2019	14:00:00	A		
N TSS Set Started	Started										

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Qualifiers:

J - Analyte detected below quantitation limit

H - Sample started outside recommended holding time

We report results on an As Received or wet basis unless marked Dry Weight. Unless otherwise noted, testing was performed at Ana-labs corporate laboratory that holds the following Federal and State certificates: EPA Lab Number TX00063, US Department of Agriculture Soil Import Permit P330-17-00117, Texas Commission on Environmental Quality Commercial Drinking Water Lab Approval (Lab ID: TX219), Texas Commission on Environmental Quality NELAP T104704201-18-14, Louisiana Department of Environmental Quality Laboratory Certification (NELAP, LELAP) #02008, Louisiana Department of Health and Hospitals Drinking Water (NELAP) Certificate No LA026, Oklahoma Department of Environmental Quality TNI Laboratory Accreditation Program Certificate No. 2018-126, Arkansas Department of Environmental Quality Certification #18-068-0. The Accredited column designates accreditation by N -- NELAC, or z -- not covered under NELAC scope of accreditation.

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp. Unless otherwise specified, these test results meet the requirements of NELAC.

RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

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Trey Peery, MA, Project Manager



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COMPLETE SERVICE LAB 🐨	Quality Control Victoria City of						Account BENV-G				Page 1 of 13		
Report To											Project		
B-Environmental Kevin C. Baros 1606 E Brazos St., Suite D Victoria, TX 77901									85	9740			
Analytical Set	819204									T	EPA 350.1		
				Blank							STA 330.1		
<u>Parameter</u> Ammonia (as N)	<i>PrepSet</i> 818925	<i>Reading</i> ND	<i>MDL</i> 0.00356	MQL 0.020 CCV	Units mg/L			<i>File</i> 119524204					
<u>Parameter</u> Ammonia (as N)		<i>Reading</i> 2.05 2.04 2.16	<i>Known</i> 2.00 2.00 2.00	<i>Units</i> mg/L mg/L mg/L	<i>Recover%</i> 102 102 108	<i>Limits%</i> 90.0 - 110 90.0 - 110 90.0 - 110		File 119524203 119524213 119524224					
				Duplica		54.5 110		119924224					
<u>Parameter</u> Ammonia (as N)	Sample 1752178 1752260		<i>Result</i> 0.057 0.660	Unknown 0.052 0.631			Unit mg/L		<b>RPD</b> 9.17		<i>Limit%</i> 20.0		
			14945	ICV			mg/L		4.49		20.0		
<u>Parameter</u> Ammonia (as N)		Reading 1.92	Known 2.00	Units mg/L	<b>Recover%</b> 96.0	<i>Limits%</i> 90.0 - 110		<i>File</i> 119524202					
				LCS Du	p								
<u>Parameter</u> Ammonia (as N)	Prep.Set 818925	LCS 1.83	LCSD 1.82	Mat. Spi	Known 2.00	<i>Limits%</i> 90.0 - 110	<i>LCS%</i> 91.5	<i>LCSD%</i> 91.0	Units mg/L	<b>RPD</b> 0.548	<i>Limit%</i> 20.0		
Parameter	Sample	Spike					S. 5.5	The second					
Ammonia (as N)	1752178 1752260	2.24 2.42	0.052 0.631	n Known 2.00 2.00	Units mg/L mg/L	Recovery % 109 89.4	<i>Limits %</i> 80.0 - 120 80.0 - 120	File 119524209 119524212					
Analytical Set	819495			Blank						SM	2540 C-9		
Parameter Total Dissolved Solids	<i>PrepSet</i> 819495	<i>Reading</i> ND	<i>MDL</i> 5.00	MQL 5.00	Units mg/L			File 119530265					
Parameter Total Dissolved Solids	<b>PrepSet</b> 819495	<i>Reading</i> 0.0001	MDL	ControlB MQL	Units grams			<i>File</i> 119530252					
				Duplicat	e								
<u>Parameter</u> Total Dissolved Solids	Sample 1751748		<i>Result</i> 1070	Unknown 1040 LCS			Unit mg/L		<b>RPD</b> 2.84		<i>Limit%</i> 20.0		
<u>Parameter</u> Total Dissolved Solids	<i>PrepSet</i> 819495	<i>Reading</i> 204		Known 200 Standard	<i>Units</i> mg/L	<b>Recover%</b> 102	<i>Limits</i> 85.0 - 115	File 119530266					



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SERVICE LAB	Q	ualit	y Co	ontro	ol	Pr	inted 01/3	1/2019		Pa	ge 2 of 13
				Standard							
<u>Parameter</u> Total Dissolved Solids	Sample	Reading 100	Known 100	<i>Units</i> mg/L	<i>Recover%</i> 100	<i>Limits%</i> 90.0 - 110		<i>File</i> 119530253			
Analytical Set	819626			Blank						SN	1 2540 D-9
Parameter	PrepSet	Reading	Inter								
Total Suspended Solids	819626	ND	MDL 2	MQL 2	Units mg/L			File			
	017020	112	-	Controll				119533218			
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Total Suspended Solids	819626	0.0002	MDL	mgr	grams			119533217			
	0.2.22	1000		Duplica				119555217			
Parameter	Sample		Result	Unknow			Unit		RPD		Limit%
Total Suspended Solids	1752088		545	695			mg/L		24.2		20.0
	1752145		24.5	21.5			mg/L		13.0		20.0
	1752163		378	362			mg/L		4.32		20.0
				LCS			100				2.1
Parameter	PrepSet	Reading		Known	Units	Recover%	Limits	File			
Total Suspended Solids	819626	53.0		50.0	mg/L	106	90.0 - 110	119533251			
				Standar				2.000 C C C C C C C C C C C C C C C C C C			
Parameter	Sample	Reading	Known	Units	Recover%	Limits%		File			
Total Suspended Solids		108	100	mg/L	108	90.0 - 110		119533250			
Analytical Set	819462									EP	A 300.0 2.1
				Blank							
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Chloride	819462	0.086	0.0053	0.300	mg/L			119529658			
Fluoride	819462	ND	0.00863	0.050	mg/L			119529658			
Sulfate	819462	0.096	0.00775	0.300	mg/L			119529658			
				CCV							
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Chloride		10.6	10.0	mg/L	106	90.0 - 110		119529654			
		10.4	10.0	mg/L	104	90.0 - 110		119529668			
Fluoride		10.8	10.0	mg/L	108	90.0 - 110		119529654			
Pulleta		10.7	10.0	mg/L	107	90.0 - 110		119529668			
Sulfate		10.6	10.0	mg/L	106	90.0 - 110		119529654			
		10.4	10.0	mg/L LCS Du	104	90.0 - 110		119529668			
Parameter	Prop	100	ICOD	LCS DU	and the second second			1			
Chloride	PrepSet 819462	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Fluoride	819462	5.10 5.20	4.91 5.06		5.00	85.0 - 110	102	98.2	mg/L	3.80	20.0
Sulfate	819462	5.27	5.19		5.00 5.00	88.0 - 110 88.0 - 110	104	101	mg/L	2.73	20.0
	317 198		5,15	MSD	5.00	00.0 - 110	105	104	mg/L	1.53	20.0
Danamatan	Sample	MS	MSD	UNK	Known	Limite	MSO	MCDA			
rarameter	manple					Limits	MS%	MSD%	Units	RPD	Limit%
and the second sec	1752542	14.0	13.8	5 36	10.0	80.0 - 120	86.4	Q1 A	THE OWNER OF THE	3 3 4	20.0
Parameter Chloride Fluoride	1752542 1752542	14.0 9.00	13.8 8.95	5.36 0.520	10.0 10.0	80.0 - 120 80.0 - 120	86.4 84.8	84.4 84.3	mg/L mg/L	2.34 0.591	20.0 20.0

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	Analytical Set	820679									E	PA 300.1
				A	WRL/M	RLC						
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Bromate		5,54	5.00	ug/L	111	75.0 - 125		119555148			
					Blank							
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
	Bromate	820679	ND	2.06	5.00	ug/L			119555147		α	
		820679	ND	2.06	5.00	ug/L ug/L			119555147			
					CCV				119555151			
	Parameter		Dandino	Variation								
	Bromate		Reading 509	Known 500	Units	Recover%	Limits%		File			
	oromato		489	500	ug/L ug/L	102 97.8	85.0 - 115		119555146			
			513	500	ug/L ug/L	103	85.0 - 115		119555166			
			515	500	LCS Du		85.0 - 115		119555179			
	Sec. 7.8					ıþ						
	Parameter	PrepSet	LCS	LCSD	*	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
	Bromate	820679	111	105		100	85.0 - 115	111	105	ug/L	5.56	25.0
		820679	111	110		100	85.0 - 115	111	110	ug/L	0.905	25.0
		820679	111	111		100	85.0 - 115	111	111	ug/L	0	25.0
					MSD							
	Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
	Bromate	1753784	229	248	ND	200	80.0 - 120	114	124 *	ug/L	7.97	20.0
_		1754555	173	167	ND	200	80.0 - 120	86.5	83.5	ug/L	3.53	20.0
	Analytical Set	819372									ED	
					Blank						EPA	A 200.7 4.4
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
	Phosphorus	819264	ND	0.0388	0.100	mg/L			119527288			
	Silicon Recoverable	819264	ND	0.0148	0.100	mg/L			119527288			
					CCV							
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Phosphorus		10.9	10.0	mg/L	109	90.0 - 110		119527291			
			10.2	10.0	mg/L	102	90.0 - 110		119527295			
			10.4	10.0	mg/L	104	90.0 - 110		119527302			
	Silicon Recoverable		5.44	5.00	mg/L	109	90.0 - 110		119527291			
			4.96	5.00	mg/L	99.2	90.0 - 110		119527295			
			5.14	5.00	mg/L	103	90.0 - 110		119527302			
					ICL							
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Phosphorus		24.7	25.0	mg/L	98.8	95.0 - 105		File			
	Silicon Recoverable		10.0	10.0	mg/L	100	95.0 - 105		119527286 119527286			
				100	ICV		35.0 - 105		119927280			
	Parameter		Reading	Known		Baanuar0/	Thursday Br					
	Phosphorus		9.79	10.0	Units	Recover%	Limits%		File			
	- noophered				mg/L	97.9	90.0 - 110		119527287			
	Silicon Recoverable		4 80	5 00					110500000			
	Silicon Recoverable		4.80	5.00	mg/L	96.0	90.0 - 110		119527287			
	Silicon Recoverable	PrepSet	4.80		mg/L LCS Duj		90.0 - 110	LCS%	119527287 LCSD%			

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SERVICE LAB	Q	ualit	y Co	ontro	ol	Pr	inted (	)1/31/2019		Pa	ge 4 of 13
				LCS D	up						
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Phosphorus	819264	4.34	4.41		4.00	85.0 - 115	108	110	mg/L	1.60	25.0
Silicon Recoverable	819264	4.06	4.06	MCD	4.00	85.0 - 115	102	102	mg/L	0	25.0
Contraction of the local sectors of the local secto				MSD							
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Phosphorus	1751532	4.18	4.09	ND	4.00	75.0 - 125	104	102	mg/L	2.18	25.0
Silicon Recoverable	1751532	10.4	10.2	6.47	4.00	75.0 - 125	98.2	93.2	mg/L	5.22	25.0
Phosphorus Silicon Recoverable	1752260	4.41	4.31	0.262	4.00	75.0 - 125	104	101	mg/L	2.44	25.0
	1752260	10.6	10.3	6.30	4.00	75.0 - 125	108	100	mg/L	7.23	25.0
Analytical Set	819379 .			Blank						EP	A 200.8 5.
Parameter	PrepSet	Reading	MDI								
Aluminum, Total	819264	Reading ND	MDL 0.0025	MQL 0.005	Units			File			
	017204	ND	0.0025	CCV	mg/L			119527692			
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Aluminum, Total		0.0517	0.05	mg/L	103	90.0 - 110		119527674			
		0.0513	0.05	mg/L	103	90.0 - 110		119527684			
		0.0497	0.05	mg/L	99.4	90.0 - 110		119527694			
		0.053	0.05	mg/L	106	90.0 - 110		119527705			
		0.051	0.05	mg/L	102	90.0 - 110		119527715			
				ICV							
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Aluminum, Total		0.0481	0.05	mg/L	96.2	90.0 - 110		119527648			
				LCS Du				11227040			
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Aluminum, Total	819264	0.514	0.490		0.500	85.0 - 115	103	98.0	mg/L	4.78	20.0
				MSD							
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Aluminum, Total	1751532	0.493	0.486	ND	0.500	70.0 - 130	98.6	97.2	mg/L	1.43	20.0
	1752260	0.495	0.553	0,00436	0.500	70.0 - 130	98.1	110	mg/L	11.2	20.0
Analytical Set	819407			UDI AC						EPA	200.7 4.4
1			A	WRL/MF	ac						
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Calcium		0.845	0.500	mg/L	169	25.0 - 175		119528618			
Magnesium, Total		0.556	0.500	mg/L	III	25.0 - 175		119528618			
Potassium		0.573	0.500	mg/L Blank	115	25.0 - 175		119528618			
Danamatan											
Parameter Calcium	PrepSet	Reading	MDL	MQL	Units			File			
Magnesium, Total	819264 819264	0.383	0.0419	0.500	mg/L			119528620			
Charles I otal	819264	0.0437 0.0848	0.0102	0.020	mg/L			119528620			
Potassium	01/204	0.0040	0.0765	0.500	mg/L			119528620			
Potassium				CCV							
Potassium <u>Parameter</u>		Reading	Known	CCV Units	Recover%	Limits%		File			

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ge 5 of 1	Pag		01/31/2019	inted	Pri	01	ontro	y Co	ualit	Q	E SERVICE LAB
							CCV				
			File		Limits%	Recover%	Units	Known	Reading		Parameter
			119528629		90.0 - 110 90.0 - 110	100 100	mg/L mg/L	25.0 25.0	25.0 25.1		Calcium Magnesium, Total
			119528619 119528629		90.0 - 110	100	mg/L	25.0	25.5		
			119528619		90.0 - 110	93.6	mg/L	25.0	23.4		Potassium
			119528629		90.0 - 110	95.2	mg/L	25.0	23.8		
							ICL				
			File		Limits%	Recover%	Units	Known	Reading		Parameter
			119528614		95.0 - 105	103	mg/L	50.0	51.5		Calcium
			119528614		95.0 - 105	103	mg/L	50.0	51.4		Magnesium, Total
			119528614		95.0 - 105	102	mg/L	50.0	51.2		Potassium
							ICV				
			File		Limits%	Recover%	Units	Known	Reading		Parameter
			119528617		90.0 - 110	101	mg/L	25.0	25.3		Calcium
			119528617		90.0 - 110	102	mg/L	25.0	25.5		Magnesium, Total Potassium
			119528617		90.0 - 110	96.4	mg/L LCS Du	25.0	24.1		1 Guissian
							DC5 Du	LCOD	105	DranCat	Parameter
Limit%	RPD	Units	LCSD%	LCS%	Limits%	Known 5.00		LCSD 4.99	LCS 4.86	PrepSet 819264	Calcium
25.0	2.64	mg/L	99.8 108	97.2 105	85.0 - 115 85.0 - 115	5.00		5.40	5.27	819264	Magnesium, Total
25.0 25.0	2.44	mg/L mg/L	108	105	85.0 - 115	5.00		5.37	5,24	819264	Potassium
25.0	2.45	mg/L		0.55			MSD				
Limit%	RPD	Units	MSD%	MS%	Limits	Known	UNK	MSD	MS	Sample	Parameter
25.0	38.2 *	mg/L	106	156 *	75.0 - 125	5.00	39.1	44.4	46,9	1752260	Calcium
25.0	18.7	mg/L	97.0	117	75.0 - 125	5.00	9.45	14.3	15.3	1752260	Magnesium, Total
25.0	13,2	mg/L	99.4	113	75.0 - 125	5.00	5.73	10.7	11.4	1752260	Potassium
310 C-200	SM 53						VDLAT			819450	Analytical Set
						LC	VRL/MR	A	a. 1 ar		636 C
			File		Limits%	Recover%	Units	Known	Reading		Parameter Total Organic Carbon
			119529450		75.0 - 125	100	mg/L Blank	2.00	2.00		Total Organic Carbon
						Units	MQL	MDL	Reading	PrepSet	Parameter
			File 119529449			mg/L	0.500	0.0618	0.064	819450	Total Organic Carbon
			119329449			mg D	ССВ				
			File			Units	MQL	MDL	Reading	PrepSet	Parameter
			119529443			mg/L	0.500	0.0618	0.124	819450	Total Organic Carbon
			119529455			mg/L	0.500	0.0618	0.0738	819450	
			119529460			mg/L	0.500	0.0618	0.0852	819450	
			119529464			mg/L	0.500	0.0618	ND	819450	
							CCV		-		2
			File		Limits%	Recover%	Units	Known	Reading		Parameter Total Organic Carbon
			119529446		90.0 - 110	98.0	mg/L	10.0	9.80 9.63		rotar Organic Carbon
			119529456		90.0 - 110 90.0 - 110	96.3 95.8	mg/L mg/L	10.0 10.0	9.58		
			119529461 119529465		90.0 - 110	93.8	mg/L mg/L	10.0	9.32		



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Datab # 70070

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AB I	Phone 903/98	4-0551 F.	AX 903/	984-5914	e-Mail corp	@ana-lab.		LEL	AP-accree	_	
	0		nployee (		Integrity	Cari		ntinual Improv	ement		
E SERVICE LAB	Q	ualit	y Co	ontro	bl	Pr	inted 01/3	1/2019		Pa	ge 6 of 13
				ICL							
Parameter Total Organic Carbon		Reading 19.3	Known 20.0	Units mg/L ICV	<i>Recover%</i> 96.5	<i>Limits%</i> 90.0 - 110		File 119529445			
<u>Parameter</u> Total Organic Carbon		<b>Reading</b> 10.4	Known 10.0	Units mg/L LCS	<b>Recover%</b> 104	<i>Limits%</i> 90.0 - 110		<i>File</i> 119529447			
Parameter Total Organic Carbon	<i>PrepSet</i> 819450	Reading 5.20		Known 5.00 MSD	Units mg/L	<i>Recover%</i> 104	<i>Limits</i> 89.8 - 111	<i>File</i> 119529451			
<u>Parameter</u> Total Organic Carbon	Sample 1751978 1752217	MS 14.7 13.4	MSD 14.7 13.4	UNK 4.10 2.84	Known 10.0	<i>Limits</i> 92.5 - 112	MS%	MSD% 106	Units mg/L	RPD 0	<i>Limit%</i> 20.0
		15.4	13.4	Standar	10.0 •d	92.5 - 112	106	106	mg/L	0	20.0
Parameter Total Organic Carbon	Sample	Reading 47.9	Known 50.0	Units mg/L	Recover% 95.8	<i>Limits%</i> 90.0 - 110		File 119529444			
Analytical Set	819476									EP	A 200.7 4
0		4.4		WRL/MF							
Parameter Magnesium, Total		Reading	Known	Units	Recover%	Limits%		File			
Potassium		0.556	0.500	mg/L	111	25.0 - 175		119529833			
Sodium		0.573	0.500	mg/L mg/L	115 114	25.0 - 175		119529833			
1.0		0.571	0,500	Blank		25.0 - 175		119529833			
Parameter	PrepSet	Reading	MDL	MQL	Units			F11.			
Magnesium, Total	819264	0.0437	0.0102	0.020	mg/L			File 119529834			
Potassium	819264	0.0848	0.0765	0.500	mg/L			119529834			
Sodium	819264	0.0908	0.0315	0.500	mg/L			119529834			
				CCV							
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Magnesium, Total		25.5	25.0	mg/L	102	90.0 - 110		119529839			
		26.8	25.0	mg/L	107	90.0 - 110		119529841			
Potassium		27.4	25.0	mg/L	110	90.0 - 110		119529851			
rotassium		23.8	25.0	mg/L	95.2	90.0 - 110		119529839			
		25.1 25.4	25.0 25.0	mg/L	100	90.0 - 110		119529841			
Sodium		23.7	25.0	mg/L mg/L	102 94.8	90.0 - 110		119529851			
		24.7	25.0	mg/L	98.8	90.0 - 110 90.0 - 110		119529839			
		25.4	25.0	mg/L	102	90.0 - 110		119529841 119529851			
				Dir. SPK		30.0 - 110		119529851			
Parameter	Sample	DSPK	DSPKD		Known	Timit-0/	DCDF0/	DCDEDA			
Magnesium, Total	1752260	34.7	35.2	10.1	25.0	Limits% 75.0 - 125	DSPK% 98.4	DSPKD% 100	Units	RPD	Limit%
Potassium	1752260	30.7	31.2	4.95	25.0	75.0 - 125	103	100	mg/L	1.43	25.0
Sodium	1752260	75.0	75.2	55.6	25.0	75.0 - 125	77.6	78.4	mg/L mg/L	1.62 0.266	25.0 25.0
				Direct SP		1.			- Mgr D	0,200	20.0
Parameter	Sample	DSPK							100		
Magnesium, Total	1752260	34.7		UNK	Known	Limits%	DSPK%		Units		
	1752200	54.7		10.1	25.0	75.0 - 125	98.4		mg/L		25.0

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662



Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

AB	Phone 903/98-		AX 903/		e-Mail corp Integrity			LELA ontinual Improv	P-accree	lited #02	.008
SERVICE LAB	0	ualit						31/2019		Pa	ge 7 of 13
				Direct S							
Parameter	Sample	DSPK		UNK	Known	Limits%	DSPK%		Units		
otassium	1752260	30.7		4.95	25.0	75.0 - 125	103		mg/L		25.0
odium	1752260	75.0		55.6 ICL	25.0	75.0 - 125	77.6		mg/L		25.0
rameter		Reading	Known		Recover%	F					
gnesium, Total		51.4	50.0	mg/L	103	Limits% 95.0 - 105		File			
assium		51.2	50.0	mg/L	103	95.0 - 105 95.0 - 105		119529829			
ium		50.8	50.0	mg/L	102	95.0 - 105 95.0 - 105		119529829			
			- 0.0	ICV	102	JJ.0 - 103		119529829			
arameter		Reading	Known	Units	Recover%	Limits%		File			
ignesium, Total		25.5	25.0	mg/L	102	90.0 - 110		119529832			
assium		24.1	25.0	mg/L	96,4	90.0 - 110		119529832			
um		23.7	25.0	mg/L	94.8	90,0 - 110		119529832			
				LCS D	up						
ameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
mesium, Total	819264	5.27	5.40		5,00	85.0 - 115	105	108	mg/L	2.44	25.0
issium	819264	5.24	5.37		5.00	85.0 - 115	105	107	mg/L	2.45	25.0
líum	819264	5.01	5.13		5.00	85.0 - 115	100	103	mg/L	2.37	25.0
				MSD							
rameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
gnesium, Total	1752260	15.3	14.3	9.45	5.00	75.0 - 125	117	97.0	mg/L	18.7	25.0
assium	1752260	11.4	10.7	5.73	5.00	75.0 - 125	113	99.4	mg/L	13.2	25.0
dium	1752260	66.2	62.8	57.1	5.00	75.0 - 125	182 *	114	mg/L	45.9 *	25.0
nalytical Set	819587									EP	200.7 4
				Blank							
rameter	PrepSet	Reading	MDL	MQL	Units			File			
lcium	819264	0.216	0.0419	0,500	mg/L			119532095			
				CCV							
ameter		Reading	Known	Units	Recover%	Limits%		File			
um		26.2	25.0	mg/L	105	90.0 - 110		119532073			
		25.0	25.0	mg/L	100	90.0 - 110		119532080			
		24.8 26.0	25.0	mg/L	99.2	90.0 - 110		119532081			
		26.0	25.0 25.0	mg/L	104	90.0 - 110		119532092			
		26.7	25.0	mg/L mg/L	104 107	90.0 - 110		119532102			
		25.8	25.0	mg/L mg/L	107	90.0 - 110 90.0 - 110		119532112			
		20.0		Dir. SPF		30.9 - 110		119532118			
meter	Sample	DSPK	DSPKD		Known	Limits%	DSPK%	DSPKD%	Units	PDD	Limit%
ium	1752260	64.5	65.2	39.5	25.0	75.0 - 125	100	103	mg/L	RPD 1.08	25.0
				Direct SI		1000	1		mg/L	1.00	20.0
meter	Sample	DSPK		UNK	Known	Limits%	DSPK%		Units		
ium	1752260	64.5		39.5	25.0	75.0 - 125	100		mg/L		25.0
				ICL					3.4		
ter		Reading	Known	Units	Pagama-0/	Limiter					
			and with	writto	Recover%	Limits%		File			

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A CORP. THE COMPL Batch # 79978

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LAB	Phone 903/98-		X 903/9 ployee O		e-Mail corp Integrity	@ana-lab. Cari		LELA ontinual Improve	P-accred	ited #02	008
ETE SERVICE LAB	Q	uality	y Co	ontro	1	Pr	inted 01/3	31/2019		Pag	e 8 of 13
				ICV							
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Calcium		25,3	25.0	mg/L LCS Du	101 I <b>P</b>	90.0 - 110		119532071			
Parameter Calcium	<i>PrepSet</i> 819264	<i>LCS</i> 4.98	<i>LCSD</i> 5.04		Known 5.00	<i>Limits%</i> 85.0 - 115	<i>LCS%</i> 99.6	<i>LCSD%</i> 101	Units mg/L	<b>RPD</b> 1.20	Limit% 25.0
Analytical Set	819905								-	EP	A 200.7 4.
	2007 Lat.			Blank						1.1	1 200.7 4
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Phosphorus	819264	ND	0.0388	0.100	mg/L			119539202			
Silicon Recoverable	819264	0.0346	0.0148	0.100	mg/L			119539202			
			0.0110	CCV	ing/L			119559202			
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Silicon Recoverable		4.89	5.00	mg/L	97.8	90.0 - 110		119539198			
		4.85	5.00	mg/L	97.0	90.0 - 110		119539204			
		4.97	5.00	mg/L	99.4	90.0 - 110		119539216			
				ICL		50.0 110		119559210			
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Silicon Recoverable		10.1	10.0	mg/L	101	95.0 - 105		119539192			
				ICV							
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Silicon Recoverable		4.86	5.00	mg/L	97.2	90.0 - 110		119539191			
				LCS Du	р						
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Phosphorus	819264	3.91	4.07		4.00	85.0 - 115	97.8	102	mg/L	4.01	25.0
Silicon Recoverable	819264	3.77	3.92		4.00	85.0 - 115	94.2	98,0	mg/L	3.90	25.0
				MSD							
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Phosphorus	1751532	4.09	3.95	ND	4.00	75.0 - 125	102	98.8	mg/L	3.48	25.0
Silicon Recoverable	1751532	10.3	9.91	6.24	4.00	75.0 - 125	102	91.8	mg/L	10.1	25.0
Analytical Set	819140									EP	4 524.2 4.
				BFB							
Parameter	Sample	RefMass	Reading	%	Limits%			File			
BFB Mass 173	819140	174	0	0.0	0 - 2.00			119523378			
BFB Mass 174	819140	95.0	22557	56.1	50.0 - 100			119523378			
BFB Mass 175	819140	174	1713	7.6	5.00 - 9.00			119523378			
BFB Mass 176	819140	174	21752	96.4	95.0 - 101			119523378			
BFB Mass 177	819140	176	1532	7.0	5.00 - 9.00			119523378			
BFB Mass 50	819140	95.0	10071	25.1	15.0 - 40.0			119523378			
BFB Mass 75	819140	95.0	23152	57.6	30.0 - 80.0			119523378			
BFB Mass 95	819140	95.0	40197	100.0	100 - 100			119523378			
BFB Mass 96	819140	95.0	2461	6.1 Blank	5.00 - 9.00			119523378			
Parameter	D	Deret	Imr					-			
Parameter	PrepSet	Reading	MDL	MQL	Units			File			

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AB	Phone 903/98-		X 903/9 ployee O		e-Mail corp Integrity	@ana-lab.com Caring	LELA Continual Improv	P-accredit ement	ed #02008
SERVICE LAB	Q	uality	y Co	ontro	1	Printed	01/31/2019		Page 9 of 13
				Blank					
Parameter	PrepSet	Reading	MDL	MQL	Units		File		
Bromoform	819140	ND	0.418	1.00	ug/L		119523382		
Chloroform	819140	ND	0.213	1.00	ug/L		119523382		
Dibromochloromethane	819140	ND	0.327	1.00 CCV	ug/L		119523382		
Parameter		Reading	Known	Units	Recover%	Limits%	File		
Bromodichloromethane		19.6	20.0	ug/L	97.9	70.0 - 130	119523379		
Bromoform		18.6	20.0	ug/L	93.2	70.0 - 130	119523379		
Chloroform		19.6	20.0	ug/L	98.2	70.0 - 130	119523379		
Dibromochloromethane		20.0	20.0	ug/L	100	70.0 - 130	119523379		
				IS Area	s				
Parameter	Sample	Type	Reading		Low	Diale	1711		
I,4-DichlorobenzeneD4 ISTD)	819140	CCV	150200	150200	75100	High 225300	File 119523379	PrepSet 819140	
	819140	LCS	153700	150200	75100	225300	119523380	819140	
	819140	LCS Dup	162700	150200	75100	225300	119523381	819140	
	819140	Blank	126800	150200	75100	225300	119523382	819140	
ChlorobenzeneD5 (ISTD	) 819140	CCV	252800	252800	126400	379300	119523379	819140	
	819140	LCS	257100	252800	126400	379300	119523380	819140	
	819140	LCS Dup	277900	252800	126400	379300	119523381	819140	
	819140	Blank	233700	252800	126400	379300	119523382	819140	
I,4-DichlorobenzeneD4 ISTD) ChlorobenzeneD5 (ISTD	1752260 ) 1752260	UNKNOW		150200	75100	225300	119523384	819140	
1,4-DichlorobenzeneD4	1752261	UNKNOW		252800 150200	126400	379300	119523384	819140	
ISTD) ChlorobenzeneD5 (ISTD)		UNKNOW			75100	225300	119523385	819140	
1,4-DichlorobenzeneD4	1752280	MS	166000	252800 150200	126400 75100	379300	119523385	819140	
(ISTD)	1152200	MD	100000	150200	75100	225300	119523387	819140	
	1752280	MSD	169300	150200	75100	225300	119523388	819140	
ChlorobenzeneD5 (ISTD)	1752280	MS	291600	252800	126400	379300	119523387	819140	
	1752280	MSD		252800	126400	379300	119523388	819140	
			1	IS RetTin	16				
Parameter	Sample	Type	Reading	CCVISM	Law	High	File	PrepSet	
,4-DichlorobenzeneD4 ISTD)	819140	CCV	11.18	11.18	11.12	11.24	119523379	819140	
	819140	LCS	11,18	11.18	11.12	11.24	119523380	819140	
	819140	LCS Dup	11.18	11.18	11.12	11.24	119523381	819140	
ChlorobenzeneD5 (ISTD)	819140 819140	Blank	11.18	11.18	11.12	11.24	119523382	819140	
(ISTD)	819140 819140	CCV	8.818	8.818	8.758	8.878	119523379	819140	
	819140	LCS LCS Dup	8.818 8.818	8.818	8.758	8.878	119523380	819140	
	819140	Blank	8.818	8.818 8.818	8.758 8.758	8.878 8.878	119523381	819140	
,4-DichlorobenzeneD4 ISTD)	1752260	UNKNOW		11.18	8.758	11.24	119523382 119523384	819140 819140	
hlorobenzeneD5 (ISTD)	1752260	UNKNOW	N8.818	8.818	8.758	8.878	119523384	819140	
,4-DichlorobenzeneD4 ISTD)	1752261	UNKNOW		11.18	11.12	11.24	119523385	819140	
hlorobenzeneD5 (ISTD)		UNKNOW		8.818	8.758	8.878	119523385	819140	
,4-DichlorobenzeneD4 ISTD)	1752280	MS	11.18	11.18	11.12	11.24	119523387	819140	
	1752280	MSD	11.18	11,18	11.12	11.24	119523388	819140	

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	Ana-La	b Corp	. P.C	). Box	9000	
ANA-LAB CORR.	Phone 903/984		ployee O	wned	Integr	
	×			IS RetTin		
Parameter	Sample	Type	Reading	CCVISM	Low	
ChlorobenzeneD5 (ISTD	) 1752280	MS	8.818	8.818	8.758	
	1752280	MSD	8.818	8.818	8.758	

(SURR)

	ione 903/98		X 903/9 ployee C		e-Mail corp Integrity			LELA ontinual Improve	P-accred	ited #02	008
SERVICE LAB	0	ualit	v Co	ontro	1	Pr		31/2019		Page	10 of 1
				IS RetTi							
8	65.47	100									
Parameter	Sample	Type		CCVISM		High		File	PrepSe		
ChlorobenzeneD5 (ISTD)	1752280	MS	8.818	8.818	8.758	8.878		119523387	819140		
	1752280	MSD	8.818	8.818 LCS Du	8.758	8.878		119523388	819140		
2				LCS Du	P						
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit?
Bromodichloromethane	819140	21.3	19.5		20.0	70.0 - 130	106	97.5	ug/L	8.35	30.0
Bromoform	819140	20.8	18.6		20.0	70.0 - 130	104	93.0	ug/L	11.2	30.0
Chloroform	819140	20.2	18.2		20.0	70,0 - 130	101	91.0	ug/L	10.4	30.0
Dibromochloromethane	819140	21.1	18.9	-	20.0	70.0 - 130	106	94.5	ug/L	11.5	30.0
				MSD							
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromodichloromethane	1752280	14.6	16.0	2.44	16.0	67.1 - 133	76.0	84.8	ug/L	10.9	30.0
Bromoform	1752280	17.4	18.6	5.03	16.0	58.4 - 125	77.3	84.8	ug/L	9.25	30.0
Chloroform	1752280	14.1	15.4	1.48	16.0	62.8 - 138	78.9	87.0	ug/L	9.80	30.0
Dibromochloromethane	1752280	15.2	16.4	2.59	16.0	60.7 - 129	78.8	86.3	ug/L	9.08	30.0
				Surrogat	te						
Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File			
,2-DCA-d4 (SURR)	819140	CCV	17.8	20.0	ug/L	89.0	70.0 - 130	119523379			
	819140	LCS	17.9	20.0	ug/L	89.5	70.0 - 130	119523380			
	819140	LCS Dup	17.0	20.0	ug/L	85.0	70.0 - 130	119523381			
	819140	Blank	17.9	20.0	ug/L	89.5	70.0 - 130	119523382			
Bromofluorobenzene SURR)	819140	CCV	19.9	20.0	ug/L	99.5	70.0 - 130	119523379			
	819140	LCS	19.9	20.0	ug/L	99.5	70.0 - 130	119523380			
	819140	LCS Dup	20.1	20.0	ug/L	100	70.0 - 130	119523381			
	819140	Blank	18.3	20.0	ug/L	91.5	70.0 - 130	119523382			
Dibromofluoromethane SURR)	819140	CCV	17.4	20.0	ug/L	87.0	70.0 - 130	119523379			
	819140	LCS	18.2	20.0	ug/L	91.0	70.0 - 130	119523380			
	819140	LCS Dup	18.0	20.0	ug/L	90.0	70.0 - 130	119523381			
	819140	Blank	18.5	20.0	ug/L	92.5	70.0 - 130	119523382			
olueneD8 (SURR)	819140	CCV	17.4	20.0	ug/L	87.0	70.0 - 130	119523379			
	819140	LCS	18.1	20.0	ug/L	90.5	70.0 - 130	119523380			
	819140	LCS Dup	17.5	20.0	ug/L	87.5	70.0 - 130	119523381			
	819140	Blank	16,4	20.0	ug/L	82.0	70,0 - 130	119523382			
,2-DCA-d4 (SURR)	1752260	UNKNOW	'N17,1	20.0	ug/L	85.5	70.0 - 130	119523384			
romofluorobenzene SURR)	1752260	UNKNOW	N20.5	20.0	ug/L	102	70.0 - 130	119523384			
ibromofluoromethane SURR)	1752260	UNKNOW	NI 8.0	20.0	ug/L	90.0	70.0 - 130	119523384			
olueneD8 (SURR)	1752260	UNKNOW	N17.1	20.0	ug/L	85.5	70.0 - 130	119523384			
2-DCA-d4 (SURR)	1752261	UNKNOW	N17.5	20.0	ug/L	87.5	70.0 - 130	119523385			
romofluorobenzene SURR)	1752261	UNKNOW	N19.6	20.0	ug/L	98.0	70.0 - 130	119523385			
bibromofluoromethane SURR)	1752261	UNKNOW	NI8.4	20.0	ug/L	92.0	70.0 - 130	119523385			
olueneD8 (SURR)	1752261	UNKNOW	N16.6	20.0	ug/L	83,0	70.0 - 130	119523385			
2-DCA-d4 (SURR)	1752280	MS	16.5	20.0	ug/L	82.5	70.0 - 130	119523387			
	1752280		17.0	20.0	ug/L	85.0	70.0 - 130	119523388			
romofluorobenzene	1752280	MS	20.3	20.0	mon/T	107	100 C 100 C				

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Bromofluorobenzene

1752280 MS

20.3

20.0



ug/L

102

70.0 - 130

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AB	Phone 903/98		AX 903/9 ployee C						P-accredit	ed #02008
	0		0.11		Integrity			ntinual Improv	ement	
TE SERVICE LAB	Q	ualit	yca	ontro	1	Pr	inted 01/31	1/2019		Page 11 of 13
				Surroga	te					
Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File		
Bromofluorobenze	ne 1752280	MSD	20.0	20.0	ug/L	100	70.0 - 130	119523388		
(SURR) Dibromofluoromet (SURR)	hane 1752280	MS	17.9	20.0	ug/L	89,5	70.0 - 130	119523387		
	1752280	MSD	17.2	20.0	ug/L	86.0	70.0 - 130	119523388		
TolueneD8 (SURI	R) 1752280	MS	17.7	20.0	ug/L	88.5	70.0 - 130	119523387		
	1752280	MSD	17.6	20.0	ug/L	88.0	70.0 - 130	119523388	-	
Analytical Set	820069			- 355						EPA 552.2
				Blank						
Parameter	PrepSet	Reading	MDL	MQL	Units			File		
Bromoacetic acid	819669	ND	0.275	5.00	ug/L			119543332		
Chloroacetic acid	819669	0.560	0.559	5.00	ug/L			119543332		
Dibromoacetic acid		ND	0.198	5.00	ug/L			119543332		
Dichloroacetic acid		ND	0.244	5,00	ug/L			119543332		
Trichloroacetic aci	d 819669	ND	0.191	5.00	ng/L			119543332		
				CCV						
Parameter		Reading	Known	Units	Recover%	Limits%		File		
Bromoacetic acid		22.0	20.0	ug/L	110	70.0 - 130		119543331		
		22.6	20.0	ug/L	113	70.0 - 130		119543349		
		22.5	20.0	ug/L	113	70.0 - 130		119543359		
Chloroacetic acid		20.3	20.0	ug/L	101	70.0 - 130		119543331		
		22.4	20.0	ug/L	112	70.0 - 130		119543349		
Di		22.3	20.0	ug/L	111	70.0 - 130		119543359		
Dibromoacetic acid		20.4	20.0	ug/L	102	70.0 - 130		119543331		
		21.4	20.0	ug/L	107	70.0 - 130		119543349		
Dichloroacetic acid		21.5	20.0	ug/L	108	70.0 - 130		119543359		
Diemoroacetic acid		20.3	20.0	ug/L	102	70.0 - 130		119543331		
		21.4 21.3	20.0 20.0	ug/L	107	70.0 - 130		119543349		
Trichloroacetic acid	e II	20.7	20.0	ug/L	107	70.0 - 130		119543359		
		22.7	20.0	ug/L ug/L	103 114	70.0 - 130 70.0 - 130		119543331		
		23.0	20.0	ug/L	115	70.0 - 130		119543349 119543359		
				IS Area		1010 100		117545555		
Parameter	Sample	Туре	Reading		Low	High		File	PrepSet	
1,2,3-Trichloroprop	Contraction of the second s	CCV	858100	858100	600700	1116000		119543331	820069	
		CCV	582600	858100	600700	1116000	*	119543349	820069	
		CCV	628400	858100	600700	1116000		119543359	820069	
	819669	Blank	853100	858100	600700	1116000		119543332	819669	
	819669	LCS	796800	858100	600700	1116000		119543333	819669	
	1751375	MS	909500	858100	600700	1116000		119543336	819669	
	1751375	MSD	814100	858100	600700	1116000		119543337	819669	
	1752099	MS	863000	858100	600700	1116000		119543339	819669	
	1752099	MSD	902800	858100	600700	1116000		119543340	819669	
	1752260	UNKNOW	VN864200	858100	600700	1116000		119543351	819669	
	1752261	UNKNOW		858100	600700	1116000	•	119543352	819669	
			1	IS RetTin	ne					
Parameter	Sample	Type	Reading	CCVISM	Low	High		File	PrepSet	
1,2,3-Trichloroprop	ane (IS)	CCV	8.800	8.800	8.740	8.860		119543331	820069	

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Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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	hone 903/9	84-0551 F	AX 903/	984-5914	e-Mail co	rp@ana-lab	-	75663	Pagarad	liter I and	1002	
HEHD			mployee		Integri				LELAP-accredited #02008 ontinual Improvement			
DMPLETE SERVICE LAB	Q	ualit	ty Co	ontro	1	Р	rinted (	01/31/2019		Pag	e 12 of 13	
				IS RetTi	me							
Parameter	Sample	Туре	Readin	g CCVISM	Low	High		File	PrepSe			
1,2,3-Trichloropropane (IS	)	CCV	8.800	8.800	8,740	8.860		119543349	820069			
		CCV	8.800	8.800	8.740	8.860		119543359	820069			
	819669	Blank	8.800	8.800	8.740	8.860		119543332	819669			
	819669	LCS	8.800	8.800	8,740	8.860		119543333	819669			
	1751375	MS	8.800	8.800	8.740	8.860		119543336	819669			
	1751375	MSD	8.800	8.800	8.740	8.860		119543337	819669			
	1752099	MS	8.800	8.800	8.740	8.860		119543339	819669			
	1752099	MSD	8.800	8.800	8.740	8.860		119543340	819669			
	1752260	UNKNO	WN8.800	8.800	8.740	8.860		119543351	819669			
	1752261	UNKNO	WN8.800	8.800	8.740	8.860		119543352	819669			
				LCS Du	р							
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%	
Bromoacetic acid	819669	20.0	22.7		20.0	70.0 - 130	100	114	ug/L	13.1	30.0	
Chloroacetic acid	819669	18.8	21.6		20.0	70.0 - 130	94.0	108	ug/L	13.9	30.0	
Dibromoacetic acid	819669	19.8	21.6		20.0	70.0 - 130	99.0	108	ug/L	8.70	30.0	
Dichloroacetic acid	819669	18.9	21.6		20.0	70.0 - 130	94.5	108	ug/L	13.3	30.0	
Trichloroacetic acid	819669	21.1	23.3		20.0	70.0 - 130	106	116	ug/L	9.01	30.0	
				MSD						6.4.4	2010	
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%	
Bromoacetic acid	1751375	14,1	16.4	ND	20.0	30.0 - 150	70.5	82.0	ug/L	15.1	30.0	
Chloroacetic acid	1751375	18.9	20.9	1,89	20.0	15.0 - 150	85.0	95.0	ug/L	11.1	30.0	
Dibromoacetic acid	1751375	15.4	17.5	1.26	20.0	30.0 - 150	70.7	81.2	ug/L	13.8	30.0	
Dichloroacetic acid	1751375	12.8	15.5	ND	20.0	30.0 - 150	64.0	77.5	ug/L	19.1	30.0	
Trichloroacetic acid	1751375	14.5	16.9	ND	20.0	30.0 - 150	72.5	84.5	ug/L	15.3	30.0	
Bromoacetic acid	1752099	14.1	13.2	ND	20.0	30.0 - 150	70.5	66.0	ug/L	6.59	30.0	
Chloroacetic acid	1752099	24.2	22.8	4.72	20.0	15.0 - 150	97.4	90.4	ug/L	7.45	30.0	
Dibromoacetic acid	1752099	16.9	16.0	0.673	20.0	30.0 - 150	81.1	76.6	ug/L	5.70	30.0	
Dichloroacetic acid	1752099	35.3	31.7	21.5	20.0	30.0 - 150	69.0	51.0	ug/L	30.0	30.0	
Trichloroacetic acid	1752099	24.4	23.4	6,24	20.0	30.0 - 150	90.8	85.8	ug/L	5.66	30.0	
				Surrogat	e							
Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File				
2,3-Dibromopropionic (Surr	6	CCV	21.3	20.0	ug/L	106	70.0 - 130	119543331				
		CCV	22.2	20.0	ug/L	111	70.0 - 130	119543349				
		CCV	22.3	20.0	ug/L	112	70.0 - 130	119543359				
	819669	Blank	21.7	20.0	ug/L	108	70.0 - 130	119543332				
	819669	LCS	20.6	20.0	ug/L	103	70.0 - 130	119543333				
	819669	LCS Dup	20.5	20.0	ug/L	102	70.0 - 130	119543334				
	1751375	MS	16.8	20.0	ug/L	84.0	70.0 - 130	119543336				
	1751375	MSD	18.8	20.0	ug/L	94.0	70.0 - 130	119543337				
	1752099	MS	16.8	20.0	ug/L	84.0	70.0 - 130	119543339				
	1752099	MSD	15.2	20.0	ug/L	76.0	70.0 - 130	119543340				
	1752260	UNKNOW	/N15.6	20.0	ug/L	78.0	70.0 - 130	119543351				
	1752261	UNKNOW	/N20.8	20.0	ug/L	104	70.0 - 130	119543352				
Analytical Set 81	9053									SM 21	30 B-2001	
4			AV	VRL/MRI	C							
Parameter		Reading	Known	Units	Recover%	Limits%		File				
Turbidity		0.29	0.30	NTU	96.7	70.0 - 130		119521326				



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Form rptPROJQCGrpt Created 01/27/2005 v1.0

NAI AB	hone 903/98		X 903/9 ployee C		e-Mail corr Integrity			LELA ntinual Improv		ited #02008
	0	uality						1/2019	ement	Page 13 of 13
	Q	uain	y Ci	JIIIO	1		and one	1/2019		1 age 15 01 15
				Blank						
Parameter	PrepSet	Reading	MDL	MQL	Units			File		
Turbidity	819053	ND	0,300	0.300 Duplicat	NTU			119521324		
Parameter	Sample		Result	Unknown			Unit		RPD	Limit%
Turbidity	1752260		ND	ND			NTU		KPD	20.0
				Mat. Spil	ke					
Parameter	Sample	Spike	Unknow	n Known	Units	Recovery %	Limits %	File		
Turbidity	1752260	40.5	ND	40.0	NTU	101	70.0 - 130	119521330		
				Standar	d					
Parameter	Sample	Reading	Known	Units	Recover%	Limits%		File		
Turbidity	819053	9.78	10.0	NTU	97.8	90.0 - 110		119521325		
	819053	96.8	100	NTU	96.8	90.0 - 110		119521327		
	819053 819053	9.98 9.84	10.0 10.0	NTU	99.8 98.4	90.0 - 110 90.0 - 110		119521331		
Analytical Set 8	Carlos Carlos	5.04	10.0	NIC	90.4	90.0 - 110		119521333	-	
Analytical Set	19494			Blank						SM 2320 B-201
Parameter	PrepSet	Reading	MDL	MQL	Units	x		File		
Total Alkalinity (as CaCO3		ND	1.00	1.00	mg/L			119530269		
				CCV	( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )			0.0000.0000		
Parameter		Reading	Known	Units	Recover%	Limits%		File		
Total Alkalinity (as CaCO3	)	26.6	25.0	mg/L	106	90.0 - 110		119530268		
		26.6	25.0	mg/L	106 .	90.0 - 110		119530282		
		26.6	25.0	mg/L	106	90.0 - 110		119530295		
				Duplicat	e					
Parameter	Sample		Result	Unknown			Unit		RPD	Limit%
Total Alkalinity (as CaCO3			203	205			mg/L		0.980	20.0
	1752663		29.0	29.0			mg/L		0	20.0
Descent				ICV						
Parameter Total Alkalinity (as CaCO3		Reading	Known	Units	Recover%	Limits%		File		
roun runaning (as CaCOS		26.6	25.0	mg/L Mat Snik	106	90.0 - 110		119530267		
Darameter	S	G. 1		Mat. Spik		2.00				
Parameter Total Alkalinity (as CaCO3	Sample	Spike		n Known	Units	Recovery %	Limits %	File		5 M
Total Andrinity (as CaCOS	) 1752167 1752663	240 53.2	205 29.0	25.0 25.0	mg/L mg/L	140 96.8	70.0 - 130	119530272 119530285		·

ery Percent: result / known \* 100% Blank - Method Blank; AWRL/MRL C - Ambient Water Reporting Limit/Minimum Reporting Limit Check Std; CCV - Continuing Calibration Verification; BFB - GC/MS Tuning Compound; ICV - Initial Calibration Verification; LCS - Laboratory Control Sample; CCB - Continuing Calibration Blank

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662



#### Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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Customer / Report Information Billing Infor		<b>Billing Information</b>	mation	Check box if B	Check box if Billing is the same as Report Information	e as Report Inf		THERM ID# 4	TEMP Corr: 22.	:33.0
Name: Victoria, City	4 0 h	Address:					Phone:		FAX:	
Attention: Sk DMLM KOD	ithson	Attention:		P(	# Od		EMAIL:			
Address:		Project:	A - Tab	1110	st A			Requested Analysis	malysis	Completed By laboratory
Sample Information			Matrix	Container			<	tice tox	DO_ Vaux	<b>Custody Seals Present</b>
Collected By:		C=0	DW - Drinking H20				HOC	KN SI	RUTE	Yes D No D
Client / Field Sample ID	Collected	ted	Grat	JMBE TYPE	Size	Preservative	19	9/8 H/8	HAH H	Intact ver D No D
	Date	Time	)	R			TT DE	HA	HUA	mple
Mell 19	التقادط	Hr34	M	ল এ ন প্রামন	C C C H3PO4	D NaOH NaOH HCL	XXX	XXX	XX	S190181600
IN011 21	1/18/19	1211	Z	লা <u>লা</u> জাগাস	250 H H204	D NaOH NaOH HCL Na2S03	XXX	() ()	XXX	S190181604
					1 H2S04 1 H3P04 1 ICE	HNO3 NaOH HCL Na2503		-		
					1 H2504 1 H3P04 1 ICE	the second second			-	
					0 H2SO4 1 H3PO4 1 ICE	HNO3 NaOH HCL Na2SO3				
					1 H2S04 1 H3P04 1 ICE	LI HNO3 D NaOH D HCL Na2SO3		-	1-13-19	19 per 5. Robinso
					1 H2S04 1 H3P04 1 ICE	HNO3 NaOH HCL Na2SO3			Tich	haidlighter Phog
Required Turnaround:	6-10 Business days)	Expedite / Rush:	ush: 🗆 1 Business Day		D2 Business Days	□ <sub>3</sub> Business days □	ays 🗆 5 Business days 🛛	days 🗆 Other	RE	REMARKS:
Surcharge will apply to RUSH TAT	TAT Authorized BY:	BY:			<b>Container T</b>	ype: P=Plas	Container Type: P=Plastic, G=Glass, V=Voa, O=Other	=Voa, O=Oth	er Carrier ID	
Relinquished By:		1118/19	Time:	1542	Received By:	" All	: Valme	Date:	1-14-19	1.1
Relinquished By:	Date:		Time:		Received By:	1.0.1		Date:		Time:
Delinenished Rv	Date:		Time:		Received By:	:/		Date:		Time:

#### Final Report Page 1 of 25

BatchNo: 80442

# SAMPLE REPORT

Batch # 80442



T104704328-18-15

#### Business

Victoria, City of - Stephen Robinson P O Box 1758 Victoria Tx 77902 Att: Stephen Robinson



# Laboratory

B Environmental, LLC. 1606 E Brazos, Suite D Victoria TX 77901 ph. 361-572-8224

# **Reference Information**

Project: ASR Table 1, List A

Printed: Monday, February 11, 2019

Re: Victoria, City of - Stephen Robinson

Dear: Stephen Robinson

Attached are the results for sample(s) received on 1/30/2019

The analytical results relate only to the samples tested. All supporting quality data meets the requirements of NELAC unless noted in the case narrative section of the report.

This report contains 25 pages (including the cover page)

If you have any questions concerning this report, please do not hesitate to call (361) 572-8224 or Fax us at (361) 572-4115

Respectfully Submitted,

**Kevin Baros** Laboratory Director



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Victoria TX

inal Report Page 2	of 25						Batch # 80442
BEnvironmental, L 606 E Brazos, Suite D	LC.		BatchNo:		80442		Page 2 of 25
ictoria TX	77901						
Batch No:	80442	Se	ample Rec	eipt	Chec	klist	
				1.7	Received:		2019
Project	ASR	Table 1, List A		Rece	ived By:	Honnen	
ogin completed	by:	Honnen	1/30/2019	1			
		Signature	LoginDate:	Ĩ			
			Carrier Name		Nalk In		
Shipping conta	ainer/coo	ler in good	condition?		VES		Not Present
Custody seals	intact on	shipping o	container/cooler?		□ YES		Not Present
Custody seals	intact on	sample bo	ottles?		YES		Not Present
Chain of Custo	ody prese	ent?			YES		
Chain of Custo	ody signe	d when rel	inquished and rece	ived	YES		
Chain of Custo	ody agree	es with sam	ple labels?		VES		
Samples in pro	oper cont	ainer/bottle	es?		YES	NO	
Sample contai	ners inta	ct?			YES	D NO	
Sufficient sam	ple volun	ne for indic	ated tests?		YES		
All samples re	ceived w	ithin holding	g times?		YES		
Container/Tem	np Blank	- temperati	ure in compliance?		YES		>0 <6 °C On Ice
Water - VOA v	rials have	zero head	Ispace? Bubble < 6	mm?	YES		No VOA Vials submitted
Water - pH acc	ceptable	upon recei	pt?		YES		Not Applicable
*TEMP 6.0/	6.0	pH Adjus	ted? No		Checked	By L. Val	nrenkamp
Any No and/or N/A (r	not applicat	ole) response	must be detailed in the	commen	ts section be	elow.	
lient contacted				Per	sonConta	cted	
contacted by:				Dat	e Contact	ed:	
Regarding							
Comments							
therm #4. Bottle	s were fron	n subcontract	or Ana-Lab and all anal	yses will I	be performe	d by them.	
Corrective Ac	tion						

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B

Victoria TX 77901

	Phone 002/004 offer The Voice	1004								-
ANALAB 7 1	Phone 903/984-0551 FAX 903 En	/984-59 nployee C		fail corp			al Improves	nent		
	Results				Pri		/08/2019		Page	l of
	results			-				-		
Report To						ount			roject	
B-Environmental Kevin C. Baros 1606 E Brazos St., Suite D Victoria, TX 77901					DEI	IV-G		0	60921	
		R	lesults	s						
								-		
1754878 \$190301553								Received:	01/31/2019	9
Drinking Water	Collected by: Client Taken: 01/30/2019 15:00:00		Environm	iental			PG	2		
Calculation	Prepared:		02/0	07/2019	16:47:54	Calculated	ł	02/07/2019	16:47:54	C
Parameter Z Phosphorus (as Phosphate)	Results 0.946		Units mg/L	<i>RL</i> 0.306		Flag	3	CAS	Boi	ttle
EPA 200.7 4.4	Prepared:	821236	02/0	04/2019	12:45:00	Analyzed	821820	02/06/2019	23:02:00	JE
Parameter	Results		Units	RL		Flag	5	CAS	Bot	ttle
N Potassium	5.17		mg/L	0.500				7440-09-7	11	
EPA 200.7 4.4	Prepared:	821236	02/0	04/2019	12:45:00	Analyzed	822021	02/07/2019	15:00:00	JE
Parameter V Phosphorus	Results		Units	RL		Flag	r	CAS	Bot	ttle
V Phosphorus z Silicon Recoverable	0.309 6.13		mg/L mg/L	0.100				7723-14-0 7740-21-3	11	
EPA 200.7 4.4	Prepared:	821236		04/2019	12:45:00	Analyzed	822107	02/07/2019	22:39:00	JE
Parameter	Results		Units	RL	Sector A	Flag				
V Sodium	55.7		mg/L	2.50		Flug		CAS 7440-23-5	Bon 11	tle
EPA 200.7 4.4	Prepared:	821236	02/0	4/2019	12:45:00	Analyzed	822107	02/07/2019	22:49:00	JB
Parameter	Results		Units	RL		Flag		CAS	Boli	tle
V Calcium	42.5		mg/L	0.500		P		7440-70-2	11	ne.
V Magnesium, Total	9.64	1	mg/L	0.020				7439-95-4	ш	
EPA 200.7 4.4 - Calc	Prepared:		02/0	7/2019	16:47:54	Calculated		02/07/2019	16:47:54	CA
Parameter	Results	100.00	Units	RL		Flag	1	CAS	Bott	tle
V Silica (SiO2)	13.1	16	mg/L	0.214						
EPA 200.8 5.4	Prepared:	821236	02/0	4/2019	12:45:00	Analyzed	821607	02/05/2019	18:15:00	LP
Parameter										



### Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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Batch # 80442 Report Page 3 of 25

Final Report Page 4 of 25

ANALAB CORP. THE COMPLETE SERVICE LAB Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Ana-Lab Corp. P.O. Box 9000

Employee Owned Integrity Caring Continual Improvement

Results

Printed: 02/08/2019

Kilgore, TX 75663

Page 2 of 9

1

	1754878 S190301553								Received:	01/31/2019	9
	Drinking Water	Collected by: Client. Taken: 01/30/2019 15:00:00		Environn	iental			PC	):		
	EPA 300.0 2.1	Prepared:	821185	02/0	01/2019	14:53:00	Analyzed	821189	02/01/2019	14:53:00	AM
	Parameter	Results		Units	RL		Flag	r	CAS	Bot	ttle
N	Chloride	54.6		mg/L	1.50					01	
N	Fluoride	0.545		mg/L	0.500					01	
N	Sulfate	20.9		mg/L	1.50					01	
	EPA 300.1 1	Prepared:	821844	02/0	06/2019	15:56:00	Analyzed	821844	02/06/2019	15:56:00	AMI
	Parameter	Results		Units	RL		Flag		CAS	Bot	ttle
N	Bromate	<5.00		ug/L	5.00					04	
14	EPA 350.1 2	Prepared:	820913	02/0	01/2019	09:30:00	Analyzed	821049	02/01/2019	00:00:00	MLC
	Parameter	Results		Units	RL		Flag	67	CAS	Bot	ttle
N	Ammonia (as N)	0.483		mg/L	0.020					10	
1	EPA 524.2 4.1	Prepared:	821503	02/0	05/2019	13:46:00	Analyzed	821503	02/05/2019	13:46:00	KLB
	Parameter	Results		Units	RL		Flag	2	CAS	Bot	ttle
N	Bromodichloromethane	19.1		ug/L	1.00				75-27-4	08	
N	Bromoform	2.14		ug/L	1.00				75-25-2	08	
N	Chloroform	14.4		ug/L	1.00				67-66-3	08	
N	Dibromochloromethane	14.2		ug/L	1.00				124-48-1	08	
1	EPA 524.2 4.1	Prepared:	821503	02/0	6/2019	13:42:20	Calculated	821503	02/06/2019	13:42:20	CAL
	Parameter	Results	-	Units	RL		Flag	1	CAS	Bott	tle
N	Trihalomethanes	0.04984		mg/L	0.001					08	
1	EPA 552.2 1	Prepared:	821248	02/0	4/2019	14:02:02	Analyzed	821745	02/05/2019	17:47:00	EMT
	Parameter	Results		Units	RL		Flag	1	CAS	Bott	tle
N	Bromoacetic acid	<5.00		ug/L	5.00				79-08-3	14	
N	Chloroacetic acid	<5.00		ug/L	5.00				79-11-8	14	
N	Dibromoacetic acid Dichloroacetic acid	7.56		ug/L	5.00				631-64-1	14	
	Trichloroacetic acid	12.9 8.62		ug/L	5.00 5.00				79-43-6	14	
	EPA 552.2 1	Prepared:	871710	ug/L	4/2019	11.02.02			76-03-9	14	
1	Parameter		-021240			14:02:02	Calculated		02/08/2019	07:15:41	CAL
N	HAA5	Results		Units	RL		Flag		CAS	Bott	tle
		0.02908		mg/L	0.005					14	_
5	SM 2130 B-2001	Prepared:	821080	01/3	1/2019	14:20:00	Analyzed	821080	01/31/2019	14:20:00	DWN
	Parameter	Results	1	Units	RL		Flag		CAS	Bott	le
N	Turbidity	<0.30		NTU	0.30					01	

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Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



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	a-Lab Corp. P	.O. B	ox 9	000	Kilgore	, TX 75	5663	ricpi	ort Page 4	012
CORP	03/984-0551 FAX 903 Ei Esults	/984-59 nployee (		Mail corp	y Caring	Continu	al Improve 08/2019		Page	e 3 of
1754878 S190301553					_			Received:	01/31/201	19
Drinking Water Colle Taken:	ected by: Client 01/30/2019 15:00:00		Environn	nental			PO			
SM 2320 B-2011	Prepared:	820769	0 01/	31/2019	11:35:00	Analyzed	820769	01/31/2019	11:35:00	E
Parameter N Total Alkalinity (as CaCO3)	Results 177		Units mg/L	<i>RL</i> 1.00		Flag		CAS	<i>Bo</i>	ottle 1
SM 2340 B-97	Prepared:		02/0	08/2019	10:27:45	Calculated		02/08/2019	10:27:45	Ċ.
Parameter N Total Hardness as CaCO3 -Ca/MgEq	Results 146		Units mg/L	<i>RL</i> 0.500		Flag		CAS	Bo	ottle
SM 2540 C-97	Prepared:	821613	02/0	05/2019	07:00:00	Analyzed	821613	02/05/2019	07:00:00	TI
Parameter N Total Dissolved Solids	Results 308		Units mg/L	<i>RL</i> 20.0		Flag		CAS	<i>Bo</i>	ottle
SM 2540 D-97	Prepared:	821190	02/0	01/2019	13:45:00	Analyzed	821190	02/01/2019	13:45:00	TH
Parameter N Total Suspended Solids	Results <2.00		Units mg/L	<i>RL</i> 2.00		Flag		CAS	<i>Bo</i> 01	ottle
SM 5310 C-2000	Prepared:	820941	01/3	31/2019	16:06:00	Analyzed	820941	01/31/2019	16:06:00	AL
Parameter V Total Organic Carbon	Results 2.68		Units mg/L	<i>RL</i> 0.500		Flag		CAS	<i>Bo</i> 05	ottle
1754879 S190301554 Drinking Water Collect Taken:	ned by: Client 01/30/2019 15:25:00	B-E	nvironme	ental			PO.	Received:	01/31/2019	9
Calculation	Prepared:		02/0	7/2019	16:47:54	Calculated		02/07/2019	16:47:54	CA
Parameter Phosphorus (as Phosphate)	<i>Results</i> <0.119		Units mg/L	<i>RL</i> 0.119		Flag		CAS	Bot	ttle
EPA 200.7 4.4	Prepared:	821236	02/04	4/2019	12:45:00	Analyzed	821820	02/06/2019	23:15:00	JB
Parameter Potassium	Results 2.71		Units mg/L	<i>RL</i> 0.500		Flag	1	CAS 7440-09-7	Bott 11	
EPA 200.7 4.4	Prepared:			4/2019	12:45:00	Analyzed	822021	02/07/2019	15:08:00	JBI
Parameter / Phosphorus	<i>Results</i> <0.0388		Units mg/L	RL 0.0388		Flag		CAS	Bott	tle

Gulf Const Region: 4141 Directors Row Ste C Houston TX 77092



ANALAD	Ana-Lab Corp. P Phone 903/984-0551 FAX 903	/984-59	14 e-1	Mail corp(	@ana-lab.c	om				
HE COMPLETE SERVICE LAB	Results	nployee (	Dwned	Integrity			al Improve 08/2019	ment	Page	: 4 of
1754879 S190301554								Received:	01/31/201	9
Drinking Water	Collected by: Client Taken: 01/30/2019 15:25:00		Environ	mental			PC	D:		
EPA 200.7 4.4	Prepared:	821230	02	/04/2019	12:45:00	Analyzed	822021	02/07/2019	15:21:00	JE
Parameter	Results		Units	RL		Flag	,	CAS	Ro	ottle
z Silicon Recoverable	10.9		mg/L	0.500				7740-21-3	11	
EPA 200.7 4.4	Prepared:	821236	02	04/2019	12:45:00	Analyzed	822107	02/07/2019	22:59:00	JI
Parameter	Results	-	Units	RL		Flag		CAS	n.	al.
N Sodium	135		mg/L	2.50		riug		7440-23-5	11	ottle
EPA 200.7 4.4	Prepared:	821236		04/2019	12:45:00	Analyzed	822107	02/07/2019	23:03:00	JI
Parameter	Results		Units	RL		Flag		CAS		ttle
N Calcium	28.6		mg/L	0.500		1148		7440-70-2	11	
N Magnesium, Total	9.14		mg/L	0.020				7439-95-4	11	
EPA 200.7 4.4 - Calc	Prepared:		02/	07/2019	16:47:54	Calculated		02/07/2019	16:47:54	Ċ
Parameter	Results		Units	RL		Flag		CAS	Bo	ttle
N Silica (SiO2)	23.3		mg/L	1.07						
EPA 200.8 5.4	Prepared:	821236	02/	04/2019	12:45:00	Analyzed	821607	02/05/2019	18:26:00	Li
Parameter	Results		Units	RL		Flag	1000	CAS	Bol	ttle
V Aluminum, Total	0.00548	-	mg/L	0.0025		В		7429-90-5	11	
EPA 300.0 2.1	Prepared:	821189	02/	01/2019	15:16:00	Analyzed	821189	02/01/2019	15:16:00	Al
Parameter	Results	-	Units	RL		Flag	-	CAS	Bot	ttle
V Chloride V Fluoride	111		mg/L	1,50					01	
V Sulfate	0.600 7.80		mg/L mg/L	0.500 1.50					01	
EPA 300.1 1	Prepared:	821844	02/0	06/2019	16:10:00	Analyzed	821844	02/06/2019	16:10:00	AM
Parameter	Results		Units	RL		Flag			1000	-
V Bromate	<5.00		ug/L	5.00		rug		CAS	Bot 04	lle
EPA 350.1 2	Prepared:	820913	02/0	01/2019	09:30:00	Analyzed	821049	02/01/2019	00:00:00	M
Parameter	Results		Units	RL		Flag	-	CAS	Bot	tle
V Ammonia (as N)	0.012		mg/L	0.020		]			10	
EPA 524.2 4.1	Prepared:	821503	02/0	05/2019	14:08:00	Analyzed	821503	02/05/2019	14:08:00	KI
Parameter	Results		Units	RL		Flag	P	CAS	Bott	ile
Bromodichloromethane	<1.00		ug/L	1.00				75-27-4	09	
Bromoform	<1.00		ug/L	1.00				75-25-2	09	

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Batch # 80442

ANALAR I P	hone 903/984-0551 FAX 903	/984-59	014 e-!	Mail corp	@ana-lab.c	om				
CORP.	Results	nployee (	Owned	Integrity			al Improver 08/2019	ment	Page	5 of
1754879 S190301554					-			Received:	01/31/201	9
Drinking Water	Collected by: Client Taken: 01/30/2019 15:25:00		Environ	mental			PC	):		
EPA 524.2 4.1	Prepared:	821503	3 02	/05/2019	14:08:00	Analyzed	821503	02/05/2019	14:08:00	K
Parameter	Results		Units	RL		Flag		CAS	Bo	ottle
N Chloroform	<1.00		ug/L	1.00				67-66-3	09	
N Dibromochloromethane	<1.00		ug/L	1.00		Р		124-48-1	09	
EPA 524.2 4.1	Prepared:	821503	02	06/2019	13:42:20	Calculated	821503	02/06/2019	13:42:20	C.
Parameter	Results	-	Units	RL		Flag	-	CAS	Pa	ttle
N Trihalomethanes	<0.001		mg/L	0.001		Thug		сло	09	
EPA 552.2 1	Prepared:	821248	02/	04/2019	14:02:02	Analyzed	821745	02/05/2019	19:19:00	E
Parameter	Results		Units	RL		Flag		CAS	Bo	ttle
V Bromoacetic acid	<5.00		ug/L	5.00				79-08-3	12	
V Chloroacetic acid	<5.00		ug/L	5,00				79-11-8	12	
N Dibromoacetic acid	<5.00		ug/L	5.00				631-64-1	12	
N Dichloroacetic acid N Trichloroacetic acid	<5.00		ug/L	5.00				79-43-6	12	
EPA 552.2 1	<5.00		ug/L	5.00				76-03-9	12	
EFA 352.2 1	Prepared:	821248	02/	04/2019	14:02:02	Calculated	821745	02/08/2019	07:15:41	C
Parameter	Results		Units	RL		Flag		CAS	Bot	ttle
N HAA5	<0.005		mg/L	0.005					12	
SM 2130 B-2001	Prepared:	821080	01/.	31/2019	14:20:00	Analyzed	821080	01/31/2019	14:20:00	DV
Parameter	Results		Units	RL		Flag		CAS	Bot	tle
V Turbidity	2.24	1	NTU	0.30					01	
SM 2320 B-2011	Prepared:	820769	01/3	31/2019	11:35:00	Analyzed	820769	01/31/2019	11:35:00	EL.
Parameter	Results	1	Units	RL		Flag		CAS	Bot	tle
V Total Alkalinity (as CaCO3)	287	11 L	mg/L	1.00					01	
SM 2340 B-97	Prepared:		02/0	08/2019	10:27:45	Calculated		02/08/2019	10:27:45	CA
Parameter	Results		Units	RL		Flag		CAS	Both	tle
V Total Hardness as CaCO3 -Ca/MgEq	109		mg/L	0.500						
SM 2540 C-97	Prepared:	821181	02/0	01/2019	11:30:00	Analyzed	821181	02/01/2019	11:30:00	AL
Parameter	Results	1	Units	RL		Flag		CAS	Bott	le
V Total Dissolved Solids	420		mg/L	50.0					01	
SM 2540 D-97	Prepared:					-				



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Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

HE COMPLETE SERVICE LAB	Phone 903/984-0551 FAX 900 E Results	3/984-5914 imployee Own			Continu	al Improver 08/2019	nent	Page	6 of
1754879 S190301554 Drinking Water	Collected by: Client Taken: 01/30/2019 15:25:0		ironmental			PO	Received:	01/31/2019	)
SM 2540 D-97	Prepared	: 821190	02/01/2019	13:45:00	Analyzed	821190	02/01/2019	13:45:00	TH
Parameter N Total Suspended Solids	<i>Results</i> <2.00		nits RL g/L 2.00		Flag	r	CAS	Bott 01	tle
SM 5310 C-2000	Prepared	820941	01/31/2019	16:22:00	Analyzed	820941	01/31/2019	16:22:00	AL
Parameter	Results	Un	nits RL		Flag	5	CAS	Bott	tle
V Total Organic Carbon	0.389		g/L 0.500	-	J			05	2
	5	ample Pr	reparation						
1754878 S190301553							Received:	01/31/2019	-

Liquid Metals Digestion	50/50	ml					02	
PA 200.2 2.8	Prepared:	821236 02/04/2019	12:45:00	Analyzed	821236	02/04/2019	12:45:00	TE
		c					09	
Cooler Temperature	0.2	degrees					09	
	0.2	C					08	
Cooler Temperature	0.2	C degrees						
Cooler Temperature	0.2	degrees					07	
		C					06	
Cooler Temperature	0.2	C degrees						
Cooler Temperature	0.2	degrees					05	
Contas Transmitter		С					04	
Cooler Temperature	0.2	degrees					04	
	0.2	degrees C					03	
Cooler Temperature	0.2	c						
Cooler Temperature	0.2	degrees					02	
	0.2	degrees C					01	
Cooler Temperature	0.2	SU					05	
Bottle pH	<2 <2	SU					03	
Bottle pH							02	
Bottle pH	<2	SU						

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02

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ANALAB Pho	one 903/984-0551 FAX 903		14 e-Mail cor	ty Caring	om Contin	ual Improvo 2/08/2019	ement	Page	
1754878 S190301553							Received:	01/31/2019	9
EPA 350.2, Rev. 2.0	Prepared:	820913	02/01/2019	09:30:00	Analyzed	820913	02/01/2019	09:30:00	0
N Ammonia Distillation	50/50		ml					03	
EPA 524.2 4.1	Prepared:	821503	02/05/2019	13:46:00	Analyzed	821503	02/05/2019	13:46:00	K
N Trihalomethane Expansion Code	Entered							08	
EPA 552.2 1	Prepared:	821248	02/04/2019	14:02:02	Analyzed	821248	02/04/2019	14:02:02	E
N Haloacetic Acids Extraction	3/40		ml	cener:				06	
N Haloacetic Acids (HAA5)	Prepared:	821248	02/04/2019	14:02:02	Analyzed	821745	02/05/2019	17:47:00	E
SM 2540 C-97	Entered Prepared:	820914	02/01/2019	10:00:00	Analyzed	820914	02/01/2010	14	
N Total Dissolved Solids Started SM 2540 C-97	Started Prepared:		02/05/2019	07:00:00	Analyzed	820914	02/01/2019	07:00:00	Л
N Total Dissolved Solids Started	Started								
SM 2540 D-1997	Prepared:	820959	02/01/2019	13:45:00	Analyzed	820959	02/01/2019	13:45:00	T
N TSS Set Started	Started								
1754879 S190301554					7:		Received:	01/31/2019	
	Prepared:	820663	01/31/2019	00:00:00	Analyzed	820663	01/31/2019	00:00:00	ĸ
z Bottle pH z Bottle pH	<2		U					02	
Z Bottle pH	<2 <2		U U					03 05	
orporate Shipping: 2600 Dudley Rd. Kilgore, T		ACCRE	IN ACCORDANCE		Const Regio	n: 4141 Di	rectors Row Ste	C Houston TX	7705
DSClient v1.14.6.1734	NE	LAP-ac	credited #T104	704201	,	Zomm (D.B.	OIRES Created	10/12/2001 1 -	

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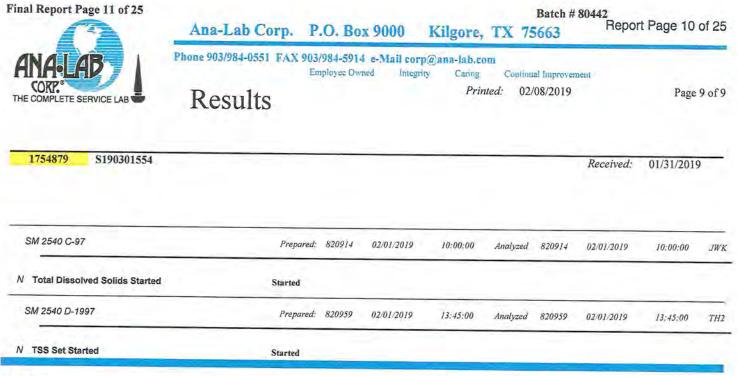
	Ana-Lab Corp. P Phone 903/984-0551 FAX 903			Kilgore,					
ANALAD		nployee Ow		y Caring	Continu	al Improver	nent		
THE COMPLETE SERVICE LAB	Results			Pru	nted: 02	/08/2019		Page	8 01
1754879 S190301554					_		Received:	01/31/2019	9
	Prepared:	820663	01/31/2019	00:00:00	Analyzed	820663	01/31/2019	00:00:00	K
Cooler Temperature	0.2		degrees					01	
Cooler Temperature	0.2		C legrees					02	
Cooler Temperature	0.2		C * legrees					03	
Cooler Temperature	0.2		C legrees					04	
Cooler Temperature	0.2		C legrees					05	
Cooler Temperature	0.2		C legrees					06	
Cooler Temperature	0.2		C legrees					07	
Cooler Temperature	0.2	c	2 legrees				~	08	
Cooler Temperature	0.2	ć	C legrees C					09	
EPA 200.2 2.8	Prepared:	821236	02/04/2019	12:45:00	Analyzed	821236	02/04/2019	12:45:00	7
V Liquid Metals Digestion	50/50	r	nl					02	1
EPA 350.2, Rev. 2.0	Prepared:	820913	02/01/2019	09:30:00	Analyzed	820913	02/01/2019	09:30:00	c
V Ammonia Distillation	50/50	n	nt					03	
EPA 524.2 4.1	Prepared:	821503	02/05/2019	14:08:00	Analyzed	821503	02/05/2019	14:08:00	K
V Trihalomethane Expansion Code	Entered							09	D
EPA 552.2 1	Prepared:	821248	02/04/2019	14:02:02	Analyzed	821248	02/04/2019	14:02:02	E
V Haloacetic Acids Extraction	3/40	п	ป					06	1
EPA 552.2 1	Prepared:	821248	02/04/2019	14:02:02	Analyzed	821745	02/05/2019	19:19:00	E
V Haloacetic Acids (HAA5)	Entered							12	
(									



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Qualifiers:

J - Analyte detected below quantitation limit B - Analyte detected in the associated method blank

P - Spike recovery outside control limits due to matrix effects.

We report results on an As Received or wet basis unless marked Dry Weight. Unless otherwise noted, testing was performed at Ana-labs corporate laboratory that holds the following Federal and State certificates: EPA Lab Number TX00063, US Department of Agriculture Soil Import Permit P330-17-00117, Texas Commission on Environmental Quality Commercial Drinking Water Lab Approval (Lab ID: TX219), Texas Commission on Environmental Quality NELAP T104704201-19-15, Louisiana Department of Environmental Quality Laboratory Certification (NELAP, LELAP) #02008, Louisiana Department of Health and Hospitals Drinking Water (NELAP) Certificate No LA026, Oklahoma Department of Environmental Quality TNI Laboratory Accreditation Program Certificate No. 2018-126, Arkansas Department of Environmental Quality Certification #18-068-0. The Accredited column designates accreditation by N -- NELAC, or z -- not covered under NELAC scope of accreditation.

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp. Unless otherwise specified, these test results meet the requirements of NELAC.

RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

U

Trey Peery, MA, Project Manager



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Gulf Const Region: 4141 Directors Row Ste C Houston TX 77092



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COKP.	ETE SERVICE LAB	Q	ualit	-				19	08/2019		Pa	ge 1 of 1
Repo	rt Ta							Account BENV-			ject	
Kevin 1606 1	rironmental C. Baros E Brazos St., Suite D							9151 Y Y -	G	00	0921	-
VICIOI	ia, TX 77901 Analytical Set	821049				_	-					
		021049			Blank						ł	EPA 350.
	<u>Parameter</u> Ammonia (as N)	PrepSet 820913	<i>Reading</i> ND	MDL 0.00356	MQL 0.020 CCV	Units mg/L			<i>File</i> 119561712			
	<u>Parameter</u> Ammonia (as N)		Reading 2.10	<i>Known</i> 2.00	Units mg/L	<i>Recover%</i> 105	<i>Limits%</i> 90.0 - 110		<i>File</i> 119561673			
			2.03 2.15	2.00 2.00	mg/L mg/L	102 108	90.0 - 110 90.0 - 110		119561682 119561693			
			2.08	2.00	mg/L mg/L	104 97.0	90.0 - 110 90.0 - 110		119561700 119561707			
			1.96 2.18 2.12	2.00 2.00 2.00	mg/L mg/L mg/L	98.0 109 106	90.0 - 110 90.0 - 110		119561717 119561728			
			2.05	2.00	mg/L mg/L	100 102 105	90.0 - 110 90.0 - 110 90.0 - 110		119561734 119561742 119561743			
					Duplica				119901745			
	<u>Parameter</u> Ammonia (as N)	Sample 1754826		<i>Result</i> 0.018	Unknown 0.022			Unit mg/L		RPD		Limit%
		1754827		0.014	0.012 ICV			mg/L mg/L		20.0 15.4		20.0 20.0
	<u>Parameter</u> Ammonia (as N)		Reading 2.04	<i>Known</i> 2.00	Units mg/L	Recover% 102	<i>Limits%</i> 90.0 - 110		<i>File</i> 119561672			
					LCS Du	р						
	<u>Parameter</u> Ammonia (as N)	PrepSet 820913	<i>LCS</i> 1.91	<i>LCSD</i> 1.86		<i>Known</i> 2.00	<i>Limits%</i> 90.0 - 110	LCS% 95.5	<i>LCSD%</i> 93.0	Units mg/L	<b>RPD</b> 2.65	<i>Limit%</i> 20.0
					Mat. Spil	ke						
	<u>Parameter</u> Ammonia (as N)	Sample 1754826 1754827	<i>Spike</i> 1.80 1.74	Unknown 0.022 0.012	2.00 2.00	Units mg/L mg/L	<i>Recovery %</i> 88.9 87.0	Limits % 80.0 - 120 80.0 - 120	File 119561718 119561721			
	Analytical Set	821181						2012 . 484			Ch.	
					Blank						SM	2540 C-
	Parameter Total Dissolved Solids	Prep.Set 821181	<i>Reading</i> ND	MDL 5.00	MQL 5.00	Units mg/L			File 119564809			
				(	ControlB	lk						
	Parameter Total Dissolved Solids	PrepSet 821181	<i>Reading</i> 0.0004		MQL	Units grams			File 119564796			
					Duplicat	e						
	Parameter	Sample		Result	Unknown			Unit		RPD		Limit%

NELAP-accredited #T104704201

inal Repo	ort Page 13 of 25	Ana-L:	ab Corp	. P.	O. Box	x 9000	Kilgor	e, TX 7.	Batch # 8044 5663	Report	Page 12 of 25
ANA	LAB	Phone 903/98		AX 903/ ployee		e-Mail cor Integrit	p@ana-lab	.com			ted #02008
HE COMPLE	ETE SERVICE LAB	Q	ualit	y Co	ontro	51	P	rinted 02/0	08/2019		Page 2 of 13
					Duplic	ate					
	<u>Parameter</u> Total Dissolved Solids	Sample 1754286		Result 2420	Unknow 2480 LCS			Unit mg/L		<b>RPD</b> 2.45	<i>Limit%</i> 20.0
	<u>Parameter</u> Total Dissolved Solids	<i>PrepSet</i> 821181	Reading 202		Known 200 Standa	<i>Units</i> mg/L rd	<b>Recover%</b> 101	<i>Limits</i> 85.0 - 115	File 119564810		
	Parameter Total Dissolved Solids	Sample	Reading 102	Known 100	Units mg/L	<i>Recover%</i> 102	<i>Limits%</i> 90.0 - 110		<i>File</i> 119564797		
	Analytical Set	821190									SM 2540 D-9
	Parameter	D C			Blank						
	Total Suspended Solids	<i>PrepSet</i> 821190	<i>Reading</i> ND	MDL 2	MQL 2 Controll	Units mg/L Blk			File 119564977		
	Parameter	PrepSet	Reading	MDL	MQL	Units			File		
	Total Suspended Solids	821190	0			grams			119564976		
	Parameter	<b>C</b>			Duplica						
	Total Suspended Solids	Sample 1754844		Result 4.80	Unknown 4.27	7		Unit mg/L		RPD	Limit%
		1754871		7.56	7.78			mg/L		11.7 2.87	20.0 20.0
		1755500		8.57	8.57 LCS			mg/L		0	20.0
	Parameter	PrepSet	Reading		Known	Units	Recover%	Limits	File		
	Total Suspended Solids	821190	54.0		50.0 Standar	mg/L r <b>d</b>	108	90.0 - 110	119565010		
	Parameter Total Suspended Solids	Sample	<i>Reading</i> 98.0	Known 100	Units mg/L	<i>Recover%</i> 98.0	<i>Limits%</i> 90.0 - 110		File 119565009		
	Analytical Set	821613			Diask						SM 2540 C-97
	Parameter	PrepSet	Reading	MDL	Blank						
	Total Dissolved Solids	821613	ND	5.00	MQL 5.00	Units mg/L			File 119572430		
					ControlE						
	Parameter	PrepSet	Reading	MDL	MQL	Units			File		
	Total Dissolved Solids	821613	0.0004		Duplicat	grams te			119572417		
	Parameter	Sample		Result	Unknown			Unit		RPD	Limit%
	Total Dissolved Solids	1754287		2190	2190 LCS			mg/L		0	20.0
	Parameter	PrepSet	Reading		Known	Units	Recover%	Limits	File		
	Total Dissolved Solids	821613	202		200 Standar	mg/L d	101	85.0 - 115	119572431		
	Parameter	Sample	Reading	Known	Units	Recover%	Limits%		File		
	Total Dissolved Solids		96.0	100	mg/L	96.0	90.0 - 110		119572418		



#### Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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NELAP-accredited #T104704201

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nTHE COMPLETE SERVICE

Analytical Set

Parameter

Fluoride

Report Page 13 of 25 Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663 Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com LELAP-accredited #02008 Employee Owned Integrity Caring Continual Improvement Printed Page 3 of 13

Batch # 80442

#### Quality Control 02/08/2019 821189 AWRL/MRL C Reading Known Units Recover% Limits% File 0.135 0.100 mg/L 135 50.0 - 150 119564951 Dlank

					Blank							
	Parameter	PrepSet	Reading	MDL	MOL	Units			File			
	Chloride	821189	0.059	0.0053	0.300	mg/L			119564950			
	Fluoride	821189	ND	0.00863	0.050	mg/L			119564950			
	Sulfate	821189	0.080	0.00775	0.300	mg/L			119564950			
					CCV							
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Chloride		10.2	10.0	mg/L	102	90.0 - 110		119564947			
•			10.3	10.0	mg/L	103	90.0 - 110		119564961			
			10.3	10.0	mg/L	103	90.0 - 110		119564975			
	Fluoride		10.4	10.0	mg/L	104	90.0 - 110		119564947			
			10.5	10.0	mg/L	105	90.0 - 110		119564961			
			10.4	10.0	mg/L	104	90.0 - 110		119564975			
	Sulfate		10.0	10.0	mg/L	100	90.0 - 110		119564947			
			10,3	10.0	mg/L	103	90.0 - 110		119564961			
			10.1	10.0	mg/L	101	90.0 - 110		119564975			
					LCS Du	p						
	Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
	Chloride	821189	4.92	4.93		5.00	85.0 - 110	98.4	98.6	mg/L	0.203	20.0
	Fluoride	821189	5.09	5.08		5.00	88.0 - 110	102	102	mg/L	0.197	20.0
	Sulfate	821189	5.12	5.14		5.00	88.0 - 110	102	103	mg/L	0.390	20.0
					MSD							
	Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
	Chloride	1754304	13.9	14.0	5.79	10.0	80.0 - 120	81.1	82.1	mg/L	1.23	20.0
	Fluoride	1754304	9.23	9.18	0.670	10.0	80.0 - 120	85.6	85.1	mg/L	0.586	20.0
	Sulfate	1754304	23.4	23.6	14.5	10.0	80.0 - 120	89.0	91.0	mg/L	2.22	20.0
	Chloride	1755441	35.9	35.6	27.6	10.0	80.0 - 120	83.0	80.0	mg/L	3.68	20.0
	Fluoride	1755441	9.00	9.00	0.400	10.0	80.0 - 120	86.0	86.0	mg/L	0	20.0
	Sulfate	1755441	18.6	17.8	9.11	10.0	80.0 - 120	94.9	86.9	mg/L	8.80	20.0

Analytical Set 821844

AWRL/MRL C

# EPA 300.11

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EPA 300.0 2.1

Parameter		Reading	Known	Units	Recover%	Limits%	File
Bromate		5.00	5.00	ug/L	100	75.0 - 125	119577294
				Blank	¢		
Parameter	PrepSet	Reading	MDL	MQL	Units		File
Bromate §	321844	ND	2.06	5.00	ug/L		119577295
5	321844	ND	2.06	5.00	ug/L		119577298
				CCV			
Parameter		Reading	Known	Units	Recover%	Limits%	File
Bromate		556	500	ug/L	111	85.0 - 115	119577291
		552	500	ug/L	110	85.0 - 115	119577309
		532	500	ug/L	106	85.0 - 115	119577322

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662



#### Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

NALAB	Phone 903/98			984-5914				5663	P-accree	lited #0	2008
CORP			nployee		Integrity	y Car	ing Co	ontinual Improv			
COMPLETE SERVICE LAB	Q	ualit	y Co	ontro	ol	P	rinted 02/0	08/2019		Pa	ge 4 of 13
				LCS D	ıp						
Parameter Bromate	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
bromate	821844 821844	94.7 94.7	99.8 103		100 100	85.0 - 115 85.0 - 115	94.7 94.7	99.8 103	ug/L ug/L	5.24 8.40	25.0 25.0
				MSD				105	ug/L	0.40	25.0
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromate	1755571 1755572	216 196	211 217	ND ND	200 200	80.0 - 120 80.0 - 120	108 98.0	106	ug/L	2.34	20.0
Analytical Set	820941				200	80.0 - 120	98.0	108	ug/L	10.2	20.0
			А	WRL/MI	RL C					3141 3	310 C-200
Parameter		Reading		Units	Recover%	Limits%		File			
Total Organic Carbon		2.16	2.00	<sup>mg/L</sup> Blank	108	75.0 - 125		119560062			
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Total Organic Carbon	820941	ND	0.0618	0.500 CCB	mg/L			119560061			
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Total Organic Carbon	820941 820941	ND ND	0.0618 0.0618	0.500 0.500 CCV	mg/L mg/L			119560055 119560070			
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Total Organic Carbon		9.82	10.0	mg/L	98.2	90.0 - 110		119560058			
		9.57	10.0	mg/L ICL	95.7	90.0 - 110		119560071			
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Total Organic Carbon		19.1	20.0	mg/L ICV	95.5	90.0 - 110		119560057			
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Total Organic Carbon		9.55	10.0	mg/L LCS	95,5	90.0 - 110		119560059			
Parameter Total Organic Carbon	<i>PrepSet</i> 820941	Reading 5.07		Known 5.00 MSD	Units mg/L	<i>Recover%</i> 101	<i>Limits</i> 89.8 - 111	File 119560060			
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Total Organic Carbon	1755045	11.2	11.2	0.872 Standard	10.0 1	92.5 - 112	103	103	mg/L	0	20.0
Parameter Total Organic Carbon	Sample	Reading 50.0	<i>Known</i> 50.0	Units mg/L	<b>Recover%</b> 100	<i>Limits%</i> 90.0 - 110		File 119560056			
Analytical Set	821607			Blank						EPA	200.8 5.4
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Aluminum, Total	821236	0.00347	0.00204	0.0025 CCV	mg/L		•	File 119572213			
Parameter		Reading	Known	Units	Recover%	Limits%		File			

Gulf Const Region: 4141 Directors Row Ste C Houston TX 77092

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ge 5 of 1	Pag		02/08/2019	inted	Pri	1	ontro	y Co	uality	Q	
							CCV				
			File		Limits%	Recover%	Units	Клоwп	Reading		Parameter
			119572172		90.0 - 110	97.0	mg/L	0.05	0.0485		Aluminum, Total
			119572179		90.0 - 110	96.0	mg/L	0.05	0.048		
			119572189		90.0 - 110	97.2	mg/L	0.05	0.0486		
			119572211		90.0 - 110	95.8	mg/L	0.05	0.0479 0.0465		
			119572221		90.0 - 110 90.0 - 110	93.0 93.8	mg/L mg/L	0.05	0.0469		
			119572232		50.0 - 110	55.0	ICV	0.05	0.0107		
			File		Limits%	Recover%	Units	Known	Reading		Parameter
			119572138		90.0 - 110	103	mg/L	0.05	0.0515		Aluminum, Total
						р	LCS Du				
Limit%	RPD	Units	LCSD%	LCS%	Limits%	Known		LCSD	LCS	PrepSet	Parameter
20.0	1.61	mg/L	100	98.4	85.0 - 115	0.500		0.500	0.492	821236	luminum, Total
		1.2					MSD				
Limit%	RPD	Units	MSD%	MS%	Limits	Known	UNK	MSD	MS	Sample	Parameter
20.0	1.86	mg/L	97.8	96.0	70.0 - 130	0.500	0.00893	0,498	0.489	1754878	Aluminum, Total
20.0	0.208	mg/L	95.8	96.0	70.0 - 130	0.500	0.00477	0.484	0,485	1754888	
A 200.7 4	EPA									821820	Analytical Set
							Blank				
			File			Units	MQL	MDL	Reading	PrepSet	Parameter
			119576384			mg/L	0.500	0.0419	0.245	821236	Calcium
			119576384			mg/L	0.020	0.0102	ND 0.116	821236 821236	Magnesium, Total Potassium
			119576384			mg/L	0.500 CCV	0.0765	0.110	821250	otassium
			- 22		** ** **			Vanue	Panding		Parameter
			File		Limits% 90.0 - 110	Recover% 106	Units mg/L	Known 25.0	Reading 26.4		Potassium
			119576380 119576390		90.0 - 110	110	mg/L	25.0	27.4		
			119576401		90.0 - 110	100	mg/L	25.0	25.0		
			119576412		90.0 - 110	98.8	mg/L	25.0	24.7		
			119576422		90.0 - 110	98.4	mg/L	25.0	24.6		
							ICL				
			File		Limits%	Recover%	Units	Known	Reading		arameter
			119576315		95.0 - 105	104	mg/L	50.0	51.8		ssium
							ICV				
			File		Limits%	Recover%	Units	Known	Reading		ameter
			119576318		90.0 - 110	104	mg/L	25.0	25.9		assium
			1000				LCS Du				
Limit%	RPD	Units	LCSD%	LCS%	Limits%	Known		LCSD	LCS	PrepSet	arameter
25.0	1.15	mg/L	104	105	85.0 - 115	5.00		5.19	5.25	821236	alcium
25.0	0.180	mg/L	111	111	85.0 - 115	5.00		5.56	5.55	821236	lagnesium, Total
25.0	0.371	mg/L	108	108	85.0 - 115	5.00		5.38	5.40	821236	otassium
							MSD				
Limit%	RPD	Units	MSD%	MS%	Limits	Known	UNK	MSD	MS	Sample	Parameter
25.0	1.65	mg/L	122	120	75.0 - 125	5.00	46.4	52.5	52.4	1754878	Calcium
	5.07	mg/L	121	115	75.0 - 125	5,00	9,93	16.0	15.7	1754878	Magnesium, Total



Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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NA.	LAB	Phone 903/98		AX 903/ ployee (		e-Mail con Integrit			LELA Continual Improv	AP-accred	lited #02	008
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		X	uam	y C				med	02/00/2017		T ag	20 0 01 1
			- ar-		MSI	)						
	Parameter Potassium	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit
	Calcium	1754878 1754888	10.8 128	10.9	5.17	5.00	75.0 - 125	113	115	mg/L	1.76	25.0
	Magnesium, Total	1754888	53.9	124 52.7	121 48.6	5.00	75.0 - 125	140 *	60.0 *	mg/L	80.0 *	25.0
_	Potassium	1754888	23.5	22.8	15.6	5.00	75.0 - 125 75.0 - 125	106	82.0 144 *	mg/L mg/L	25.5 * 9.27	25.0 25.0
	Analytical Set	822021									EP	A 200.7
					Blan	k						
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
	Phosphorus	821236	ND	0.0388	0.100	mg/L			119580721			
	Silicon Recoverable	821236	0.0764	0.0148	0.100	mg/L			119580721			
					CCV	1.1						
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Phosphorus		9.90	10.0	mg/L	99.0	90.0 - 110		119580712			
			9.34	10.0	mg/L	93.4	90.0 - 110		119580723			
	1000000000		9.42	10.0	mg/L	94.2	90.0 - 110		119580734			
	Silicon Recoverable		4.91	5.00	mg/L	98.2	90.0 - 110		119580712			
			4.81	5.00	mg/L	96.2	90.0 - 110		119580723			
			4.70	5.00	mg/L ICL	94.0	90.0 - 110		119580734			
	Parameter		Panding	V								
	Phosphorus		Reading 24.9	Known 25.0	Units	Recover%	Limits%		File			
	Silicon Recoverable		10.0	10.0	mg/L mg/L	99.6 100	95.0 - 105 95.0 - 105		119580710			
				10.0	ICV	100	95.0 - 105		119580710			
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Phosphorus		10.2	10.0	mg/L	102	90.0 - 110		119580711			
	Silicon Recoverable		5.14	5.00	mg/L	103	90.0 - 110		119580711			
					LCS Di	ıp						
	Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
	Phosphorus	821236	3.81	3.86		4.00	85.0 - 115	95.2	96.5	mg/L	1.30	25.0
	Silicon Recoverable	821236	3.68	3.74	-	4.00	85.0 - 115	92.0	93.5	mg/L	1,62	25.0
					MSD							
	Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
	Phosphorus Silicon Basered L	1754878	4.10	4.17	0.309	4.00	75.0 - 125	94.8	96.5	mg/L	1.83	25.0
	Silicon Recoverable Phosphorus	1754878	9.70	9.56	6.13	4.00	75.0 - 125	89.2	85.8	mg/L	4.00	25.0
	Silicon Recoverable	1754888 1754888	4.12 21.5	4.12 21.5	ND 17.0	4.00 4.00	75.0 - 125 75.0 - 125	103 112	103 112	mg/L mg/L	0	25.0 25.0
	Analytical Set	822107										200.7 4
					Blank						LIA	200.74
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
	Calcium	821236	0.130	0.0419	0.500	mg/L			119582476			
	Magnesium, Total	821236	ND	0.0102	0.020	mg/L			119582476			
	Sodium	821236	0.939	0.0315	0.500	mg/L		•	119582476			
	Parameter		Reading	Known	CCV Units	Pacaur 0/	I hude as					
	Calcium		24.9	25.0	mg/L	Recover% 99.6	Limits% 90.0 - 110		File 119582412			

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Form rptPROJQCGrpt Created 01/27/2005 v1.0

ALAB I	Phone 903/98		X 903/9		e-Mail corr Integrity				P-accreo	lited #0:	2008
KP.	0						1	Continual Improve	ement		
MPLETE SERVICE LAB	Q	uality	y Co	ontro	)I	Pi	rinted	02/08/2019		Pa	ge 7 of 13
				ccv							
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Calcium		24.4	25.0	mg/L	97.6	90.0 - 110		119582424			
		24.5	25.0	mg/L	98.0	90.0 - 110		119582434			
		25.8	25.0	mg/L	103	90.0 - 110		119582445			
		24.8	25.0	mg/L	99.2	90.0 - 110		119582456			
		26.0	25.0	mg/L	104	90.0 - 110		119582467			
		24.9	25.0	mg/L	99.6	90.0 - 110		119582477			
		24.8	25.0	mg/L	99.2	90.0 - 110		119582488			
and the second second		24.0	25.0	mg/L	96.0	90.0 - 110		119582498			
Magnesium, Total		26.8	25.0	mg/L	107	90.0 - 110		119582467			
		25.6	25.0	mg/L	102	90.0 - 110		119582477			
		26.3	25.0	mg/L	105	90.0 - 110		119582488			
		26.1	25.0	mg/L	104	90.0 - 110		119582498			
Sodium		24.1	25.0	mg/L	96.4	90.0 - 110		119582412			
		23.6	25.0	mg/L	94.4	90.0 - 110		119582424			
		24.4	25.0	mg/L	97.6	90.0 - 110		119582434			
		25.6	25.0	mg/L	102	90.0 - 110		119582445			
		24.5	25.0	mg/L	98.0	90.0 - 110		119582456			
		25.8 24.7	25.0	mg/L	103	90.0 - 110		119582467			
		25.4	25.0	mg/L	98.8	90.0 - 110		119582477			
		25.2	25.0 25.0	mg/L	102	90.0 - 110		119582488			
		24.4	25.0	mg/L mg/L	101 97.6	90.0 - 110		119582498			
		24.2	25.0	mg/L	96.8	90.0 - 110 90.0 - 110		119582509			
		24.2	25.0	mg/L	96.8	90.0 - 110		119582520			
		24.1	25.0	mg/L	96.4	90.0 - 110		119582531 119582541			
				Dir. SPH				119902341			
Parameter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK	% DSPKD%	Units	RPD	· Limit%
Sodium	1754878	75.0	75.5	55.7	25.0	75.0 - 125	77.2	79.2	mg/L	0.664	25.0
				Direct SI	PK						
Parameter	Sample	DSPK		UNK	Known	Limits%	DSPK?	6	Units		
Sodium	1754878	75.0		55.7	25.0	75.0 - 125	77.2		mg/L		25.0
				ICL							
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Calcium		50.6	50.0	mg/L	101	95.0 - 105		119582395			
Magnesium, Total		51.8	50.0	mg/L	104	95.0 - 105		119582395			
Sodium		51.7	50.0	mg/L	103	95.0 - 105		119582395			
				ICV							
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Calcium		24.7	25.0	mg/L	98.8	90.0 - 110		119582398			
Magnesium, Total		25.6	25.0	mg/L	102	90.0 - 110		119582398			
Sodium		23.9	25.0	mg/L	95.6	90.0 - 110		119582398			
				LCS Du	р						
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Calcium	821236	4.89	5,10		5.00	85.0 - 115	97.8	102	mg/L	4.20	25.0
Magnesium, Total	821236	4.81	5.02		5.00	85.0 - 115	96.2	100	mg/L	4.27	25.0
Sodium	821236	4.68	4.84		5.00	85.0 - 115	93.6	96.8	mg/L	3.36	25.0

LDSClient v1.14.6.1734



Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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	Q	ualit	y Co	ontro	1	Pr	inted 02	/08/2019		Pag	e 8 of 1
		-		MSD							
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit?
Calcium	1754878	46.7	45.9	42.5	5.00	75.0 - 125	84.0	68.0 *	mg/L	21.1	25.0
Magnesium, Total	1754878	14.8	14.4	9.64	5.00	75.0 - 125	103	95.2	mg/L	8.06	25.0
Sodium	1754878	60.0	59.3	55.2	5.00	75.0 - 125	96.0	82.0	mg/L	15.7	25.0
Calcium	1754888	102	104	102	5.00	75.0 - 125	0 *	40.0 *	mg/L	200 *	25.0
Magnesium, Total	1754888	46.4	47.5	43.7	5.00	75.0 - 125	54.0 *	76.0	mg/L	33.8 *	25.0
Sodium	1754888	894	920	940	5.00	75.0 - 125	-920 *	-400 *	mg/L	2.87	25.0
Analytical Set	821503			DED						EPA	\$ 524.2
				BFB							
<u>Parameter</u>	Sample	RefMass	Reading	%	Limits%			File			
BFB Mass 173	821503	174	18	0.4	0 - 2.00			119570315			
BFB Mass 174	821503	95.0	4946	61.0	50.0 - 100			119570315			
BFB Mass 175	821503	174	280	5.7	5.00 - 9.00			119570315			
BFB Mass 176	821503	174	4736	95.8	95,0 - 101			119570315			
BFB Mass 177	821503	176	286	6.0	5.00 - 9.00			119570315			
BFB Mass 50	821503	95.0	1926	23.8	15.0 - 40.0			119570315			
BFB Mass 75	821503	95.0	4699	58.0	30.0 - 80.0			119570315			
BFB Mass 95	821503	95.0	8104	100.0	100 - 100			119570315			
BFB Mass 96	821503	95.0	532	6.6 Blank	5.00 - 9.00			119570315			
Demonstra	Dever	0	1001								
Parameter Bromodichloromethane	PrepSet	Reading	MDL	MQL	Units			File			
bromodichioromethane	821503	ND	0.308	1.00	ng/L			119570319			
Bromoform	821503	ND	0.308	1.00	ug/L			119573200			
bromotorm	821503 821503	ND ND	0.418	1.00	ug/L			119570319			
Chloroform	821503	ND	0.418	1.00	ug/L			119573200			
Cillorotorin	821503	ND	0.213	1.00	ug/L			119570319			
Dibromochloromethane	821503	ND	0.213	1.00	ug/L			119573200			
Di Di Chi Chi Chi Chi Alt	821503	ND	0.327	1.00	ug/L ug/L			119570319			
	021505	ND	0.527	CCV	ug/L			119573200			
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Bromodichloromethane		18.8	20.0	ug/L	93.8	70.0 - 130		119570316			
Bromoform		17.5	20.0	ug/L	87.6	70.0 - 130		119570316			
Chloroform		19.5	20.0	ug/L	97.6	70.0 - 130		119570316			
Dibromochloromethane		17.2	20.0	ug/L	85.9	70.0 - 130		119570316			
				IS Area:	s						
Parameter	Sample	Type	Reading	CCVISM	Low	High		File	PrepSet		
1,4-DichlorobenzeneD4 (ISTD)	821503	CCV	122100	122100	61050	183100		119570316	821503		
	821503	LCS	126600	122100	61050	183100		119570317	821503		
	821503	LCS Dup	124400	122100	61050	183100		119570318	821503		
	821503	Blank	104300	122100	61050	183100		119570319	821503		
	821503	Blank	122000	122100	61050	183100		119573200	821503		
ChlorobenzeneD5 (ISTD)		CCV	242200	242200	121100	363300		119570316	821503		
	821503	LCS	251300	242200	121100	363300		119570317	821503		
	821503	LCS Dup	242800	242200	121100	363300		119570318	821503		
	821503	Blank	221300	242200	121100	363300		119570319	821503		
	821503	Blank	262000	242200	121100	363300		119573200	821503		



#### Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

Form rptPROJQCGrpt Created 01/27/2005 v1.0

<b>Final Report</b>	Page 2	0 of 25
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Batch # 80442

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Parameter

Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663 Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Integrity Caring

Printed

LELAP-accredited #02008

File

02/08/2019

Continual Improvement

PrepSet

Quality Control

Sample

Type

Employee Owned

	IS Areas			
Reading	CCVISM	Low	High	
NOWN108000	122100	61050	183100	

Parameter	Sample	Type	Readin	g CCVISM	Low	High		File	PrepS	et	
1,4-DichlorobenzeneD4 (ISTD)	1754878		WN108000	122100	61050	183100		119573192	82150		
ChlorobenzeneD5 (ISTD)	1754878	UNKNOV	VN228800	242200	121100	363300		119573192	82150	3	
1,4-DichlorobenzeneD4 (ISTD)	1754879	UNKNOW	WN108100	122100	61050	183100		119573193	82150		
4	1754879	MS	134500	122100	61050	183100		119573198	82150	3	
	1754879	MSD	137200	122100	61050	183100		119573199	82150		
ChlorobenzeneD5 (ISTD)	1754879	UNKNOW	VN231900	242200	121100	363300		119573193	82150		
	1754879	MS	271200	242200	121100	363300		119573198	82150		
	1754879	MSD	281100	242200	121100	363300		119573199	82150		
				IS RetTir					02150.		
Parameter	Sample	Type	Reading	COVISM	Low	High		File	PrepSe		
1,4-DichlorobenzeneD4 (ISTD)	821503	CCV	11.18	11.18	11.12	11.24		119570316	821503		
	821503	LCS	11.18	11.18	11.12	11.24		119570317	821503	3	
	821503	LCS Dup	11.18	11.18	11.12	11.24		119570318	821503		
	821503	Blank	11.18	11.18	11.12	11.24		119570319	821503		
	821503	Blank	11.18	11.18	11.12	11.24		119573200	821503		
ChlorobenzeneD5 (ISTD)	821503	CCV	8.818	8,818	8.758	8.878		119570316	821503		
	821503	LCS	8,818	8.818	8.758	8.878		119570317	821503		
	821503	LCS Dup	8.818	8.818	8.758	8.878		119570318	821503		
	821503	Blank	8.818	8.818	8.758	8.878		119570319	821503		
	821503	Blank	8.818	8.818	8.758	8.878		119573200	821503		
1,4-DichlorobenzeneD4 (ISTD)	1754878	UNKNOW	/NI 1.18	11.18	11.12	11.24		119573192	821503		
ChlorobenzeneD5 (ISTD)	1754878	UNKNOW	/N8.818	8.818	8.758	8.878		119573192	821503		
1,4-DichlorobenzeneD4 (ISTD)	1754879	UNKNOW	/NI I.18	11.18	11.12	11.24		119573193	821503		
	1754879	MS	11.18	11.18	11.12	11.24		119573198	821503	(	
	1754879	MSD	11.17	11.18	11.12	11.24		119573199	821503		
ChlorobenzeneD5 (ISTD)	1754879	UNKNOW	N8.818	8.818	8.758	8.878		119573193	821503		
	1754879	MS	8.818	8.818	8.758	8.878		119573198	821503		
	1754879	MSD	8.818	8.818	8.758	8.878		119573199	821503		
				LCS Dup	,						
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromodichloromethane	821503	18.8	19,4		20.0	70,0 - 130	94.0	97.0	ug/L	3.14	30.0
Bromoform	821503	17.7	18.1		20.0	70.0 - 130	88.5	90.5	ug/L	2.23	30.0
Chloroform	821503	18.8	19.2		20.0	70.0 - 130	94.0	96.0	ug/L	2.11	30.0
Dibromochloromethane	821503	16.8	17.2		20.0	70.0 - 130	84.0	86.0	ug/L	2.35	30.0
				MSD					1.1		
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromodichloromethane	1754879	13.9	15.2	ND	20.0	67.1 - 133	69.5	76.0	ug/L	8.93	30.0
Bromoform	1754879	12.6	14.2	ND	20.0	58.4 - 125	63.0	71.0	ug/L	11.9	30.0
Chloroform	1754879	14.3	15.5	ND	20.0	62.8 - 138	71.5	77.5	ug/L	8.05	30.0
Dibromochloromethane	1754879	11.8	13.2	ND	20.0	60.7 - 129	59.0 *	66.0	ug/L	11.2	30.0
				Surrogate		CONTRACT OF	(1973)		a Bi th	11.2	10.0
Parameter	Sample	Type	Reading	Known	Units	Recover%	Timite0/	File			
1,2-DCA-d4 (SURR)	821503	CCV	19.8	20.0	ug/L	99.0	Limits%	File			
2000 100 1007 E C 210	821503	LCS	20.0	20.0	ug/L	100	70.0 - 130 70.0 - 130	119570316			
	10000		20.0	20.0	ug L	100	70.0 - 130	119570317			

Corporate Shipping: 2600 Oudley Rd. Kilgore, TX 75662



Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

	Phone 903/9	ab Cor 84-0551 F	-				re, TX 7		
NA-LAD	Actor seems	E	nployee	Owned	Integri			LELAP-ac ontinual Improvement	credited #02008
COMPLETE SERVICE LAB	Q	ualit	y C	ontro	ol	4		08/2019	Page 10 of 1
				Surrog					
Parameter	Sample	Type	Readi	ng Known	Units	Recover?	% Limits%	File	
1,2-DCA-d4 (SURR)	821503	LCS Du		20.0	ug/L	100	70.0 - 130	119570318	
	821503	Blank	21.0	20.0	ug/L	105	70.0 - 130	119570319	
	821503	Blank	20.4	20.0	ug/L	102	70.0 - 130	119573200	
Bromofluorobenzene (SURR)	821503	CCV	20.7	20.0	ug/L	104	70.0 - 130	119570316	
(oorde)	821503	LCS	20.9	20.0	ug/L	104	70.0 - 130	119570317	
	821503	LCS Dup	20.5	20.0	ug/L	102	70.0 - 130		
	821503	Blank	19.6	20.0	ug/L	98.0	70.0 - 130	119570318 119570319	
	821503	Blank	19.5	20.0	ug/L	97,5	70.0 - 130		
Dibromofluoromethane	821503	CCV	20.4	20.0	ug/L	102	70.0 - 130	119573200 119570316	
(SURR)					-6-2	102	70.0 - 150	119370316	
	821503	LCS	20.2	20.0	ug/L	101	70.0 - 130	119570317	
	821503	LCS Dup	20.2	20.0	ug/L	101	70.0 - 130	119570318	
	821503	Blank '	21.7	20.0	ug/L	108	70.0 - 130	119570319	
Carl Carl State	821503	Blank	20,4	20.0	ug/L	102	70.0 - 130	119573200	
TolueneD8 (SURR)	821503	CCV	20.4	20.0	ug/L	102	70.0 - 130	119570316	
	821503	LCS	20.4	20.0	ug/L	102	70.0 - 130	119570317	
	821503	LCS Dup	20.4	20.0	ug/L	102	70.0 - 130	119570318	
	821503	Blank	20.2	20.0	ug/L	101	70.0 - 130	119570319	
	821503	Blank	20.0	20.0	ug/L	100	70.0 - 130	119573200	
1,2-DCA-d4 (SURR)	1754878	UNKNO	VN21.0	20.0	ug/L	105	70.0 - 130	119573192	
Bromofluorobenzene (SURR)	1754878	UNKNOV	VN20.6	20.0	ug/L	103	70.0 - 130	119573192	
Dibromofluoromethane (SURR)	1754878	UNKNOV		20.0	ug/L	106	70.0 - 130	119573192	
TolueneD8 (SURR)	1754878	UNKNOV		20.0	ug/L	102	70.0 - 130	119573192	
I,2-DCA-d4 (SURR)	1754879	UNKNOV		20.0	ug/L	106	70.0 - 130	119573193	
	1754879	MS	19.9	20.0	ug/L	99.5	70.0 - 130	119573198	
	1754879	MSD	19.4	20.0	ug/L	97.0	70.0 - 130	119573199	
Bromofluorobenzene (SURR)	1754879	UNKNOV		20.0	ug/L	99.0	70.0 - 130	119573193	
	1754879	MS	21.6	20.0	ug/L	108	70.0 - 130	119573198	
Dibromofluoromethane	1754879	MSD	22.0	20.0	ug/L	110	70.0 - 130	119573199	
(SURR)	1754879	UNKNOV	/N20.8	20.0	ug/L	104	70.0 - 130	119573193	
	1754879	MS	20.0	20.0	ug/L	100	70.0 - 130	110572108	
	1754879	MSD	19.8	20.0	ug/L	99.0		119573198	
TolueneD8 (SURR)	1754879	UNKNOW		20.0	ug/L	101	70.0 - 130 70.0 - 130	119573199	
	1754879	MS	20.9	20.0	ug/L	104	70.0 - 130	119573193	
	1754879	MSD	20.8	20.0	ug/L	104	70.0 - 130	119573198 119573199	
Analytical Set	821745				-		1012 101		
				Blank					EPA 552.2
Parameter	PrepSet	Reading	MDL	MOL	Units			File	
Bromoacetic acid	821248	ND	0.275	5.00	ug/L			119574565	
Chloroacetic acid	821248	ND	0.559	5.00	ug/L				
Dibromoacetic acid	821248	ND	0.198	5.00	ug/L			119574565 119574565	
Dichloroacetic acid	821248	ND	0.244	5.00	ug/L			119574565	
Trichloroacetic acid	821248	ND	0.191	5.00	ug/L			119574565	
				CCV					
Parameter		Reading	Known	linite	Recove-0/	Timber ?!		F.1.	
Parameter		Reading	Known	CCV Units	Recover%	Limits%		File	



Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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	<sup>2</sup> hone 903/9	84-0551 I	AX 903/ mployee (	984-5914					AP-accre	dited #	#02008
	C				Integrit		ring	Continual Improv	rement		
ETE SERVICE LAB	Q	ualit	y Co	ontro	DI		Printed	02/08/2019		P	age 11 of 1
				CCV	5						
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Bromoacetic acid		25.8	20.0	ug/L	129	70.0 - 130	)	119574539			
		25.9	20.0	ug/L	129	70.0 - 130		119574564			
Chloroacetic acid		21.2	20.0	ug/L	106	70.0 - 130	6. F	119574539			
		21.8	20.0	ug/L	109	70.0 - 130	R.	119574564			
Dibromoacetic acid		20.6	20.0	ug/L	103	70.0 - 130	U.	119574539			
D' 11		21.6	20.0	ug/L	108	70.0 - 130		119574564			
Dichloroacetic acid		24.4	20.0	ug/L	122	70.0 - 130		119574539			
Tricklasses		25.4	20.0	ug/L	127	70.0 - 130		119574564			
Trichloroacetic acid		19,6	20.0	ug/L	98.1	70.0 - 130		119574539			
		20.8	20.0	ug/L	104	70.0 - 130		119574564			
				IS Area	IS						
Parameter	Sample	Type	Rending	CCVISM	Low	Weah					
1,2,3-Trichloropropane (IS)		CCV	765500	765500	535900	High 995200		File	PrepSe		
		CCV	650900	765500	535900	995200		119574539	821745		
	821248	LCS	843400	765500	535900	995200		119574564	821745		
	821248	Blank	541200	765500	535900	995200		119574540	821248		
	1754878		WN824200	765500	535900	995200		119574565	821248		
	1754878	MS	831300	765500	535900	995200		119574542	821248		
	1754878	MSD	887400	765500	535900	995200		119574543	821248		
	1754879		VN650800	765500	535900	995200		119574544	821248		
	1754879	MS	710800	765500	535900	995200		119574545	821248		
	1754879	MSD	663600	765500	535900			119574546	821248		
				IS RetTin		995200		119574547	821248		
Parameter	Connela	T									
I,2.3-Trichloropropane (IS)	Sample	Type		CCVISM	Low	High		File	PrepSei	1	
(13)		CCV	8.790	8.790	8.730	8.850		119574539	821745		
	821248	CCV	8.800	8.790	8,730	8.850		119574564	821745		
	821248	LCS Blank	8.800	8.790	8.730	8,850		119574540	821248		
			8.800	8,790	8.730	8.850		119574565	821248		
	1754878 1754878	UNKNOW		8.790	8.730	8.850		119574542	821248		
	1754878	MS	8.790	8.790	8.730	8.850		119574543	821248		
	1754879	MSD	8.790	8.790	8.730	8.850		119574544	821248		
	1754879	UNKNOW		8.790	8.730	8.850		119574545	821248		
	1754879	MSD	8.800	8.790	8.730	8.850		119574546	821248		
	17,24679	MSD	8.800	8.790	8.730	8.850		119574547	821248		
C				LCS Dup	)						
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromoacetic acid	821248	24.1	22.8		20.0	70.0 - 130	120	114	ug/L	5.13	30.0
Chloroacetic acid	821248	20.8	19.9		20.0	70.0 - 130	104	99.5	ug/L	4.42	30.0
Dibromoacetic acid	821248	21.1	20.7		20.0	70.0 - 130	106	104	ug/L	1.90	30.0
Dichloroacetic acid	821248	23.7	22.5		20.0	70.0 - 130	118	112	ug/L	5.22	30.0
Trichloroacetic acid	821248	19.7	19.4		20.0	70.0 - 130	98.5	97.0	ug/L	1.53	30.0
A second second				MSD							
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromoacetic acid	1754878	19.5	19.6	ND	20.0	30.0 - 150	97.5	98.0	ug/L	0.512	30.0
Chloroacetic acid	1754878	19.0	21.8	1.23	20.0	15.0 - 150	88.8	103	ug/L	14.6	30.0
Dibromoacetic acid	1754878	19.7	21.3	7.56	20.0	30.0 - 150	60.7	68.7	ug/L	12.4	30.0
Dichloroacetic acid	1754878	31.6	32,9	12.9	20.0	30.0 - 150	93.5	100	- Br L	1.a.T	20.0



Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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			1000				e, TX	75663	Repor	t Page	22 of 25
LAD	1000 905/9	84-0351 E	mployee	0wned	4 e-Mail co Integri	rp@ana-lal ity Ca		LEL Continual Impro-	AP-accre vement	dited #02	2008
LETE SERVICE LAB	Q	Jualit	ty C	ontr	ol	P	rinted 02/	08/2019		Page	e 12 of 13
				MSI	D						
Parameter	Sample	MS	MSD	UNK	Known	11.00	1.0001				
Trichloroacetic acid	1754878		21.8	8.62	20.0	Limits	MS%	MSD%	Units	RPD	Limit%
Bromoacetic acid	1754879		21.4	ND	20.0	30.0 - 150	57.4	65.9	ug/L	13.8	30.0
Chloroacetic acid	1754879		20.2	ND	20.0	30.0 - 150	107	107	ug/L	0	30.0
Dibromoacetic acid	1754879		19.2	ND	20.0	15.0 - 150	102	101	ug/L	0.985	30.0
Dichloroacetic acid	1754879		22.4	ND	20.0	30.0 - 150	100	96.0	ug/L	4.58	30.0
Trichloroacetic acid	1754879		18.9	ND		30.0 - 150	112	112	ug/L	0.445	30.0
		20,1	10,9		20.0	30.0 - 150	100	94.5	ug/L	6.15	30.0
Parameter	Sample	Tuna	D P	Surrog							
2,3-Dibromopropionic (Surr)	Sample	Type	Readin	-	Units	Recover%	Limits%	File			
all Distomoproprome (Surr)		CCV	16.0	20.0	ug/L	80.0	70.0 - 130	119574539			
	821248	CCV	16.0	20.0	ug/L	80.0	70.0 - 130	119574564			
	821248	LCS	17.9	20.0	ug/L	89.5	70.0 - 130	119574540			
		LCS Dup		20.0	ug/L	91.5	70.0 - 130	119574541			
	821248	Blank	20.4	20.0	ug/L	102	70.0 - 130	119574565			
	1754878	UNKNO		20.0	ug/L	86.0	70.0 - 130	119574542			
	1754878	MS	14.3	20.0	ug/L	71.5	70.0 - 130	119574543			
	1754878	MSD	16.5	20.0	ug/L	82.5	70.0 - 130	119574544			
	1754879	UNKNO		20.0	ug/L	95.0	70.0 - 130	119574545			
	1754879	MS	18.8	20.0	ug/L	94.0	70.0 - 130	119574546			
	1754879	MSD	16.9	20.0	ug/L	84.5	70.0 - 130	119574547			
Analytical Set 820	769									SM 23	20 B-201
				Blank	¢.						
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Total Alkalinity (as CaCO3)	820769	ND	1.00	1.00	mg/L			119556290			
				CCV							
Parameter		Reading	Known	Units	Recover%	Limits%					
Total Alkalinity (as CaCO3)		27.0	25.0	mg/L	108	90.0 - 110		File			
		25.1	25.0	mg/L	100	90.0 - 110		119556289			
		26.5	25.0	mg/L	106			119556302			
			40.0	Duplica		90.0 - 110		119556315			
Parameter	Sample		Result	1.1.1.1			20				
Total Alkalinity (as CaCO3)	1754418			Unknown			Unit		RPD		Limit%
(as cac())	1754418		43.0	43.0			mg/L		0		20.0
	1754420		44.0	45.4			mg/L		3.13		20.0
				ICV							
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Total Alkalinity (as CaCO3)		26.5	25.0	mg/L	106	90.0 - 110		119556288			
				Mat. Spil	ke						
Parameter	Sample	Spike	Unknow	n Known	Tration	P					
Total Alkalinity (as CaCO3)	1754418	65.8	43.0	25.0	Units	Recovery %	Limits %	File			
	1754420	69.5	45.4	25.0	mg/L mg/L	91.2 96.4	70.0 - 130 70.0 - 130	119556293			
Analytical Set 8210	190			CALCULATION OF THE OWNER		540	10.0 - 150	119556305	_	-	-
- mary near Set 8210	100		47	WDI /MD						SM 213	0 B-2001
D			A	WRL/MR	u C						
Parameter Turbidite		Reading	Known	Units	Recover%	Limits%		File			
Turbidity		0.28	0.30	NTU	93.3	70.0 - 130		119562290			

Guif Coast Region: 4141 Directors Row Ste C Houston TX 77092



LDSClient v1.14.6.1734

Form rptPROJQCGrpt Created 01/27/2005 v1.0

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Â	Ana-Lab Co	rp. P.	O. Boy	x 9000	Kilgore	, TX 7	Batch # 8044 5663		Page 23 of 25	
CORP. THE COMPLETE SERVICE LAB	Phone 903/984-0551	Employee	Owned	Integrity	y Cari	ng Co	LEL; ontinual Improv 08/2019		ted #02008 Page 13 of 13	1
<u>Parameter</u> Turbidity	<b>PrepSet Readin</b> 821080 ND	<b>ng MDL</b> 0.30	Bland MQL 0.30 Duplica	<i>Units</i> NTU			<i>File</i> 119562288			
<u>Parameter</u> Turbidity	Sample 1754878	<i>Result</i> ND	Unknown ND Mat. Spi	n		<i>Unit</i> NTU		RPD	<i>Limit%</i> 20.0	
<u>Parameter</u> Turbidity	Sample Spike 1754878 40.9	Unknow ND	vn Known 40.0 Standar	<i>Units</i> NTU	Recovery % 102	<i>Limits %</i> 70.0 - 130	File 119562294			
<u>Parameter</u> Turbidity	Sample         Readin,           \$21080         9.50           \$21080         98.7           \$21080         9.50           \$21080         9.50           \$21080         9.70	g Known 10.0 100 10.0 10.0	<i>Units</i> NTU NTU NTU NTU	<b>Recover%</b> 95.0 98.7 95.0 97.0	<i>Limits%</i> 90.0 - 110 90.0 - 110 90.0 - 110 90.0 - 110		File 119562289 119562291 119562296 119562299			

\* Out RPD is Relative Percent Difference: abs(r1-r2) / mean(r1,r2) \* 100%

Recover% is Recovery Percent: result / known \* 100%

Blank - Method Blank; CCV - Continuing Calibration Verification; ICV - Initial Calibration Verification; LCS - Laboratory Control Sample; CCB - Continuing Calibration Blank; AWRL/MRL C - Ambient Water Reporting Limit/Minimum Reporting Limit Check Std; BFB - GC/MS Tuning Compound

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662



Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

LDSClient v1.14.6.1734

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Customer / Report Information Billing Infor		Billing Information	mation	D Check box i	Check box if Billing is the same as Report Information	ie as Report Inf		THERM ID#	TEMP Corr:	nr: 6.0	
	J.C	Address:	1				11		FAX:	11	
Attention: Skohen Robinson	UC	Attention:			# Od		EMAIL:				
Address:		Project: AS	15R-T	1421	-, List A			Requeste	Requested Analysis	Completed	Completed By laboratory
Sample Information			Matrix	Container	ıer		*	loi f	20	Custody :	<b>Custody Seals Present</b>
Collected By:			DW - Drinking H20				405	5/0	L/1 mon	Yes 🗆	No 🛛
Client / Field Sample ID	Collected		d B SL - Sludge		Size	Preservative	19.11	31 210 2101	18 24 24	Intact	
	Date	Time	L-Liquid w - Water				CI-ID	HNI HNI HNI HNI	H1 100	LAB Sam	LAB Sample Number
Well 19	1130114	1500	M	0197	AC R H2504 SSO R H2504 H3P04 CD H3P04 CD H2P04 CD H2P04	HNO3 NaOH HCL Na2SO3	XX	XXX	XXX	S190301553	1553
Well 21	1/30/19	1012	Z	<u>e</u> ]@>	21 D H2504	D HNO3 NaOH HCL Na2SO3	XX	XXX	XXX	S190301554	1554
					1 H2504 H3P04 CE	D HNO3 D NaOH HCL Na2SO3					
					1 H2S04 1 H3P04 1 ICE	HNO3 NaOH HCL Na2SO3					
					0 H2504 H3P04 H2F04 H2F04	HN03     HN03     NaOH     HCL     Na2S03					
					0 H2S04	LL HN03 NaOH HCL Na2503					
					1 H2504 H3P04 CE	HN03 NaOH HCL Na2S03					
Required Turnaround: 🗆 Routine (6-10 Business days)	0 Business days)	Expedite / Rush:		□1 Business Day □2	D2 Business Days	<sup>1</sup> 3 Business di	ays 🗆 5 Busin	□ 3 Business days □ 5 Business days □ Other		REMARKS:	
Surcharge will apply to RUSH TAT	T Authorized BY:	I BY:			Container 1	ype: P=Plas	tic, G=Glass	Container Type: P=Plastic, G=Glass, V=Voa, O=Other	ther Carrier ID :	:0	
Relinquished By: Relinquished By:	Date:	1 30/19	t <b>9</b> Time: Time:	1540	Received By: Received By:	PH	man	Date: Date:	1-30-1	19 Time: Time:	1546
Relinquished By	Date:		Time		Received By:	.iA		Date:		Time:	

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Final Report Page 1 of 26

BatchNo: 80885

## SAMPLE REPORT

Batch # 80885



T104704328-18-15

#### Business

Victoria, City of - Stephen Robinson P O Box 1758 Victoria Tx 77902 Att: Stephen Robinson



#### Laboratory

B Environmental, LLC. 1606 E Brazos, Suite D Victoria TX 77901 ph. 361-572-8224

#### **Reference Information**

Project: ASR Table 1, List A

Printed: Tuesday, February 19, 2019

Re: Victoria, City of - Stephen Robinson

Dear: Stephen Robinson

Attached are the results for sample(s) received on 2/11/2019

The analytical results relate only to the samples tested. All supporting quality data meets the requirements of NELAC unless noted in the case narrative section of the report.

This report contains 26 pages (including the cover page)

If you have any questions concerning this report, please do not hesitate to call (361) 572-8224 or Fax us at (361) 572-4115

Respectfully Submitted, How Vandur p. p.

Kevin Baros Laboratory Director



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Victoria TX 77901

ictoria TX 7	7901						
Batch No: 80	0885 Sa	mple Rec	eipt (	Chec	kli	st	
			Date Re	eceived		2/11/	2019
Project	ASR Table 1, List A		Receive	ed By:	Va	ahrenka	amp
ogin completed by:	Vahrenkamp	2/11/2019	Ī				
	Signature	LoginDate:	1				
		Carrier Name	W	alk In		1	
Shipping container	/cooler in good of	condition?		VES		NO	Not Present
Custody seals inta	ct on shipping co	ontainer/cooler?		YES		NO	Not Present
Custody seals inta	ct on sample bo	ttles?		YES		NO	Not Present
Chain of Custody	present?			YES		NO	
Chain of Custody s	signed when relia	nquished and rece		YES		NO	
Chain of Custody a	agrees with sam	ple labels?		YES		NO	
Samples in proper	container/bottle	s?	6	VES		NO	
Sample containers	intact?		[	YES		NO	
Sufficient sample v	olume for indica	ited tests?	6	VES		NO	
All samples receiv	ed within holding	times?	6	YES		NO	
Container/Temp B	lank - temperatu	re in compliance?	1	YES		NO	>0 <6 °C On Ice
Water - VOA vials	have zero heads	space? Bubble < 6	imm? [	YES		NO	No VOA Vials submitted
Water - pH accept	able upon receip	ot?		VES		NO	Not Applicable
*TEMP 9.9/9.9	pH Adjust	ed? No	C	necked	By	L. Val	nrenkamp
Any No and/or N/A (not ap	oplicable) response r	must be detailed in the	comments	section b	elow.		
lient contacted			Perso	onConta	acted		
contacted by:			Date	Contac	ted:		
Regarding							
Comments		the second second		_	_		
Therm #4. The sampl	es were recieved the	e same day they were o	collected an	d were in	the pr	ocess	of cooling.
Corrective Action							



1606 E Brazos, Suite D

Victoria TX 77901

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	Phone 903/984-0551 FAX 903	1084-50	14	Anil corp	Cano Job o	0.000				
ana ad 7 1		iployee C		Integrity	Caring		al Improven	nent		
THE COMPLETE SERVICE LAB	Results				Pri	nted: 02/	18/2019		Page	l of
Report To	ASR-Table 1, Lis	st A				ount			roject	-
B-Environmental Kevin C. Baros 1606 E Brazos St., Suite D Victoria, TX 77901					BEI	VV-G		8	62362	
		F	lesult	8						
1758057 S190421401		_	_		_		_	Received:	02/12/2019	9
Drinking Water	Collected by: Client Taken: 02/11/2019 11:09:00		Environn	nental			PO.		191000	
Calculation	Prepared:		02/	14/2019	10:41:24	Calculated	,	02/14/2019	10:41:24	CA
Parameter N Ammonia	<i>Results</i> 0.855		Units mg/L	<i>RL</i> 0.0242		Flag		CAS	Bot	ttle
EPA 200.7 4.4	Prepared:	822885	02/	13/2019	11:00:00	Analyzed	822989	02/13/2019	14:47:00	JB
Parameter	Results		Units	RL		Flag	r	CAS	Bot	ttle
z. Silicon Recoverable	6.55		mg/L	0.100				7740-21-3	11	
EPA 200.7 4.4	Prepared:	822885	02/	13/2019	11:00:00	Analyzed	823039	02/13/2019	19:27:00	JB
Parameter	Results		Units	RL		Flag		CAS	Bot	tle
N Calcium N Magnesium, Total	43.5		mg/L mg/L	0.500				7440-70-2 7439-95-4	11	
EPA 200.7 4.4	Prepared:	822885		13/2019	11:00:00	Analyzed	823305	02/14/2019	11 17:55:00	ID
Parameter	Results	022000	Units		11.00.00					JB
N Sodium	61.7		mg/L	RL 2.50		Flag PD		CAS 7440-23-5	Bon 11	tle
EPA 200.7 4.4	Prepared:	822885	02/1	13/2019	11:00:00	Analyzed	823305	02/14/2019	18:05:00	JB
Parameter	Results	-	Units	RL	_	Flag	- C V.	CAS	Bott	_
N Potassium	5.05		mg/L	0.500		1 146		7440-09-7	11	ne
EPA 200.7 4.4	Prepared:	822885	02/1	13/2019	11:00:00	Analyzed	823744	02/18/2019	12:03:00	JB
Parameter	Results		Units	RL		Flag		CAS	Bott	tle
N Phosphorus	0.262		mg/L	0.100				7723-14-0	11	
EPA 200.7 4.4 - Calc	Prepared:		02/1	13/2019	17:02:28	Calculated	100	02/13/2019	17:02:28	CA
Parameter	Results		Units	RL		Flag	1	CAS	Bott	tle
N Silica (SiO2)	14.0		mg/L	0.214						
EPA 200.8 5.4	Prepared:	822885	02/1	3/2019	11:00:00	Analyzed	823384	02/15/2019	09:58:00	LP
Parameter	Results	1.1.1	Units	RL		Flag		CAS	Bott	tla



	Ana-Lab Corp. P	.O. B	ox 9	000	Kilgore	, TX 7	5663	Repo	ort Page 3	of 2
ANALAB CORP. THE COMPLETE SERVICE LAB	Phone 903/984-0551 FAX 903 En Results	/ <b>984-59</b> nployee O		Mail corp( Integrity	Caring	Continu	al Improve /18/2019	ment	Page	e 2 of
1758057 S190421401			_							
Drinking Water	Collected by: Client Taken: 02/11/2019 11:09:00		Inviron	mental			PC	Received:	02/12/201	9
EPA 300.0 2.1	Prepared:	823051	02	2/12/2019	17:55:00	Analyzed	823051	02/12/2019	17:55:00	Al
Parameter	Results		Units	RL		Flag	2	CAS	Be	ottle
N Chloride	62.8		mg/L	1.50		0.00			01	
N Fluoride	0.830		mg/L	0.500					01	
N Sulfate	22.9		mg/L	1.50					01	
EPA 300.1 1	Prepared:	823610	02	/15/2019	17:14:00	Analyzed	823610	02/15/2019	17:14:00	A
Parameter	Results		Units	RL		Flag		CAS	Ba	ottle
N Bromate	<5.00		ug/L	5.00					10	
EPA 350.1 2	Prepared:	822830	02	/13/2019	09:00:00	Analyzed	822954	02/13/2019	11:00:00	R
Parameter	Results		Units	RL		Flag		CAS		ttle
N Ammonia (as N)	0.707		mg/L	0.020		Tidg		CAO	10	
EPA 524.2 4.1	Prepared:	822893	02	/12/2019	20:07:00	Analyzed	822893	02/12/2019	20:07:00	K
Parameter	Results		Units	RL		Flag		CAS	Bo	ttle
N Bromodichloromethane	12.2		ug/L	1.00				75-27-4	07	
N Bromoform	4.09		ug/L	1.00				75-25-2	07	
N Chloroform	8.21		ug/L	1.00				67-66-3	07	
N Dibromochloromethane	13.5		ug/L	1.00				124-48-1	07	
EPA 524.2 4.1	Prepared:	822893	02/	/13/2019	17:02:28	Calculated	822893	02/13/2019	17:02:28	C
Parameter	Results	5	Units	RL		Flag		CAS	Bot	ttla
N Trihalomethanes	0.038		mg/L	0.001					07	
EPA 552.2 1	Prepared:	823109	02/	/14/2019	10:23:46	Analyzed	823715	02/18/2019	11:20:00	EA
Parameter	Results		Units	RL		Flag		CAS	Bot	itle
N Bromoacetic acid	<5.00		ug/L	5.00				79-08-3	14	
N Chloroacetic acid	<5.00		ug/L	5.00				79-11-8	14	
N Dibromoacetic acid	10.0		ug/L	5.00				631-64-1	14	
N Dichloroacetic acid	<5.00	14	ug/L	5.00				79-43-6	14	
N Trichloroacetic acid	<5.00	4	ug/L	5.00				76-03-9	14	
EPA 552.2 1	Prepared:	823109	02/	14/2019	10:23:46	Calculated	823715	02/18/2019	13:05:25	CA
Parameter	Results	1	Units	RL		Flag	_	CAS	Both	da
V HAA5	0.01		ng/L	0.005				0.00	14	ne
SM 2130 B-2001	Prepared:	822934	02/1	12/2019	10:58:00	Analyzed	822934	02/12/2019	10:58:00	EL
Parameter	Results		1.00			-				
	1(03/1/13	1	Inits	RL		Flag		CAS	Bott	11-

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CORP	e 903/984-0551 FAX 903/ En Results	9 <b>84-59</b> ployee O		Mail corp@ Integrity	Caring	Continua	l Improvem 18/2019	ent	Page 3	3 of !
a second s	Collected by: Client ken: 02/11/2019 11:09:00		Inviron	nental			PO:	Received:	02/12/2019	
SM 2320 B-2011	Prepared:	823223	02	/14/2019	08:26:00	Analyzed	823223	02/14/2019	08:26:00	EL
Parameter V Total Alkalinity (as CaCO3)	Results 197		Units mg/L	<i>RL</i> 1.00		Flag		CAS	Bott. 01	le
SM 2340 B-97	Prepared:		02	/14/2019	16:33:12	Calculated		02/14/2019	16:33:12	СА
Parameter V Total Hardness as CaCO3 -Ca/MgEq	Results 147		Units mg/L	<i>RL</i> 0.500		Flag	a	CAS	Both	le
SM 2540 C-97	Prepared:	823210	02	13/2019	08:15:00	Analyzed	823210	02/13/2019	08:15:00	TH
Parameter V Total Dissolved Solids	Results 336		Units mg/L	<i>RL</i> 20.0		Flag		CAS	Both 01	le
SM 2540 D-97	Prepared:	822952	02/	12/2019	13:30:00	Analyzed	822952	02/12/2019	13:30:00	AL
Parameter V Total Suspended Solids	Results 2.00		Units mg/L	<i>RL</i> 2.00		Flag		CAS	<i>Bottl</i> 01	le
SM 5310 C-2000	Prepared:	823363	02/	15/2019	00:30:00	Analyzed	823363	02/15/2019	00:30:00	AL
Parameter V Total Organic Carbon	Results 2.37		Units mg/L	<i>RL</i> 0.500		Flag		CAS	Bottl 04	le
	Collected by: Client ten: 02/11/2019 11:56:00	B-E	nvironn	nental			PO:	Received:	02/12/2019	
Calculation	Prepared:		02/	14/2019	10:41:25	Calculated		02/14/2019	10:41:25	C/
Parameter Ammonia	<i>Results</i> 0.0145		Units mg/L	<i>RL</i> 0.0242		Flag		CAS	Bottl	le
EPA 200.7 4.4	Prepared:	822885	02/	13/2019	11:00:00	Analyzed	823039	02/13/2019	19:37:00	JB
Parameter	Results	114	Units	RL		Flag		CAS	Bottle	le
/ Calcium / Magnesium, Total	31.0		mg/L	0.500				7440-70-2	11	
EPA 200.7 4.4	8.78 Prepared:		mg/L 02/.	0.020 13/2019	11:00:00	Analyzed	823305	7439-95-4 02/14/2019	11 17:48:00	JB
Parameter	Results		Units	RL	*******	Flag	000000	CAS	17:48:00 Bottle	_



	Ana-Lab Corp. P	.O. B	ox 9	000 1	Kilgore,	TX 75	663	Repor	T Page 5	OT 20
ANALAB CORP. THE COMPLETE SERVICE LAB	Phone 903/984-0551 FAX 903	/ <b>984-59</b> 1 ployee O		Mail corp@ Integrity		Continua	al Improven 18/2019	lent	Page	4 of
1758058 \$190421402 Drinking Water	Collected by: Client	B-E	nviron	nental			PO	Received:	02/12/2019	9
	Taken: 02/11/2019 11:56:00									
EPA 200.7 4.4	Prepared:	822885	02	/13/2019	11:00:00	Analyzed	823305	02/14/2019	17:51:00	JE
Parameter	Results		Units	RL		Flag		CAS	Во	ttle
N Potassium	3.00		mg/L	0.500				7440-09-7	11	
EPA 200.7 4.4	Prepared:	822885	02	13/2019	11:00:00	Analyzed	823744	02/18/2019	12:25:00	JE
Parameter	Results		Units	RL		Flag		CAS	Во	ttle
N Phosphorus	<0.194		mg/L	0.194				7723-14-0	11	
z Silicon Recoverable	10.3		mg/L	0.500				7740-21-3	11	
EPA 200.7 4.4 - Calc	Prepared:		02	/18/2019	17:29:53	Calculated		02/18/2019	17:29:53	С
Parameter	Results		Units	RL		Flag		CAS	Bo	ttle
N Silica (SiO2)	22.0		mg/L	1.07						
EPA 200.8 5.4	Prepared:	822885	02	/13/2019	11:00:00	Analyzed	823634	02/15/2019	19:48:00	C
Parameter	Results		Units	RL		Flag		CAS	Bo	ttle
N Aluminum, Total	0.00681	- 1	mg/L	0.005		В		7429-90-5	11	
EPA 300.0 2.1	Prepared:	823051	02	/12/2019	18:21:00	Analyzed	823051	02/12/2019	18:21:00	A
Parameter	Results		Units	RL		Flag	2	CAS	Bo	ttle
N Chloride	61.7		mg/L	1.50					01	
N Fluoride	0.485		mg/L	0.500		1			01	
N Sulfate	3.83		mg/L	1.50					01	
EPA 300.1 1	Prepared:	823610	02	15/2019	17:01:00	Analyzed	823610	02/15/2019	17:01:00	Al
Parameter	Results		Units	RL		Flag	e la	CAS	Boi	ule
N Bromate	<5.00	1	ug/L	5.00	1.000				01	
EPA 350.1 2	Prepared:	822830	02	13/2019	09:00:00	Analyzed	822954	02/13/2019	11:00:00	R
Parameter	Results		Units	RL		Flag	-	CAS	Boi	ule
N Ammonia (as N)	0.012	1.9	mg/L	0.020		1	1		10	
EPA 524.2 4.1	Prepared:	823133	02/	13/2019	17:32:00	Analyzed	823133	02/13/2019	17:32:00	KI
Parameter	Results		Units	RL		Flag		CAS	Bol	tle
N Bromodichloromethane	<1.00		ug/L	1.00				75-27-4	07	
N Bromoform	<1.00		ug/L	1.00				75-25-2	07	
N Chloroform	<1.00	1	ug/L	1.00				67-66-3	07	
N Dibromochloromethane	<1.00		ug/L	1.00				124-48-1	07	

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Batch # 80885

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ANALAB CORP. HE COMPLETE SERVICE LAB	Phone 903/984-0551 FAX 903. En Results	<b>/984-591</b> nployee Ow		Mail corp@ Integrity	Caring	Continua	al Improven 18/2019	nent	Page	5 of 9
<b>1758058</b> S190421402 Drinking Water	Collected by: Client Taken: 02/11/2019 11:56:00		nviron	mental			РО	Received:	02/12/2019	9
EPA 524.2 4.1	Prepared:	823133	02	2/14/2019	16:42:25	Calculated	823133	02/14/2019	16:42:25	CA
Parameter N Trihalomethanes	Results <0.001		Units mg/L	<i>RL</i> 0.001		Flag		CAS	<i>Bo</i> 07	ottle
EPA 552.2 1	Prepared:	823109	02	/14/2019	10:23:46	Analyzed	823715	02/18/2019	11:51:00	EA
Parameter N Bromoacetic acid	Results		Units	RL		Flag		CAS		ttle
N Chloroacetic acid	<5.00		ug/L	5.00				79-08-3	12	
	<5.00		ug/L	5.00				79-11-8	12	
V Dibromoacetic acid	<5.00		ug/L	5.00				631-64-1	12	
V Dichloroacetic acid	<5.00	1	ug/L	5.00				79-43-6	12	
N Trichloroacetic acid	<5.00		ug/L	5.00				76-03-9	12	
EPA 552.2 1	Prepared:	823109	02	/14/2019	10:23:46	Calculated	823715	02/18/2019	13:05:26	С
Parameter	Results		Units	RL		Flag	1	CAS	Boi	ttle
N HAA5	<0.005	3	mg/L	0.005					12	
SM 2130 B-2001	Prepared:	822934	02	/12/2019	10:58:00	Analyzed	822934	02/12/2019	10:58:00	E
Parameter	Results	1	Units	RL		Flag		CAS	Bol	nle
N Turbidity –	1.92	1	NTU	0.30					01	
SM 2320 B-2011	Prepared:	823223	02	/14/2019	08:26:00	Analyzed	823223	02/14/2019	08:26:00	E
Parameter	Results	1	Units	RL	-	Flag		CAS	Bot	nle
V Total Alkalinity (as CaCO3)	292		ng/L	1.00					01	
SM 2340 B-97	Prepared:		02	/14/2019	16:33:12	Calculated		02/14/2019	16:33:12	C.
Parameter	Results	l	Units	RL		Flag	1000	CAS	Bot	ille
V Total Hardness as CaCO3 -Ca/Mg	Eq 114	r	ng/L	0.500						
SM 2540 C-97	Prepared:	823210	02	/13/2019	08:15:00	Analyzed	823210	02/13/2019	08:15:00	T
Parameter	Results	t	Units	RL		Flag		CAS	Bot	ttle
V Total Dissolved Solids	510	п	ng/L	50.0					01	
SM 2540 D-97	Prepared:	822952	02	/12/2019	13:30:00	Analyzed	822952	02/12/2019	13:30:00	Al
Parameter	Results	7	Inits	RL		Flag		CAS	Bot	ttla
V Total Suspended Solids	3.00		ng/L	2.00		1108		CAD	01	ne
SM 5310 C-2000	Prepared:	823363	02	15/2019	00:47:00	Analyzed	823363	02/15/2019	00:47:00	A
	rrepured.	022202	0.41	15:2017	00.47.00	maryzeu	023303	02/13/2019	00.47.00	



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Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

ANALAD CORP. HE COMPLETE SERVICE LAB	Phone 903/984-0551 FAX 903, En Results	/984-5914 aployee Own			Continua	al Improven 18/2019	lent	Page 6	5 of §
<b>1758058 S190421402</b> Drinking Water	Collected by: Client Taken: 02/11/2019 11:56:00		vironmental			PO	Received:	02/12/2019	
SM 5310 C-2000	Prepared:	823363	02/15/2019	00:47:00	Analyzed	823363	02/15/2019	00:47:00	AL
Parameter	Results		inits RL		Flag		CAS	Bott	le
N Total Organic Carbon	0.368		ng/L 0.500		J			04	
	52	imple P	reparation						
1758057 S190421401							Received:	02/12/2019	
	Prepared:	822603	02/12/2019	00:00:00	Analyzed	822603	02/12/2019	00:00:00	A
z Bottle pH	<2	SI	U					02	
z Bottle pH	<2	SI						04	
z Bottle pH Cooler Temperature	<2 1.0		egrees					06 01	
Cooler Temperature	1.0		egrees					02	
Cooler Temperature	1.0	C de C	egrees					03	
Cooler Temperature	1.0		egrees					04	
Cooler Temperature	1.0		egrees					05	
Cooler Temperature	1.0		egrees					06	
Cooler Temperature	1.0		egrees					07	
Cooler Temperature	1.0		egrees					08	
Cooler Temperature	1.0		egrees					09	
EPA 200.2 2.8	Prepared:	822885	02/13/2019	11:00:00	Analyzed	822885	02/13/2019	11:00:00	TE
N Liquid Metals Digestion	50/50	m	I					02	
EPA 350.2, Rev. 2.0	Prepared:	822830	02/13/2019	09:00:00	Analyzed	822830	02/13/2019	09:00:00	JA.

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inal Report Page 9 of 26	Ana-Lab Corp. P	.O. Bo	x 9000	Kilgore,		Batch # 8 6663		ort Page 8 o	of 26
HE COMPLETE SERVICE LAB	hone 903/984-0551 FAX 903. En Results	/ <b>984-591</b> 4 aployce Ow			Continu	al Improven 18/2019	nent	Page	7 of 9
1758057 S190421401							Received:	02/12/2019	
EPA 524.2 4.1	Prepared:	822893	02/12/2019	20:07:00	Analyzed	822893	02/12/2019	20:07:00	KL
N Trihalomethane Expansion Code	Entered							07	
EPA 552.2 1	Prepared:	823109	02/14/2019	10:23:46	Analyzed	823109	02/14/2019	10:23:46	LSI
N Haloacetic Acids Extraction EPA 552.2 1	3/40 Prepared:	n 823109	ul 02/14/2019	10:23:46	Analyzed	823715	02/18/2019	05 11:20:00	EM
N Haloacetic Acids (HAA5)	Entered							14	
SM 2540 C-97	Prepared:	822451	02/13/2019	08:15:00	Analyzed	822451	02/13/2019	08:15:00	TH
N Total Dissolved Solids Started	Started						22		
SM 2540 D-1997	Prepared:	822553	02/12/2019	13:30:00	Analyzed	822553	02/12/2019	13;30:00	ALV
N TSS Set Started	Started								
1758058 S190421402							Received:	02/12/2019	

		Prepared:	822603 02/12/2019	00:00:00	Analyzed	822603	02/12/2019	00:00:00	AAJ
z	Bottle pH	<2	SU					02	
z	Bottle pH	<2	SU					04	
z	Bottle pH	<2	SU					06	
	Cooler Temperature	1.0	degrees C					01	
	Cooler Temperature	1.0	degrees C					02	
	Cooler Temperature	1.0	degrees C					03	
	Cooler Temperature	1.0	degrees C					04	
	Cooler Temperature	1.0	degrees C					05	

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13	Ana-Lab Corp. P	.O. B	ox 9000	Kilgore,	TX 75	Batch # 5663	Repo	ort Page 9	of 2
ANALAD CORP. HE COMPLETE SERVICE LAB	Phone 903/984-0551 FAX 903 En Results	/984-591 aployee O		Caring	Continu	al Improver /18/2019	nent	Page	8 of
1758058 S190421402							Received:	02/12/2019	)
	Prepared:	822603	02/12/2019	00:00:00	Analyzed	822603	02/12/2019	00:00:00	A
Cooler Temperature	1.0		degrees					06	
Cooler Temperature	1.0		C degrees					07	
Cooler Temperature	1.0		C degrees					08	
Cooler Temperature	1.0		C degrees C					09	
EPA 200.2 2.8	Prepared:	822885	02/13/2019	11:00:00	Analyzed	822885	02/13/2019	11:00:00	T
N Liquid Metals Digestion	50/50		ml					02	
EPA 350.2, Rev. 2.0	Prepared:	822830	02/13/2019	09:00:00	Analyzed	822830	02/13/2019	09:00:00	J
N Ammonia Distillation	50/50		ml					06	
EPA 524.2 4.1	Prepared:	823133	02/13/2019	17:32:00	Analyzed	823133	02/13/2019	17:32:00	ĸ
V Trihalomethane Expansion Code	Entered							07	
EPA 552.2 1	Prepared:	823109	02/14/2019	10:23:46	Analyzed	823109	02/14/2019	10:23:46	L
V Haloacetic Acids Extraction	3/40		ml					03	
EPA 552.2 1	Prepared:	823109	02/14/2019	10:23:46	Analyzed	823715	02/18/2019	11:51:00	E
N Haloacetic Acids (HAA5)	Entered							12	
SM 2540 C-97	Prepared:	822451	02/13/2019	08:15:00	Analyzed	822451	02/13/2019	08:15:00	TI
V Total Dissolved Solids Started	Started								
SM 2540 D-1997	Prepared:	822553	02/12/2019	13:30:00	Analyzed	822553	02/12/2019	13:30:00	AL
V TSS Set Started	Started								

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- J Analyte detected below quantitation limit
- D Duplicate RPD was higher than expected
- B Analyte detected in the associated method blank
- P Spike recovery outside control limits due to matrix effects.

We report results on an As Received or wet basis unless marked Dry Weight. Unless otherwise noted, testing was performed at Ana-labs corporate laboratory that holds the following Federal and State certificates: EPA Lab Number TX00063, US Department of Agriculture Soil Import Permit P330-17-00117, Texas Commission on Environmental Quality Commercial Drinking Water Lab Approval (Lab ID: TX219), Texas Commission on Environmental Quality NELAP T104704201-19-15, Louisiana Department of Environmental Quality Laboratory Certification (NELAP, LELAP) #02008, Louisiana Department of Health and Hospitals Drinking Water (NELAP) Certificate No LA026, Oklahoma Department of Environmental Quality TNI Laboratory Accreditation Program Certificate No. 2018-126, Arkansas Department of Environmental Quality Certification #18-068-0. The Accredited column designates accreditation by N -- NELAC, or z -- not covered under NELAC scope of accreditation.

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp. Unless otherwise specified, these test results meet the requirements of NELAC.

RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

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Trey Peery, MA, Project Manager



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A-LAD,	PI	2hone 903/984		AX 903/98 ployee O		e-Mail corp Integrity			LELA ntinual Improve	P-accred ement	lited #02	:008
OKP."	AB	Qı	uality	y Cc	ontro	1	Priz	inted 02/18	8/2019		Pag	ge 1 of 14
Report To								Account BENV-C	G	Proj	ject 2362	
B-Environmental Kevin C. Baros 1606 E Brazos St., Victoria, TX 7790								Lory -	<u></u> _		4002	]
Analytic		822954									F	EPA 350.1
					Blank	4						
<u>Parameter</u> Ammonia (	i and a state of the	<i>PrepSet</i> 822830	<i>Reading</i> ND	MDL 0.00356	MQL 0.020 CCV	Units mg/L			<i>File</i> 119600884			
<u>Parameter</u> Ammonia (	1 A 40		<i>Reading</i> 2.03 1.86 1.97 1.97 2.01	<i>Known</i> 2.00 2.00 2.00 2.00 2.00	Units mg/L mg/L mg/L mg/L mg/L	Recover% 102 93.0 98.5 98.5 100	<i>Limits%</i> 90.0 - 110 90.0 - 110 90.0 - 110 90.0 - 110		File 119600883 119600893 119600902 119600908			
			2.01	2.00	mg/L Duplicat		90.0 - 110		119600912			
Parameter		Sample		Result	Unknown			Unit		RPD		Limit%
Ammonia (	as Nj	1758015 1758174		0.180 0.118	0.183 0.103 ICV			mg/L mg/L		1.65 13.6		20.0 20.0
<u>Parameter</u> Ammonia (			<i>Reading</i> 2.05	<i>Known</i> 2.00	Units mg/L LCS Duj	Recover% 102	<i>Limits%</i> 90.0 - 110		File 119600882			
Parameter		PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Ammonia (	as N)	822830	2.02	2.03	Mat. Spik	2,00 ke	90.0 - 110	101	102	mg/L	0.494	20.0
<u>Parameter</u> Ammonia (		<i>Sample</i> 1758015 1758174	<i>Spike</i> 2.38 2.21	Unknown 0.183 0.103	n Known 2.00 2.00	<i>Units</i> mg/L mg/L	<b>Recovery %</b> 110 105	<i>Limits %</i> 80.0 - 120 80.0 - 120	File 119600892 119600889			
Analytica	al Set 8	322952									SM	[ 2540 D-9
				ſ	ControlB	lk						
Parameter Total Suspe	ended Solids	<i>PrepSet</i> 822952	<i>Reading</i> 0.0002	MDL	MQL Duplicate	Units grams te			File 119600847			
Parameter		Sample		Result	Unknown			Unit		RPD		1 inite0/
	ended Solids	1757976		144	142			mg/L		1.40		Limit% 20.0
		1757979		68.0	65.0			mg/L		4.51		20.0
		1757980		26.5	27.0 LCS			mg/L		1.87		20.0
Parameter Total Suspe	ended Solids	<b>PrepSet</b> 822952	Reading 47.0		Known 50.0 Standard	Units mg/L	<i>Recover%</i> 94.0	<i>Limits</i> 90.0 - 110	File 119600881			
Parameter		Sample	Reading	Known	Units	Recover%	Limits%		File			

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## Quality Control

				Standa	rd						
 Parameter Total Suspended Solids	Sample	<i>Reading</i> 108	Known 100	Units mg/L	<i>Recover%</i> 108	<i>Limits%</i> 90.0 - 110		File 119600880			
Analytical Set	823210									SN	1 2540 C-9
				Controll	Blk						
<u>Parameter</u> Total Dissolved Solids	PrepSet 823210	<i>Reading</i> -0.0001	MDL	MQL	Units grams			<i>File</i> 119606654			
			*	Duplica	ite						
<u>Parameter</u> Total Dissolved Solids	<i>Sample</i> 1757618		<i>Result</i> 1430	Unknown 1440 LCS	r		<i>Unit</i> mg/L		<b>RPD</b> 0.697		<i>Limit%</i> 20.0
<u>Parameter</u> Total Dissolved Solids	<b>PrepSet</b> 823210	<i>Reading</i> 188		Known 200 Standar	Units mg/L	<b>Recover%</b> 94.0	<i>Limits</i> 85.0 - 115	<i>File</i> 119606668			
Parameter	Sample	Reading	Known	Units	Recover%	Limits%		El.			
Total Dissolved Solids	Sumple	100	100	mg/L	100	90.0 - 110		File 119606655			
Analytical Set	823051									EP	A 300.0 2.1
			A	WRL/MI	RL C					Li	11 500.0 2.1
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Fluoride		0.126	0.100	mg/L	126	50.0 - 150		119602911			
				Blank							
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Chloride	823051	0.051	0.0196	0.300	mg/L			119602912			
Fluoride	823051	ND	0.014	0.100	mg/L			119602912			
Sulfate	823051	0.026	0.0109	0.300 CCV	mg/L			119602912			
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Chloride		10.7	10.0	mg/L	107	90.0 - 110		119602908			
		10.3	10.0	mg/L	103	90.0 - 110		119602923			
		10.4	10.0	mg/L	104	90.0 - 110		119602934			
Fluoride		9.91	10.0	mg/L	99.1	90.0 - 110		119602908			
		10.1	10.0	mg/L	101	90.0 - 110		119602923			
5 m		9.96	10.0	mg/L	99.6	90.0 - 110		119602934			
Sulfate		10.8	10.0	mg/L	108	90.0 - 110		119602908			
		10.4	10.0	mg/L	104	90.0 - 110		119602923			
		10.4	10.0	mg/L	104	90.0 - 110		119602934			
				LCS Du	р						
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Chloride	823051	4.93	4.94		5.00	85.0 - 110	98.6	98.8	mg/L	0.203	20.0
Fluoride	823051	4.77	4.86		5.00	88.0 - 110	95.4	97.2	mg/L	1.87	20.0
Sulfate	823051	5.30	5.31	MSD	5.00	88.0 - 110	106	106	mg/L	0.189	20.0
Deserved			322.0								
Parameter Chlorida	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Chloride Fluoride	1758161 1758161	41.7 9.27	41.6 9.31	32.2 0.810	10.0 10.0	80.0 - 120 80.0 - 120	95.0 84.6	94.0 85.0	mg/L mg/L	1.06 0.472	20.0 20.0

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Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

NA-	AB )	Phone 903/98-		X 903/9 ployee C		e-Mail corr Integrity			LELA Continual Improve	P-accred	lited #02	008
CORP.		Q	uality	y Co	ontro	1	Pr	inted	02/18/2019		Pag	ge 3 of 14
					MSD							
	Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
	Sulfate	1758161	493	493	491	10.0	80.0 - 120	20.0 *	20.0 *	mg/L	0	20.0
	Chloride	1758217	15.5	15.6	7.03	10.0	80.0 - 120	84.7	85.7	mg/L	1.17	20.0
	Fluoride Sulfate	1758217	8.92	8.95	ND	10.0	80.0 - 120	89.2	89.5	mg/L	0.336	20.0
		1758217	15,3	15.4	7.22	10.0	80.0 - 120	80.8	81.8	mg/L	1.23	20.0
	Analytical Set	823610		А	WRL/MR	RLC					E	PA 300.1
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Bromate		5.73	5.00	ug/L	115	75.0 - 125		119616279			
					Blank		2010 See					
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
	Bromate	823610	ND	2.06	5.00	ug/L			119616278			
		823610	ND	2.06	5.00	ug/L			119616282			
					CCV							
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Bromate		520	500	ug/L	104	85.0 - 115		119616275			
			520	500	ug/L	104	85.0 - 115		119616296			
			524	500	ug/L	105	85.0 - 115		119616306			
					LCS Du	р						
	Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
	Bromate	823610	92.9	88.5	2.25627	100	85.0 - 115	92.9	88.5	ug/L	4.85	25.0
					MSD							-
	Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
	Bromate	1757563	187	168	ND	200	80.0 - 120	93.5	84.0	ug/L	10.7	20.0
_	Since and during	1758067	155	138	ND	200	80.0 - 120	77.5 *	69.0 *	ug/L	11.6	20.0
	Analytical Set	822989			Blank						EPA	A 200.7 4
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
	Silicon Recoverable	822885	0.106	0.0148	0.100	mg/L			119601420			
					CCV	and a second			10001120			
	Parameter		Reading	Known		Dama Of	Thester					
	Silicon Recoverable		4.53	5.00	Units mg/L	Recover% 90.6	Limits% 90.0 - 110		File 119601419			
	and a second second		4.94	5.00	mg/L	98.8	90.0 - 110		119601419			
					ICL		2010 110		115001420			
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Silicon Recoverable		9.80	10.0	mg/L	98.0	95.0 - 105		119601417			
					ICV							
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Silicon Recoverable		5.00	5.00	mg/L	100	90.0 - 110		119601418			
					LCS Dup	p						
	Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
	Silicon Recoverable	822885	3.81	3.77		4.00	85.0 - 115	95.2	94.2	mg/L	1.06	25.0



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Parameter Silicon Recoverable	Sample 1758057	MS 10.9	<i>MSD</i> 10,2	UNK 6.55	<i>Known</i> 4.00	<i>Limits</i> 75.0 - 125	MS% 109	<i>MSD%</i> 91.2	Units mg/L	<b>RPD</b> 17.5	<i>Limit%</i> 25.0
Analytical Set	823039			DI						EF	A 200.7 4
A				Blan	к						
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Calcium	822885	ND	0.0419	0,500	mg/L			119602251			
Magnesium, Total	822885	ND	0.0102	0.020	mg/L			119602251			
				CCV	,						
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Calcium		27.4	25.0	mg/L	110	90.0 - 110		119602221			
		26.1	25.0	mg/L	104	90.0 - 110		119602228			
		26.9	25.0	mg/L	108	90.0 - 110		119602229			
		24.8	25.0	mg/L	99.2	90.0 - 110		119602239			
		25.2	25.0	mg/L	101	90,0 - 110		119602248			
		25.1	25.0	mg/L	100	90.0 - 110		119602259			
		25.3	25,0	mg/L	101	90.0 - 110		119602270			
		26.4	25.0	mg/L	106	90.0 - 110		119602280			
		27.1	25.0	mg/L	108	90.0 - 110		119602291			
		26.0	25.0	mg/L	104	90.0 - 110		119602298			
		25.8	25.0	mg/L	103	90.0 - 110		119602302			
		26.2	25.0	mg/L	105	90.0 - 110		119602308			
		25.0	25.0	mg/L	100	90.0 - 110		119602319			
		24.6	25.0	mg/L	98.4	90.0 - 110		119602326			
Magnesium, Total		23.8	25.0	mg/L	95.2	90.0 - 110		119602248			
		23.4	25.0	mg/L	93.6	90.0 - 110		119602259			
		24.0	25.0	mg/L	96.0	90.0 - 110		119602239			
		24.9	25.0	mg/L	99.6	90.0 - 110		119602280			
				ICL				119002200			
Parameter		Reading	Known	Units	Recover%	Limits%		Ell.			
Calcium		50.7	50.0	mg/L	101	95.0 - 105		File 119602218			
Magnesium, Total		49.7	50.0	mg/L	99.4						
		12.7	50.0	ICV	22.4	95.0 - 105		119602218			
Parameter		Desident									
Calcium		Reading	Known	Units	Recover%	Limits%		File			
Magnesium, Total		25.4	25.0	mg/L	102	90.0 - 110		119602219			
wagnesium, 10tar		24.6	25.0	mg/L	98.4	90.0 - 110		119602219			
				LCS Di	ıp						
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Calcium	822885	4.38	4.31		5.00	85.0 - 115	87.6	86.2	mg/L	1.61	25.0
Magnesium, Total	822885	4.66	4.63		5.00	85.0 - 115	93.2	92.6	mg/L	0.646	25.0
				MSD							
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Calcium	1758057	49.0	48.6	43.5	5.00	75.0 - 125	110	102	mg/L	7.55	25.0
Magnesium, Total	1758057	14.4	14.1	9,36	5.00	75.0 - 125	101	94.8	mg/L	6.13	25,0
Calcium	1758260	-0.191	117	110	5.00	75.0 - 125	-2200	140 *	mg/L	0.15	25.0
Magnesium, Total	1758260	-0.0639	22.6	17.1	5.00	75.0 - 125	-343	110	mg/L		25.0

Analytical Set 823305

EPA 200.7 4.4

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A AB	Phone 903/98								P-accred	dited #03	2008
			iployee (		Integrity		-	Continual Improv	ement		
PLETE SERVICE LAB	e Q	uality	y Co	ontro	bl	Pr	inted 0	2/18/2019		Pa	ge 5 of 14
			А	WRL/M	RL C						
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Calcium		0.706	0.500	mg/L	141	25.0 - 175		119608061			
Magnesium, T	otal	0.532	0.500	mg/L	106	25.0 - 175		119608061			
Potassium		0.655	0.500	mg/L	131	25.0 - 175		119608061			
Sodium		0.854	0.500	mg/L	171	25.0 - 175		119608061			
				Blank	•						
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Calcium	822885	0.212	0.0419	0.500	mg/L			119608063			
Magnesium, T		0.0429	0.0102	0.020	mg/L			119608063			
Potassium	822885	0.186	0.0765	0.500	mg/L			119608063			
Sodium	822885	0.448	0.0315	0.500	mg/L			119608063			
				CCV							
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Potassium		24.3	25.0	mg/L	97.2	90.0 - 110		119608062			
		24.9	25.0	mg/L	99.6	90.0 - 110		119608073			
		26.5	25.0	mg/L	106	90.0 - 110		119608084			
Sodium		24.8	25.0	mg/L	99.2	90.0 - 110		119608062			
		25.1	25.0	mg/L	100	90.0 - 110		119608073			
		26.6	25.0	mg/L	106	90.0 - 110		119608084			
				Dir. SPI	KD						
Parameter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK%	DSPKD%	Units	RPD	Limit%
Sodium	1758057	88.5	83.4	61.7	25.0	75.0 - 125	107	86.8	mg/L	5.93	25.0
				Direct SI	PK						
Parameter	Sample	DSPK		UNK	Known	Limits%	DSPK%		Units		
Sodium	1758057	88.5		61.7	25.0	75.0 - 125	107		mg/L		25.0
				ICL							
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Potassium		51.9	50.0	mg/L	104	95.0 - 105		119608059			
Sodium		52.3	50.0	mg/L	105	95.0 - 105		119608059			
				ICV							
arameter		Reading	Known	Units	Recover%	Limits%		File			
otassium		26.2	25.0	mg/L	105	90.0 - 110		119608060			
odium		26.2	25.0	mg/L	105	90.0 - 110		119608060			
				LCS Du	р						
trameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
alcium	822885	4.90	4.81		5.00	85.0 - 115	98.0	96.2	mg/L	1.85	25.0
agnesium, To	al 822885	4.82	4.76		5.00	85.0 - 115	96.4	95.2	mg/L	1.25	25.0
otassium	822885	4.95	4.94		5.00	85.0 - 115	99.0	98.8	mg/L	0.202	25.0
odium	822885	4.51	4.43		5.00	85.0 - 115	90.2	88.6	mg/L	1.79	25.0
				MSD		010.00			ang o	1.72	25.0
arameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Tale	000	7.1
alcium	1758057	48.6	49.8	45.3	5.00	75.0 - 125	66.0 *	90.0	Units	RPD 30.8 *	Limit%
lagnesium, To		15.0	15.6	10.5	5.00	75.0 - 125	90.0	102	mg/L	30.8 *	25.0
otassium	1758057	10.3	10.8	5.05	5.00	75.0 - 125	105	102	mg/L	12.5	25.0
dium	1758057	73.4	76.0	71.3	5.00	75.0 - 125	42.0 *	110	mg/L	9.09	25.0



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NA-LAB	Phone 903/98-		X 903/9 ployee C		e-Mail corp Integrity			LELAI Continual Improve	-accred	lited #02	2008
COKP.	0	uality						/18/2019	incin	Pa	ge 6 of 14
COMPLETE SERVICE LAB	Q	uain	yci	Juic	л		inted 02	10/2019		1 4	ge 0 01 14
			A	WRL/M	RL C						
Parameter Total Organic Carbon		<i>Reading</i> 1.80	<i>Known</i> 2.00	Units mg/L Blank	<b>Recover%</b> 90.0	<i>Limits%</i> 75.0 - 125		File 119609333			
Parameter	PrepSet	Reading	MDL	MQL							
Total Organic Carbon	823363	0.0813	0.0168	0.500 CCB	Units mg/L			File 119609332			
Parameter	PrepSet	Reading	MDL	MQL	in it.			<b>E</b> 21-			
Total Organic Carbon	823363	0.104	0.0168	0.500	Units mg/L			File 119609325			
	823363	0.0947	0.0168	0.500	mg/L			119609339			
	823363	0.0728	0.0168	0.500	mg/L			119609347			
	823363	0.0772	0.0168	0.500	mg/L			119609352			
	823363	0.108	0.0168	0.500 CCV	mg/L			119609354			
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Total Organic Carbon		9.92	10.0	mg/L	99.2	90.0 - 110		119609328			
		9.97	10.0	mg/L	99.7	90.0 - 110		119609340			
		9.83 9.76	10.0 10.0	mg/L mg/L	98.3 97.6	90.0 - 110 90.0 - 110		119609348			
		9.83	10.0	mg/L ICL	98.3	90.0 - 110		119609353 119609355			
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Total Organic Carbon		19.9	20.0	mg/L ICV	99.5	90.0 - 110		119609327			
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Total Organic Carbon		10.0	10.0	mg/L LCS	100	90.0 - 110		119609329			
Parameter	PrepSet	Reading		Known	Units	Recover%	Limits	File			
Total Organic Carbon	823363	4.88		5.00 MSD	mg/L	97,6	93.1 - 112	119609331			
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Total Organic Carbon	1757651	12.8	12.9	3.09	10.0	89.5 - 116	97.1	98.1	mg/L	1.02	20.0
	1757894	12.8	12.7	3.08	10.0	89.5 - 116	97.2	96.2	mg/L	1.03	20.0
				Standar	ď						
<u>Parameter</u> Total Organic Carbon	Sample	Reading 51.7	Known 50.0	Units mg/L	<i>Recover%</i> 103	Limits% 90.0 - 110		File 119609326			
Analytical Set	823384									EP	A 200.8 5
				Blank							
<u>Parameter</u> Aluminum, Total	PrepSet 822885	<i>Reading</i> 0.00574	MDL 0.0025	MQL 0.005 CCV	Units mg/L		a -	File 119609881			
Darautar		David									
Parameter Aluminum, Total		Reading 0.0503	Known 0.05	Units mg/L	Recover% 101	Limits% 90.0 - 110		File			
		0.0498	0.05	mg/L	99.6	90.0 - 110		119609877 119609887			
		0.0512	0.05	mg/L	102	90.0 - 110		119609896			



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Final Report P	age 18 of 26	Ana-La	b Corr	. P.	O. Box	9000	Kilgore	. TX 7	Batch # 8088	85 Report	Page	17 of 26
ANA-LA	B)	Phone 903/98	4-0551 F	-	84-5914		@ana-lab.	com		P-accred	lited #02	008
THE COMPLETE S		Q	ualit	y Co	ontro	ol	Pr	inted 02/	18/2019		Pag	ge 7 of 14
					ICV							
	<u>Parameter</u> Aluminum, Total		<i>Reading</i> 0.0496	<i>Known</i> 0.05	Units mg/L LCS Dr	Recover% 99.2	<i>Limits%</i> 90.0 - 110		File 119609869			
	<u>Parameter</u> Aluminum, Total	<b>PrepSet</b> 822885	<i>LCS</i> 0.527	- <i>LCSD</i> 0.508	MSD	Known 0.500	<i>Limits%</i> 85.0 - 115	<i>LCS%</i> 105	<i>LCSD%</i> 102	Units mg/L	<b>RPD</b> 3.67	<i>Limit%</i> 20.0
	<u>Parameter</u> Aluminum, Total	Sample 1758057	<i>MS</i> 0.523	MSD 0.507	UNK 0.0086	<b>Known</b> 0.500	<i>Limits</i> 70.0 - 130	MS% 103	<i>MSD%</i> 99.7	Units mg/L	<b>RPD</b> 3.16	<i>Limit%</i> 20.0
	Analytical Set	823634									EP.	A 200.8 5.4
					Blank							
	<u>Parameter</u> Aluminum, Total	PrepSet 822885	<i>Reading</i> 0.00588	MDL 0.0025	MQL 0.005 CCV	Units mg/L		÷	<i>File</i> 119617652			
	<u>Parameter</u> Aluminum, Tota <u>l</u>		<i>Reading</i> 0.052 0.051 0.0508 0.050	Known 0.05 0.05 0.05 0.05	Units mg/L mg/L mg/L mg/L	Recover% 104 102 102 100	<i>Limits%</i> 90.0 - 110 90.0 - 110 90.0 - 110 90.0 - 110		File 119617601 119617608 119617618 119617628			
			0.050 0.0495 0.0497 0.0531 0.0526	0.05 0.05 0.05 0.05 0.05	mg/L mg/L mg/L mg/L Mg/L	100 99.0 99.4 106 105	90.0 - 110 90.0 - 110 90.0 - 110 90.0 - 110 90.0 - 110		119617639 119617650 119617660 119617679 119617690			
	<u>Parameter</u> Aluminum, Total		<i>Reading</i> 0.0496	<i>Known</i> 0.05	Units mg/L	<i>Recover%</i> 99.2	<i>Limits%</i> 90.0 - 110		File 119617597			
					LCS Du	p						
	<u>Parameter</u> Aluminum, Total	<i>PrepSet</i> 822885	<i>LCS</i> 0.537	<i>LCSD</i> 0.512	MSD	<i>Known</i> 0.500	<i>Limits%</i> 85.0 - 115	<i>LCS%</i> 107	<i>LCSD</i> % 102	Units mg/L	<b>RPD</b> 4.77	<i>Limit%</i> 20.0
	Parameter Aluminum, Total	Sample 1758057	MS 0.528	MSD 0.509	UNK 0.00804	<b>Known</b> 0.500	<i>Limits</i> 70.0 - 130	MS% 104	MSD% 100	Units mg/L	<b>RPD</b> 3.72	<i>Limit%</i> 20.0
1	Analytical Set	823744									EPA	200.7 4.4
					Blank							
	Parameter Phosphorus	PrepSet 822885	Reading	MDL	MQL	Units			File			
	ilicon Recoverable	822885 822885	ND 0.0539	0.0388 0.0148	0.100 0.100 CCV	mg/L mg/L			119619734 119619734			
	P <u>arameter</u> Phosphorus		<i>Reading</i> 9.78 10.0 10.2	Known 10.0 10.0 10.0	Units mg/L mg/L, mg/L	<i>Recover%</i> 97.8 100 102	<i>Limits%</i> 90.0 - 110 90.0 - 110		File 119619733 119619744			
S	ilicon Recoverable		5.00 5.04	5.00 5.00	mg/L mg/L mg/L	102 100 101	90.0 - 110 90.0 - 110 90.0 - 110		119619749 119619733 119619744			

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DRP.®	SERVICE LAB	Q	Reading 5.13 Reading 24.8	Known 5.00		Integrity		1.0	Continual Improve		Pag	e 8 of 14
	Silicon Recoverable <u>Parameter</u> Phosphorus Silicon Recoverable	X	Reading 5.13 Reading	Known	CCV Units							
	Silicon Recoverable <u>Parameter</u> Phosphorus Silicon Recoverable		5.13 Reading		Units	Recover%						
	Silicon Recoverable <u>Parameter</u> Phosphorus Silicon Recoverable		5.13 Reading			Recover%			dants -			
	Phosphorus Silicon Recoverable		1. State 1. State		ICL	103	<i>Limits%</i> 90.0 - 110		File 119619749			
	Phosphorus Silicon Recoverable		1. State 1. State	Known	Units	Recover%	Limits%		File			
			24.0	25.0	mg/L	99.2	95.0 - 105		119619731			
	Parameter		10.1	10.0	mg/L ICV	101	95.0 - 105		119619731			
			Reading	Known	Units	Recover%	Limits%		File			
	Phosphorus		9.91	10.0	mg/L	99.1	90.0 - 110		119619732			
	Silicon Recoverable		5.02	5.00	mg/L	100	90.0 - 110		119619732			
					LCS Du	р						
	Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
	Phosphorus	822885	3.96	3.93		4.00	85.0 - 115	99.0	98.2	mg/L	0.760	25.0
	Silicon Recoverable	822885	3.88	3.77	MOD	4.00	85.0 - 115	97.0	94.2	mg/L	2.88	25.0
	10.00		-		MSD			-	and and			the second second
	Parameter Bhaanhaan	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
	Phosphorus Silicon Recoverable	1758057 1758057	4.40 10.6	4.26 10.3	0.262	4.00	75.0 - 125 75.0 - 125	103 103	100 95.5	mg/L mg/L	3.44 7.56	25.0 25.0
			10,0	10,5	0.10	1.00	15.0-125	105	22.5	mg/L		
	Analytical Set	822893			BFB						EP	4 524.2 4.1
	Parameter	Sample	RefMass	Reading	%	Limits%			File			
	BFB Mass 173	822893	174	0	0.0	0 - 2.00			119599636			
	BFB Mass 174	822893	95.0	24936	59.3	50.0 - 100			119599636			
	BFB Mass 175	822893	174	1833	7.4	5.00 - 9.00			119599636			
	BFB Mass 176	822893	174	24325	97.5	95.0 - 101			119599636			
	BFB Mass 177	822893	176	1702	7.0	5.00 - 9.00			119599636			
	BFB Mass 50 BFB Mass 75	822893	95.0	9791	23.3	15.0 - 40.0			119599636			
	BFB Mass 75 BFB Mass 95	822893 822893	95.0 95.0	24699 42051	58.7 100.0	30.0 - 80.0 100 - 100			119599636 119599636			
	BFB Mass 96	822893	95.0	2905	6.9	5.00 - 9.00			119599636			
		our of the	20.0	2502	Blank				119999050			
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
	Bromodichloromethane	822893	ND	0.308	1.00	ug/L			119599643			
	Bromoform	822893	ND	0.418	1.00	ug/L			119599643			
	Chloroform	822893	ND	0.213	1.00	ug/L			119599643			
	Dibromochloromethane	822893	ND	0.327	1.00	ug/L			119599643			
			C.	6	CCV							
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Bromodichloromethane Bromoform		19.8	20.0	ug/L	99.2	70.0 - 130		119599637			
	Chloroform		17.0 20.4	20.0 20.0	ug/L ug/L	85.0 102	70.0 - 130 70.0 - 130		119599637 119599637			
	Dibromochloromethane		17.4	20.0	ug/L	87.1	70.0 - 130		119599637			
				949	IS Area							
	Parameter	Sample	Туре	Reading	CCVISM		High		File	PrepSet		
	1,4-DichlorobenzeneD4	822893	CCV	122100	122100	61030	183100		119599637	822893		



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LAB 7 1 Ph	one 903/984		X 903/90 ployce O		-Mail corp Integrity	@ana-lab. Carii		LELA Continual Improve	P-accredit	ted #02	008
TTE SERVICE LAB	Q	uality	y Co	ntro	1	Pr	inted	02/18/2019		Pag	e 9 of 14
				IS Areas							
Parameter	Sample	Type	Reading	CCVISM	Low	High		File	PrepSet		
1,4-DichlorobenzeneD4	822893	LCS	120300	122100	61030	183100		119599638	822893		
(ISTD)	822893	LCS Dup	116100	122100	61030	183100		119599639	822893		
	822893	Blank	92510	122100	61030	183100		119599643	822893		
ChlorobenzeneD5 (ISTD)	822893	CCV	243500	243500	121800	365300		119599637	822893		
of her many for the	822893	LCS	245100	243500	121800	365300		119599638	822893		
	822893	LCS Dup	238700	243500	121800	365300		119599639	822893		
	822893	Blank	198200	243500	121800	365300		119599643	822893		
1,4-DichlorobenzeneD4	1756344	MS	92680	122100	61030	183100		119599646	822893		
(ISTD)	1756344	MSD	96490	122100	61030	183100		119599647	822893		
ChlorobenzeneD5 (ISTD)	1756344	MS	174800	243500	121800	365300		119599646	822893		
	1756344	MSD	181300	243500	121800	365300		119599647	822893		
1,4-DichlorobenzeneD4	1758057	UNKNOW		122100	61030	183100		119599644	822893		
(ISTD) - ChlorobenzeneD5 (ISTD)	1759057	UNIVNOW	01178100	242500	121900	265200		110500644	822802		
ChlorobenzeneD5 (ISTD)	1758057	UNKNOW		243500 IS RetTin	121800	365300		119599644	822893		
				IS Rel I III	ie						
Parameter	Sample	Type	Reading	CCVISM	Low	High		File	PrepSet		
1,4-DichlorobenzeneD4 (ISTD)	822893	CCV	11.18	11.18	11.12	11.24		119599637	822893		
(1510)	822893	LCS	11.18	11.18	11.12	11.24		119599638	822893		
	822893	LCS Dup	11.18	11.18	11.12	11.24		119599639	822893		
	822893	Blank	11.18	11.18	11.12	11.24		119599643	822893		
ChlorobenzeneD5 (ISTD)	822893	CCV	8,818	8.818	8.758	8.878		119599637	822893		
	822893	LCS	8.818	8.818	8.758	8.878		119599638	822893		
	822893	LCS Dup	8.818	8.818	8.758	8.878		119599639	822893		
	822893	Blank	8.818	8,818	8.758	8.878		119599643	822893		
1,4-DichlorobenzeneD4 (ISTD)	1756344	MS	11.18	11.18	11.12	11.24		119599646	822893		
	1756344	MSD	11.18	11.18	11.12	11.24		119599647	822893		
ChlorobenzeneD5 (ISTD)	1756344	MS	8.818	8.818	8.758	8.878		119599646	822893		
	1756344	MSD	8.818	8.818	8,758	8.878		119599647	822893		
1,4-DichlorobenzeneD4 (ISTD)	1758057	UNKNOW	/NI1.18	11.18	11.12	11.24		119599644	822893		
ChlorobenzeneD5 (ISTD)	1758057	UNKNOW	/N8.818	8.818	8.758	8.878		119599644	822893		
				LCS Duj	p						
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromodichloromethane	822893	18.8	19.0		20.0	70.0 - 130	94.0	95.0	ug/L	1.06	30,0
Bromoform	822893	17.7	17.3		20.0	70.0 - 130	88.5	86.5	ug/L	2.29	30.0
Chloroform	822893	18.8	18.9		20.0	70.0 - 130	94.0	94.5	ug/L	0.531	30.0
Dibromochloromethane	822893	16.2	16.4		20.0	70.0 - 130	81.0	82.0	ug/L	1.23	30.0
				MSD							
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromodichloromethane	1756344	16,5	17.1	ND	20.0	67.1 - 133	82.5	85.5	ug/L	3.57	30.0
Bromoform	1756344	16.7	15.6	ND	20.0	58.4 - 125	83.5	78.0	ug/L	6.81	30.0
Chloroform	1756344	15.8	14.3	ND	20.0	62.8 - 138	79.0	71.5	ug/L ug/L	9.97	30.0
Dibromochloromethane	1756344	15.6	15.2	ND	20.0	60.7 - 129	78.0	76.0	ug/L ug/L	2.60	30.0
	a second de la companya de la			Surrogat		and the second				1.1.1	100
Parameter	Sample	Type	Reading		Units	Recover%	Limits	% File			
a set to the set of	Junine										



Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

LDSClient v1.14.6.1734

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NALA	371	Phone 903/98		X 903/9		e-Mail corp Integrity	-		LELAP-accree	lited #02008
COKP		0					Carin		8/2019	Page 10 of 1
COMPLETE SER		Q	uality	ycc	muo	1	111	ineu 02/1	0/2019	Fage 10 01
					Surroga	te				
	ameter	Sample	Туре	Reading	Known	Units	Recover%	Limits%	File	
1,2-	DCA-d4 (SURR)	822893	CCV	19.7	20.0	ug/L	98.5	70.0 - 130	119599637	
		822893	LCS	20.0	20.0	ug/L	100	70.0 - 130	119599638	
		822893	LCS Dup	19.7	20.0	ug/L	98.5	70.0 - 130	119599639	
	Arristant.	822893	Blank	21.7	20.0	ug/L	108	70.0 - 130	119599643	
	mofluorobenzene RR)	822893	CCV	21.3	20,0	ug/L	106	70.0 - 130	119599637	
(30	KK)	822893	LCS	21.5	20,0	ug/L	108	70.0 - 130	119599638	
		822893	LCS Dup	21,6	20.0	ug/L	108	70.0 - 130	119599639	
		822893	Blank	20.0	20.0	ug/L	100	70.0 - 130	119599643	
Dib	romofluoromethane	822893	CCV	20.4	20.0	ug/L	102	70.0 - 130	119599637	
(SU	RR)							1010 100	11,5,7,65,7	
		822893	LCS	20.6	20.0	ug/L	103	70.0 - 130	119599638	
		822893	LCS Dup	20.2	20.0	ug/L	101	70.0 - 130	119599639	
		822893	Blank	20.0	20.0	ug/L	100	70.0 - 130	119599643	
Tolu	ueneD8 (SURR)	822893	CCV	21.0	20.0	ug/L	105	70.0 - 130	119599637	
		822893	LCS	20.8	20.0	ug/L	104	70,0 - 130	119599638	
		822893	LCS Dup	20.8	20.0	ug/L	104	70.0 - 130	119599639	
		822893	Blank	20.2	20.0	ug/L	101	70.0 - 130	119599643	
1,2-1	DCA-d4 (SURR)	1756344	MS	21.0	20.0	ug/L	105	70.0 - 130	119599646	
		1756344	MSD	20.5	20.0	ug/L	102	70.0 - 130	119599647	
Broi (SU	mofluorobenzene RR)	1756344	MS	19.9	20.0	ug/L	99.5	70.0 - 130	119599646	
(00.	0-9	1756344	MSD	19.8	20.0	ug/L	99.0	70.0 - 130	119599647	
Dibr (SU	romofluoromethane	1756344	MS	21.2	20.0	ug/L	106	70.0 - 130	119599646	
(50)	RRY	1756344	MSD	19.7	20.0	ug/L	98.5	70.0 - 130	119599647	
Tolu	ieneD8 (SURR)	1756344	MS	20.2	20,0	ug/L	101	70.0 - 130	119599646	
		1756344	MSD	20.5	20.0	ug/L	102	70.0 - 130	119599647	
1,2-1	DCA-d4 (SURR)	1758057	UNKNOW	N21.1	20.0	ug/L	106	70.0 - 130	119599644	
	nofluorobenzene	1758057	UNKNOW	N20.3	20.0	ug/L	102	70.0 - 130	119599644	
(SU) Dibr (SU)	omofluoromethane	1758057	UNKNOW	N21.2	20.0	ug/L	106	70.0 - 130	119599644	
	ieneD8 (SURR)	1758057	UNKNOW	N20.2	20.0	ug/L	101	70.0 - 130	119599644	
Ana	alytical Set	823133								EPA 524.2
					BFB					
Para	umeter	Sample	RefMass	Reading	%	Limits%			File	
	Mass 173	823133	174	0	0.0	0 - 2.00			119605624	
BFB	Mass 174	823133	95.0	2944	60.1	50.0 - 100			119605624	
BFB	Mass 175	823133	174	211	7.2	5.00 - 9.00			119605624	
BFB	Mass 176	823133	174	2928	99.5	95.0 - 101			119605624	
BFB	Mass 177	823133	176	177	6.0	5.00 - 9.00			119605624	
	Mass 50	823133	95.0	1233	25.2	15.0 - 40.0			119605624	
	Mass 75	823133	95.0	2932	59.9	30.0 - 80.0			119605624	
	Mass 95	823133	95.0	4895	100.0	100 - 100			119605624	
BFB	Mass 96	823133	95.0	290	5.9	5.00 - 9.00			119605624	
					Blank					
	imeter	PrepSet	Reading	MDL	MQL	Units			File	
	nodichloromethane	823133	ND	0.308	1.00	ug/L			119605628	
Bron	noform	823133	ND	0.418	1.00	ug/L			119605628	

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	Q	uality	y Co	ntro	1	Prin				Page	e 11 of 14
				Blank							
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Chloroform	823133	ND	0.213	1.00	ug/L			119605628			
Dibromochloromethane	823133	ND	0.327	1.00 CCV	ug/L			119605628			
Parameter		Reading	Known	Units	Datauan0/	1 1		1711			
Bromodichloromethane					Recover%	Limits%		File			
Bromodorm		19.4	20.0	ug/L	97.1	70.0 - 130		119605625			
		16.4	20.0	ug/L	82.1	70.0 - 130		119605625			
Chloroform		21.3	20.0	ug/L	106	70.0 - 130		119605625			
Dibromochloromethane		17.6	20.0	ug/L IS Areas	87.9	70.0 - 130		119605625			
10 T 10	247.54										
Parameter	Sample	Type	- 10 A A A A A A A A A A A A A A A A A A	CCVISM	Low	High		File	PrepSet	1	
,4-DichlorobenzeneD4 ISTD)	823133	CCV	98000	98000	49000	147000		119605625	823133		
	823133	LCS	95290	98000	49000	147000		119605626	823133		
	823133	LCS Dup	99260	98000	49000	147000		119605627	823133		
1000 - 100 -	823133	Blank	82230	98000	49000	147000		119605628	823133		
ChlorobenzeneD5 (ISTD)	823133	CCV	186400	186400	93200	279600		119605625	823133		
	823133	LCS	186600	186400	93200	279600		119605626	823133		
	823133	LCS Dup	193900	186400	93200	279600		119605627	823133		
	823133	Blank	182100	186400	93200	279600		119605628	823133		
,4-DichlorobenzeneD4 ISTD)	1756879	MS	99910	98000	49000	147000		119605632	823133		
	1756879	MSD	98870	98000	49000	147000		119605633	823133		
ChlorobenzeneD5 (ISTD)	1756879	MS	192100	186400	93200	279600		119605632	823133		
	1756879	MSD	189900	186400	93200	279600		119605633	823133		
,4-DichlorobenzeneD4 ISTD)	1758058	UNKNOW	N107700	98000	49000	147000		119605629	823133		
ChlorobenzeneD5 (ISTD)	1758058	UNKNOW		186400	93200	279600		119605629	823133		
				S RetTin							
Parameter	Sample	Туре	Reading	CCVISM	Low	High		File	PrepSet		
,4-DichlorobenzeneD4 ISTD)	823133	CCV	11.18	11.18	11.12	11,24		119605625	823133		
	823133	LCS	11.18	11.18	11.12	11.24		119605626	823133		
	823133	LCS Dup	11.18	11.18	11.12	11.24		119605627	823133		
A state of the state of the	823133	Blank	11.18	11.18	11.12	11.24		119605628	823133		
hlorobenzeneD5 (ISTD)	823133	CCV	8,818	8,818	8.758	8.878		119605625	823133		
	823133	LCS	8.818	8.818	8.758	8.878		119605626	823133		
	823133	LCS Dup	8.818	8.818	8.758	8.878		119605627	823133		
	823133	Blank	8.818	8.818	8.758	8.878		119605628	823133		
,4-DichlorobenzeneD4 (STD)	1756879	MS	11.18	11.18	11.12	11.24		119605632	823133		
	1756879	MSD	11.17	11.18	11.12	11.24		119605633	823133		
hlorobenzeneD5 (ISTD)	1756879	MS	8.818	8.818	8.758	8.878		119605632	823133		
	1756879	MSD	8.818	8.818	8.758	8.878		119605633	823133		
4-DichlorobenzeneD4 STD)	1758058	UNKNOW	NI1.18	11,18	11.12	11.24		119605629	823133		
hlorobenzeneD5 (ISTD)	1758058	UNKNOW		8.818	8.758	8,878		119605629	823133		
				LCS Dup	1						
						S. 64.1					
arameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%

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Guif Coast Region: 4141 Directors Row Ste C Houston TX 77092

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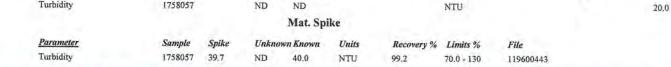
HLAD	Phone 903/98		<b>X 903/9</b> ployee C		e-Mail corp Integrity	@ans-lab. Carii		LELA ntinual Improve	P-accred	ited #02	008
PLETE SERVICE LAB	Q	uality	y Co	ontro	ol	Pri	inted 02/1	8/2019		Page	12 of 14
				LCS D	цр						
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromoform	823133	20.4	17.8		20.0	70.0 - 130	102	89.0	ug/L	13.6	30.0
Chloroform	823133	24.0	19.6		20.0	70.0 - 130	120	98.0	ug/L	20.2	30.0
Dibromochlorometha	te 823133	17.2	17.0		20.0	70.0 - 130	86.0	85.0	ug/L	1.17	30.0
				MSD							
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit?
Bromodichloromethan	ie 1756879	160	161	ND	200	67.1 - 133	80.0	80,5	ug/L	0.623	30.0
Bromoform	1756879	162	152	ND	200	58.4 - 125	81.0	76.0	ug/L	6.37	30.0
Chloroform	1756879	163	158	ND	200	62.8 - 138	81.5	79.0	ug/L	3.12	30.0
Dibromochloromethan	ne 1756879	162	160	ND	200	60.7 - 129	81.0	80.0	ug/L	1.24	30.0
				Surroga	ate						
Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File			
1,2-DCA-d4 (SURR)	823133	CCV	21.0	20.0	ug/L	105	70.0 - 130	119605625			
	823133	LCS	20.7	20.0	ug/L	104	70.0 - 130	119605626			
	823133	LCS Dup	20.8	20.0	ug/L	104	70.0 - 130	119605627			
	823133	Blank	21.7	20.0	ug/L	108	70.0 - 130	119605628			
Bromofluorobenzene	823133	CCV	20.2	20.0	ug/L	101	70.0 - 130	119605625			
(SURR)	823133	LCS	20.8	20.0	ug/L	104	70.0 - 130	119605626			
	823133	LCS Dup	20.5	20.0	ug/L	102	70.0 - 130	119605627			
	823133	Blank	20.3	20.0	ug/L	102	70.0 - 130	119605628			
Dibromofluoromethan		CCV	21.3	20.0	ug/L	106	70.0 - 130	119605625			
(SURR)	823133	LCS	23.8	20.0	ug/L	119	70.0 - 130	119605626			
	823133	LCS Dup	20.8	20.0	ug/L	104	70.0 - 130	119605627			
	823133	Blank	20.1	20.0	ug/L	100	70.0 - 130	119605628			
TolueneD8 (SURR)	823133	CCV	20.4	20.0	ug/L	102	70.0 - 130	119605625			
and the second second	823133	LCS	19.4	20.0	ug/L	97.0	70.0 - 130	119605626			
	823133	LCS Dup	20.5	20.0	ug/L	102	70.0 - 130	119605627			
	823133	Blank	19.6	20.0	ug/L	98.0	70.0 - 130	119605628			
1,2-DCA-d4 (SURR)	1756879	MS	20.9	20.0	ug/L	104	70.0 - 130	119605632			
	1756879	MSD	21.4	20.0	ug/L	107	70.0 - 130	119605633			
Bromofluorobenzene (SURR)	1756879	MS	19.8	20.0	ug/L	99.0	70.0 - 130	119605632			
441.11.4	1756879	MSD	20.0	20.0	ug/L	100	70.0 - 130	119605633			
Dibromofluoromethan (SURR)	e 1756879	MS	20.4	20.0	ug/L	102	70.0 - 130	119605632			
	1756879	MSD	21.2	20.0	ug/L	106	70.0 - 130	119605633			
TolueneD8 (SURR)	1756879	MS	19.9	20.0	ug/L	99.5	70.0 - 130	119605632			
	1756879	MSD	20.4	20.0	ug/L	102	70.0 - 130	119605633			
1,2-DCA-d4 (SURR)	1758058	UNKNOW	/N20.8	20.0	ug/L	104	70.0 - 130	119605629			
Bromofluorobenzene (SURR)	1758058	UNKNOW	/N20.6	20.0	ug/L	103	70.0 - 130	119605629			
Dibromofluoromethan (SURR)	e 1758058	UNKNOW	/N20.5	20.0	ug/L	102	70.0 - 130	119605629			
TolueneD8 (SURR)	1758058	UNKNOW	7N20.1	20.0	ug/L	100	70.0 - 130	119605629			
Analytical Set	823715			1.201						El	PA 552.
				Blank							
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Bromoacetic acid	823109	ND	0.275	5.00	ug/L			119619231			

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<b>4-L</b> A	B Pho	ne 903/98		X 903/9 ployee O		-Mail corp Integrity	@ana-lab. Carii		LELA Continual Improve	P-accredi ment	ted #02	008
PLETE SE		Q	uality	y Co	ntro	1	Pri	inted	02/18/2019		Page	e 13 of 1
					Blank							
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
	Chloroacetic acid	823109	ND	0.559	5.00	ug/L			119619231			
	Dibromoacetic acid	823109	ND	0.198	5.00	ug/L			119619231			
	Dichloroacetic acid	823109	ND	0.244	5.00	ug/L			119619231			
1	richloroacetic acid	823109	ND	0.191	5.00 CCV	ug/L			119619231			
P	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Bromoacetic acid		25.5	20.0	ug/L	127	70.0 - 130		119619230			
C	hloroacetic acid		21.1	20.0	ug/L	106	70.0 - 130		119619230			
D	Dibromoacetic acid		23.3	20.0	ug/L	117	70.0 - 130		119619230			
D	Dichloroacetic acid		25,9	20.0	ug/L	129	70.0 - 130		119619230			
Т	richloroacetic acid		23,0	20,0	ug/L	115	70.0 - 130		119619230			
					IS Areas	6						
P	Parameter	Sample	Туре	Reading	CCVISM	Low	High		File	PrepSet		
1,	,2,3-Trichloropropane (IS)	1251	CCV	1014000	1014000	709500	1318000		119619230	823715		
		823109	Blank	986600	1014000	709500	1318000		119619231	823109		
		823109	LCS	1007000	1014000	709500	1318000		119619232	823109		
		1758057	UNKNOW	/N1063000	1014000	709500	1318000		119619234	823109		
		1758058	UNKNOW	N867900	1014000	709500	1318000		119619235	823109		
				1	IS RetTin	ne	-					
P	arameter	Sample	Type	Reading	CCVISM	Low	High		File	PrepSet		
1,	,2,3-Trichloropropane (IS)		CCV	8.810	8.810	8,750	8.870		119619230	823715		
		823109	Blank	8,800	8.810	8,750	8.870		119619231	823109		
		823109	LCS	8.800	8.810	8,750	8.870		119619232	823109		
		1758057	UNKNOW	/N8.800	8.810	8.750	8.870		119619234	823109		
		1758058	UNKNOW	/N8.800	8.810	8.750	8.870		119619235	823109		
					LCS Dup	p						
P	arameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	6 LCSD%	Units	RPD	Limit
B	romoacetic acid	823109	21.9	23.7		20.0	70.0 - 130	110	118	ug/L	7.02	30.0
C	hloroacetic acid	823109	19.1	20.4		20,0	70.0 - 130	95.5	102	ug/L	6.58	30.0
	ibromoacetic acid	823109	21.0	22.3		20.0	70.0 - 130	105	112	ug/L	6.45	30.0
	hichloroacetic acid	823109	22.3	23.9		20.0	70.0 - 130	112	120	ug/L	6.90	30.0
Ti	richloroacetic acid	823109	19.1	20.5		20.0	70.0 - 130	95.5	102	ug/L	6,58	30.0
A	analytical Set 822	934			VRL/MR	LC.					SM 21	130 B-2
			S. S. S.									
	arameter t		Reading	Known	Units	Recover%	Limits%		File			
n	urbidity		0.30	0.30	NTU Blank	100	70.0 - 130		119600439			
P	arameter	PrepSet	Reading	MDL	MQL	Units			File			
	urbidity	822934	ND	0.30	0.30	NTU			119600437			
		Cartery			Duplicate							
					6 A 11 1							
Pa	arameter urbidity	Sample 1758057		Result ND	Unknown			Unit		RPD		Limit? 20.0
1000					ND			NTU				



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ANALAD	Phone 903/98		AX 903/9 ployee (		e-Mail cor Integrity			LELA Continual Improve		lited #02008
THE COMPLETE SERVICE LAB	Q	ualit	y Co	ontro	1	Pr	inted (	02/18/2019		Page 14 of 14
				Standar	d					
Parameter	Sample	Reading	Known	Units	Recover%	Limits%		File		
Turbidity	822934	9.43	10.0	NTU	94.3	90.0 - 110		119600438		
	822934	101	100	NTU	101	90.0 - 110		119600440		
	822934	9.37	10.0	NTU	93.7	90.0 - 110		119600445		
	822934	9.86	10.0	NTU	98.6	90.0 - 110		119600448		
	822934	9.32	10.0	NTU	93.2	90.0 - 110		119600450		
Analytical Set	823223									SM 2320 B-201
				Blank						SIVI 2520 B-201
Parameter	PrepSet	Reading	MDL	MQL	Units					
Total Alkalinity (as Cas		ND	1.00	1.00	mg/L			File		
				CCV				119606785		
Parameter		Reading	Known	Units	Recover%	Limits%				
Total Alkalinity (as Cal	203)	26.1	25.0	mg/L	104	90.0 - 110		File		
		26,1	25.0	mg/L	104	90.0 - 110		119606784 119606798		
		26.1	25.0	mg/L	104	90.0 - 110		119606811		
				Duplicat	e	ALC: NOT		11,000011		
Parameter	Sample		Result	Unknown			Unit		RPD	11-201
Total Alkalinity (as CaC	03) 1757415		21.5	22.5			mg/L		4.55	Limit% 20.0
	1758722		259	261			mg/L		0.769	20.0
				ICV					0.107	20.0
Parameter		Reading	Known	Units	Recover%	Limits%		File		
Total Alkalinity (as CaC	O3)	26.6	25.0	mg/L	106	90.0 - 110		119606783		
				Mat. Spik				112000785		
Parameter	Sample	Spike	Unknow		Units	Paganam: 8/	I Inches 1	( m)		
Total Alkalinity (as CaC		46.6	22.5	25.0	mg/L	Recovery % 96.4	Limits %			
	1758722	279	261	25.0	mg/L	72.0	70.0 - 13			

Out RPD is Relative Percent Difference: abs(r1-r2) / mean(r1,r2) \* 100%

Recover% is Recovery Percent: result / known \* 100%

1 2

Blank - Method Blank; CCV - Continuing Calibration Verification; BFB - GC/MS Tuning Compound; AWRL/MRL C - Ambient Water Reporting Limit/Minimum Reporting Limit Check Std; LCS - Laboratory Control Sample; ICV - Initial Calibration Verification; CCB - Continuing Calibration Blank

Corporate Shipping: 2600 Dudley Rd. Kilgore, TN 75662



1606 E Brazos Suite D Victoria, Texas 77901 ph. (361) 572-8224	as 77901 ph. (3	61) 572-82	24			
Customer / Report Information		Billing Information	mation	Check box if Billing is the same as Report Information	mation THERM ID#4	TEMP Corr: 9,9
Name: Victoria, City of		Address:			Phone:	FAX:
Attention: Ste ONON RODIN	ANN.	Attention:	PC	PO#	EMAIL:	
Address:		Project: <del>X</del> Comments:	SR Table I, List A	H	Requested Analysis	alysis Completed By laboratory
Sample Information			Matrix Container	7	y lice	Custody Seals Present
Collected By:			DW - Drinking H20 S - Solid		idy issitist	SILI Yes D No A
Client / Field Sample ID	Collected		dwo) P JD = WW-Waste H20 IdAL IBWN PZIS	Preservative	F,S hbichals Blas Blas	
	Date	Time	w - Water		CITE TUR	LAB Sample Number
Well 19	2/11/19	that the	EDE M		XXXXXX	XX S190421401
Well 21	2/11/19	1156	W S q B		XXXXXX	X X S190421402
				П H2SO4 П HNO3 П H3PO4 П NaOH П ICE П HCL П Na2SO3		
				П H2SO4 П HNO3 П H3PO4 П NaOH П ICE П HCL Na2SO3		
			-			
	5					
Required Turnaround:  Routine (6-10 Business days)		Expedite / Rush:	□ 1 Business Day		□ 3 Business days □ 5 Business days □ Other	
Surcharge will apply to RUSH TAT	T Authorized BY:	BY:		Container Type: P=Plasti	P=Plastic, G=Glass, V=Voa, O=Other	Carrier ID :
Relinquished By:		11/2	19 Time: 1223	Received By: Received By:	Valmul Pate: 2	2-11-19 Time: 122.
Relinquished By	Date:		Time:	Received By:	Date:	Time:

#### Final Report Page 1 of 22

BatchNo: 81230

## SAMPLE REPORT

Batch # 81230



T104704328-19-16

77901

TX

#### **Business**

Victoria, City of - Stephen Robinson P O Box 1758 Victoria Tx 77902

#### B Environmental, LLC. 1606 E Brazos, Suite D Victoria ph. 361-572-8224

Laboratory

Att: Stephen Robinson

#### **Reference Information**

Project: ASR Table 1, List A&B - Well #19 Printed: Tuesday, March 05, 2019

Re: Victoria, City of - Stephen Robinson

Dear: Stephen Robinson

Attached are the results for sample(s) received on 2/19/2019

The analytical results relate only to the samples tested. All supporting quality data meets the requirements of NELAC unless noted in the case narrative section of the report.

This report contains 22 pages (including the cover page)

If you have any questions concerning this report, please do not hesitate to call (361) 572-8224 or Fax us at (361) 572-4115

Respectfully Submitted, P.P.

Kevin Baros Laboratory Director

> B Environmental, LLC. 1606 E Brazos, Suite D Victoria TX This report shall not be reproduced except in full, without written approval of the laboratory

inal Report Page 2 of 22 B Environmental, LLC. 606 E Brazos, Suite D		BatchNo:		81230		Batch # 81230 Page 2 of 22
ictoria TX 7	7901					
Batch No: 81	230 <b>S</b>	ample Rec	eipt	Chec	klist	
			-	eceived:		/2019
Project	ASR Table 1, List A	&B - Well #19	Receiv	ed By:	Honnen	
ogin completed by:	Honnen	2/22/2019	1			
	Signature	LoginDate:	Ī			
		Carrier Name	V	Valk In		
Shipping container	/cooler in good	condition?		YES		Not Present
Custody seals inta	ct on shipping o	container/cooler?		YES		Not Present
Custody seals inta	ct on sample bo	ottles?		YES		Not Present
Chain of Custody p	present?		_	YES		
Chain of Custody s	signed when rel	inquished and rece	ived	✓ YES		
Chain of Custody a	grees with sam	ple labels?		YES		
Samples in proper	container/bottle		✓ YES			
Sample containers	intact?			YES		
Sufficient sample v	olume for indic	ated tests?		VES		
All samples receive	ed within holdin	g times?		YES	NO	
Container/Temp Bl	ank - temperati	ure in compliance?		YES		>0 <6 °C On Ice
Water - VOA vials	have zero head	space? Bubble < 6	mm?	YES		No VOA Vials submitted
Water - pH accepta	able upon recei	pt?		YES	NO	Not Applicable
*TEMP 13.5/13.	5 pH Adjus	ted? No	0	Checked		hrenkamp
ny No and/or N/A (not ap	plicable) response	must be detailed in the	comments	section be	elow.	
lient contacted			Pers	onConta	cted	
ontacted by:			Date	Contact	ed:	
Regarding						
Comments Therm #4. The sample	was received the	same day it was collect	ed and wa	s in the pro	cess of cool	ing. The sample was
collected in bottles rec	eived from the sub	contractor, Ana-Lab. pl	H Paper Lo	ot # 2-63-7.		
Corrective Action						

B

1606 E Brazos, Suite D

Victoria TX

oria TX 77901

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	Phone 903/084 0551 EAV 003	1094 50	14 - 1	Anil	Dama Lab		663			
ANA-LAB7	Phone 903/984-0551 FAX 903. En	1984-59 nployce O		Integrity	Caring		al Improver	nent		
COKP.	Results				Pri		01/2019		Page	l of
Report To	ASR-Table 1, List	A & B				ount			roject	_
B-Environmental Kevin C. Baros 1606 E Brazos St., Suite D Victoria, TX 77901					BEI	VV-G		8	63477	
		R	lesult	Ś						
1760456 S190501542			_					Received:	02/20/201/	
Drinking Water	<i>Collected by:</i> Client <i>Taken:</i> 02/19/2019 14:54:00		Environm	nental			PO		02/20/2019	,
Calculation	Prepared:		02/.	22/2019	17:36:21	Calculatea		02/22/2019	17:36:21	CA
Parameter	Results		Units	RL		Flag		CAS	Bot	ttle
N Ammonia	0.462		mg/L	0.0242						
Calculation	Prepared:		02/2	27/2019	10:53:14	Calculated		02/27/2019	10:53:14	CA
Parameter z Phosphorus (as Phosphate)	Results 0.722		Units mg/L	<i>RL</i> 0.306		Flag		CAS	Bot	ttle
EPA 200.7 4.4	Prepared:	824428	02/2	21/2019	13:30:00	Analyzed	824580	02/21/2019	23:07:00	JB
Parameter	Results		Units	RL		Flag		CAS	Bot	ttle
N Calcium	42.4		mg/L	0.500				7440-70-2	16	
N Iron, Total N Magnesium, Total	0.198		mg/L	0.025				7439-89-6	16	
N Manganese	9.54 <0.00264		mg/L mg/L	0.020				7439-95-4 7439-96-5	16 16	
EPA 200.7 4.4	Prepared:	824428	1.1	21/2019	13:30:00	Analyzed	825038	02/25/2019	20:09:00	JB
Parameter	Results		Units	RL	1.000	Flag		CAS	Both	
N Sodium	56.6		mg/L	2.50		Trug		7440-23-5	16	ne
EPA 200.7 4.4	Prepared:	824428	02/2	21/2019	13:30:00	Analyzed	825038	02/25/2019	20:19:00	JBI
Parameter	Results		Units	RL		Flag		CAS	Boti	tle
N Potassium	4.48		mg/L	0.500				7440-09-7	16	
EPA 200.7 4.4	Prepared:	824428	02/2	1/2019	13:30:00	Analyzed	825283	02/26/2019	16:57:00	JBF
Parameter	Results	-	Units	RL.		Flag		CAS	Bott	tle
N Phosphorus	0.236		mg/L	0.100				7723-14-0	16	
z Silicon Recoverable	6.31	3	mg/L	0.100				7740-21-3	16	
EPA 200.7 4.4 - Calc	Prepared:		02/2	7/2019	10:53:14	Calculated	1	02/27/2019	10:53:14	CAL
Parameter	Results		Units	RL		Flag		CAS	Bott	-

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



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ANALAR	Phone 903/984-0551 FAX 903/	/984-591	14 e-N	fail corp@	ana-lab.co	m				
HING CORP.		nployee O		Integrity	Caring	Continu	al Improven (01/2019	nent	Page	2 of
1760456 S190501542								Received:	02/20/201	9
Drinking Water	Collected by: Client Taken: 02/19/2019 14:54:00		nvironm	nental			PO	r.		
EPA 200.7, Rev. 4.4	Prepared:	824206	02/.	20/2019	14:00:00	Analyzed	824610	02/21/2019	21:12:00	JI
Parameter	Results		Units	RL		Flag	3	CAS	Bo	ottle
z Dissolved Arsenic	0.0187		mg/L	0.050		JD		7440-38-2	12	
N Dissolved Iron N Dissolved Manganese	0.0118 <0.00264		mg/L mg/L	0.025 0.00264		ſ		7439-89-6 7439-96-5	12 12	
EPA 200.7, Rev. 4.4	Prepared:	824428	02/2	21/2019	13:30:00	Analyzed	824580	02/21/2019	23:07:00	JE
Parameter	Results	1	Units	RL		Flag	3	CAS	Во	ttle
N Arsenic	0.0186		mg/L	0.010				7440-38-2	16	
EPA 200.8 5.4	Prepared:	824428	02/2	21/2019	13:30:00	Analyzed	824858	02/22/2019	18:32:00	L
Parameter	Results	1	Units	RL		Flag	3	CAS	Bo	ttle
N Aluminum, Total	0.0356		mg/L	0.005		В		7429-90-5	16	
EPA 300.0 2.1	Prepared:	825055	02/2	24/2019	01:51:00	Analyzed	825055	02/24/2019	01:51:00	Al
Parameter	Results		Units	RL		Flag	r	CAS	Во	ttle
N Chloride	61.8		mg/L	1.50					01	
N Fluoride N Sulfate	0.750		mg/L	0.500					01	
N Sunate	22.5		mg/L	1.50					01	
EPA 300.1 1	Prepared:	825632	02/2	27/2019	13:42:00	Analyzed	825632	02/27/2019	13:42:00	Ai
Parameter	Results	3	Units	RL		Flag	r	CAS	Bo	ttle
N Bromate	<5.00	đ	ug/L	5.00					04	
EPA 350.1 2	Prepared;	824293	02/2	21/2019	09:00:00	Analyzed	824522	02/21/2019	11:09:00	М
Parameter	Results	3	Units	RL		Flag		CAS	Bo	ttle
N Ammonia (as N)	0.382	1	mg/L	0.020					15	
EPA 524.2 4.1	Prepared:	824775	02/2	1/2019	14:08:00	Analyzed	824775	02/21/2019	14:08:00	K
Parameter	Results	1	Units	RL		Flag		CAS	Boi	ttle
N Bromodichloromethane	15.4		ug/L	1.00		D		75-27-4	10	
N Bromoform N Chloroform	2.94		ug/L	1.00		P		75-25-2	10	
N Dibromochloromethane	12.9 12.8		ıg/L ıg/L	1.00 1.00		D D		67-66-3 124-48- 1	10 10	
EPA 524.2 4.1	Prepared:			5/2019	10:53:36	Calculated	824775	02/25/2019	10:53:36	C.
Parameter	Results									
N Trihalomethanes	0.04404	(	Jnits	RL		Flag		CAS	Bot	ille

#### Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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CORP®	/984-0551 FAX 903 En	/ <b>984-5914</b> iployee Owr		ail corp@ Integrity	Caring	Continua	d Improver )1/2019	nent	Page	3 of 6
1760456 S190501542								Received:	02/20/2019	9
Drinking Water Collect Taken:	ed by: Client 02/19/2019 14:54:00		vironme	ental			PO	Þ		
EPA 552.2 1	Prepared:	824870	02/25	5/2019	08:53:29	Analyzed	824983	02/25/2019	16:09:00	EM
Parameter	Results	U	nits	RL	-	Flag		CAS	Bo	ttle
N Bromoacetic acid	<5.00	u	g/L	5.00				79-08-3	19	
N Chloroacetic acid	10.2		g/L	5.00				79-11-8	19	
N Dibromoacetic acid	10.8	u	g/L	5.00				631-64-1	19	
N Dichloroacetic acid	17.6	u	g/L	5.00				79-43-6	19	
N Trichloroacetic acid	9.17	u	g/L	5.00				76-03-9	19	
EPA 552.2 1	Prepared:	824870	02/25	5/2019	08:53:29	Calculated	824983	02/26/2019	13:29:41	CA.
Parameter	Results	U	nits	RL		Flag		CAS	Boi	ttle
N HAA5	0.04777	m	g/L	0.005	-				19	
SM 2130 B-2001	Prepared:	824659	02/21	1/2019	12:00:00	Analyzed	824659	02/21/2019	12:00:00	DW
Parameter	Results	U	mits	RL		Flag		CAS	Bot	ttle
N Turbidity	1.14	N	TU	0.30					06	
SM 2320 B-2011	Prepared:	824410	02/21	/2019	08:45:00	Analyzed	824410	02/21/2019	08:45:00	ELS
Parameter	Results	U	mits	RL		Flag	_	CAS	Bot	ttle
N Total Alkalinity (as CaCO3)	176	m	g/L	1.00					01	
SM 2340 B-2011	Prepared:		02/22	2/2019	17:36:21	Calculated		02/22/2019	17:36:21	CAL
Parameter	Results	Th	nits	RL	-	Flag	-	CAS	Bot	ul.
1 an americi	resting	U				1 142		CAD	DOL	ne

SM 2540 C-97 Prepared: 825174 02/22/2019 07:00:00 Analyzed 825174 02/22/2019 07:00:00 TH2 Parameter Results Units RL Flag CAS Bottle N Total Dissolved Solids 328 mg/L 20.0 01 SM 2540 D-97 Prepared: 824730 02/21/2019 10:45:00 Analyzed 824730 02/21/2019 10:45:00 ALW Parameter Results Units RL Flag CAS Bottle N Total Suspended Solids <2.00 mg/L 2.00 01 SM 5310 C-2000 Prepared: 824335 02/20/2019 14:58:00 Analyzed 824335 02/20/2019 14:58:00 ALH Parameter Results Units RL Flag CAS Bottle N Total Organic Carbon 2.73 mg/L 0.500 03 .

Sample Preparation

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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A	COMPLETE SERVICE LAB	Phone 903/984-0551 FAX 903 En Results	/984-59	14 e-Mail corp	Caring	om Continu	ual Improver /01/2019	nent	Page	4 of 6
	1760456 S190501542							Received:	02/20/2019	)
		Prepared:		02/20/2019	11:43:00	Analyzed		02/20/2019	11:43:00	СС
z	Bottle pH	<2	. 7	SU			• 67		07	1
		Prepared:	82414:	02/20/2019	00:00:00	Analyzed	824145	02/20/2019	00:00:00	CC.
z	Bottle pH	<2		SU					02	
z	Bottle pH	<2		SU					02	
z	Bottle pH	<2		SU					05	
	Cooler Temperature	0.3		degrees C					01	
	Cooler Temperature	0.3		degrees C					02	
	Cooler Temperature	0.3		degrees					08	
	Cooler Temperature	0.3		C degrees					09	
	Cooler Temperature	0.3		C degrees					10	
	Cooler Temperature	0.3		C degrees					11	
	Cooler Temperature	0.3		C degrees					06	
	Cooler Temperature	0.3		C degrees					03	
	Cooler Temperature	0.3		C degrees					04	
	Cooler Temperature	0.3		C degrees C					05	
E	EPA 200.2 2.8	Prepared:	824428	02/21/2019	13:30:00	Analyzed	824428	02/21/2019	13:30:00	TES
N	Liquid Metals Digestion	50/50		ml					02	
E	EPA 350.2, Rev. 2.0	Prepared:	824293	02/21/2019	09:00:00	Analyzed	824293	02/21/2019	09:00:00	CRS
N	Ammonia Distillation	50/50		ml					05	
E	PA 524.2 4.1	Prepared:	824775	02/21/2019	14:08:00	Analyzed	824775	02/21/2019	14:08:00	KLB
N	Trihalomethane Expansion Code	Entered							10	
_										

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



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inal Report Page 7 of 22	Ana-Lab Corp. P	O. Bo	x 9000	Kilgore.	TX 75		n # 81230 Repo	ort Page 6	of 22
ANALAB CORP. THE COMPLETE SERVICE LAB	Phone 903/984-0551 FAX 903		4 e-Mail corp	@ana-lab.co	om Continu	al Improven (01/2019	sent	Page	5 of 6
1760456 S190501542							Received:	02/20/2019	)
EPA 552.2 1	Prepared:	824870	02/25/2019	08:53:29	Analyzed	824870	02/25/2019	08:53:29	LSL
N Haloacetic Acids Extraction EPA 552.2 1	3/40 Prepared:		nl 02/25/2019	08:53:29	Analyzed	824983	02/25/2019	08 16:09:00	EM
N Haloacetic Acids (HAA5)	Entered							19	
SM 2540 C-97	Prepared;	824539	02/22/2019	07:00:00	Analyzed	824539	02/22/2019	07:00:00	TH2
N Total Dissolved Solids Started	Started								
SM 2540 D-1997	Prepared:	824092	02/21/2019	10:45:00	Analyzed	824092	02/21/2019	10:45:00	ALV
N TSS Set Started	Started								
SM 3030 B-2004	Prepared:	824206	02/20/2019	14:00:00	Analyzed	824206	02/20/2019	14:00:00	ALE
N Dissolved Metals Filtering	50/50	n	ıl			_		01	

Gulf Const Region: 4141 Directors Row Ste C Houston TX 77092



Final Report Page 8 of 22	Ana-Lab Corp.	P.O. Box 9000	Batch # 8 Kilgore, TX 75663	1230 Report Page 7 of 22
CORP. THE COMPLETE SERVICE LAB	Phone 903/984-0551 FAX Results	903/984-5914 e-Mail con Employee Owned Integ		Page 6 of 6
Qualifiers:				

- J Analyte detected below quantitation limit
- D Duplicate RPD was higher than expected
- B Analyte detected in the associated method blank
- P Spike recovery outside control limits due to matrix effects.

We report results on an As Received or wet basis unless marked Dry Weight. Unless otherwise noted, testing was performed at Ana-labs corporate laboratory that holds the following Federal and State certificates: EPA Lab Number TX00063, US Department of Agriculture Soil Import Permit P330-17-00117, Texas Commission on Environmental Quality Commercial Drinking Water Lab Approval (Lab ID: TX219), Texas Commission on Environmental Quality NELAP T104704201-19-15, Louisiana Department of Environmental Quality Laboratory Certification (NELAP, LELAP) #02008, Louisiana Department of Health and Hospitals Drinking Water (NELAP) Certificate No LA026, Oklahoma Department of Environmental Quality TNI Laboratory Accreditation Program Certificate No. 2018-126, Arkansas Department of Environmental Quality Certification #18-068-0. The Accredited column designates accreditation by N -- NELAC, or z -- not covered under NELAC scope of accreditation.

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp. Unless otherwise specified, these test results meet the requirements of NELAC.

RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

U

Trey Peery, MA, Project Manager

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NALAB	Phone 903/98		AX 903/9 ployee (		e-Mail corp Integrity			LELA ontinual Improv	P-accree	lited #03	2008
COKP. COMPLETE SERVICE LAB	Q	uality						01/2019	entent	Pa	ge 1 of 1
Report To							Account			oject	
B-Environmental Kevin C. Baros 1606 E Brazos St., Suite D Victoria, TX 77901						E	BENV-0	G	86	3477	
Analytical Set	824522									F	EPA 350
				Blanl	k						
<u>Parameter</u> Ammonia (as N)	PrepSet 824293	<i>Reading</i> ND	<i>MDL</i> 0.00356	MQL 0.020 CCV	Units mg/L			File 119637286			
Parameter		Reading	Known	Units	Recover%	Limits%		1771			
Ammonia (as N)		2.06	2.00	mg/L	103	90.0 - 110		File 119637285			
		2.12	2.00	mg/L	106	90.0 - 110		119637289			
		2.08	2.00	mg/L	104	90.0 - 110		119637295			
		2.16	2.00	mg/L	108	90.0 - 110		119637300			
		2.14	2.00	mg/L	107	90.0 - 110		119637308			
		2.07	2.00	mg/L	104	90.0 - 110		119637319			
		2.17	2.00	mg/L	108	90.0 - 110		119637328			
		2.16	2.00	mg/L	108	90.0 - 110		119637336			
		2.16	2.00	mg/L	108	90.0 - 110		119637345			
		2.13	2.00	mg/L Duplica	106	90.0 - 110		119637349			
Parameter	Sample	-5	Result	Unknow					204		10.00
Ammonia (as N)	1760439		0.113	0.140	п		Unit		RPD	*	Limit%
	1760590		0.115	0.121			mg/L mg/L		21.3 13.1		20.0 20.0
				ICV			ing t		15,1		20.0
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Ammonia (as N)		2.10	2.00	mg/L	105	90.0 - 110		119637284			
				LCS Di							
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Ammonia (as N)	824293	2.06	2.02		2.00	90.0 - 110	103	101	mg/L	1.96	20.0
				Mat. Spi	ike						
Parameter	Sample	Spike	Unknow	n Known	Units	Recovery %	Limits %	File			
Ammonia (as N)	1760439	2.46	0.140	2.00	mg/L	116	80.0 - 120	119637343			
	1760590	2.32	0.121	2.00	mg/L	110	80.0 - 120	119637340			
Analytical Set	824730			Controll	Rik					SM	2540 D-
Parameter	PrepSet	Reading	MDL	MQL	Units			Eil-			
Total Suspended Solids		0.0002	MDL	MQL	grams			File 119642436			
				Duplica	te						
Parameter	Sample		Result	Unknown	1		Unit		RPD		Limit%
Total Suspended Solids	1760343		64.0	67.3			mg/L		5.03		20.0
	1760453		4940	5040			mg/L		2.00		20.0
	1760454		3840	3970			mg/L		3.33		20.0



Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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### Final Report Page 10 of 22

COM THE COMPLETE Batch # 81230

1 2

	Ana-La	b Corp	). P.(	O. Box	9000	Kilgore	e, TX 75	Batch # 8	Repo	rt Page	9 of 22
AB)	Phone 903/98		X 903/9 ployee C		e-Mail cor Integrity			LELA ntinual Improv	P-accrea ement	lited #02	008
SERVICE LAB	Q	uality	y Co	ontro	1	Pr	inted 03/0	1/2019		Pag	ge 2 of 13
				LCS							
<u>Parameter</u> Total Suspended Solids	<i>PrepSet</i> 824730	<b>Reading</b> 46.0		Known 50.0 Standar	Units mg/L •d	<b>Recover%</b> 92.0	<i>Limits</i> 90.0 - 110	<i>File</i> 119642470			
<u>Parameter</u> Total Suspended Solids	Sample	<b>Reading</b> 92.0	<i>Known</i> 100	<i>Units</i> mg/L	<i>Recover%</i> 92.0	<i>Limits%</i> 90.0 - 110		<i>File</i> 119642469			
Analytical Set	825174			A						SM	2540 C-9
				ControlE	Blk						
<u>Parameter</u> Total Dissolved Solids	<i>PrepSet</i> 825174	<i>Reading</i> 0	MDL	MQL Duplicat	Units grams			File 119651444			
D											
Parameter Total Dissolved Solids	Sample 1760369		<i>Result</i> 2700	Unknown 2670 LCS			Unit mg/L		<b>RPD</b> 1.12		<i>Limit%</i> 20.0
Parameter Total Dissolved Solids	<i>PrepSet</i> 825174	<b>Reading</b> 202		Known 200 Standar	<i>Units</i> mg/L	<i>Recover%</i> 101	<i>Limits</i> 85.0 - 115	<i>File</i> 119651458			
Parameter	Sample	Reading	Known	Units	Recover%	Limits%		File			
Total Dissolved Solids	Sample	100	100	mg/L	100	90.0 - 110		119651445			
Analytical Set	825055									FD	A 300.0 2.
	distributed at		A	WRL/MR	RL C					DI .	A 500.0 2.
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Fluoride		0.135	0.100	mg/L Blank	135	50.0 - 150		119649528			
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Chloride	825055	ND	0.0196	0.300	mg/L			119649527			
Fluoride	825055	ND	0.014	0.100	mg/L			119649527			
Sulfate	825055	0.017	0.0109	0.300	mg/L			119649527			
				CCV							
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Chloride		10.6	10.0	mg/L	106	90.0 - 110		119649524			
		10.1	10.0	mg/L	101	90.0 - 110		119649539			
Fluoride		10.1	10.0	mg/L	101	90.0 - 110		119649553			
ridonde		10.0	10.0	mg/L	100	90.0 - 110		119649524			
		9.92 9.96	10.0 10.0	mg/L mg/L	99.2 99.6	90.0 - 110 90.0 - 110		119649539			
Sulfate		11.0	10.0	mg/L mg/L	99.8 110	90.0 - 110 90.0 - 110		119649553 119649524			
		10.2	10.0	mg/L mg/L	102	90.0 - 110		119649524			
		10.2	10.0	mg/L	102	90.0 - 110		119649553			
				LCS Du							
Parameter	Property	100	LCOR			F	1.000		-		
Chloride	PrepSet 825055	LCS 4.81	4.81	÷	Known 5.00	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Fluoride	825055	4.91	4.91		5.00	85.0 - 110 88.0 - 110	96.2	96.2	mg/L	0	20.0
Sulfata	825055	5.14	7.21		5.00	00.0 - 110	98.2	98.2	mg/L	0	20.0

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

825055

5.14

5.16

Sulfate



5.00

# Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

103

103

88.0 - 110

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Form rptPROJQCGrpt Created 01/27/2005 v1.0

mg/L

0.388

20.0

LDSClient v1.14.9.1744

ANA.	LAB	Phone 903/98-		AX 903/9 ployee (		e-Mail corp Integrity			LELA Continual Improv	P-accred	lited #02	008
CORP.®	TE SERVICE LAB	Q	ualit						/01/2019		Pag	ge 3 of 13
					MSD							
	Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
	Chloride	1760428	25.9	25.8	17.3	10.0	80.0 - 120	86.0	85.0	mg/L	1.17	20.0
	Fluoride	1760428	9.08	9.08	1.26	10.0	80.0 - 120	78.2 *	78.2 *	mg/L	0	20.0
	Sulfate	1760428	19.9	19.1	10.4	10.0	80.0 - 120	95.0	87.0	mg/L	8.79	20.0
	Chloride	1760429	25.7	25.6	17.4	10.0	80.0 - 120	83.0	82.0	mg/L	1.21	20.0
	Fluoride Sulfate	1760429	9.75	9.67	1.28	10.0	80.0 - 120	84.7	83.9	mg/L	0.949	20.0
		1760429	19.5	19.3	10.4	10.0	80.0 - 120	91.0	89.0	mg/L	2.22	20.0
	Analytical Set	825632		A	WRL/MI	RLC					E	PA 300.
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Bromate		5.11	5.00	ug/L	102	75.0 - 125		119659123			
					Blank							
	Parameter	PrepSet	Reading	MDL	MQL	Units			F21-			
	Bromate	825632	ND	2.06	5.00	ug/L			File 119659122			
		825632	ND	2.06	5.00	ug/L			119659122			
					CCV	uB/2			119039123			
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Bromate		548	500	ug/L	110	85.0 - 115		119659119			
			535	500	ug/L	107	85.0 - 115		119659139			
			530	500	ug/L	106	85.0 - 115		119659146			
					LCS Du	р			1.001.000.000			
	Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
	Bromate	825632	94.9	95.3		100	85.0 - 115	94.9	95.3	ug/L	0.421	25.0
					MSD							
	Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
	Bromate	1760572	207	201	ND	200	80.0 - 120	104	100	ug/L	2.94	20.0
		1760573	189	192	ND	200	80.0 - 120	94.5	96.0	ug/L	1.57	20.0
	Analytical Set	824335									SM 53	10 C-200
	Parameter		Reading		WRL/MR							
	Total Organic Carbon		1.97	Known 2.00	Units mg/L	Recover% 98.5	Limits% 75.0 - 125		File			
				2.00	Blank	20.5	75.0 - 125		119634219			
	Parameter	PrepSet	Reading	MDL		Tinter						
	Total Organic Carbon	824335	0.0708	0.0618	MQL 0.500	Units			File			
		824335	0.120	0.0618	0.500	mg/L mg/L			119634218			
		824335	0.0701	0.0618	0.500	mg/L mg/L			119634222			
					CCB	ing o			119634244			
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
	Total Organic Carbon	824335	0.139	0.0618	0.500	mg/L			119634212			
	Contraction of Contract	824335	0.0838	0.0618	0.500	mg/L			119634230			
		824335	0.159	0.0618	0.500	mg/L			119634230			
		824335	0.0795	0.0618	0.500	mg/L			119634240			
		824335	0.121	0.0618	0.500	mg/L			119634242			
		824335	0.136	0.0618	0.500	mg/L			119634255			



# Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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INA. I AE	3 1	Phone 903/98-		X 903/9 ployee C		e-Mail corp Integrity	@ana-lab. Carii		LEL.	P-accred	lited #02	008
COKP.®		0	uality						01/2019	ement	Pa	ge 4 of 13
E GOM LETE GENY		Y	uam.	yci		1						50 1 01 1.
					CCV							
10 TO 10	<u>umeter</u> 1 October		Reading	Known	Units	Recover%	Limits%		File			
1 ota	l Organic Carbon		10.9	10.0	mg/L	109	90.0 - 110		119634215			
			10.4 10.6	10.0 10.0	mg/L	104 106	90.0 - 110 90.0 - 110		119634224			
			10.3	10.0	mg/L mg/L	103	90.0 - 110		119634231			
			10.3	10.0	mg/L	103	90.0 - 110		119634241 119634243			
			10.2	10.0	mg/L	102	90.0 - 110		119634245			
			10.5	10.0	mg/L mg/L	105	90.0 - 110		119634254			
			10.5	10.0	ICL	105	50.0 - 110		119034230			
Para	meter		Reading	Known	Units	Recover%	Limits%		File			
Total	l Organic Carbon		21.8	20.0	mg/L	109	90.0 - 110		119634214			
			18.9	20.0	mg/L	94.5	90.0 - 110		119634220			
					ICV							
Para	meter		Reading	Known	Units	Recover%	Limits%		File			
Total	Organic Carbon		10.8	10.0	mg/L	108	90.0 - 110		119634216			
			10.3	10.0	mg/L LCS	103	90.0 - 110		119634221			
Para	meter	PrepSet	Reading		Known	Units	Recover%	Timite	F#1-			
	Organic Carbon	824335	5.17		5.00	mg/L	103	Limits 89.8 - 111	File 119634217			
		824335	4.92		5.00	mg/L	98.4	89.8 - 111	119634223			
		824335	5.20		5.00	mg/L	104	89.8 - 111	119634225			
					MSD	ing/L	104	69.6 - 111	119034245			
Para	meter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Total	Organic Carbon	1760061	10.4	10.3	0.128	10.0	92.5 - 112	103	102	mg/L	0.978	20.0
		1760079	11.7	11.8	1.30	10.0	92.5 - 112	104	105	mg/L	0.957	20.0
		1760402	10.4	10.3	0.206	10.0	92.5 - 112	102	101	mg/L	0.986	20.0
					Standar	d						
	meter	Sample	Reading	Known	Units	Recover%	Limits%		File			
Total	Organic Carbon		52.8	50.0	mg/L	106	90.0 - 110		119634213		_	
Ana	lytical Set	824580			WDI AID						EP.	A 200.7 4
					WRL/MR							
	meter		Reading	Known	Units	Recover%	Limits%		File			
Calci			0.745	0.500	mg/L	149	25.0 - 175		119639097			
Iron, Magn			0.060	0.050	mg/L	120	25.0 - 175		119639097			
	tesium, Total ganese		0.536 0.0385	0.500	mg/L	107	25.0 - 175		119639097			
wang	ganese		0.0385	0.050	mg/L Blank	77.0	25.0 - 175		119639097			
Para	meter	PrepSet	Reading	MDL	MQL	Units			File			
Arser	nic	824428	ND	0.0077	0.050	mg/L			119639181			
Calcin	um	824428	0.259	0.0419	0.500	mg/L			119639181			
Iron,	Total	824428	ND	0.00504	0.025	mg/L			119639181			
	iesium, Total	824428	0.0227	0.0102	0.020	mg/L		+	119639181			
	anese	824428	ND	0.00264	0.050	mg/L			119639181			
Sodiu	un	824428	ND	0.0315	0.500	mg/L			119639181			
					CCV							
Parai	meter		Reading	Known	Units	Recover%	Limits%		File			



LAB	Phone 903/984-0551 F/ Em	AX 903/9 ployee (		e-Mail cor Integrit		LELAP-accred Continual Improvement	lited #02008
TE SERVICE LAB	Quality	VC	ontro	1	Printed	03/01/2019	Page 5 o
	Yuuni	y Ci	Unur	51		00/01/2017	r age 5 (
			CCV	7			
Parameter	Reading	Known	Units	Recover%	Limits%	File	
Arsenic	2.28	2.50	mg/L	91.2	90.0 - 110	119639175	
	2.33	2.50	mg/L	93.2	90.0 - 110	119639185	
	2.62	2.50	mg/L	105	90.0 - 110	119639194	
um	27.0	25.0	mg/L	108	90.0 - 110	119639098	
	27.3	25.0	mg/L	109	90.0 - 110	119639106	
	27.4	25.0	mg/L	110	90.0 - 110	119639117	
	26.6	25.0	mg/L	106	90.0 - 110	119639128	
	26.3	25.0	mg/L	105	90.0 - 110	119639138	
	26.5	25.0	mg/L	106	90.0 - 110	119639149	
	26.1	25.0	mg/L	104	90.0 - 110	119639154	
	25.5	25.0	mg/L	102	90.0 - 110	119639164	
	25.5	25.0	mg/L	102	90.0 - 110	119639175	
	25.3	25.0	mg/L	101	90.0 - 110	119639185	
	26.3	25.0	mg/L	105	90.0 - 110	119639194	
Total	2.37	2.50	mg/L	94.8	90.0 - 110	119639098	
	2.30	2.50	mg/L	92.0	90.0 - 110	119639106	
	2.52	2.50	mg/L	101	90.0 - 110	119639117	
	2.44	2.50	mg/L	97.6	90.0 - 110	119639128	
	2.44	2.50	mg/L	97.6	90.0 - 110	119639138	
	2.46	2.50	mg/L	98.4	90.0 - 110	119639149	
	2.41	2.50	mg/L	96.4	90.0 - 110	119639154	
	2.41	2.50	mg/L	96.4	90.0 - 110	119639164	
	2.38	2.50	mg/L	95.2	90.0 - 110	119639175	
	2.33	2.50	mg/L	93.2	90.0 - 110	119639185	
	2.46	2.50	mg/L	98.4	90.0 - 110	119639194	
esium, Total	24.7	25.0	mg/L	98.8	90.0 - 110	119639098	
	24.3	25.0	mg/L	97.2	90.0 - 110	119639106	
	25.8	25.0	mg/L	103	90.0 - 110	119639117	
	25.2	25.0	mg/L	101	90.0 - 110	119639128	
	25.0	25.0	mg/L	100	90.0 - 110	119639138	
	25.2	25.0	mg/L	101	90.0 - 110	119639149	
	24.9	25.0	mg/L	99.6	90.0 - 110	119639154	
	24.7	25.0	mg/L	98.8	90.0 - 110	119639164	
	24.6	25.0	mg/L	98.4	90.0 - 110	119639175	
	24.1	25.0	mg/L	96.4	90.0 - 110	119639185	
	25.3	25.0	mg/L	101	90.0 - 110	119639194	
ese	2.45	2.50	mg/L	98.0	90.0 - 110	119639175	
	2.40	2.50	mg/L	96.0	90.0 - 110	119639185	
	2.52	2.50	mg/L	101	90.0 - 110	119639194	
			ICL				
<u>eter</u>	Reading	Known	Units	Recover%	Limits%	File	
ic m	5.13	5.00	mg/L	103	95.0 - 105	119639093	
	51.0	50.0	mg/L	102	95.0 - 105	119639093	
Fotal	5.09	5.00	mg/L	102	95.0 - 105	119639093	
esium, Total	51.3	50.0	mg/L	103	95.0 - 105	119639093	
nese	5.07	5.00	mg/L	101	95.0 - 105	119639093	
			ICV				
ter	Reading	Known	Units	Recover%	Limits%	File	
Arsenic	2.58	2.50	mg/L	103	90.0 - 110	119639096	



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1-LAB	Phone 903/9		AX 903/9 ployee (		e-Mail corp Integrity	-		LELA Continual Improve	P-accred	lited #02	008
PLETE SERVICE LAB	C	ualit	v Co	ontro	l	Pr	inted	03/01/2019		Pa	ge 6 of 13
	X	, would ,	,								
			1000	ICV							
Parameter Calcium		Reading	Known	Units	Recover%	Limits%		File			
Iron, Total		25.8	25.0	mg/L	103	90.0 - 110		119639096			
Magnesium, To	al	2.59 25.9	2.50	mg/L	104	90.0 - 110		119639096			
Manganese	ai		25.0	mg/L	104	90.0 - 110		119639096			
wanganese		2.58	2.50	mg/L	103	90.0 - 110		119639096			
1000				LCS D	up						
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Arsenic	824428	0.481	0.449		0.500	85.0 - 115	96.2	89.8	mg/L	6.88	25.0
Calcium	824428	4.55	4.62		5.00	85.0 - 115	91.0	92.4	mg/L	1.53	25.0
Iron, Total	824428	0.473	0.471		0.500	85.0 - 115	94.6	94.2	mg/L	0.424	25.0
Magnesium, To		4.92	5.00		5.00	85.0 - 115	98.4	100	mg/L	1.61	25.0
Manganese	824428	0.476	0.480		0.500	85.0 - 115	95.2	96.0	mg/L	0.837	25.0
Sodium	824428	4.32	4.38		5.00	85.0 - 115	86,4	87.6	mg/L	1.38	25.0
				MSD							
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Arsenic	1760456	0.459	0.493	ND	0.500	75.0 - 125	91.8	98.6	mg/L	7.14	25.0
Calcium	1760456	47.6	47.9	42.4	5.00	75.0 - 125	104	110	mg/L	5.61	25.0
Iron, Total	1760456	0.657	0.655	0.198	0.500	75.0 - 125	91.8	91.4	mg/L	0.437	25.0
Magnesium, To	al 1760456	13.6	13.8	9.54	5.00	75.0 - 125	81.2	85.2	mg/L	4.81	25.0
Manganese	1760456	0.459	0.461	ND	0.500	75.0 - 125	91.8	92.2	mg/L	0.435	25.0
Sodium	1760456	66.8	67.0	59.6	5.00	75.0 - 125	144 *	148 *	mg/L	2.74	25.0
Analytical S	t 824610									_	A 200.7 4.
				Blank							
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Dissolved Arser	ic 824206	0.0137	0.0077	0.050	mg/L			119640414			
Dissolved Iron	824206	ND	0.00504	0.025	mg/L			119640414			
Dissolved Mang	anese 824206	ND	0.00264	0.050	mg/L			119640414			
				CCV							
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Dissolved Arser	c	2.68	2.50	mg/L	107	90.0 - 110		119640413			
		2.38	2.50	mg/L	95.2	90.0 - 110		119640415			
		2.59	2.50	mg/L	104	90.0 - 110		119640419			
Dissolved Iron		2.46	2.50	mg/L	98.4	90.0 - 110		119640413			
		2.41	2.50	mg/L	96.4	90.0 - 110		119640415			
		2.41	2.50	mg/L	96.4	90.0 - 110		119640419			
Dissolved Mang	inese	2.53	2.50	mg/L	101	90.0 - 110		119640413			
		2.48	2.50	mg/L	99.2	90.0 - 110		119640415			
		2.44	2.50	mg/L	97.6	90.0 - 110		119640419			
				ICL		2.194.1 <b>1</b> 14		119010119			
Parameter		Reading	Known	Units	Danonar0/	Timlen04		F317 -			
Dissolved Arsen	c	5.13	5.00		Recover%	Limits%		File			
Dissolved Iron		5.09	5.00	mg/L mg/L	103 102	95.0 - 105 95.0 - 105		119640410			
Dissolved Mang	nese	5.07	5.00	mg/L	102			119640410			
		5.07	5.00	ICV	101	95.0 - 105		119640410			
Parameter		Reading	Known	Units	Recover%	Limits%		File			
A R LANSE COM		2.58	2.50	mg/L	103	90.0 - 110		119640412			
Dissolved Arsen		4.20	2.30			70.07 - 110		1106/0/17			



#### Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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		×	Gulli	,		1						
	<u>Parameter</u> Dissolved Manganese		<i>Reading</i> 2.58	<b>Known</b> 2.50	ICV Units mg/L	<b>Recover%</b> 103	<i>Limits%</i> 90.0 - 110		<i>File</i> 119640412			
	<u>Parameter</u> Dissolved Arsenic Dissolved Iron Dissolved Manganese	<i>Sample</i> 1760456 1760456 1760456	<i>MS</i> 0.521 0.492 0.494	<i>MSD</i> 0.429 0.500 0.497	MSD UNK 0.0187 0.0118 ND	<i>Known</i> 0.500 0.500 0.500	<i>Limits</i> 75.0 - 125 75.0 - 125 75.0 - 125	<i>MS%</i> 100 96.0 98.8	<i>MSD%</i> 82.1 97.6 99.4	<i>Units</i> mg/L mg/L mg/L	<b>RPD</b> 20.2 * 1.65 0.605	<i>Limit%</i> 20.0 20.0 20.0
	Analytical Set	824858										A 200.8 5.
					Blank							
	<u>Parameter</u> Aluminum, Total	<i>PrepSet</i> 824428	<i>Reading</i> 0.00502	<i>MDL</i> 0.0025	MQL 0.005 CCV	<i>Units</i> mg/L		•	<i>File</i> 119644846			
	<u>Parameter</u> Aluminum, Total		<b>Reading</b> 0.0497 0.0501 0.0501	<i>Known</i> 0.05 0.05 0.05	<i>Units</i> mg/L mg/L mg/L	<i>Recover%</i> 99.4 100 100	<i>Limits%</i> 90.0 - 110 90.0 - 110 90.0 - 110		<i>File</i> 119644811 119644819 119644828			
			0.0514 0.0499 0.0509 0.0509	0.05 0.05 0.05 0.05	mg/L mg/L mg/L mg/L	103 99.8 102 102	90.0 - 110 90.0 - 110 90.0 - 110 90.0 - 110		119644845 119644854 119644865 119644875			
			0.0508 0.0503	0.05 0.05	mg/L mg/L ICV	102 101	90.0 - 110 90.0 - 110		119644886 119644896			
	<u>Parameter</u> Aluminum, Total		Reading 0.0493	Known 0.05	Units	Recover%	Limits%		File			
	, nummin, rour		0.0475	0.05	mg/L LCS Du	98.6 p	90.0 - 110		119644805			
	<u>Parameter</u> Aluminum, Total	<i>PrepSet</i> 824428	<i>LCS</i> 0.469	<i>LCSD</i> 0.473		<i>Known</i> 0.500	<i>Limits%</i> 85.0 - 115	<i>LCS%</i> 93.8	<i>LCSD%</i> 94.6	Units mg/L	<b>RPD</b> 0.849	<i>Limit%</i> 20.0
					MSD			2010	21.0	mg/L	0.042	20.0
	<u>Parameter</u> Aluminum, Total	<i>Sample</i> 1760456 1760779	<i>MS</i> 0.567 0.499	<i>MSD</i> 0.525 0.497	UNK 0.0356 0.0156	<i>Known</i> 0.500 0.500	<i>Limits</i> 70.0 - 130 70.0 - 130	<i>MS%</i> 106 96.7	<i>MSD%</i> 97.9 96.3	<i>Units</i> mg/L mg/L	<b>RPD</b> 8.23 0.415	<i>Limit%</i> 20.0 20.0
	Analytical Set	825038									EPA	200.7 4.4
	Parameter	PrepSet	Reading	MDL	Blank MQL	Units			File			
	Iron, Total Magnesium, Total	824428 824428	ND ND	0.00504 0.0102	0.025	mg/L mg/L			119648374			
	Potassium	824428	ND	0.0765	0.500	mg/L mg/L			119648374 119648374			
	Sodium	824428	ND	0.0315	0.500 CCV	mg/L			119648374			
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Potassium		24.9	25.0	mg/L	99.6	90.0 - 110		119648353			
			24.2	25.0	mg/L	96.8	90.0 - 110		119648363			
			24.8	25.0	mg/L	99.2	90.0 - 110		119648373			



# Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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NA		Phone 903/98	4-0551 FA	AX 903/9	84-5914	e-Mail corp	@ana-lab.	com	LELA	P-accred	lited #02	008
INH.				ployee C		Integrity	Carj		ontinual Improv			
COMPLE	TE SERVICE LAB	Q	uality	y Co	ontro		Pr	inted 03/	01/2019		Pag	ge 8 of 1
					CCV							
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Potassium		24.9	25.0	mg/L	99.6	90.0 - 110		119648391			
			24.9	25.0	mg/L	99.6	90.0 - 110		119648401			
	Sodium		23.8	25.0	mg/L	95.2	90.0 - 110		119648353			
			23.5	25.0	mg/L	94.0	90.0 - 110		119648363			
			23.9	25.0	mg/L	95.6	90.0 - 110					
			23.4	25.0		93.6			119648373			
			23.4		mg/L		90.0 - 110		119648381			
				25.0	mg/L	95.2	90.0 - 110		119648391			
			23.5	25.0	mg/L	94.0	90.0 - 110		119648401			
					Dir. SPH	KD .						
	Parameter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK%	DSPKD%	Units	RPD	Limit?
	Sodium	1760456	78.9	78.8	56.6	25.0	75.0 - 125	89.2	88.8			
	a per sua	1100450	1000				75.0 - 125	07.2	00.0	mg/L	0.127	25.0
					Direct SI	?K			8			
	Parameter	Sample	DSPK		UNK	Known	Limits%	DSPK%		Units		
	Sodium	1760456	78.9		56.6	25.0	75.0 - 125	89.2		mg/L		25.0
					ICL			1.1.1				22.0
					ICL							
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Potassium		49.1	50.0	mg/L	98.2	95.0 - 105		119648340			
	Sodium		49.3	50.0	mg/L	98.6	95.0 - 105		119648340			
					ICV							
	Parameter		Reading	Known	Timite	Paganar0/	Timite 0/		P21-			
	Potassium				Units	Recover%	Limits%		File			
	Sodium		23.7	25.0	mg/L	94.8	90.0 - 110		119648343			
	Southin		24.3	25.0	mg/L	97.2	90.0 - 110		119648343			
					LCS Du	р						
	Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit?
	Iron, Total	824428	0.517	0.532		0.500	85.0 - 115	103	106	mg/L	2.86	25.0
	Magnesium, Total	824428	4.75	4.81		5.00	85.0 - 115	95.0	96.2		1.26	25.0
	Potassium	824428	5.30	5.40		5.00	85.0 - 115	106	108	mg/L		
	Sodium	824428	5.21	5.33		5.00	85.0 - 115			mg/L	1.87	25.0
		021120	5.21	5.55	MSD	5.00	85.0 - 115	104	107	mg/L	2.28	25.0
	Parameter.		100	1000				14 (2000)	.Tecture			
	Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
	Iron, Total	1760456	0.716	0.728	0.213	0.500	75.0 - 125	101	103	mg/L	2.36	25.0
	Magnesium, Total	1760456	14.6	14.9	9.72	5.00	75.0 - 125	97.6	104	mg/L	5.96	25.0
	Potassium	1760456	9.57	9.62	4.48	5.00	75.0 - 125	102	103	mg/L	0.978	25.0
	Sodium	1760456	63.2	64.0	58.8	5.00	75.0 - 125	88.0	104	mg/L	16.7	25.0
	Analytical Set	825283									FD	200.7
					Blank						LIT	1 200.7
	Parameter	PrepSet	Reading	MDL	MQL	Units			<b>F</b> <sup>1</sup> / <sub>2</sub> .			
	Phosphorus	824428	ND	0.0388	0.100	mg/L			File			
	Silicon Recoverable	824428							119653453			
	Sincer Recoverance	024420	0.0551	0.0148	0.100 CCV	mg/L			119653453			
			40.00				de la m					
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Phosphorus		9.48	10.0	mg/L	94.8	90.0 - 110		119653452			
÷.			9.37	10.0	mg/L	93.7	90.0 - 110		119653463			
			9.69	10.0	mg/L	96.9	90.0 - 110		119653473			



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LETE SERVICE LAB	0	ualit	v Co	ontro		Pri	nted	03/01/2019		Pag	ge 9 of 13
	X	croule ,	,	CCV							
<u>Parameter</u>		Reading	Known		<b>D</b>	T 1. 14.07		<b>F</b>			
Silicon Recoverable		4.72	5.00	Units mg/L	Recover% 94.4	Limits% 90.0 - 110		File 119653463			
		4.90	5.00	mg/L ICL	98.0	90.0 - 110		119653473			
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Phosphorus		24.7	25.0	mg/L	98.8	95.0 - 105		119653450			
Silicon Recoverable		9.91	10.0	mg/L ICV	99.1	95.0 - 105		119653450			
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Phosphorus		9.83	10.0	mg/L	98.3	90.0 - 110		119653451			
Silicon Recoverable		4.95	5.00	mg/L	99.0	90.0 - 110		119653451			
				LCS Du	р						
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Phosphorus	824428	3.81	3.87		4.00	85.0 - 115	95.2	96.8	mg/L	1.56	25.0
Silicon Recoverable	824428	17.9	18.4		20.0	85.0 - 115	89.5	92.0	mg/L	2.75	25.0
				MSD							
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Phosphorus	1760456	4.10	4.08	0.236	4.00	75.0 - 125	96.6	96.1	mg/L	0.519	25.0
Silicon Recoverable	1760456	24.3	24.4	6.31	20.0	75.0 - 125	90.0	90.4	mg/L	0,554	25.0
Analytical Set	824775			DED						EP	A 524.2
				BFB							
Parameter 199	Sample	RefMass	Reading		Limits%			File			
BFB Mass 173	824775	174	34	0.4	0 - 2.00			119643476			
BFB Mass 174 BFB Mass 175	824775 824775	95.0 174	7989	61.8	50.0 - 100			119643476			
BFB Mass 175	824775	174	633 8066	7.9 101.0	5.00 - 9.00 95.0 - 101			119643476			
BFB Mass 177	824775	174	499	6.2	5.00 - 9.00			119643476			
BFB Mass 50	824775	95.0	2483	19.2	15.0 - 40.0			119643476 119643476			
BFB Mass 75	824775	95.0	6884	53.2	30.0 - 80.0			119643476			
BFB Mass 95	824775	95.0	12934	100.0	100 - 100			119643476			
BFB Mass 96	824775	95.0	933	7.2	5.00 - 9.00			119643476			
				Blank							
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Bromodichlorometha		ND	0.307	1.00	ug/L			119643480			
Bromoform	824775	ND	0.288	1.00	ug/L			119643480			
Chloroform	824775	ND	0.211	1.00	ug/L			119643480			
Dibromochlorometha	ne 824775	ND	0,185	1.00	ug/L			119643480			
				CCV							
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Bromodichlorometha	ne	18.4	20.0	ug/L	92.2	70.0 - 130		119643477			
Bromoform		14.8	20.0	ug/L	74.0	70.0 - 130		119643477			
Chloroform		19.6	20.0	ug/L	97.9	70.0 - 130		119643477			
Dibromochlorometha	ne	16.8	20.0	ug/L	84.0	70.0 - 130		119643477			
				IS Areas	6						



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SERVICE LAB	0	uality						03/01/2019	ement	Page	e 10 c
	X		,	IS Areas							
20040		-									
Parameter 1,4-DichlorobenzeneD4 (ISTD)	Sample 824775	Type CCV	<i>Reading</i> 133100	CCVISM 133100	<i>Low</i> 66530	High 199600		File 119643477	PrepSet 824775		
a second	824775	LCS	144600	133100	66530	199600		119643478	824775		
	824775	LCS Dup	133100	133100	66530	199600		119643479	824775		
	824775	Blank	130600	133100	66530	199600		119643480	824775		
ChlorobenzeneD5 (ISTD)	824775	CCV	240100	240100	120100	360200		119643477	824775		
	824775	LCS	259300	240100	120100	360200		119643478	824775		
	824775	LCS Dup	245300	240100	120100	360200		119643479	824775		
	824775	Blank	254100	240100	120100	360200		119643480	824775		
1,4-DichlorobenzeneD4 (ISTD)	1760456	UNKNOW	/NI18800	133100	66530	199600		119643481	824775		
	1760456	MS	147600	133100	66530	199600		119643483	824775		
	1760456	MSD	126500	133100	66530	199600		119643484	824775		
ChlorobenzeneD5 (ISTD)	1760456	UNKNOW	N235000	240100	120100	360200		119643481	824775		
	1760456	MS	270800	240100	120100	360200		119643483	824775		
	1760456	MSD	226400	240100	120100	360200		119643484	824775		
				IS RetTim	ie						
Parameter	Sample	Type	Reading	CCVISM	Low	High		File	PrepSet		
1,4-DichlorobenzeneD4 (ISTD)	824775	CCV	11.94	11.94	11.88	12.00		119643477	824775		
	824775	LCS	11.94	11.94	11.88	12.00		119643478	824775		
	824775	LCS Dup	11.94	11.94	11.88	12.00		119643479	824775		
	824775	Blank	11.94	11.94	11,88	12.00		119643480	824775		
ChlorobenzeneD5 (ISTD)	824775	CCV	9.561	9.561	9.501	9.621		119643477	824775		
,	824775	LCS	9.561	9.561	9.501	9,621		119643478	824775		
	824775	LCS Dup	9.561	9.561	9.501	9.621		119643479	824775		
and the second second	824775	Blank	9.567	9.561	9.501	9.621		119643480	824775		
1,4-DichlorobenzeneD4 (ISTD)	1760456	UNKNOW		11.94	11.88	12.00		119643481	824775		
	1760456	MS	11.94	11.94	11.88	12.00		119643483	824775		
	1760456	MSD	11.94	11.94	11.88	12.00		119643484	824775		
ChlorobenzeneD5 (ISTD)	1760456	UNKNOW		9.561	9.501	9.621		119643481	824775		
	1760456	MS	9.561	9.561	9.501	9.621		119643483	824775		
	1760456	MSD	9.561	9.561	9.501	9.621		119643484	824775		
10.101		350		LCS Dup							
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Lin
Bromodichloromethane	824775	17.6	18.1		20.0	70.0 - 130	88.0	90.5	ug/L	2.80	30.
Bromoform	824775	14.4	15.7		20.0	70.0 - 130	72.0	78.5	ug/L	8.64	30.
Chloroform	824775	18.6	19.2		20.0	70.0 - 130	93.0	96.0	ug/L	3.17	30.0
Dibromochloromethane	824775	15.9	16.9	MSD	20.0	70.0 - 130	79.5	84.5	ug/L	6.10	30.0
Domanatar	C	100	1.000			S. 2	and the second				
Parameter Bromodichloromathana	Sample	MS 20.5	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Lin
Bromodichloromethane Bromoform	1760456	29.5	35.2	15.4	20.0	67.1 - 133	70.5	99.0	ug/L	33.6 *	30.0
Chloroform	1760456	14.4	16.8	2.94	20.0	58.4 - 125	57.3 *	69.3	ug/L	19.0	30.0
Dibromochloromethane	1760456	26.9	32.1	12.9	20.0	62.8 - 138	70.0	96.0	ug/L	31.3 *	30.0
Dioromocinoromethane	1760456	26.0	31.5		20.0	60.7 - 129	66.0	93.5	ug/L	34.5 *	30.0
Access Constant		C.2. L.		Surrogate							
Parameter 1,2-DCA-d4 (SURR)	Sample	Туре	Reading	Known	Units	Recover%	Limits	% File			
	824775	CCV	18.0	20.0	ug/L	90.0	70.0 - 1	30 119643477			

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Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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	X	creating)		Surrogat					
Benevier	<b>6 1</b>			1.					
Parameter 1,2-DCA-d4 (SURR)	Sample	Type	Reading		Units	Recover%	Limits%	File	
1,2-DCA-04 (SORK)	824775 824775	LCS LCS Dup	18.6	20.0	ug/L	93.0	70.0 - 130	119643478	
	824775	Blank	18.2 19.0	20.0	ug/L	91.0	70.0 - 130	119643479	
Bromofluorobenzene	824775	CCV	19.0	20.0 20.0	ug/L ug/L	95.0 95.0	70.0 - 130 70.0 - 130	119643480 119643477	
(SURR)	824775	LCS	18.9	20.0	ug/L	94.5	70.0 - 130	119643478	
	824775	LCS Dup	19.2	20.0	ug/L	96.0	70.0 - 130	119643479	
	824775	Blank	19.9	20.0	ug/L	99.5	70.0 - 130	119643480	
Dibromofluoromethane (SURR)	824775	CCV	18.8	20.0	ug/L	94.0	70.0 - 130	119643477	
(county)	824775	LCS	19.3	20.0	ug/L	96.5	70.0 - 130	119643478	
	824775	LCS Dup	18.8	20.0	ug/L	94.0	70.0 - 130	119643479	
	824775	Blank	18.4	20.0	ug/L	92.0	70.0 - 130	119643480	
TolueneD8 (SURR)	824775	CCV	19.2	20.0	ug/L	96.0	70.0 - 130	119643477	
	824775	LCS	19.7	20.0	ug/L	98.5	70.0 - 130	119643478	
	824775	LCS Dup	19.1	20.0	ug/L	95.5	70.0 - 130	119643479	
	824775	Blank	19.2	20.0	ug/L	96.0	70.0 - 130	119643480	
1,2-DCA-d4 (SURR)	1760456	UNKNOW	N18.0	20.0	ug/L	90.0	70.0 - 130	119643481	
	1760456	MS	19.1	20.0	ug/L	95.5	70.0 - 130	119643483	
	1760456	MSD	19.2	20.0	ug/L	96.0	70.0 - 130	119643484	
Bromofluorobenzene (SURR)	1760456	UNKNOW	N19.9	20.0	ug/L	99.5	70.0 - 130	119643481	
	1760456	MS	19.2	20.0	ug/L	96.0	70.0 - 130	119643483	
	1760456	MSD	19.2	20.0	ug/L	96.0	70.0 - 130	119643484	
Dibromofluoromethane (SURR)	1760456	UNKNOW	N18.0	20.0	ug/L	90.0	70.0 - 130	119643481	
	1760456	MS	20.1	20.0	ug/L	100	70.0 - 130	119643483	
	1760456	MSD	19.7	20.0	ug/L	98.5	70.0 - 130	119643484	
TolueneD8 (SURR)	1760456	UNKNOW	N18.9	20.0	ug/L	94.5	70.0 - 130	119643481	
	1760456	MS	19.7	20.0	ug/L	98.5	70.0 - 130	119643483	
	1760456	MSD	19.9	20.0	ug/L	99.5	70.0 - 130	119643484	
Analytical Set	824983								EPA 552.
				Blank					
Parameter	PrepSet	Reading	MDL	MQL	Units			File	
Bromoacetic acid	824870	0.321	0.275	5.00	ug/L			119647357	
Chloroacetic acid	824870	ND	0.559	5.00	ug/L			119647357	
Dibromoacetic acid	824870	ND	0.198	5.00	ug/L			119647357	
Dichloroacetic acid	824870	ND	0.244	5.00	ug/L			119647357	
Trichloroacetic acid	824870	ND	0.191	5.00 CCV	ug/L			119647357	
Daramatar		D							
Parameter Bromoacetic acid		Reading	Known	Units	Recover%	Limits%		File	
bromoacene acid		22.1	20.0	ug/L	110	70.0 - 130		119647356	
Chloroacetic acid		23.4	20.0	ug/L	117	70.0 - 130		119650346	
cinoroacene acid		19.5	20.0	ug/L	97.7	70.0 - 130		119647356	
Dibromoacetic acid		21.5	20.0	ug/L	107	70.0 - 130		119650346	
controllectic acia		22.9	20.0	ug/L	114	70.0 - 130		119647356	
Dichloroacetic acid		24.2	20.0	ug/L	121	70.0 - 130		119650346	
emoroacetic acid		24.7	20.0	ug/L	124	70.0 - 130		119647356	



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Parameter

Trichloroacetic acid

Batch # 81230 Report Page 19 of 22 Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663 Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com LELAP-accredited #02008

Caring

Quality Control

Known

20.0

20.0

Reading

22.8

24.4

Employee Owned

CCV

Units

ug/L

ug/L

Integrity

Continual Improvement Printed 03/01/2019 Page 12 of 13 Recover% Limits% File 114 70.0 - 130 119647356 122 70.0 - 130 119650346

			20.0	ug/L	122	70.0 - 130		119650346			
				IS Area	S						
Parameter	Sample	Type	Reading	CCVISM	Low	High		File	Drang	1.4	
1,2,3-Trichloropropane (IS)		CCV	796300	796300	557400	1035000		119647356	PrepS 82498		
		CCV	611200	796300	557400	1035000		119650346	82498		
	824870	Blank	795600	796300	557400	1035000		119647357	82487		
	824870	LCS	721500	796300	557400	1035000		119650339	82487		
	1760456	UNKNO	WN762900	796300	557400	1035000		119650341	82487		
	1761329	MS	674700	796300	557400	1035000		119650344	82487		
	1761329	MSD	749400	796300	557400	1035000		119650345	82487		
				IS RetTin	ne						
Parameter	Sample	Type	Reading	CCVISM	Low	High		File	PrepSe	of	
1,2,3-Trichloropropane (IS)		CCV	8.800	8.800	8.740	8.860		119647356	824983		
		CCV	8.800	8.800	8.740	8.860		119650346	824983		
	824870	Blank	8.800	8.800	8.740	8.860		119647357	824870		
	824870	LCS	8.800	8.800	8.740	8.860		119650339	824870		
	1760456	UNKNO	WN8.800	8.800	8.740	8.860		119650341	824870		
	1761329	MS	8.800	8.800	8.740	8.860		119650344	824870		
	1761329	MSD	8.800	8.800	8.740	8.860		119650345	824870		
				LCS Dup	0						
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit
Bromoacetic acid	824870	23.5	23,8		20.0	70.0 - 130	118	119	ug/L	0.844	30.0
Chloroacetic acid	824870	23.3	23.2		20.0	70.0 - 130	116	116	ug/L	0	30.0
Dibromoacetic acid	824870	23.5	24.8		20.0	70.0 - 130	118	124	ug/L	4.96	30.0
Dichloroacetic acid	824870	25.3	25.8		20.0	70.0 - 130	126	129	ug/L	2.35	30.0
Frichloroacetic acid	824870	21.5	23.4		20.0	70.0 - 130	108	117	ug/L	8.00	30.0
				MSD							
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit?
Bromoacetic acid	1761329	20.8	20.2	ND	20.0	30.0 - 150	104	101	ug/L	2.93	30.0
Chloroacetic acid	1761329	_ 11.1	12.5	ND	20.0	15.0 - 150	55.5	62.5	ug/L	11.9	30.0
Dibromoacetic acid	1761329	19.1	20.1	0.395	20.0	30.0 - 150	93.5	98.5	ug/L	5.21	30.0
Dichloroacetic acid	1761329	24.6	24.4	ND	20.0	30.0 - 150	123	122	ug/L	0.816	30.0
richloroacetic acid	1761329	19.1	20.2	1.23	20.0	30.0 - 150	89.4	94.8	ug/L	5.97	30.0
				Surrogate					-8		50.0
Parameter	Sample	Туре	Reading	Known	Units	Recover%	Limits%	File			
,3-Dibromopropionic (Surr)		CCV	23.4	20.0	ug/L	117	70.0 - 130	119647356			
		CCV	25.5	20.0	ug/L	128	70.0 - 130	119650346			
	824870	Blank	25.4	20.0	ug/L	127	70.0 - 130	119647357			
	824870	LCS	22.9	20.0	ug/L	114	70.0 - 130	119650339			
	824870	LCS Dup	24.7	20.0	ug/L	124	70.0 - 130	119650340			
	1760456	UNKNOW	N21.0	20.0	ug/L	105	70.0 - 130	119650341			
	1761329	MS	21.5	20.0	ug/L	108	70.0 - 130	119650344			
	1761329	MSD	22.7	20.0	ug/L	114	70.0 - 130	119650345			

Analytical Set

824410

SM 2320 B-2011

1

2

### Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662



www.ana-lab.com

<b>Final Repor</b>	t Page	21	of 22
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Batch # 81230 Ana-Lab Corp. P.O. Box 9000 Report Page 20 of 22

Kilgore, TX 75663 Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com LELAP-accredited #02008 Integrity

1 2

Page 13 of 13

#### Caring Continual Improvement Quality Control Printed 03/01/2019

Employee Owned

			Blan	k						
PrepSet	Reading	MDL	MOL	Units			File			
824410	ND	1.00	1.00							
			CCV				117055475			
	Reading	Known	Units	Recover%	Timits%		Fil.			
	26.6									
	26.6									
					50.0 - 110		119033301			
Sample		Rosult								
				n						Limit%
										20.0
		20.1				mg/L		9.71		20.0
	<b>D</b>			del sur						
					Limits%		File			
	26.1	25.0	9.724.91		90.0 - 110		119635473			
			Mat. Spi	ike						
Sample	Spike	Unknow	n Known	Units	Recovery %	Limits %	File			
1759921	384	374	25.0	mg/L	40.0	70.0 - 130	119635478		*	
1760145	115	99.3	25.0	mg/L	62.8	70.0 - 130	119635491		*	
659									CMA	130 0 00
		A	WRL/MI	RL C					SIVI 2	130 B-20
	Reading	Known	Units	Recover%	Limits%		File			
	0.27	0.30	NTU	90.0	70.0 - 130					
			Blank							
PrepSet	Reading	MDL	MQL							
001/00				Units			File			
824659	ND	0.300	0.300	NTU			File 119641244			
824659	ND	0.300		NTU			File 119641244			
Sample	ND	0.300 Result	0.300 Duplicat	NTU te		Unit		0.00		
	ND		0.300	NTU te		Unit NTU		<i>RPD</i>		Limit%
Sample	ND	Result	0.300 Duplicat Unknown 1.14	NTU te		NTU		0.881		20.0
Sample 1760456	ND	<i>Result</i> 1.13 0.69	0.300 Duplicat Unknown 1.14 0.69	NTU te						
<i>Sample</i> 1760456 1761201		<i>Result</i> 1.13 0.69	0.300 Duplicat Unknown 1.14 0.69 Mat. Spil	NTU te ke		NTU NTU	119641244	0.881		20.0
Sample 1760456 1761201 Sample	Spike	Result 1.13 0.69 Unknown	0.300 Duplicat Unknown 1.14 0.69 Mat. Spil	NTU te ke Units	Recovery %	NTU NTU Limits %	119641244 File	0.881		20.0
<i>Sample</i> 1760456 1761201 <i>Sample</i> 1760456	<i>Spike</i> 40,7	<i>Result</i> 1.13 0.69 <i>Unknown</i> 1.14	0,300 <b>Duplicat</b> <i>Unknown</i> 1.14 0.69 <b>Mat. Spil</b> <i>n Known</i> 40.0	NTU te ke Units NTU	98.9	NTU NTU <i>Limits %</i> 70.0 - 130	119641244 File 119641250	0.881		20.0
Sample 1760456 1761201 Sample	Spike	Result 1.13 0.69 Unknown	0,300 <b>Duplicat</b> <i>Unknown</i> 1.14 0.69 <b>Mat. Spil</b> <i>n Known</i> 40.0 40.0	NTU te Units NTU NTU		NTU NTU Limits %	119641244 File	0.881		20.0
Sample 1760456 1761201 Sample 1760456 1761201	<i>Spike</i> 40.7 41.1	<b>Result</b> 1.13 0.69 <b>Unknown</b> 1.14 0.69	0.300 <b>Duplicat</b> <i>Unknown</i> 1.14 0.69 <b>Mat. Spil</b> <i>nKnown</i> 40.0 40.0 <b>Standard</b>	NTU te ke Units NTU NTU d	98.9 101	NTU NTU <i>Limits %</i> 70.0 - 130	119641244 File 119641250 119641254	0.881		20.0
Sample 1760456 1761201 Sample 1760456 1761201 Sample	Spike 40.7 41.1 Reading	Result 1.13 0.69 Unknown 1.14 0.69 Known	0.300 Duplicat Unknown 1.14 0.69 Mat. Spil nKnown 40.0 40.0 Standard Units	NTU te Units NTU NTU d Recover%	98.9 101 Limits%	NTU NTU <i>Limits %</i> 70.0 - 130	119641244 File 119641250 119641254 File	0.881		20.0
Sample 1760456 1761201 Sample 1760456 1761201 Sample 824659	<i>Spike</i> 40.7 41.1 <i>Reading</i> 9.80	<b>Result</b> 1.13 0.69 <b>Unknown</b> 1.14 0.69 <b>Known</b> 10.0	0.300 <b>Duplicat</b> <i>Unknown</i> 1.14 0.69 <b>Mat. Spil</b> <i>n Known</i> 40.0 40.0 <b>Standard</b> <i>Units</i> NTU	NTU te Units NTU NTU d Recover% 98.0	98.9 101 <i>Limits%</i> 90.0 - 110	NTU NTU <i>Limits %</i> 70.0 - 130	119641244 File 119641250 119641254	0.881		20.0
Sample 1760456 1761201 Sample 1760456 1761201 Sample	Spike 40.7 41.1 Reading	Result 1.13 0.69 Unknown 1.14 0.69 Known	0.300 Duplicat Unknown 1.14 0.69 Mat. Spil nKnown 40.0 40.0 Standard Units	NTU te Units NTU NTU d Recover%	98.9 101 <i>Limits%</i>	NTU NTU <i>Limits %</i> 70.0 - 130	119641244 File 119641250 119641254 File	0.881		20.0
	824410 Sample 1759921 1760145 Sample 1759921 1760145	824410 ND Reading 26.6 26.6 26.6 26.6 26.6 26.6 26.7 26.7 26.1 26.1 26.1 26.1 26.1 26.1 26.7 26.1 26.5 26.6 26.6 26.6 26.6 26.6 26.6 26.6 26.5 26.1 26.5 26.5 26.1 26.5	824410         ND         1.00           Reading         Known           26.6         25.0           26.6         25.0           26.6         25.0           26.6         25.0           26.6         25.0           26.6         25.0           26.6         25.0           26.6         25.0           26.6         25.0           Sample         Result           1759921         358           26.1         25.0           Sample         Spike         Unknown           26.1         25.0           Sample         Spike         Unknown           1759921         384         374           1760145         115         99.3           2659         AN           Reading         Known           0.27         0.30	PrepSet         Reading ND         MDL 1.00         MQL 1.00           824410         ND         1.00         1.00           ND         1.00         1.00         CCV           Reading         Known         Units         CCV           26.6         25.0         mg/L         CCV           26.6         25.0         mg/L         CCV           26.6         25.0         mg/L         CCV           26.6         25.0         mg/L         CUPIC:           Sample         Result         Unknown         Top12:           759921         358         374         90.1         99.3           ICCV         Reading         Known         Units         1CV           Sample         Spike         Unknown         Ints         1CV           1750921         384         374         25.0         1760145         115         99.3         25.0           175921         384         374         25.0         1760145         115         99.3         25.0           1659         Known         Units         0.27         0.30         NTU	824410         ND         1.00         1.00         mg/L           Reading         Known         Units         Recover%           26.6         25.0         mg/L         106           Sample         Result         Unknown         106           1759921         358         374         106           26.1         90.1         99.3         ICV           Reading         Known         Units         Recover%           26.1         25.0         mg/L         104           Mat. Spike         Unknown Known         Units           1759921         384         374         25.0         mg/L           1760145         115         99.3         25.0         mg/L           1659         Ekank         Cover%         20.0           105         99.3         25.0         mg/L           105	PrepSet 824410         Reading ND         MDL 1.00         MQL 1.00         Units mg/L         Units mg/L           Reading         Known         Units         Recover%         Limits%           26.6         25.0         mg/L         106         90.0 - 110           26.7         Toplicate         Duplicate         Intits         Result         Viscource           759921         358         374         90.1         99.3         Intits%         90.0 - 110           26.1         25.0         mg/L         104         90.0 - 110         ND           26.1         25.0         mg/L         104         90.0         101           1759921         384         374         25.0         mg/L         40.0           1760145         115         99.3         25.0	PrepSet 824410         Reading ND         MDL 1.00         MQL 1.00         Units mg/L           Reading 26.6         Known 25.0         Units 824.0         Recover% 90.0 - 110         Limits% 90.0 - 110           26.6         25.0         mg/L         106         90.0 - 110           759921         358         374         mg/L         mg/L           1750921         350         mg/L         104         90.0 - 110           26.1         25.0         mg/L         104         90.0 - 110           1750921         384         374         25.0         mg/L         40.0         70.0 - 130           1760145         115         9.3         25.0         mg/L         62.8         70.0 - 130      1	PrepSet 824410         Reading ND         MDL 1.00         MQL 1.00         Units mg/L         Imits mg/L         File 119635475           Reading 26.6         Known 25.6         Units 25.6         Recover% mg/L         Limits% 90.0 - 110         File 119635474           26.6         25.0         mg/L         106         90.0 - 110         119635474           26.6         25.0         mg/L         106         90.0 - 110         119635474           26.6         25.0         mg/L         106         90.0 - 110         119635475           Sample         Result         Unknown         Units         mg/L         mg/L           1759921         358         374         mg/L         119635473           1760145         90.1         99.3         mg/L         119635473           I760145         90.1         99.3         Imits%         File           1759921         358         374         mg/L         119635473           I759921         384         374         25.0         mg/L         119635478           1759921         384         374         25.0         mg/L         40.0         70.0 - 130         119635478           175921         384         374	PrepSet 824410         Reading ND         MDL 1.00         MQL 1.00         Units mg/L         Imits mg/L         File 119635475           Reading 26.6         Known 26.6         Vinits 26.6         Recover% 26.6         Limits% 90.0 - 110         File 119635474           26.6         25.0         mg/L         106         90.0 - 110         119635474           26.6         25.0         mg/L         106         90.0 - 110         119635478           1759921         358         374         mg/L         104         90.0 - 110         119635473           1750921         354         74         25.0         mg/L         104         90.0 - 110         119635478           1759921         384         374         25.0         mg/L         40.0         70.0 - 130         119635478           1759921         384         374         25.0         mg/L         62.8         70.0 - 130         119635478	PrepSet 824410         Reading ND         MQL 1.00         MQL 1.00         Units mg/L         File 119635475           824410         ND         Loo         ng/L         Limits%         File 119635475           82440         ND         Units         Recover%         Limits%         File 119635474           26.6         25.0         mg/L         106         90.0 - 110         119635478           26.6         25.0         mg/L         106         90.0 - 110         119635478           26.6         25.0         mg/L         106         90.0 - 110         119635478           26.6         25.0         mg/L         106         90.1 10         119635478           1759921         358         374         mg/L         4.37           1760145         90.1         99.3         mg/L         9.71           Itik           Known         Units         Recover%         Limits%         File           26.1         25.0         mg/L         104         90.0 - 110         119635478 $=$ 175921         384         374         25.0         mg/L         40.0         70.0 - 130         119635478 $=$ <t< td=""></t<>

\* Out RPD is Relative Percent Difference: abs(r1-r2) / mean(r1,r2) \* 100%

Recover% is Recovery Percent: result / known \* 100%

Blank - Method Blank; LCS - Laboratory Control Sample; CCB - Continuing Calibration Blank; CCV - Continuing Calibration Verification; ICV - Initial Calibration Verification; AWRL/MRL C - Ambient Water Reporting Limit/Minimum Reporting Limit Check Std; BFB - GC/MS Tuning Compound

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

LDSClient v1.14.9.1744



# Gulf Const Region: 4141 Directors Row Ste C Houston TX 77092

1606 E Brazos Suite D. Victoria, Texas //901 pn. (361) 5/2-8224	5 //901 pn. (-	29-715 (T95			1		-     
Customer / Report Information		<b>Billing Information</b>		Check box if Billing is the same as Report Information	THERM ID# 4	TEMP Corr: 13.J	
Name: City of Victoria		Address:	inthe st	Phone:	le:	FAX:	
Attention: SwTP		Attention:	~ Robinson	PO # EMAIL:	E	÷	
Address:		Project: Comments:	ASR	List A¢B	Requested Analysis		Completed By laboratory
Sample Information			Matrix Container	iner	1 1 1 1	Custod	<b>Custody Seals Present</b>
Collected By: Kevin Post			DW - Drinking H20 S - Solid			Yes 🗆	No M
Client / Field Sample ID	Collected		duo www-waste H20 U	Preservative		Intact	-
	Date	Time	L - Liquid w - Water			LAB Sa	LAB Sample Number
ASR Well #19 Table 1, List A&B	2/19/19	1454	V DW	H2SO4 I HNO3     H3PO4 I NaOH     ICE I HCL     Na2SO3		S1905	S190501542
				H2SO4 I HNO3     H3PO4 I NaOH     ICE I HCL     Na2SO3			
				H2SO4 I HNO3     H3PO4 I NaOH     ICE I HCL     ICE Na2SO3			
				H2SO4 I HNO3     H3PO4 I NaOH     ICE I HCL     ICE I Na2SO3			
				H2SO4 I HNO3     H3PO4 I NaOH     ICE I HCL     ICE I Na2SO3			
				H2SO4 I HNO3     H3PO4 I NaOH     ICE I HCL     Na2SO3			
Required Turnaround: 🗖 Routine (6-10 Business days)	) Business days)	Expedite / Rush:	□1 Business Day	□2 Business Days □3 Business days □ 5 Business days	Business days 🗖 Other	REMARKS:	
Surcharge will apply to RUSH TAT	Authorized BY:	BY:		Type: P=Plastic,	G=Glass, V=Voa, O=Other	Carrier	
Relinquished By:	124	.19-	19 Time: 3:301041 Time:	Received By: 7 Horns	Date: Date:	2-19-19 Time: Time:	15:30
Relinguished By	Date:		Time:	Received By:	Date:	Time:	

#### Final Report Page 1 of 23

BatchNo: 82163

# SAMPLE REPORT

Batch # 82163



T104704328-19-16

Business

Victoria, City of - Stephen Robinson P O Box 1758 Victoria Tx 77902 Att: Stephen Robinson



# Laboratory

B Environmental, LLC. 1606 E Brazos, Suite D Victoria TX 77901 ph. 361-572-8224

#### **Reference Information**

Project: ASR Well #19, Table 1, List A & B Printed: Friday, March 22, 2019

Re: Victoria, City of - Stephen Robinson

Dear: Stephen Robinson

Attached are the results for sample(s) received on 3/12/2019

The analytical results relate only to the samples tested. All supporting quality data meets the requirements of NELAC unless noted in the case narrative section of the report.

This report contains 23 pages (including the cover page)

If you have any questions concerning this report, please do not hesitate to call (361) 572-8224 or Fax us at (361) 572-4115

Respectfully Submitted,

Kevin Baros Laboratory Director



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TX 77901

						Batch # 82163
Environmental, LLC. 06 E Brazos, Suite D		BatchNo:		82163		Page 2 of 23
the second second second second second	7901					
Batch No: 82	163 <b>S</b> an	mple Rec	nint	Chac	list	
	Dui	inpie Mec	-			2010
			-	Received:	3/12/	2019
Project	ASR Well #19, Table 1,	LIST A & B	Rece	ived By:	Honnen	· · · · · · ·
ogin completed by:	Honnen	3/12/2019				
	Signature	LoginDate:				
		Carrier Name		Walk In		
Shipping container/	cooler in good co	ondition?		YES		Not Present
Custody seals intac	ct on shipping cor	ntainer/cooler?		YES		Not Present
Custody seals intac	ct on sample bottl	les?		YES		Not Present
Chain of Custody p	resent?			YES		
Chain of Custody s	igned when relind	quished and rece	eived	VES		
Chain of Custody a	grees with sampl	le labels?		YES	NO	
Samples in proper	container/bottles	?		YES	NO	
Sample containers	intact?			YES		
Sufficient sample v	olume for indicate	ed tests?		YES	NO	
All samples receive	ed within holding t	times?		YES	NO NO	
Container/Temp Bla	ank - temperature	e in compliance?	>	YES	NO	>0 <6 °C On Ice
Water - VOA vials h	have zero headsp	bace? Bubble < 6	3mm?	YES	NO	No VOA Vials submitted
Water - pH accepta	able upon receipt	?		VES		Not Applicable
*TEMP 6.0/6.0	pH Adjuste	d? NA		Checked I	By L. Va	hrenkamp
Any No and/or N/A (not ap	plicable) response m	ust be detailed in the	e commer	nts section be	low.	
lient contacted			Pe	rsonContac	cted	
contacted by:			Da	te Contacte	ed:	
Regarding						
Comments						
Therm #4.						
Corrective Action						
Conective Action						

B

1606 E Brazos, Suite D

Victoria TX 77901

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HE COMPLETE SERVICE LAB	Phone 903/984-0551 FAX 903/ Ea	/984-59 iployee O		Mail corp@ Integrity	Caring	Continu	al Improven 21/2019	nent	Page	1 of
Report To B-Environmental Kevin C. Baros 1606 E Brazos St., Suite D Victoria, TX 77901						ount NV-G			oject 5 <mark>6158</mark>	
		R	esult	s						
1766348 82163 Drinking Water	S19 Collected by: Client Taken: 03/12/2019 10:40:00	B-E	24/S19	0711429 nental			PO	Received:	03/13/2019	)
Calculation	Prepared:		03/	19/2019	09:05:10	Calculated	1	03/19/2019	09:05:10	C,
Parameter Z Phosphorus (as Phosphate)	<i>Results</i> 0.731		Units mg/L	<i>RL</i> 0.306		Flag		CAS	Boi	ttle
EPA 200.7 4.4	Prepared:	828028	03/	14/2019	12:00:00	Analyzed	828568	03/18/2019	18:11:00	LF
Parameter	Results		Units	RL		Flag		CAS	Boi	ttle
N Phosphorus	0.239		mg/L	0.100				7723-14-0	14	
z Silicon Recoverable	5.83		mg/L	0.100				7740-21-3	14	
EPA 200.7 4.4	Prepared:	828028	03/	14/2019	12:00:00	Analyzed	828620	03/19/2019	09:34:00	LI
Parameter	Results	-	Units	RL		Flag		CAS	Boi	ttle
N Calcium	41.7		mg/L	0.500		PD		7440-70-2	14	
N Iron, Total N Magnesium, Total	0.109		mg/L	0.025				7439-89-6	14	
N Potassium	9.44 4.71		mg/L mg/L	0.020 0.500				7439-95-4 7440-09-7	14 14	
EPA 200.7 4.4	Prepared:	828028		14/2019	12:00:00	Analyzed	828601	03/19/2019	11:09:00	LI
Parameter					12.00.00					
N Sodium	Results 59.1		Units mg/L	RL 2.50		Flag PD		CAS 7440-23-5	Bot 14	tle
		_			-					
EPA 200.7 4.4 - Calc	Prepared:		03/	19/2019	09:05:10	Calculated		03/19/2019	09:05:10	C
Parameter N Silica (SiO2)	Results		Units	RL		Flag		CAS	Bot	tle
	12.5		mg/L	0.214			C			
EPA 200.7, Rev. 4.4	Prepared:	827952	03/.	13/2019	13:30:00	Analyzed	828289	03/15/2019	18:16:00	LP
Parameter	Results		Units	RL		Flag		CAS	Bot	tle
N Dissolved Iron	<0.00504		mg/L	0.00504				7439-89-6	12	
EPA 200.8 5.4	Prepared:	827952	03/	13/2019	13:30:00	Analyzed	828893	03/19/2019	19:43:00	JB
Parameter	Results	-	Units	RL		Flag		CAS	Bot	tle
N Dissolved Arsenic	0.00209		mg/L	0.0005				7440-38-2	12	1.12

NELAP-accredited #T104704201

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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Batch Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Batch # 82163

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Results

Integrity Caring Continual Improvement Printed: 03/21/2019

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1766348 82163	S1:	9071142	24/S19	0711429				Received:	03/13/2019	)
Drinking Water	<i>Collected by:</i> Client <i>Taken:</i> 03/12/2019 10:40:00		Environn	nental			PG			
EPA 200.8 5.4	Prepared:	827952	03/	13/2019	13:30:00	Analyzed	829170	03/21/2019	12:55:00	JBI
Parameter	Results		Units	RL		Flag		CAS	Boi	ttle
N Dissolved Manganese	0.0126		mg/L	0.001		В		7439-96-5	12	
EPA 200.8 5.4	Prepared:	828028	03/	14/2019	12:00:00	Analyzed	828816	03/19/2019	15:58:00	JBF
Parameter	Results		Units	RL		Flag		CAS	Bot	ttle
N Aluminum, Total	0.0124		mg/L	0.005				7429-90-5	14	
N Arsenic, Total	0.00248		mg/L	0.0005				7440-38-2	14	
N Lead, Total	<0.00025		mg/L	0.00025				7439-92-1	14	
N Manganese, Total	0.0126		mg/L	0.001				7439-96-5	14	
EPA 300.0 2.1	Prepared:	828172	03/	14/2019	20:32:00	Analyzed	828172	03/14/2019	20:32:00	AM
Parameter	Results		Units	RL		Flag		CAS	Bot	tle
N Chloride	58.8		mg/L	1.50					01	
N Fluoride	0.560		mg/L	0.500					01	
N Sulfate	21.8		mg/L	1.50					01	
EPA 350.1 2	Prepared:	827964	03/.	14/2019	14:35:00	Analyzed	828197	03/15/2019	11:00:00	RSV
Parameter	Results		Units	RL		Flag	6	CAS	Bot	tle
N Ammonia (as N)	0.229		mg/L	0.020					13	
EPA 524.2 4.1	Prepared:	828564	03/.	18/2019	16:29:00	Analyzed	828564	03/18/2019	16:29:00	KLB
Parameter	Results		Units	RL		Flag		CAS	Both	tle
N Bromodichloromethane	21.2		ug/L	1.00				75-27-4	07	
N Bromoform	3.69		ug/L	1.00				75-25-2	07	
N Chloroform	18.1		ug/L	1.00				67-66-3	07	
N Dibromochloromethane	17.5		ug/L	1.00				124-48-1	07	
EPA 524.2 4.1	Prepared:	828564	03/1	19/2019	11:35:01	Calculated	828564	03/19/2019	11:35:01	CAL
Parameter	Results		Units	RL	_	Flag		CAS	Bott	le
N Trihalomethanes	0.06049		mg/L	0.001					07	
EPA 552.2 1	Prepared:	828157	03/1	15/2019	12:42:13	Analyzed	828698	03/19/2019	11:21:00	EMT
Parameter	Results		Units	RL		Flag	-	CAS	Bott	le
N Bromoacetic acid	<5.00		ug/L	5.00				79-08-3	17	
N Chloroacetic acid	<5.00		ug/L	5.00				79-11-8	17	
N Dibromoacetic acid	<5.00		ug/L	5.00				631-64-1	17	
N Dichloroacetic acid	12.9		ug/L	5.00				79-43-6	17	
N Trichloroacetic acid	10.5			5.00						

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

76-03-9

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N Trichloroacetic acid

ug/L

5.00

10.5

Kilgore, TX 75663

03/21/2019

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Results

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Employee Owned Integrity Caring Printed:

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1766348 82163	\$19	90711424/S	5190711429			Received:	03/13/201	9
Drinking Water Colle Taken:	ected by: Client 03/12/2019 10:40:00		ronmental		1	PO:		
EPA 552.2 1	Prepared:	828157	03/15/2019	12:42:13	Calculated 828698	03/21/2019	13:17:06	CA
Parameter	Results	Uni	its RL		Flag	CAS	Bo	ottle
N HAA5	0.0234	mg	/L 0.005				17	
SM 2130 B-2001	Prepared:	827763	03/13/2019	13:30:00	Analyzed 827763	03/13/2019	13:30:00	ELS
Parameter	Results	Uni	ts RL		Flag	CAS	Ba	ttle
N Turbidity	0.410	NT	U 0.300				11	
SM 2320 B-2011	Prepared:	828487	03/18/2019	08:52:00	Analyzed 828487	03/18/2019	08:52:00	ELS
Parameter	Results	Uni	ts RL		Flag	CAS	Boi	ttle
N Total Alkalinity (as CaCO3)	170	mg/	L 1.00				01	
SM 2340 B-2011	Prepared:		03/19/2019	11:46:59	Calculated	03/19/2019	11:46:59	CAL
Parameter	Results	Unit	ts RL		Flag	CAS	Bot	ttla
N Total Hardness as CaCO3 -Ca/MgEq	143	mg/			8	CAD	DOL	inte

SM 2540 C-97 Prepared: 828738 03/18/2019 11:45:00 Analyzed 828738 03/18/2019 11:45:00 TH2 Parameter Results Units RL Flag CAS Bottle N Total Dissolved Solids 324 mg/L 20.0 01 SM 2540 D-97 Prepared: 828650 03/18/2019 13:10:00 Analyzed 828650 03/18/2019 13:10:00 ALW Parameter Results Units RL Flag CAS Bottle N Total Suspended Solids 2.20 mg/L 2.00 01 SM 5310 C-2000 Prepared: 828105 03/15/2019 02:46:00 Analyzed 828105 03/15/2019 02:46:00 ALH Parameter Results Units RL Flag CAS Bottle N Total Organic Carbon 2.35 mg/L 0.500

**Sample Preparation** 

1766348 82163

S190711424/S190711429

Received: 03/13/2019

03

Prepared: 827727 03/13/2019 00:00:00 Analyzed 827727 03/13/2019 00:00:00 KAT

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



COR THE COM	PLETE SERVICE LAB	hone 903/984-0551 FAX 9( Results	13/984-5 Employee		ty Caring	Contin	ual Improve 3/21/2019	ment	Page	4 of
1766	<mark>348</mark> 82163	S	1907114	424/S190711429				Received:	03/13/2019	9
		Prepare	d: 82772	7 03/13/2019	00:00:00	Analyzed	827727	03/13/2019	00:00:00	K
z Bott	le pH	<2		CT.					45	
	le pH	<2		SU SU					02	
z Bott	le pH	<2		SU					03 06	
	le pH	<2		SU					10	
Cool	er Temperature	1.6		degrees					01	
Cool	er Temperature	16		C						
		1.6		degrees C					02	
Cool	er Temperature	1.6		degrees C					03	
Cool	er Temperature	1.6		degrees					04	
Cool	er Temperature	1.6		C degrees					05	
Cool	er Temperature	1.6		C degrees						
		1.0		C					06	
Cool	er Temperature	1.6		degrees C					07	
Cool	er Temperature	1.6		degrees					08	
Cool	er Temperature	1.6		C degrees						
Cool	er Temperature			C					09	
0000	er remperature	1.6		degrees C					10	
Coole	er Temperature	1.6		degrees C					11	
Cooler	Return	Preparea	•	03/18/2019	00:00:00	Analyzed		03/18/2019	00:00:00	M
Retur	n Cooler/No bottles Require	Returned								
EPA 20	00.2 2.8	Prepared	828028	03/14/2019	12:00:00	Analyzed	828028	03/14/2019	12:00:00	TE
√ Liquie	d Metals Digestion	50/50		ml					02	
EPA 35	0.2, Rev. 2.0	Prepared	827964	03/14/2019	14:35:00	Analyzed	827964	03/14/2019	14:35:00	ML
/ Amm	onia Distillation	50/50		ml					06	
EPA 52	4.2 4.1	Prepared	828564	03/18/2019	16:29:00	Analyzed	828564	03/18/2019	16:29:00	KL
Trihal	omethane Expansion Code	Entered							07	



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Final Report Page 7 of 23	Ana-Lab Corp. P	.O. Bo	ox 9000	Kilgore		Batch #		ort Page 6	of 2
CORPLETE SERVICE LAB	Phone 903/984-0551 FAX 903		4 e-Mail corr	ana-lab.c	om Conline	ual Improven /21/2019	ment	Page	5 of
<u>1766348</u> 82163	S1	90711424	I/S190711429				Received:	03/13/2019	9
EPA 552.2 1	Prepared:	828157	03/15/2019	12:42:13	Analyzed	828157	03/15/2019	12:42:13	LS
N Haloacetic Acids Extraction EPA 552.2 1	3/40 Prepared:		nl 03/15/2019	12:42:13	Analyzed	828698	03/19/2019	05 11:21:00	El
N Haloacetic Acids (HAA5)	Entered					ÿ		17	
SM 2540 C-97	Prepared:	828391	03/18/2019	11:45:00	Analyzed	828391	03/18/2019	11:45:00	TH
N Total Dissolved Solids Started	Started								
SM 2540 D-1997	Prepared:	828339	03/18/2019	13:10:00	Analyzed	828339	03/18/2019	13:10:00	AL
N TSS Set Started	Started								-
SM 3030 B-2004	Prepared:	827952	03/13/2019	13:30:00	Analyzed	827952	03/13/2019	13:30:00	AL
N Dissolved Metals Filtering	50/50	m	1					01	-

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Final Report Page 8 of 23	Ana-Lab Corp.	P.O. Box 9000	Batch # 82163 Kilgore, TX 75663	Report Page 7 of 25
ANALAD	Phone 903/984-0551 FAX	903/984-5914 e-Mail co Employee Owned Integ		
THE COMPLETE SERVICE LAB	Results		Printed: 03/21/2019	Page 6 of 6

Qualifiers:

B - Analyte detected in the associated method blank D - Duplicate RPD was higher than expected

P - Spike recovery outside control limits due to matrix effects.

We report results on an As Received or wet basis unless marked Dry Weight. Unless otherwise noted, testing was performed at Ana-labs corporate laboratory that holds the following Federal and State certificates: EPA Lab Number TX00063, US Department of Agriculture Soil Import Permit P330-17-00117, Texas Commission on Environmental Quality Commercial Drinking Water Lab Approval (Lab ID: TX219), Texas Commission on Environmental Quality NELAP T104704201-19-15, Louisiana Department of Environmental Quality Laboratory Certification (NELAP, LELAP) #02008, Louisiana Department of Health and Hospitals Drinking Water (NELAP) Certificate No LA026, Oklahoma Department of Environmental Quality TNI Laboratory Accreditation Program Certificate No. 2018-126, Arkansas Department of Environmental Quality Certification #18-068-0. The Accredited column designates accreditation by N -- NELAC, or z -- not covered under NELAC scope of accreditation.

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp. Unless otherwise specified, these test results meet the requirements of NELAC.

RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

00 LOC

Bill Peery, MS, VP Technical Services



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Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662



COKP.		1 10110 200120	4-0551 F.	AX 903/9	084-5914	e-Mail cor	p@ana-lab.	com	LEL	AP-accrea	dited #0	2008
			En	nployee (	Dwned	Integrit			ontinual Improv			
COMPLETE	SERVICE LAB	Q	ualit	y Co	ontro	ol	Pr	inted 03/2	21/2019		Pa	age 1 of 14
Report	I o							Account		Pro	ject	
	onmental						I	BENV-	G	86	6158	
	. Baros Brazos St., Suite D , TX 77901											
	Analytical Set	828197										EPA 350.1
					Blanl							
	<u>Parameter</u> Ammonia (as N)	<i>PrepSet</i> 827964	<i>Reading</i> ND	<i>MDL</i> 0.00356	MQL 0.020 CCV	<i>Units</i> mg/L			<b>File</b> 119716772			
	Parameter		Reading	Known	Units	Recover%	Limits%		F24.			
	Ammonia (as N)		2.09	2.00	mg/L	104	90.0 - 110		File 119716771			
			2.10	2.00	mg/L	105	90.0 - 110		119716781			
			2.07	2.00	mg/L	104	90.0 - 110		119716790			
			2.00 2.05	2.00 2.00	mg/L mg/L	100 102	90.0 - 110		119716801			
			1.80	2.00	mg/L	90.0	90.0 - 110 90.0 - 110		119716812 119716819			
			2.03	2.00	mg/L	102	90.0 - 110		119716827			
	Parameter	Samala		Description	Duplica			-				
	Ammonia (as N)	Sample 1766189		<i>Result</i> 0.260	Unknown 0.286	L.		Unit		RPD		Limit%
		1766783		0.167	0.168			mg/L mg/L		9.52 0.597		20.0 20.0
	Parameter		Reading	Known	ICV Units	Recover%	Limits%		File			
	Ammonia (as N)		2.03	2.00	mg/L	102	90.0 - 110		119716770			
					LCS Du	р						
	Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
	Ammonia (as N)	827964	2.11	2.14	Mat. Spi	2.00 ke	90.0 - 110	106	107	mg/L	1.41	20.0
	Parameter	Sample	Spike	Unknow			D	· · · ·				
	Ammonia (as N)	1766189	2.61	0.286	2.00	Units mg/L	Recovery % 116	Limits % 80.0 - 120	File 119716777			
		1766783	2.17	0.168	2.00	mg/L	100	80.0 - 120	119716780		_	
	Analytical Set	828650			Blank						SM	2540 D-9
	Parameter	PrepSet	Reading	MDL		FT 14-			-			
	Total Suspended Solids	828650	ND	2	MQL 2	Units mg/L			File 119726710			
				(	ControlB				119720710			
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
	Total Suspended Solids	828650	0.0001		Duplicat	grams e			119726709			
	Parameter	Sample		Result	Unknown			Their				
	Total Suspended Solids	1766367		3630	3700			Unit mg/L		<b>RPD</b> 1.91		Limit% 20.0
		1766368		3360	3460			mg/L		2.93		20.0



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ANA	AB7	Phone 903/9		AX 903/ nployee		e-Mail cor Integrit			LEL.	AP-accre	edited #	02008
HE COMPLET		Q	ualit	y Co	ontro	1	Р		1/2019		Р	age 2 of 1
					LCS							
	Parameter Total Suspended Solids	<b>PrepSet</b> 828650	<b>Reading</b> 48.0		<i>Known</i> 50.0 Standar	Units mg/L	<b>Recover%</b> 96.0	<i>Limits</i> 90.0 - 110	File 119726743			
	<u>Parameter</u> Total Suspended Solids	Sample	<b>Reading</b> 110	Known 100		<i>Recover%</i> 110	<i>Limits%</i> 90.0 - 110		<i>File</i> 119726742			
	Analytical Set	828738									SI	M 2540 C-
					ControlB	lk						
	<u>Parameter</u> Total Dissolved Solids	PrepSet 828738	Reading 0	MDL	MQL	Units			File			
	Total Dissolved Solids	626738	0		Duplicat	grams			119728221			
	Parameter	Sample		Dente		le						
	Total Dissolved Solids	1766273		Result 18.0	Unknown 20.0			Unit		RPD		Limit%
					LCS			mg/L		10.5		20.0
	Parameter	PrepSet	Reading		Known	Units	Recover%	7.5				
	Total Dissolved Solids	828738	188		200	mg/L	94.0	Limits 85.0 - 115	File 119728235			
					Standard				117720235			
	Parameter	Sample	Reading	Known	Units	Recover%	Limits%		File			
	Total Dissolved Solids		100	100	mg/L	100	90.0 - 110		119728222			
	Analytical Set	828172			100.00						EI	A 300.0 2
	1. Con 1.			A	WRL/MR	LC						
	Parameter Fluoride		Reading	Known	Units	Recover%	Limits%		File			
	Fluonde		0.118	0.100	mg/L	118	50.0 - 150		119716428			
	100 Mar 100				Blank							
	Parameter Chloride	PrepSet	Reading	MDL	MQL	Units			File			
	Fluoride	828172 828172	ND ND	0.0196	0.300	mg/L			119716429			
	Sulfate	828172	0.095	0.014 0.0109	0.100 0.300	mg/L mg/L			119716429			
					CCV	mg/L			119716429			
	Parameter		Reading	Known	Units	Recover%	T instant		-			
	Chloride		10.1	10.0	mg/L	101	<i>Limits%</i> 90.0 - 110		File 119716425			
			10.1	10.0	mg/L	101	90.0 - 110		119716440			
			10.2	10.0	mg/L	102	90.0 - 110		119716455			
	Fluoride		10.3	10.0	mg/L	103	90.0 - 110		119716425			
			10.3	10.0	mg/L	103	90.0 - 110		119716440			
	Sulfate		10.4 10.2	10.0	mg/L	104	90.0 - 110		119716455			
			10.2	10.0 10.0		102	90.0 - 110		119716425			
			10.3	10.0		104 103	90.0 - 110 90.0 - 110		119716440			
					LCS Dup		50.0 - 110		119716455			
	Parameter	PrepSet	LCS	LCSD			1	1.000	3.45.57			
	Chloride	828172	4.94	4.93		Known 5.00	<i>Limits%</i> 85.0 - 110	LCS% 98.8	LCSD% 98.6	Units	RPD	Limit%
	Fluoride	828172	5.30	5.29		5.00	88.0 - 110	106	106	mg/L mg/L	0.203 0.189	20.0 20.0



# Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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INA-LAB	Phone 903/98	84-0551 F En	AX 903/ nployee	984-5914 Owned	e-Mail cor Integrit		.com	LELA Continual Improv	P-accred	lited #02	008
E COMPLETE SERVICE LAB	Q	ualit	y C	ontr	ol			3/21/2019		Pag	ge 3 of 14
				MS	D						
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Chloride	1765886	26.3	26.5	16.4	10.0	80.0 - 120	99.0	101	mg/L	2.00	20.0
Fluoride	1765886	9.48	9.58	0.560	10.0	80.0 - 120	89.2	90.2	mg/L	1.11	20.0
Sulfate	1765886	31.2	31.0	23.5	10.0	80.0 - 120	77.0 *	75.0 *	mg/L	2.63	20.0
Chloride	1765887	43.1	43.4	33.2	10.0	80.0 - 120	99.0	102	mg/L	2.99	20.0
Fluoride	1765887	0	9.57	0.600	10.0	80.0 - 120	-6.00	89.7	mg/L	229 *	20.0
Sulfate	1765887	36.5	37.7	26.0	10.0	80.0 - 120	105	117	mg/L	10.8	20.0
Analytical Set	828105			NUMPER OF						SM 53	810 C-200
			A	WRL/M	IRL C						
<u>Parameter</u>		Reading	Known	Units	Recover%	Limits%		File			
Total Organic Carbor		1.79	2.00	mg/L	89.5	75.0 - 125		119714907			
				Blan	k						
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Total Organic Carbor	828105	0.0627	0.0618	0.500	mg/L			119714906			
	828105	ND	0.0618	0.500	mg/L			119714933			
	828105	0.0676	0.0618	0.500	mg/L			119714972			
				CCE	E						
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Total Organic Carbon	828105	0.110	0.0618	0.500	mg/L			119714900			
	828105	0.116	0.0618	0.500	mg/L			119714914			
	828105	0.0998	0.0618	0.500	mg/L			119714918			
	828105	0.110	0.0618	0.500	mg/L			119714931			
	828105	0.116	0.0618	0.500	mg/L			119714950			
	828105	0.142	0.0618	0.500	mg/L			119714970			
	828105	0.120	0.0618	0.500	mg/L			119714986			
	828105	0.118	0.0618	0.500 CCV	mg/L			119714998			
Purameter		Reading	Known			27.545					
Total Organic Carbon		10.7	10.0	Units mg/L	Recover% 107	Limits%		File			
61.02 T. A. OLA (199 (199		10.8	10.0	mg/L	107	90.0 - 110 90.0 - 110		119714903			
		10.5	10.0	mg/L	105	90.0 - 110		119714916			
		10.8	10.0	mg/L	108	90.0 - 110		119714920 119714932			
		10.3	10.0	mg/L	103	90.0 - 110		119714932			
		10.0	10.0	mg/L	100	90.0 - 110		119714933			
		10.4	10.0	mg/L	104	90.0 - 110		119714971			
		10.7	10.0	mg/L	107	90.0 - 110		119715000			
				ICL				100 CO 10			
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Total Organic Carbon		19.7	20.0	mg/L	98.5	90.0 - 110		119714902			
				ICV							
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Total Organic Carbon		10.6	10.0	mg/L	106	90.0 - 110		119714904			
P				LCS							
Parameter Total Organia Cal	PrepSet	Reading		Known	Units	Recover%	Limits	File			
Total Organic Carbon	828105 828105	5.32		5.00	mg/L	106	89.8 - 111	119714905			
		5.17		5.00	mg/L	103	89.8 - 111	119714934			



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		×	Guilt	,		/1						50 1 01 11
	D				LCS							
	<u>Parameter</u> Total Organic Carbon	PrepSet 828105	Reading 4.97		Known 5.00 MSD	Units mg/L	<i>Recover%</i> 99.4	<i>Limits</i> 89.8 - 111	<i>File</i> 119714973			
	Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
	Total Organic Carbon	1765958	13.9	13.8	3.48	10.0	92.5 - 112	104	103	mg/L	0.964	20.0
		1766096	13.9	13.8	3.44	10.0	92.5 - 112	105	104	mg/L	0.961	20.0
		1766191	14.2	14.2	3.74	10.0	92.5 - 112	105	105	mg/L	0	20.0
		1766428	13.4	13.5	3.26 Standar	10.0 d	92.5 - 112	101	102	mg/L	0.981	20.0
	Parameter	Samuela	Deadlers									
	Total Organic Carbon	Sample	Reading 50.9	Known 50.0	Units mg/L	Recover% 102	<i>Limits%</i> 90.0 - 110		File 119714901			
	Analytical Set	828289			Blank						EP	A 200.7 4.4
	A											
	Parameter Discolution	PrepSet	Reading	MDL	MQL	Units			File			
	Dissolved Iron	827952	ND	0.00504	0.025 CCV	mg/L			119718826			
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Dissolved Iron		2.39	2.50	mg/L	95.6	90.0 - 110		119718827			
			2.46	2.50	mg/L ICL	98.4	90.0 - 110		119718833			
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Dissolved Iron		4.95	5.00	mg/L ICV	99.0	95.0 - 105		119718790			
	Parameter		Reading	Known	Units	Panouar®/	F Sundan O/					
	Dissolved Iron		2.60	2.50	mg/L	<b>Recover%</b> 104	<i>Limits%</i> 90.0 - 110		File 119718794			
	0.00				MSD							
	Parameter Dissolved Iron	<i>Sample</i> 1766014	MS 0.547	MSD 0.578	UNK 0.0997	<b>Known</b> 0.500	<i>Limits</i> 75.0 - 125	MS% 89.5	<b>MSD%</b> 95.7	Units mg/L	<b>RPD</b> 6.70	<i>Limit%</i> 20.0
	Analytical Set	828568			Disc						EPA	A 200.7 4.4
	Biologic Contraction	12.545			Blank							
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
	Phosphorus Silicon Recoverable	828028	ND	0.0388	0.100	mg/L			119725321			
	Shicon Recoverable	828028	0.0842	0.0148	0.100 CCV	mg/L			119725321			
	Parameter		Bandlera	V								
	Phosphorus		Reading 10.1	Known	Units	Recover%	Limits%		File			
	- noophorus		10.1	10.0 10.0	mg/L	101	90.0 - 110		119725314			
			9.96	10.0	mg/L mg/L	102 99.6	90.0 - 110		119725323			
			9.68	10.0	mg/L mg/L	96.8	90.0 - 110 90.0 - 110		119725334			
	Silicon Recoverable		4.90	5.00	mg/L	98.0	90.0 - 110		119725337			
			4.66	5.00	mg/L	93.2	90.0 - 110		119725314			
			4.80		mg/L	96.0	90.0 - 110		119725323 119725334			
			4.58	5.00	mg/L		50.0 - 110		119723334			



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ANALAB COKZ. THE COMPLETE SERVICE LAB Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663 Report Page 12 of 25

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com Employee Owned Integrity Caring Continual Improvement

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EPA 200.7 4.4

# Quality Control

				ICL							
<u>Parameter</u> Phosphorus Silicon Recoverable		<i>Reading</i> 24.6 10.1	<i>Known</i> 25.0 10.0	<i>Units</i> mg/L mg/L ICV	<b>Recover%</b> 98.4 101	<i>Limits%</i> 95.0 - 105 95.0 - 105		File 119725312 119725312			
<u>Parameter</u> Phosphorus Silicon Recoverable		<b>Reading</b> 9.87 5.07	<b>Known</b> 10.0 5.00	Units mg/L mg/L LCS Du	<i>Recover%</i> 98.7 101	<i>Limits%</i> 90.0 - 110 90.0 - 110		File 119725313 119725313			
Parameter Phosphorus Silicon Recoverable	<b>PrepSet</b> 828028 828028	<i>LCS</i> 3.98 3.60	<i>LCSD</i> 3.94 3.56	MSD	<i>Known</i> 4.00 4.00	<i>Limits%</i> 85.0 - 115 85.0 - 115	<i>LCS%</i> 99.5 90.0	<i>LCSD%</i> 98.5 89.0	<i>Units</i> mg/L mg/L	<b>RPD</b> 1.01 1.12	<i>Limit%</i> 25.0 25.0
<u>Parameter</u> Phosphorus Silicon Recoverable Phosphorus Silicon Recoverable	Sample 1766348 1766348 1766580 1766580	MS 4.03 9.14 4.00 19.1	MSD 4.14 9.51 3.86 18.2	UNK 0.239 5.83 ND 15.6	<i>Known</i> 4.00 4.00 4.00 4.00	<i>Limits</i> 75.0 - 125 75.0 - 125 75.0 - 125 75.0 - 125	<i>MS%</i> 94.8 82.8 100 87.5	<i>MSD%</i> 97.5 92.0 96.5 65.0 *	Units mg/L mg/L mg/L mg/L	<b>RPD</b> 2.86 10.6 3.56 29.5 *	<i>Limit%</i> 25.0 25.0 25.0 25.0

Analytical Set 828620

#### AWRL/MRL C

Parameter		Reading	Known	Units	Recover%	Limits%	File
Calcium		0.560	0.500	mg/L	112	25.0 - 175	
Iron, Total		0.0397	0.050	mg/L	79.4	25.0 - 175	119726008
Magnesium, Total		0.467	0.500	mg/L	93.4	25.0 - 175	119726008
Potassium		0.492	0.500	mg/L	98.4	25.0 - 175	119726008
Sodium		0.457	0.500	mg/L	91.4	25.0 - 175	119726008
			0.000	Blan		25.0 - 175	119726008
and a second				Blan	s.		
Parameter	PrepSet	Reading	MDL	MQL	Units		File
Calcium	828028	0.0884	0.0419	0.500	mg/L		119726010
Iron, Total	828028	ND	0.00504	0.025	mg/L		119726010
Magnesium, Total	828028	ND	0.0102	0.020	mg/L		119726010
Potassium	828028	ND	0.0765	0.500	mg/L		119726010
Sodium	828028	ND	0.0315	0.500	mg/L		119726010
				CCV			119720010
Parameter		Reading	Known	Units	Recover%	F. 1. 0.	
Calcium		25.2	25.0		101	Limits%	File
		24.3	25.0	mg/L		90.0 - 110	119726009
Iron, Total		2.53	2.50	mg/L	97.2	90.0 - 110	119726019
		2.33	2.50	mg/L	101	90.0 - 110	119726009
Magnesium, Total				mg/L	96.8	90.0 - 110	119726019
ind ghostain, rotai		25.6	25.0	mg/L	102	90.0 - 110	119726009
Potassium		24.7	25.0	mg/L	98.8	90.0 - 110	119726019
oussium		24.0	25.0	mg/L	96.0	90.0 - 110	119726009
		23,0	25.0	mg/L	92.0	90.0 - 110	119726019
				ICL			
Parameter		Reading	Known	Units	Recover%	Limits%	File
Calcium		48.8	50.0	mg/L	97.6	95.0 - 105	119726003
ron, Total		4.91	5.00	mg/L	98.2		119720003

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AB )	Phone 903/9		AX 903/		e-Mail con Integrit			LELA Continual Improv	AP-accre ement	dited #02	2008
SERVICE LAB	Q	Jualit	y C	ontro	ol	P	rinted	03/21/2019		Pa	ge 6 of 14
				ICL							
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Magnesium, Total		48.4	50.0	mg/L	96.8	95.0 - 105		119726003			
Potassium		49.4	50.0	mg/L	98.8	95.0 - 105		119726003			
				ICV							
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Calcium		24.9	25.0	mg/L	99.6	90.0 - 110		119726007			
Iron, Total		2.46	2.50	mg/L	98.4	90.0 - 110		119726007			
Magnesium, Total		24.9	25.0	mg/L	99.6	90.0 - 110		119726007			
Potassium		23.4	25.0	mg/L	93.6	90.0 - 110		119726007			
				LCS D	up			Contraction.			
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Calcium	828028	4.88	4.75		5.00	85.0 - 115	97.6	95.0	mg/L	2.70	
ron, Total	828028	0.513	0.492		0.500	85.0 - 115	103	98.4			25.0
Aagnesium, Total	828028	5.04	4.96		5.00	85.0 - 115	101	99.2	mg/L	4.18	25.0
otassium	828028	4.93	4.76		5.00	85.0 - 115	98.6		mg/L	1.60	25.0
odium	828028	4.82	4.65		5.00	85.0 - 115		95.2	mg/L	3.51	25.0
			1.05	MSD		85.0 - 115	96.4	93.0	mg/L	3,59	25.0
arameter	Sample	MS	MSD	UNK	Known		1.000	a land of	Same.		
Calcium	1766348	47.5	45.3	41.7	5.00	Limits	MS%	MSD%	Units	RPD	Limit%
ron, Total	1766348	0.715	0.594			75.0 - 125	116	72.0 *	mg/L	46.8 *	25.0
lagnesium, Total	1766348	15.1	14.5	0.109	0.500	75.0 - 125	121	97.0	mg/L	22.2	25.0
otassium	1766348	10.0		9.44	5.00	75.0 - 125	113	101	mg/L	11.2	25.0
odium	1766348	65.0	9.61 62.6	4.71 58.3	5.00 5.00	75.0 - 125 75.0 - 125	106 134 *	98.0 86.0	mg/L	7.65	25.0
Analytical Set	828691					10.0 120	154	80.0	mg/L	43.6 *	25.0
indi y tredi Set	020071		A	WRL/MI	RL C					EPA	A 200.7 4.
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Calcium		0.560	0.500	mg/L	112	25.0 - 175					
ron, Total		0.0397	0.050	mg/L	79.4	25.0 - 175		119727355			
fagnesium, Total		0.467	0.500	mg/L	93.4	25.0 - 175		119727355			
odium		0.457	0.500	mg/L	91.4			119727355			
		0.127	0.500	Blank		25.0 - 175		119727355			
arameter	PrepSet	Reading	MDL	MQL							
alcium	828028	0.0884			Units			File			
on, Total	828028		0.0419	0.500	mg/L			119727357			
lagnesium, Total		ND	0.00504	0.025	mg/L			119727357			
odium	828028 828028	ND	0.0102	0.020	mg/L			119727357			
Jaram	828028	ND	0.0315	0.500 CCV	mg/L			119727357			
trameter		D			S						
		Reading	Known	Units	Recover%	Limits%		File			
odium		24.5	25.0	mg/L	98.0	90.0 - 110		119727356			
		24.1	25.0	mg/L	96.4	90.0 - 110		119727363			
		25.8	25.0	mg/L	103	90.0 - 110		119727364			
		24.4	25.0	mg/L	97.6	90.0 - 110		119727372			
		26.1	25.0	mg/L	104	90.0 - 110		119727383			
			1	Dir. SPK	D						
and a state of the	Sample	DSPK	DSPKD	UNK	Known	T	DODVA	DCDFD0/	** **		
arameter alcium	1766348	66.0	68.6	41.0	Anown	Limits%	DSPK%	DSPKD%	Units	RPD	Limit%

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				Dir. SP	YKD							
Parameter	Sample	DSPK	DSPKI	D UNK	Known	Limits%	DSPK%	DSPKD%	Units	RPD	Limit%	
Iron, Total	1766348	2.37	2.38	0.0405	2.50	75.0 - 125	93.2	93.6	mg/L	0.421	25.0	
Magnesium, Total Sodium	1766348	35.6	37.2	9.93	25.0	75.0 - 125	103	109	mg/L	4.40	25.0	
Calcium	1766348	82.1	86.1	59.1	25.0	75.0 - 125	92.0	108	mg/L	4.76	25.0	
ron, Total	1766580 1766580	389	362	132	250	75.0 - 125	103	92.0	mg/L	7.19	25.0	
Aagnesium, Total	1766580	21.6 322	22.0	ND	25.0	75.0 - 125	86.4	88.0	mg/L	1.83	25.0	
Sodium	1766580	1360	308	54.7	250	75.0 - 125	107	101	mg/L	4.44	25.0	
outuin	1700380	1500	1310	1070 Direct S	250	75.0 - 125	116	96.0	mg/L	3.75	25.0	
		w 2018.			I K							
Parameter Calcium	Sample	DSPK		UNK	Known	Limits%	DSPK%		Units			
	1766348	66.0		41.0	25.0	75.0 - 125	100		mg/L		25.0	
Iron, Total Magnesium, Total	1766348	2.37		0.0405	2.50	75.0 - 125	93.2		mg/L		25.0	
agnesium, 10tai odium	1766348	35.6		9.93	25.0	75.0 - 125	103		mg/L		25.0	
alcium	1766348	82.1		59.1	25.0	75.0 - 125	92.0		mg/L		25.0	
on, Total	1766580	389		132	250	75.0 - 125	103		mg/L		25.0	
fagnesium, Total	1766580	21.6		ND	25.0	75.0 - 125	86.4		mg/L		25.0	
lium	1766580 1766580	322		54.7	250	75.0 - 125	107		mg/L		25.0	
	1700380	1360		1070 ICL	250	75.0 - 125	116		mg/L		25.0	
				ICL								
arameter		Reading	Known	Units	Recover%	Limits%		File				
Sodium		50.0	50.0	mg/L	100	95.0 - 105		119727350				
				ICV								
Parameter		Reading	Known	Units	Recover%	Limits%		File				
odium		24.1	25.0	mg/L	96.4	90.0 - 110		119727354				
				LCS Di	up							
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%	
alcium	828028	4.88	4.75		5.00	85.0 - 115	97.6	95.0	mg/L	2.70	25.0	
on, Total	828028	0.513	0.492		0.500	85.0 - 115	103	98.4	mg/L	4.18	25.0	
lagnesium, Total	828028	5.04	4.96		5.00	85.0 - 115	101	99.2	mg/L mg/L	1.60	25.0	
dium	828028	4.82	4.65		5.00	85.0 - 115	96.4	93.0	mg/L	3.59	25.0	
				MSD								
ameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Traite	DDD	T 1	
lcium	1766348	47.5	45.3	41.7	5.00	75.0 - 125	116	72.0 *	Units	RPD	Limit%	
i, Total	1766348	0.715	0.594	0.109	0.500	75.0 - 125	121	97.0	mg/L	46.8 *	25.0	
agnesium, Total	1766348	15.1	14.5	9.44	5.00	75.0 - 125	113	101	mg/L mg/L	22.2	25.0	
dium	1766348	65.0	62.6	58.3	5.00	75.0 - 125	134 *	86.0	mg/L mg/L	11.2 43.6 *	25.0 25.0	
cium	1766580	135	137	136	5.00	75.0 - 125	-20.0 *	20.0 *	mg/L mg/L	45.6 *	25.0	
n, Total	1766580	0.878	0.864	0.460	0.500	75.0 - 125	83.6	80.8	mg/L mg/L	3.41	25.0	
gnesium, Total	1766580	52.7	53.2	50.3	5.00	75.0 - 125	48.0 *	58.0 *	mg/L mg/L	18.9	25.0	
dium	1766580	1260	1290	1310	5.00	75.0 - 125	-1000 *	-400 *	mg/L	2.35	25.0	
alytical Set	828772										200.8 5.4	
				Blank						111 1		8
rameter	PrepSet	Reading	MDL	MQL	Units			File				
enic, Total	828028	ND	0.00025	0.0005	mg/L			119728817				
Total	828028	ND	0.00025	0.0005	mg/L			119728817				



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1	TA	Ana-La	b Corp	p. P.	O. Box	9000	Kilgoro	e, TX	75663	Report	Page	15 of 25
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HE COMPLET	E SERVICE LAB	Q	ualit	yci	Junc	)]	FI	inted	03/21/2019		Pa	ge 8 of 14
					CCV							
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Arsenic, Total		0.0484	0.05	mg/L	96.8	90.0 - 110		119728816			
			0.0493	0.05	mg/L	98.6	90.0 - 110		119728819			
			0.0473	0.05	mg/L	94.6	90.0 - 110		119728830			
	Lead, Total		0.0499	0.05	mg/L	99.8	90.0 - 110		119728816			
			0.0508	0.05	mg/L	102	90.0 - 110		119728819			
			0.0498	0.05	mg/L	99.6	90.0 - 110		119728830			
	Manganese, Total		0.0504	0.05	mg/L	101	90.0 - 110		119728836			
			0.0505	0.05	mg/L	101	90.0 - 110		119728819			
			0.0495	0.05	mg/L	99.0						
			0.0495	0.05	ICV	99.0	90.0 - 110		119728830			
	Parameter		Der	V			2					
	Arsenic, Total		Reading	Known	Units	Recover%	Limits%		File			
	Lead, Total		0.048	0.05	mg/L	96.0	90.0 - 110		119728813			
			0.0497	0.05	mg/L	99.4	90.0 - 110		119728813			
	Manganese, Total		0.050	0.05	mg/L	100	90.0 - 110		119728813			
					LCS Du	ıp						
	Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
	Arsenic, Total	828028	0.471	0.478		0.500	85.0 - 115	94.2	95.6	mg/L	1.48	20.0
	Lead, Total	828028	0.521	0.524		0.500	85.0 - 115	104	105	mg/L	0.574	20.0
	Manganese, Total	828028	0.495	0.516		0.500	85.0 - 115	99.0	103	mg/L	4.15	20.0
					MRL Ch					mg, L	7.1.2	20.0
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Lead, Total		0.000991	0.001	mg/L	99.1	50.0 - 150		119728811			
	Manganese, Total		0.00104	0.001	mg/L	104	50.0 - 150		119728811			
					MSD		50.0 150		119720011			
	Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
	Arsenic, Total	1766348	0.476	0.484	0.00248	0.500	70.0 - 130	94.7	96.3	mg/L	1.68	20.0
	Lead, Total	1766348	0.512	0.516	ND	0.500	70.0 - 130	102	103	- 17 CA. 1		
	Manganese, Total	1766348	0.508	0.518	0.0126	0.500	70.0 - 130	99.1	103	mg/L mg/L	0.778 2.00	20.0 20.0
	Analytical Set	828816									EP	A 200.8 5.
					Blank							
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
	Aluminum, Total	828028	ND	0.0025	0.005	mg/L			119730055			
	Arsenic, Total	828028	ND	0.00025	0.0005	mg/L			119730055			
	Lead, Total	828028	ND	0.00025	0.0005	mg/L			119730055			
	Manganese, Total	828028	ND	0.00033		mg/L			119730055			
	an channe the year of			1000	CCV							
	Parameter		Reading	Known	Units	Recover%	Limits%		<b>E</b> 21.			
	Aluminum, Total		0.0493	0.05	mg/L	98.6	90.0 - 110		File			
			0.0493	0.05	mg/L mg/L				119730054			
			0.049		1.1.1	98.0	90.0 - 110		119730057			
				0.05	mg/L	94.4	90.0 - 110		119730062			
			0.0473	0.05	mg/L	94.6	90.0 - 110		119730069			
			0.0464	0.05	mg/L	92.8	90.0 - 110		119730127			
			0.0471	0.05	mg/L	94.2	90.0 - 110		119730144			
			0.0452	0.05	mg/L	90.4	90.0 - 110		119730176			
			0.0462	0.05	mg/L	92,4	90.0 - 110		119730186			
			0.0471	0.05	mg/L	94.2	90.0 - 110		119730197			



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Parameter

Parameter

Parameter

Lead, Total

Parameter

Lead, Total

Parameter

Aluminum, Total

Aluminum, Total

Aluminum, Total

Manganese, Total

Manganese, Total

Aluminum, Total

Manganese, Total

Aluminum, Total

Manganese, Total

Arsenic, Total

Lead, Total

Arsenic, Total

Lead Total

Arsenic, Total

# Batch # 82163

Report Page 16 of 25 Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663 Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com 1 LELAP-accredited #02008 Employee Owned Integrity Caring Continual Improvement 2 Quality Control Printed 03/21/2019 Page 9 of 14 CCV Reading Known Units Recover% Limits% File 0.0456 0.05 mg/L 912 90.0 - 110 119730208 ICV Reading Known Units Recover% Limits% File 0.0481 0.05 mg/L 96.2 90.0 - 110 119730051 LCS Dup PrepSet LCS LCSD Limits% Known LCS% LCSD% RPD Units Limit% 828028 0.496 0.530 0.500 85.0 - 115 99.2 106 mg/L 6.63 20.0 828028 0.467 0.478 0,500 85.0 - 115 93.4 95.6 mg/L 2.33 20.0 828028 0.509 0.524 0,500 85.0 - 115 102 105 mg/L 2.90 20.0 828028 0.492 0.516 0.500 85.0 - 115 98.4 103 mg/L 4.76 20.0 MRL Check Reading Units Known Recover% Limits% File 0.000991 0.001 mg/L 99.1 50.0 - 150 119730049 0.00104 0.001 mg/L 104 50.0 - 150 119730049 MSD Sample MS MSD UNK Known Limits MS% MSD% Units RPD Limit% 1766348 0.559 0.533 0.0124 0.500 70.0 - 130 109 104 mg/L 4.87 20.0 1766348 0.476 0.484 0.00248 0.500 70.0 - 130 94.7 96.3 1.68 20.0 mg/L 1766348 0.512 0.516 ND 0.500 70.0 - 130 102 103 mg/L 0.778 20.0 1766348 0.508 0.518 0.0126 0 500 70.0 - 130 99.1 101 mg/L 2.00 20.0 1766580 0.534 0.559 0.0376 0.500 70.0 - 130 99.3 104 20.0 mg/L 4.91 1766580 0.490 0 497 0.018 0.500 70.0 - 130 94.4 95.8 20.0 mg/L 1.47 1766580 0 494 0.490 ND 0.500 70.0 - 130 98.8 98.0 mg/L 0.813 20.0 1766580 0.599 0.600 0.0923 0.500 70.0 - 130 101 102 mg/L 0.197 20.0

Analytical Set 828893

Blank

EPA 200.8 5.4

	Analytical Set	829170 PrenSet	Reading	MDI	Blank	Unite					EP	A 200.8 5.4
_	Dissolved Arsenic Analytical Set	1766014	0.516	0.520	0.000523	0.500	70.0 - 130	103	104	mg/L	0.773	20.0
	Parameter	Sample	MS	MSD	MSD UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
	Dissolved Arsenic		0.0505	0.05	mg/L	101	90.0 - 110		119732101			
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
					ICV							
			0.0525	0.05	mg/L	105	90.0 - 110		119732144			
			0.0533	0.05	mg/L	107	90.0 - 110		119732137			
	Dissolved Arsenic		0.0532	0.05	mg/L	106	90.0 - 110		119732128			
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
					CCV							
	Dissolved Arsenic	827952	0.000377	0.00035	9 0.0005	mg/L			119732135			
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
					Diality							

PrepSet Reading Parameter MDL MQL Units File **Dissolved** Manganese 827952 0.00726 0.000105 0.001 mg/L 119739306

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#### Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

LDSClient v1.14.12.1762

<b>ALA</b>	371	Phone 903/98		AX 903/9 ployec C		e-Mail corr Integrity			LELA Continual Improve	P-accred	lited #02	008
R <sup>®</sup>	VICE LAB	0	ualit					inted	03/21/2019	ement	Doge	10 of 14
LILOLI		Y	uam	yci		21	11	inted	03/21/2017		rage	10 01 14
					CCV							
2.0	r <u>ameter</u> solved Manganese		<i>Reading</i> 0.0512 0.0512	<i>Known</i> 0.05 0.05	Units mg/L mg/L ICV	<i>Recover%</i> 102 102	<i>Limits%</i> 90.0 - 110 90.0 - 110		<i>File</i> 119739304 119739311			
	r <u>ameter</u> solved Manganese		<b>Reading</b> 0.0507	Known 0.05	Units mg/L MSD	<b>Recover%</b> 101	<i>Limits%</i> 90.0 - 110		<i>File</i> 119739290			
	<u>ameter</u> solved Manganese	Sample 1766014	<i>MS</i> 0.562	<b>MSD</b> 0.557	UNK 0.0585	<i>Known</i> 0.500	<i>Limits</i> 70.0 - 130	<b>MS%</b> 101	<i>MSD%</i> 99.7	Units mg/L	<b>RPD</b> 0.998	<i>Limit%</i> 20.0
An	alytical Set	828564									EP	A 524.2 4.1
					BFB							
	ameter	Sample	RefMass	Reading	%	Limits%			File			
	3 Mass 173	828564	174	15	0.3	0 - 2.00			119725206			
	3 Mass 174	828564	95.0	4971	70.5	50.0 - 100			119725206			
BFE	3 Mass 175	828564	174	352	7.1	5.00 - 9.00			119725206			
BFE	3 Mass 176	828564	174	4945	99.5	95.0 - 101			119725206			
	3 Mass 177	828564	176	325	6.6	5.00 - 9.00			119725206			
	3 Mass 50	828564	95.0	1593	22.6	15.0 - 40.0			119725206			
	B Mass 75	828564	95.0	2965	42.0	30.0 - 80.0			119725206			
	3 Mass 95	828564	95.0	7054	100.0	100 - 100			119725206			
BFB	3 Mass 96	828564	95.0	498	7.1	5.00 - 9.00			119725206			
					Blank							
Para	ameter	PrepSet	Reading	MDL	MQL	Units			File			
Bron	nodichloromethane	828564	ND	0.186	1.00	ug/L			119725210			
Bron	noform	828564	ND	0.449	1.00	ug/L			119725210			
	proform	828564	ND	0.294	1.00	ug/L			119725210			
Dibr	omochloromethane	828564	ND	0.119	1.00	ug/L			119725210			
					CCV							
Para	imeter		Reading	Known	Units	Recover%	Limits%		File			
Bron	nodichloromethane		17.1	20.0	ug/L	85.3	70.0 - 130		119725207			
Bron	noform		14.8	20.0	ug/L	74.2	70.0 - 130		119725207			
Chlo	roform		20.3	20.0	ug/L	102	70.0 - 130		119725207			
Dibr	omochloromethane		17.8	20.0	ug/L	89.0	70.0 - 130		119725207			
					IS Areas	6						
Para	meter	Sample	Type	Danding	CCVISM	Low	TT-1.			50.75v		
	DichlorobenzeneD4	828564	CCV	42980	42980	21490	High 64470		File 119725207	PrepSet 828564		
		828564	LCS	40660	42980	21490	64470		119725208	828564		
		828564	LCS Dup	40160	42980	21490	64470		119725209	828564		
		828564	Blank	37940	42980	21490	64470		119725210	828564		
Chlo	robenzeneD5 (ISTD)	828564	CCV	85650	85650	42830	128500		119725207	828564		
		828564	LCS	86060	85650	42830	128500		119725208	828564		
		828564	LCS Dup	87130	85650	42830	128500		119725209	828564		
		828564	Blank	83700	85650	42830	128500		119725210	828564		
1,4-E (ISTI	DichlorobenzeneD4	1766348	UNKNOW	NB2820	42980	21490	64470		119725214	828564		
(IN II	robenzeneD5 (ISTD)	1766348		N70320								



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Ana-Lah Corn PO Box 9000 Kilgoro TV 75662

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15 <b>2</b>	Ana-La	b Corr	). P.(	O. Box	9000	Kilgor	e, TX	75663	нероп	Page	18 01 25
AB I	hone 903/98		X 903/9 ployee C		e-Mail co Integr		.com		AP-accree	lited #0	2008
	0							Continual Improv	vement		
E SERVICE LAB 🐨	Q	ualit	yca	ontro	1	Р	rinted	03/21/2019		Pag	ge 11 of 14
				IS Area	s						
Parameter	Sample	Type	Reading	CCVISM	Low	High		File	PrepSe	rt	
1,4-DichlorobenzeneD4 (ISTD)	1767157	MS	38040	42980	21490	64470		119725212	828564		
	1767157	MSD	34760	42980	21490	64470		119725213	828564	8	
ChlorobenzeneD5 (ISTD)	1767157	MS	77830	85650	42830	128500		119725212	828564	Q.	
	1767157	MSD	72600	85650 IS RetTi	42830 ne	128500		119725213	828564		
Deservation	<b>.</b> .	6 a 1									
Parameter 1,4-DichlorobenzeneD4 (ISTD)	Sample 828564	<i>Type</i> CCV	Reading 14.79	CCVISM 14.79	Low 14.73	High 14.85		<i>File</i> 119725207	PrepSe 828564		
(1310)	828564	LCS	14.80	14.79	14.73	14.95		11070 0000			
	828564	LCS Dup	14.80	14.79	14.73	14.85 14.85		119725208	828564		
	828564	Blank	14.80	14.79	14.73	14.85		119725209	828564		
ChlorobenzeneD5 (ISTD)	828564	CCV	11.09	11.09	11.03	11.15		119725210	828564		
0.0000000000000000000000000000000000000	828564	LCS	11.09	11.09	11.03	11.15		119725207 119725208	828564		
	828564	LCS Dup	11.10	11.09	11.03	11.15		119725208	828564 828564		
	828564	Blank	11.10	11.09	11.03	11.15		119725210	828564		
1,4-DichlorobenzeneD4 (ISTD)	1766348	UNKNOW	/N14.82	14.79	14.73	14.85		119725214	828564		
ChlorobenzeneD5 (ISTD)	1766348	UNKNOW	NI1.11	11.09	11.03	11.15		119725214	828564		
1,4-DichlorobenzeneD4 (ISTD)	1767157	MS	14.82	14.79	14.73	14.85		119725212	828564		
011	1767157	MSD	14.82	14.79	14.73	14.85		119725213	828564		
ChlorobenzeneD5 (ISTD)	1767157	MS	11.11	11.09	11.03	11.15		119725212	828564		
	1767157	MSD	11.11	11.09 LCS Du	11.03	11.15		119725213	828564		
2	6	0.000		Deo Duj							
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromodichloromethane Bromoform	828564	17.4	16.1		20.0	70.0 - 130	87.0	80.5	ug/L	7.76	30.0
Chloroform	828564	16.3	15.5		20.0	70.0 - 130	81.5	77.5	ug/L	5.03	30.0
Dibromochloromethane	828564	18.2	17.3		20.0	70.0 - 130	91.0	86.5	ug/L	5.07	30.0
Distonocinicionicinane	828564	17.2	17.2	MSD	20.0	70.0 - 130	86.0	86.0	ug/L	0	30.0
Parameter	Sample	MS	MSD	UNK	V	····					
Bromodichloromethane	1767157	160	176	ND	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromoform	1767157	126	148	ND	200 200	67.1 - 133	80.0	88.0	ug/L	9.52	30.0
Chloroform	1767157	194	211	ND	200	58.4 - 125 62.8 - 138	63,0 97.0	74.0	ug/L	16.1	30.0
Dibromochloromethane	1767157	156	179	ND	200	60.7 - 129	78.0	106 89.5	ug/L ug/L	8.40 13.7	30.0 30.0
				Surrogate	e						
Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File			
1,2-DCA-d4 (SURR)	828564	CCV	19.7	20.0	ug/L	98.5	70.0 - 13	0 119725207			
	828564	LCS	19.8	20.0	ug/L	99.0	70.0 - 13	0 119725208			
	828564	LCS Dup	18.4	20.0	ug/L	92.0	70.0 - 13	119725209			
D 0 1	828564	Blank		20.0	ug/L	97.5	70.0 - 13	119725210			
Bromofluorobenzene (SURR)	828564	CCV		20.0	ug/L	93.5	70.0 - 130	) 119725207			
	828564	LCS		20.0	ug/L	94.5	70.0 - 130	119725208			
	828564	LCS Dup		20.0	ug/L	95.0	70.0 - 130				
Dibromofluoromethane	828564	Blank		20.0	ug/L	93.0	70.0 - 130				
(SURR)	828564	CCV	20.5	20.0	ug/L	102	70.0 - 130	119725207			

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Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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E COMPLETE		0		nployee (		Integrit			ntinual Improv	ement	
		Q	ualit	yC	ontro	DI	Pr	inted 03/2	1/2019		Page 12 of 1
					Surrog	ate					
	Parameter	Sample	Type	Readin	g Known	Units	Recover%	Limits%	File		
	Dibromofluoromethane (SURR)	828564	LCS	18.4	20.0	ug/L	92.0	70.0 - 130	119725208		
		828564	LCS Dup	18.1	20.0	ug/L	90.5	70.0 - 130	119725209		
		828564	Blank	17.2	20.0	ug/L	86.0	70.0 - 130	119725210		
	TolueneD8 (SURR)	828564	CCV	18.3	20.0	ug/L	91.5	70.0 - 130	119725207		
		828564	LCS	17.9	20.0	ug/L	89.5	70.0 - 130	119725208		
		828564	LCS Dup	17.9	20.0	ug/L	89.5	70.0 - 130	119725209		
		828564	Blank	18.3	20.0	ug/L	91.5	70.0 - 130	119725210		
	1,2-DCA-d4 (SURR)	1766348	UNKNOW	WN21.2	20.0	ug/L	106	70.0 - 130	119725214		
	Bromofluorobenzene (SURR)	1766348	UNKNOV	VN19.7	20.0	ug/L	98.5	70.0 - 130	119725214		
	Dibromofluoromethane (SURR)	1766348	UNKNOV		20.0	ug/L	93.5	70.0 - 130	119725214		
	TolueneD8 (SURR)	1766348	UNKNOV		20.0	ug/L	94.5	70.0 - 130	119725214		
	1,2-DCA-d4 (SURR)	1767157	MS	18.8	20.0	ug/L	94.0	70.0 - 130	119725212		
	D0 1	1767157	MSD	19.8	20.0	ug/L	99.0	70.0 - 130	119725213		
	Bromofluorobenzene (SURR)	1767157	MS	18.0	20.0	ug/L	90.0	70.0 - 130	119725212		
	Dibromofluoromethane		MSD	18.9	20.0	ug/L	94.5	70.0 - 130	119725213		
	(SURR)	1767157 1767157	MS MSD	18.8 18.9	20.0	ug/L	94.0	70.0 - 130	119725212		
	TolueneD8 (SURR)	1767157	MSD		20.0	ug/L	94.5	70.0 - 130	119725213		
	(condy)	1767157	MSD	19.0 19.0	20.0	ug/L ug/L	95.0 95.0	70.0 - 130 70.0 - 130	119725212		
	Analytical Set	828698				48.2	2010	70.0 - 150	119725213		
					Blank						EPA 552.
	Parameter	PrepSet	Reading	MDL	MQL	Units			File		
	Bromoacetic acid	828157	0.310	0.275	5.00	ug/L			119727471		
	Chloroacetic acid	828157	ND	0.559	5.00	ug/L			119727471		
	Dibromoacetic acid	828157	0.289	0.198	5.00	ug/L			119727471		
	Dichloroacetic acid	828157	ND	0.244	5.00	ug/L					
	Trichloroacetic acid	828157	ND	0.191	5.00	ug/L			119727471		
					CCV	ug/L			119727471		
	Parameter		Reading	Known	Units	Recover%	Limits%		File		
	Bromoacetic acid		20.5	20.0	ug/L	103	70.0 - 130		119727470		
			20.5	20.0	ug/L	103	70.0 - 130		119738629		
	Chloroacetic acid		24.9	20.0	ug/L	125	70.0 - 130		119727470		
			20.8	20.0	ug/L	104	70.0 - 130		119738629		
	Dibromoacetic acid		16.3	20.0	ug/L	81.5	70.0 - 130		119727470		
			14.1	20.0	ug/L	70.5	70.0 - 130		119738629		
	Dichloroacetic acid		21.4	20.0	ug/L	107	70.0 - 130		119727470		
			21.7	20.0	ug/L	109	70.0 - 130				
	Trichloroacetic acid		17.8	20.0	ug/L	89.1	70.0 - 130		119738629 119727470		
			18.5	20.0	ug/L	92.4	70.0 - 130				
					IS Areas		70.0 - 150		119738629		
	Parameter	Sample	Type	Reading	CCVISM	Low	High		E11-		
				ano musting	CCT IONI	LANN	High		File	PrepSet	
	1,2,3-Trichloropropane (IS)		CCV	709000	709000	496300	021700				
	1,2,3-Trichloropropane (IS)		CCV CCV	709000 856600	709000 709000	496300 496300	921700 921700		119727470 119738629	828698 828698	



#### Gulf Coast Region: 414I Directors Row Ste C Houston TX 77092

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COKP.	E SERVICE LAB	Q	ualit	y Co	ontro	1	P	rinted 03	/21/2019		Page	e 13 of 14
					IS Area	IS						
	Parameter	Sample	Туре	Reading	CCVISM	Low	High		File	PrepSet		
	1,2,3-Trichloropropane (IS)	828157	LCS	748900	709000	496300	921700		119727472	828157		
		1766348	UNKNO	WN828000	709000	496300	921700		119738617	828157		
		1767092	MS	708900	709000	496300	921700		119738623	828698		
		1767092	MSD	639800	709000	496300	921700		119738624	828157		
		1767092	UNKNO	WN737400	709000	496300	921700		119738622	828157		
					IS RetTi	me						
	Parameter	Sample	Туре		CCVISM	Low	High		File	PrepSet		
	1,2,3-Trichloropropane (IS)		CCV	8.800	8.800	8.740	8.860		119727470	828698		
		0001	CCV	8.810	8.800	8.740	8.860		119738629	828698		
		828157	Blank	8.810	8.800	8.740	8.860		119727471	828157		
		828157	LCS	8.810	8.800	8.740	8.860		119727472	828157		
		1766348	UNKNO		8.800	8.740	8.860		119738617	828157		
		1767092	MS	8.810	8.800	8.740	8.860		119738623	828698		
		1767092 1767092	MSD UNKNO	8.800	8.800	8.740	8.860		119738624	828157		
		1707052	UNKINO	W10.010	8.800 LCS Du	8.740	8.860		119738622	828157		
	Danamatan	<b>n</b> . <b>c</b> .	1.00		Des Du							
	Parameter Bromoacetic acid	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
	Chloroacetic acid	828157 828157	24.2 24.3	23.5		20.0	70.0 - 130	121	118	ug/L	2.51	30.0
	Dibromoacetic acid	828157	24.3	24.6		20.0	70.0 - 130	122	123	ug/L	0.816	30.0
	Dichloroacetic acid	828157	24.7	23.5 25.3		20.0	70.0 - 130	114	118	ug/L	3.45	30.0
	Trichloroacetic acid	828157	24.7	23.3		20.0	70.0 - 130	124	126	ug/L	1.60	30.0
		020137	21.2	21.5	MSD	20.0	70.0 - 130	106	108	ug/L	1.87	30.0
	Parameter	Sample	MS	MSD		v			2			
	Bromoacetic acid	1767092	18.1	19.8	UNK 0.903	Known	Limits 30.0 - 150	MS%	MSD%	Units	RPD	Limit%
	Chloroacetic acid	1767092	23.1	30.3	3.66	20.0 20.0	30.0 - 150 15.0 - 150	86.0 97.2	94.5	ug/L	9.42	30.0
	Dibromoacetic acid	1767092	4.79	21.5	1.68	20.0	13.0 - 130 30.0 - 150	97.2 15.6 *	133	ug/L	31.2 *	30.0
	Dichloroacetic acid	1767092	32.0	37.2	19.5	20.0	30.0 - 150	62.5	99.1 88.5	ug/L	146 *	30.0
	Trichloroacetic acid	1767092	22.0	25.9	8.60	20.0	30.0 - 150	67.0	86.5	ug/L ug/L	34.4 * 25.4	30.0
					Surrogat		50.0 - 150	07.0	80.5	ug/L	25,4	30.0
	Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File			
	2,3-Dibromopropionic (Surr)		CCV	19.3	20.0	ug/L	96.5	70.0 - 130	119727470			
			CCV	15.2	20.0	ug/L	76.0	70.0 - 130	119738629			
		828157	Blank	18.8	20.0	ug/L	94.0	70.0 - 130	119727471			
		828157	LCS	21.2	20,0	ug/L	106	70.0 - 130	119727472			
		828157	LCS Dup	21.6	20.0	ug/L	108	70.0 - 130	119727473			
		1766348	UNKNOV	VN18.2	20.0	ug/L	91.0	70.0 - 130	119738617			
		1767092	MS	6.05	20.0	ug/L	30.2 *	70.0 - 130	119738623			
		1767092	MSD	21.7	20.0	ug/L	108	70.0 - 130	119738624			
		1767092	UNKNOV	VN14.3	20.0	ug/L	71.5	70.0 - 130	119738622			
	Analytical Set 827	763									SM 21	30 B-200
	Deserved		-		VRL/MR							
	Parameter Turbiditu		Reading		Units	Recover%	Limits%		File			
	Turbidity		0.29	0.30	NTU	0	70.0 - 130		119708083			
	Danamatan	<b>B G i</b>			Blank	2.1						
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
te Shippin	ig: 2600 Dudley Rd. Kilgore, 7	TX 75662			LOITED IN A		G	ulf Coast Reg	ion: 4141 Directors	Row Ste C I	louston	EX 77092

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NELAP-accredited #T104704201

Form rptPROJQCGrpt Created 01/27/2005 v1.0

Final Report		<b>Ana-La</b> ne 903/984	4-0551 FA	X 903/9	84-5914		Kilgore	, TX 75		Report	Page 21 of 25
			Em	ployee C	)wned	Integrity	Carir	ng Con	ntinual Improv	ement	
THE COMPLETE	SERVICE LAB	Q	uality	y Co	ontro	1	Pri	nted 03/2	1/2019		Page 14 of 14
					Blank						
	<u>Parameter</u> Turbidity	<b>PrepSet</b> 827763	<i>Reading</i> ND	<i>MDL</i> 0.30	MQL 0.300	<i>Units</i> NTU			<i>File</i> 119708080		
	2			1	Duplica						
	Parameter Turbidity	Sample 1766150		Result	Unknown			Unit		RPD	Limit%
	Turblaity	1/00150		3.74	3.75	6.5		NTU		0.267	20.0
					Mat. Spi	ke					
	Parameter	Sample	Spike		n Known	Units	Recovery %	Limits %	File		
	Turbidity	1766150	43.8	3.75	40.0	NTU	100	70.0 - 130	119708087		
					Standar	d					
	Parameter	Sample	Reading	Known	Units	Recover%	Limits%		File		
	Turbidity	827763	9.28	10.0	NTU	92.8	90.0 - 110		119708081		
		827763	96.3	100	NTU	96.3	90.0 - 110		119708084		
		827763	9.05	10.0	NTU	90.5	90.0 - 110		119708090		
		827763	9.78	10.0	NTU	97.8	90.0 - 110		119708092		
	Analytical Set 828	487									SM 2320 B-2011
					Blank						5111 2520 19-2011
	Parameter	PrepSet	Reading	MDL	MQL	Units			File		
	Total Alkalinity (as CaCO3)	828487	ND	1.00	1.00	mg/L			119723645		
					CCV						
	Parameter		Reading	Known	Units	Recover%	Limits%		File		
	Total Alkalinity (as CaCO3)		25.4	25.0	mg/L	102	90.0 - 110		119723644		
			24.9	25.0	mg/L	99.6	90.0 - 110		119723654		
			25.9	25.0	mg/L	104	90.0 - 110		119723666		
					Duplicat	e					
	Parameter	Sample		Result	Unknown			Unit		RPD	T 1
	Total Alkalinity (as CaCO3)	1766124		77.1	79.5			mg/L		3.07	<i>Limit%</i> 20.0
		1766939		24.9	25.4			mg/L		1.99	20.0
					ICV					1.77	20.0
	Parameter		Reading	Known	Units	Recover%	Limits%		File		
	Total Alkalinity (as CaCO3)		24.5	25.0	mg/L	98.0	90.0 - 110		119723643		
					Mat. Spil				117/20070		
	Parameter	Commente	Cuiles								
	Total Alkalinity (as CaCO3)	Sample 1766124	Spike 100	Unknown 79.5		Units	Recovery %		File		
	(as cacos)	1766939	47.5	25.4	25.0	mg/L	82.0	70.0 - 130	119723648		

\* Out RPD is Relative Percent Difference: abs(r1-r2) / mean(r1,r2) \* 100%

Recover% is Recovery Percent: result / known \* 100%

1

Blank - Method Blank; AWRL/MRL C - Ambient Water Reporting Limit/Minimum Reporting Limit Check Std; LCS - Laboratory Control Sample; CCB - Continuing Calibration Blank; CCV - Continuing Calibration Verification; ICV - Initial Calibration Verification; BFB - GC/MS Tuning Compound; MRL Check - Minimum Reporting Limit Check Std

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662



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In the left is some as Report Information       THERM 1019 $\overline{V}$ Therm 101 The top of the		Time:		Date:			Received By:		Time:			Date:	1	nquished By
In ph (25) 372.8224       Image: Status and a status information       Interview       Interview <thinterview< th="">       I</thinterview<>	1325		3-12	Date:	men	DHG	Received By:			i9	3/12/	H Date:	Z.C./Y	nquished By:
In the design of the sum as Report information     Interformation     <		rrier ID :		/=Voa, 0=0t	tic, G=Glass, \		ontainer Typ	0			BY:	Authorized	bly to RUSH TAT	charge will app
In the (San) 572.822.4     Container     Balling Information     Container     Popiet:     Repert Information     THERM IDB Y     TEMP IDF       Address:     Popiet:     ASC     WUIL #FIG_TTO_L     Phone: Succession (Succession		REMARKS:				Business da			1 Business I	1.1	Expedite	Business days)		uired Turnaroun
In ph. $\begin{bmatrix} Sa1 \\ Sa1 \end{bmatrix} \underbrace{Sa224}{Sa224}$ Interval						1.	П нзро4							
In phy (Sec) 577-8224       Incommation       Incommation       Incommation       Internation        Internation <td></td> <td></td> <td>_</td> <td></td> <td></td> <td>- 1</td> <td>H2SO4</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td>			_			- 1	H2SO4			-				
In the issue as Report information       IBACH # OKAGE   IEMP UNACT         Billing information       INTERM 10# $4$ IEMP Corr:         Address: PCO 60X ITSS       Phone: $x_{L} + HSS = 3H \cdot S$ FRAME Corr:         Address: PCO 60X ITSS       Phone: $x_{L} + HSS = 3H \cdot S$ FRAME Corr:         Matrix       Container       PO #       FRAME Container         Project: ASA WUI # H (9, TD) [ 1, Lish Mt B       Requested Analysis         Collected       Bissue as a space of the same as Report information       THERM 10# $4$ FAX:         Matrix       Container       PO #       FMAIL:: Stock is the same as Report information         OUT of the figure of the same as Report information       THERM 10# $4$ FAX:         Collected       Matrix       Contract to a start as a st														
In ph. (361) 572-8224       I Check box if Billing is the same as Report Information       ITHERM ID# 4       IEMP ON-C         Billing Information       I Check box if Billing is the same as Report Information       ITHERM ID# 4       IEMP Corr:         Address:       PO 6 0.5 x 1758       Project:       ASC       ITA 72         Project:       ASC       WCIII #1(9, TD) 17, List MtB       EMAIL: social serve) victoria. Tx, 003       Requested Analysis         Collected       000 onemation       Matrix       Container       Victoria. Tx, 013       Requested Analysis         ate       Time       000 onemation       Address       Matrix       Container       Victoria. Tx, 013       State       Victoria. Tx, 013         ate       Time       000 one matrix       Address       Matrix       Preservative       Victoria. Tx, 013       State       S														
11 ph. (361) 572-8224       Image: Container       Batch # Zavies       Image: Container														
11 ph. (361) 572-8324       I Check box if Billing is the same as Report Information       I HERM 1D# 4       I EMP ON-C:         Billing Information       I Check box if Billing is the same as Report Information       I HERM 1D# 4       I EMP On-C:         Address: PO 60x 1758       Phone: 3c1 - 485 - 34+5       FAX:         Phone: 3c1 - 485 - 34+5       FAX:         Project:       ASA:       WCII #19, TD17, List AFB       EMAIL: srelations on Qvictoria. 4x         Collected         attentime       Solid       Solid       Solid       Solid         atte       Time       Solid       Solid       Solid       Solid       Solid       Solid         attention: Stephen Robinstring DO       Matrix       Container       Solid							H2SO4 H3PO4 ICE							
11 ph. (361) 572-8224       Image: State in the same as Report Information	1429	X X S19071				and the second second	H2SO4 H3PO4 ICE	22	DW	0	LONO PM	3/12/19		SR Table 1
1 ph. (361) 572-8224       I Check box if Billing is the same as Report Information       THERM ID# 4       TEMP UN-C:         Billing Information       I Check box if Billing is the same as Report Information       THERM ID# 4       TEMP Corr:         Address:       PO & Ox (1758)       TTR02       Phone: 36(-485-34)5       FAX:         Attention:       Stech-ria, TX TTR02       Phone: 36(-485-34)5       FAX:         Project::       ASR_WUII #IQ, TDI 1, List At B       EMAIL:       Stech-ria, TX, org         Comments:       Matrix       Container       Requested Analysis       Requested Analysis         On a www.wase H20       St. Studge       St. St. Studge       St.	1424	X S1907	VV	NX 1	YYY	a second second second second second		ه_	DW	0	1040 Pr	3/12/19		SR Table 1
11 ph. (361) 572-8224       Image: Container       Image: Collected	ple Numbe	Dis	Ita. TT		CI, TO			-	- Liquid - Water		Time	Date		
11 ph. (361) 572-8224       Image: Constant of the same as Report Information       Image: Constant of the same as Report Informatin of the same as Report Information		6:A	HA		Fit			MBEH	/W - Waste H20 L - Sludge	Grab	cted	Colle	nple ID	nt / Field Sam
1 ph. (361) 572-8224       Image: Container				IGIN IAI	50	ative	Preserv	INN	W - Drinking H20 - Solid	= 9				ected By:
11 ph. (361) 572-8224       Batch # 8 Algo       I EMP UN-C         Billing Information       Check box if Billing is the same as Report Information       THERM ID# 4       TEMP Corr:         Address:       PO & Sox 1758       Victoria, TX 77902       Phone: 361-485-3415       FAX:         Attention:       Skedown Kobinism po #       Phone: 361-485-3415       FAX:         Project:       ASR_WULI #19, TD12, List At B       EMAIL: srobins on O victoria tx org         Comments:       WULI #19, TD12, List At B       Requested Analysis	Seals Presen	NA.		la,K	y id.			Container		7			ion	nple Informati
11 ph. (361) 572-8224       ILEMIP UN-C         Billing Information       Check box if Billing is the same as Report Information       THERM ID# 4       TEMP Corr:         Address:       PO & Sox 1758       Phone:       361 - 485 - 3415       FAX:         Victoria, TX       T7902       Phone:       361 - 485 - 3415       FAX:         Attention:       Stefan & Koblasian PO #       EMAIL:       Stablasian Stefan Koblasian PO #       EMAIL:       Stablasian Stefan Koblasian PO #	By laborator	P6	Analysis	Q victori	cc: Kpost	145	617, 415	#19,7		ASR ts:	Project: Commen			ess: 2902 Blu Victoria
11 ph. (361) 572-8224       ILEMIP UN-C: Q. U Page         Billing Information       Check box if Billing is the same as Report Information       THERM ID# 4       TEMP Corr: Q.0         Address:       PO & OX 1758       Phone: 361-485-3415       FAX:		oriatx.org	Dvich	binson		2		PO #	en Robin	1	Attentior			
Billing Information Check box if Billing is the same as Report Information THERM ID# 4 TEMP Corr: 6.0		FAX:		-485-34				377902	TA TX	-	Address:	TP	Victoria Su	e: City of
Batch # 8%/0%   EMIP UN-C: 00 Page			TEN	IERM ID#		Report Info	g is the same a	eck box if Billin		Iformat	Billing In		Information	omer / Report I
	Pageof	6.0		ch # 8216	-	Necolu	USLOUY		Cildi	224	361) 572-8	77901 ph. (3	D Victoria, Texas	6 E Brazos Suite

-7 1

#### BatchNo: 82436

# SAMPLE REPORT



T104704328-19-16

# Business

Victoria, City of - Stephen Robinson P O Box 1758 Victoria Tx 77902 Att: Stephen Robinson



### Laboratory

B Environmental, LLC. 1606 E Brazos, Suite D Victoria TX 77901 ph. 361-572-8224

#### **Reference Information**

Project: Well #19 ASR Table 1, List A & B Printed: Tuesday, April 02, 2019

Re: Victoria, City of - Stephen Robinson

Dear: Stephen Robinson

Attached are the results for sample(s) received on 3/18/2019

The analytical results relate only to the samples tested. All supporting quality data meets the requirements of NELAC unless noted in the case narrative section of the report.

This report contains 23 pages (including the cover page)

If you have any questions concerning this report, please do not hesitate to call (361) 572-8224 or Fax us at (361) 572-4115

Respectfully Submitted,

Kevin Baros

Laboratory Director



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Victoria TX 77901

<b>B</b> Environm	nental, LL	.C.
1606 E Brazo	s, Suite D	
Victoria	TV	7700

			Date	Received:	3/18/2	2019
Project	Well #19 ASR Table 1	. List A & B	Rece	ived By:	Honnen	
_ogin completed by:	Honnen	3/18/2019	1			
	Signature	LoginDate:	i			
		Carrier Name		Walk In		
Shipping container/	cooler in good o	ondition?		YES		Not Present
Custody seals intac	t on shipping co	ntainer/cooler?		YES		Not Present
Custody seals intac	t on sample bot	tles?		YES		Not Present
Chain of Custody pr	esent?			✓ YES		
Chain of Custody si	gned when relin	quished and rece	ived	✓ YES		
Chain of Custody ag	grees with samp	le labels?		✓ YES		
Samples in proper of	container/bottles	?		✓ YES		
Sample containers i	ntact?			YES	NO	
Sufficient sample vo	olume for indica	ted tests?		✓ YES	NO	
All samples received	d within holding	times?		YES		
Container/Temp Bla	ink - temperatur	e in compliance?	1	✓ YES		>0 <6 °C On Ice
Water - VOA vials h	ave zero heads	pace? Bubble < 6	imm?	YES		No VOA Vials submitted
Water - pH acceptal	ble upon receip	?		YES		✓ Not Applicable
*TEMP 20.9/20.9	pH Adjuste	d? NA		Checked I	By L. Val	renkamp
Any No and/or N/A (not app	licable) response n	ust be detailed in the	commer	its section be	low.	
lient contacted			Per	sonConta	cted	
Contacted by:			Dat	te Contacte	ed:	
Regarding						
Comments						
Therm #4. The sample	s were collected the	e same day they were	received	at the labora	atory and wer	e in the process of cooling
Corrective Action				*		
Sonecave Action						

BatchNo:

82436



Victoria TX 77901

Page 2 of 23

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ANALAR I	Phone 903/984-0551 FAX 903.	/984-59	14 e-M	lail corp(	@ana-lab.c	om				
ana-lad		nployee C		Integrity			al Improver	nent		
HE COMPLETE SERVICE LAB	Results								Page	1 of
	Pri Pri	nted:	04/02/	2019	14:11					
Sec. 1					Acc	ount		Pr	oject	
Report To					BEN	VV-G		80	66739	
B-Environmental Kevin C. Baros 1606 E Brazos St., Suite D Victoria, TX 77901										
		F	lesults	8						
1767563 S190771537				_						
Drinking Water								Received:	03/19/2019	9
Dimking water	<i>Collected by:</i> Client <i>Taken:</i> 03/18/2019 14:30:00		Environm	ental			PO			
Calculation	Prepared:		03/2	22/2019	09:49:54	Calculatea		03/22/2019	09:49:54	С
Parameter	Results		Units	RL		Flag		CAS	Во	ttle
Phosphorus (as Phosphate)	0.438		mg/L	0.306						
EPA 200.7 4.4	Prepared:	828929	03/2	20/2019	10:30:00	Analyzed	829300	03/21/2019	15:28:00	L
Parameter	Results		Units	RL		Flag		CAS	Bo	ttle
Phosphorus	0.143		mg/L	0.100				7723-14-0	13	
Silicon Recoverable	6.31		mg/L	0.100				7740-21-3	13	
EPA 200.7 4.4	Prepared:	828929	03/2	0/2019	10:30:00	Analyzed	829593	03/22/2019	20:06:00	L
Parameter	Results		Units	RL.		Flag	1.1	CAS	Bo	ttle
Calcium	39.5		mg/L	0.500				7440-70-2	13	
/ Magnesium, Total	9.43		mg/L	0.020				7439-95-4	13	
Potassium	4.87		mg/L	0.500				7440-09-7	13	
EPA 200.7 4.4	Prepared:	828929	03/2	0/2019	10:30:00	Analyzed	829593	03/22/2019	20:45:00	L
Parameter	Results		Units	RL		Flag	1	CAS	Boi	ttle
Sodium	71.4		mg/L	5.00		D		7440-23-5	13	
EPA 200.7 4.4 - Calc	Prepared:		03/2	2/2019	09:49:54	Calculated		03/22/2019	09:49:54	Ċ.
Parameter	Results		Units	RL		Flag		CAS	Bot	ttle
Silica (SiO2)	13.5		mg/L	0.214						
EPA 200.8 5.4	Prepared:	828929	03/2	0/2019	10:30:00	Analyzed	828988	03/20/2019	14:23:00	JE
Parameter	Results		Units	RL		Flag		CAS	Bot	tle
Aluminum, Total	0.00312		mg/L	0.005		JB		7429-90-5	13	
EPA 300.0 2.1	Prepared:	829671	03/2	1/2019	18:03:00	Analyzed	829671	03/21/2019	18:03:00	AN
Parameter	Results	-	Units	RL		Flag		CAS	Bot	tle
Chloride	59.4		mg/L	1.50					01	
V Fluoride			-						19.10	



1

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Page 2 of 7



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663 Report Page 3 of 25

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Results

Printed: 04/02/2019 14:11

1767563 \$19	0771537								Received:	03/19/2019	9
Drinking Water	Collected by: Taken: 03/18	Client /2019 14:30:00		Environm	ental			PC	k.		
EPA 300.0 2.1		Prepared:	829671	03/2	21/2019	18:03:00	Analyzed	829671	03/21/2019	18:03:00	AM.
Parameter		Results		Units	RL		Flag		CAS	Во	ttle
N Sulfate		23.7		mg/L	1.50					01	
EPA 300.1 1		Prepared:	830363	03/2	28/2019	11:05:00	Analyzed	830363	03/28/2019	11:05:00	AMI
Parameter		Results		Units	RL	-	Flag		CAS	Во	ttle
N Bromate		<5.00	_	ug/L	5.00					05	
EPA 350.1 2		Prepared:	828696	03/1	9/2019	14:15:00	Analyzed	829017	03/20/2019	00:00:00	RSV
Parameter		Results		Units	RL		Flag	2	CAS	Bo	ttle
N Ammonia (as N)		0.158		mg/L	0.020					10	
EPA 524.2 4.1		Prepared:	828856	03/1	9/2019	19:39:00	Analyzed	828856	03/19/2019	19:39:00	KLB
Parameter		Results		Units	RL		Flag		CAS	Bo	ttle
N Bromodichlorometh	nane	20.8		ug/L	1.00				75-27-4	07	
N Bromoform		3.24		ug/L	1.00				75-25-2	07	
N Chloroform		17.0		ug/L	1.00				67-66-3	07	
N Dibromochlorometh	lane	15.6		ug/L	1.00				124-48-1	07	
EPA 524.2 4.1		Prepared:	828856	03/2	0/2019	10:25:52	Calculated	828856	03/20/2019	10:25:52	CAL
Parameter		Results	200-0-0	Units	RL		Flag		CAS	Bot	ttle
N Trihalomethanes		0.05664		mg/L	0.001					07	
EPA 552.2 1		Prepared:	829599	03/2	5/2019	09:05:41	Analyzed	831027	04/01/2019	23:35:00	EMT
Parameter		Results		Units	RL		Flag	1.1	CAS	Bot	tle
N Bromoacetic acid		<5.00		ug/L	5.00				79-08-3	16	
N Chloroacetic acid		<5.00		ug/L	5.00				79-11-8	16	
N Dibromoacetic acid		<5.00		ug/L	5.00				631-64-1	16	
N Dichloroacetic acid		<5.00		ug/L	5.00				79-43-6	16	
N Trichloroacetic acid		9.73		ug/L	5.00				76-03-9	16	
EPA 552.2 1		Prepared;	829599	03/2	5/2019	09:05:41	Calculated	831027	04/02/2019	13:41:19	CAL
Parameter		Results		Units	RL		Flag		CAS	Bot	tle
N HAA5		0.00973		mg/L	0.005					16	
SM 2130 B-2001		Prepared:	828919	03/1	9/2019	11:27:00	Analyzed	828919	03/19/2019	11:27:00	NHL
Parameter		Results		Units	RL		Flag	11	CAS	Both	tle
N Turbidity		<0.30		NTU	0.30		6		1000	01	1000

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

#### Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



Final Report Page 5 of 23	Ana-Lab Corp. P	P.O. B	ox 9	000	Kilgore,		Batch #		ort Page 4	of 2
CORP. THE COMPLETE SERVICE LAB	Results	<mark>3/984-59</mark> mployce C inted:	wned	Integrity			al Improven	nent	Page	3 of
1767563 S190771537 Drinking Water	Collected by: Client Taken: 03/18/2019 14:30:0		Environ	mental			PO	Received:	03/19/2019	9
SM 2320 B-2011	Prepared	829222	03	/20/2019	13:20:00	Analyzed	829222	03/20/2019	13:20:00	NE
Parameter N Total Alkalinity (as CaCO3)	Results 174		Units mg/L	<i>RL</i> 1.00		Flag		CAS	Во	ttle
SM 2340 B-2011	Prepared:			/25/2019	09:59:20	Calculated		02/25/2010	01	
Parameter N Total Hardness as CaCO3 -Ca/Mg	Results		Units mg/L	RL 0.500	09.39.20	Flag		03/25/2019 CAS	09:59:20 Bo	CA. ttle
SM 2540 C-97	Prepared:	829081	03.	/20/2019	12:30:00	Analyzed	829081	03/20/2019	12:30:00	TH
Parameter N Total Dissolved Solids	Results 308		Units mg/L	<i>RL</i> 20.0		Flag		CAS	<i>Bo</i> 01	ttle
SM 2540 D-2011	Prepared:	829187	03	/21/2019	09:35:00	Analyzed	829187	03/21/2019	09:35:00	AL
Parameter N Total Suspended Solids	<i>Results</i> <2.00		Units mg/L	<i>RL</i> 2.00		Flag	0	CAS	<i>Boi</i> 01	ttle
SM 5310 C-2000	Prepared:	829138	03/	20/2019	14:48:00	Analyzed	829138	03/20/2019	14:48:00	AL.
Parameter N Total Organic Carbon	Results 1.90		Units mg/L	<i>RL</i> 0.500		Flag		CAS	<i>Bol</i> 04	tle
1767576 \$190771539 Drinking Water	<i>Collected by:</i> Client <i>Taken:</i> 03/18/2019 14:30:00		nvironn	nental			PO:	Received:	03/19/2019	
EPA 200.7 4.4	Prepared:	828929	03/	20/2019	10:30:00	Analyzed	829593	03/22/2019	20:17:00	LPS
Parameter N Iron, Total	<i>Results</i> 0.0514		Units mg/L	<i>RL</i> 0.025		Flag		CAS 7439-89-6	<i>Bot</i> 03	tle
EPA 200.7, Rev. 4.4	Prepared:	829883	03/.	26/2019	12:33:00	Analyzed	829883	03/26/2019	12:33:00	LPS
Parameter N Dissolved Iron	Results 0.0119		Units mg/L	<i>RL</i> 0.025		Flag J		CAS 7439-89-6	Both 02	le
EPA 200.8 5.4	Prepared:	828929	03/2	20/2019	10:30:00	Analyzed	829055	03/21/2019	00:10:00	JBP
Parameter N Arsenic, Total	Results 0.00376		Units mg/L	<i>RL</i> 0.0005		Flag		CAS	Bott	le



0.0005

В

mg/L

Form rptPROJRES Created 10/13/2004 v1.2

7440-38-2

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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A	COMPLETE SERVICE LAB	Phone 903/984-0551 FAX Results		oyee Ow		Integrity	ana-lab.co Caring 4:11		il Improven	ient	Page	4 of 7
	1767576 \$190771539 Drinking Water	<i>Collected by:</i> Client <i>Taken:</i> 03/18/2019 14:	:30:00	B-Er	ivironme	ental			PO	Received:	03/19/2019	)
E	EPA 200.8 5.4	Prepa	ared: 8	328929	03/2	0/2019	10:30:00	Analyzed	829055	03/21/2019	00:10:00	JBI
	Parameter	Results		l	Units	RL		Flag		CAS	Bo	ttle
N	Manganese, Total	0.00743	3		mg/L	0.001				7439-96-5	03	
E	EPA 200.8 5.4	Prepo	ared: 8	828929	03/2	0/2019	10:30:00	Analyzed	829311	03/22/2019	00:52:00	LP
	Parameter	Results		1	Units	RL		Flag		CAS	Bo	ttle
V	Lead, Total	<0.0002			mg/L	0.00025				7439-92-1	03	e
E	EPA 200.8 5.4	Prepa	ared: 8	829871	03/2	6/2019	11:02:00	Analyzed	829871	03/26/2019	11:02:00	JB
	Parameter	Results	-	1	Units	RL		Flag		CAS	Bo	ttle
V	Dissolved Arsenic	0.00338	8	1	mg/L	0.0005				7440-38-2	02	
V	Dissolved Manganese	0.00112				0.001				7439-96-5	02	
					<sup>mg/L</sup> Prepa	ration						
	1767563 S190771537									Received:	03/19/2015	)
				nple I	Prepa		00:00:00	Analyzed	828617			
			San	nple I 328617	Prepa	ration	00:00:00	Analyzed	828617	Received:	03/19/2019	
	1767563 S190771537 Bottle pH Bottle pH	Prepa 2 2	San	nple I 328617 5 5	03/19 03/19	ration	00:00:00	Analyzed	828617	Received:	03/19/2019 00:00:00	
	1767563 S190771537 Bottie pH Bottie pH Bottie pH	Prepa ~2 ~2 ~2 ~2 ~2	San	nple I 328617 5 5	03/19 03/19 SU SU SU	ration	00:00:00	Analyzed	828617	Received:	03/19/2019 00:00:00 03 02 04	
	1767563 S190771537 Bottle pH Bottle pH	Prepa 2 2	San	nple I 328617 5 5 6	03/19 03/19 SU SU SU SU SU SU	ration	00:00:00	Analyzed	828617	Received:	03/19/2019 00:00:00 03 02	
	1767563 S190771537 Bottie pH Bottie pH Bottie pH	Prepa ~2 ~2 ~2 ~2 ~2	San	nple I 828617 55 55 60 60 60 60 60 60 60 60 60 60 60 60 60	O3/19 03/19 SU SU SU SU Hegrees C Hegrees	ration	00:00:00	Analyzed	828617	Received:	03/19/2019 00:00:00 03 02 04	
	1767563 S190771537 Bottle pH Bottle pH Bottle pH Bottle pH Cooler Temperature	Prepa 2 2 2 1.7	San	nple I 828617 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	03/19 03/19 SU SU SU SU SU SU SU SU SU SU SU SU SU	ration	00:00:00	Analyzed	828617	Received:	03/19/2015 00:00:00 03 02 04 01	
	1767563 S190771537 Bottle pH Bottle pH Bottle pH Cooler Temperature Cooler Temperature	Prepa <2 <2 <2 1.7 1.7	San	828617 828617 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	O3/19 03/19 SU SU SU SU SU Hegrees C	ration	00:00:00	Analyzed	828617	Received:	03/19/2019 00:00:00 03 02 04 01 03 03	
	1767563 S190771537 Bottle pH Bottle pH Bottle pH Cooler Temperature Cooler Temperature Cooler Temperature	Prepa 2 2 2 1.7 1.7 1.7	San	228617	03/19 03/19 SU SU SU SU SU SU SU SU SU SU SU SU SU	ration	00:00:00	Analyzed	828617	Received:	03/19/2019 00:00:00 03 02 04 01 03 02 04 01 03 02 04	
	1767563 S190771537 Bottle pH Bottle pH Bottle pH Cooler Temperature Cooler Temperature Cooler Temperature Cooler Temperature	Prepa <2 <2 <2 1.7 1.7 1.7 1.7 1.7	San	Right Research In the second s	03/19 03/19 SU SU SU SU SU SU SU SU SU SU SU SU SU	ration	00:00:00	Analyzed	828617	Received:	03/19/2015 00:00:00 03 02 04 01 03 02 04 01 03 02 04 05	
	1767563       S190771537         Bottle pH       Bottle pH         Bottle pH       Bottle pH         Cooler Temperature       Cooler Temperature	Prepa <2 <2 <2 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7	San	see 17	O3/15 O3/15 SU SU SU SU SU SU SU SU SU SU SU SU SU	ration	00:00:00	Analyzed	828617	Received:	03/19/2019 00:00:00 03 02 04 01 03 02 04 01 03 02 04 05 06	
	1767563       S190771537         Bottle pH       Bottle pH         Bottle pH       Bottle pH         Cooler Temperature       Cooler Temperature         Cooler Temperature       Cooler Temperature	Prepa <2 <2 <2 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7	San	Section 12	03/19 03/19 SU SU SU SU SU SU SU SU SU SU SU SU SU	ration	00:00:00	Analyzed	828617	Received:	03/19/2015 00:00:00 03 02 04 01 03 02 04 01 03 02 04 05 06 07	
z	1767563       S190771537         Bottle pH       Bottle pH         Bottle pH       Bottle pH         Bottle pH       Cooler Temperature         Cooler Temperature       Cooler Temperature	Prepa <2 <2 <2 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7	San	Section 12	03/19 03/19 SU SU SU SU SU SU SU SU SU SU SU SU SU	ration	00:00:00	Analyzed	828617	Received:	03/19/2019 00:00:00 03 02 04 01 03 02 04 01 03 02 04 05 06	) AA

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#### Gulf Const Region: 4141 Directors Row Ste C Houston TX 77092

Batch # 82436

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inal Report Page 7 of 23	Ana-Lab Corp	. <b>P.C</b>	. Bo	x 9000	Kilgore,	TX 7	Batch # 5663		ort Page 6	of 25
HE COMPLETE SERVICE LAB	Phone 903/984-0551 FA Results		oyce Owr				aal Improver	nent	Page	5 of
1767563 S190771537								Received:	03/19/2019	9
Cooler Return	Pi	epared:		03/19/2019	17:00:00	Analyzed		03/19/2019	17:00:00	МС
z Return Cooler/No bottles Require	e Ret	rned.								
EPA 200.2 2.8	Pi	epared: 8	28929	03/20/2019	10:30:00	Analyzed	828929	03/20/2019	10:30:00	TE
V Liquid Metals Digestion	50/5	0	m	u					02	
EPA 350.2, Rev. 2.0	Pr	epared: 8.	28696	03/19/2019	14:15:00	Analyzed	828696	03/19/2019	14:15:00	JA
V Ammonia Distillation	50/5	0	m	ı					03	
EPA 524.2 4.1	Pr	epared: 8.	28856	03/19/2019	19:39:00	Analyzed	828856	03/19/2019	19:39:00	KL
V Trihalomethane Expansion Code	Ente	red							07	
EPA 552.2 1	Pr	epared: 8.	29599	03/25/2019	09:05:41	Analyzed	829599	03/25/2019	09:05:41	LS
V Haloacetic Acids Extraction	<b>3/40</b> Pr	epared: 8.	m 29599	1 03/25/2019	09:05:41	Analyzed	831027	04/01/2019	06 23:35:00	EM
V Haloacetic Acids (HAA5)	Ente	red							16	
SM 2540 C-97	Pr	epared: 82	28933	03/20/2019	12:30:00	Analyzed	828933	03/20/2019	12:30:00	TH
✓ Total Dissolved Solids Started	Star	red								
SM 2540 D-1997	Pr	epared: 82	28980	03/21/2019	09:35:00	Analyzed	828980	03/21/2019	09:35:00	AL
V TSS Set Started	Star	ed								

1767576 S190771539

Received: 03/19/2019

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Corporate Shipping: 2600 Dudley Rd. Kilgore, 1X 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



ina	al Report Page 8 of 23	Ana-Lab Corp. F	P.O. B	ox 9000	Kilgore,	TX 7:	Batch # 5663		ort Page 7	of 28
А	COMPLETE SERVICE LAB	Results	3/984-59 mployee C				al Improver	nent	Page	6 of 7
	1767576 \$190771539							Received:	03/19/2019	
		Prepared:	: 828617	03/19/2019	00:00:00	Analyzed	828617	03/19/2019	00:00:00	AA
z	Bottle pH Bottle pH Cooler Temperature	<2 <2 1.7		SU SU degrees					01 02 01	
	Cooler Temperature	1.7		C degrees C					02	
		Prepared:	828623	03/18/2019	14:30:00	Analyzed	828623	03/18/2019	14:30:00	CL
V	Client Field Filtration (Onsite)	Filtered Prepared:	829777	03/26/2019	07:58:55	Analyzed	829777	03/26/2019	07:58:55	LP
	Transfer to ICP/MS	COMPLET	E						02	
E	EPA 200.2 2.8	Prepared:	828929	03/20/2019	10:30:00	Analyzed	828929	03/20/2019	10:30:00	TES
V	Liquid Metals Digestion	50/50		ml					01	

**Ene** 

IN ACCOR

NELAP-accredited #T104704201-19-15

NUTH

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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Final Report Page 9 of 23	Ana-Lab Corp.	P.O. Box 9000	Ba Kilgore, TX 7560	tch # 82436 3 Report Page 8 of 25
ANALAD	Phone 903/984-0551 FAX	903/984-5914 e-Mail con Employee Owned Integ		· · · · · · · · · · · · · · · · · · ·
THE COMPLETE SERVICE LAB	Results	Printed: 04/02/2019	14:11	Page 7 of 7
Qualifiers:				

J - Analyte detected below quantitation limit

B - Analyte detected in the associated method blank

D - Duplicate RPD was higher than expected

We report results on an As Received or wet basis unless marked Dry Weight. Unless otherwise noted, testing was performed at Ana-labs corporate laboratory that holds the following Federal and State certificates: EPA Lab Number TX00063, US Department of Agriculture Soil Import Permit P330-17-00117, Texas Commission on Environmental Quality Commercial Drinking Water Lab Approval (Lab ID: TX219), Texas Commission on Environmental Quality NELAP T104704201-19-15, Louisiana Department of Environmental Quality Laboratory Certification (NELAP, LELAP) #02008, Louisiana Department of Health and Hospitals Drinking Water (NELAP) Certificate No LA026, Oklahoma Department of Environmental Quality TNI Laboratory Accreditation Program Certificate No. 2018-126, Arkansas Department of Environmental Quality Certification #18-068-0. The Accredited column designates accreditation by N -- NELAC, or z -- not covered under NELAC scope of accreditation.

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp. Unless otherwise specified, these test results meet the requirements of NELAC.

RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

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Trey Peery, MA, Project Manager

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NA-LAB /	Phone 903/98		AX 903/9 ployee (		e-Mail cor Integrity			LELA ontinual Improv	P-accrec	lited #02	2008
COMPLETE SERVICE LAB	Q	ualit	1 C					02/2019	entent	Pa	ge 1 of 1
Report To B-Environmental Kevin C. Baros						E	Account BENV-	G	Pro. 86	<sup>ject</sup> 6739	
1606 E Brazos St., Suite D Victoria, TX 77901											
Analytical Set	829017			Blank						ŀ	EPA 350
<u>Parameter</u> Ammonia (as N)	<i>PrepSet</i> 828696	<i>Reading</i> ND	<i>MDL</i> 0.00356	MQL 0.020 CCV	<i>Units</i> mg/L			<b>File</b> 119735626			
<u>Parameter</u> Ammonia (as N)		<i>Reading</i> 2.07 2.04	<i>Known</i> 2.00 2.00	<i>Units</i> mg/L mg/L	<i>Recover%</i> 104 102	<i>Limits%</i> 90.0 - 110 90.0 - 110		File 119735625 119735635			
		2.11 2.07 1.94 2.14	2.00 2.00 2.00 2.00	mg/L mg/L mg/L	106 104 97.0	90.0 - 110 90.0 - 110 90.0 - 110		119735644 119735654 119735663			
		2.14 2.00 2.16	2.00 2.00 2.00	mg/L mg/L mg/L Duplicat	107 100 108 te	90.0 - 110 90.0 - 110 90.0 - 110		119735670 119735679 119735684			
<u>Parameter</u> Ammonia (as N)	Sample 1767563 1767613		<i>Result</i> 0.149 0.023	Unknown 0.158 0.023 ICV			<i>Unit</i> mg/L mg/L		<b>RPD</b> 5.86 0		<i>Limit</i> 20.0 20.0
<u>Parameter</u> Ammonia (as N)		<b>Reading</b> 1.98	<b>Known</b> 2.00	Units mg/L LCS Du	<i>Recover%</i> 99.0 <b>P</b>	<i>Limits%</i> 90.0 - 110		<i>File</i> 119735624			
<u>Parameter</u> Ammonia (as N)	<i>PrepSet</i> 828696	<i>LCS</i> 2.00	<i>LCSD</i> 1.99		<i>Known</i> 2.00	<i>Limits%</i> 90.0 - 110	<i>LCS%</i> 100	<i>LCSD%</i> 99.5	Units mg/L	<b>RPD</b> 0.501	<i>Limit</i> % 20.0
<u>Parameter</u> Ammonia (as N)	<i>Sample</i> 1767563 1767613	<i>Spike</i> 2.39 2.17		Mat. Spil n Known 2.00 2.00	Units mg/L mg/L	<b>Recovery %</b> 112 107	<i>Limits %</i> 80.0 - 120 80.0 - 120	<i>File</i> 119735631 119735634			
Analytical Set	829081			ControlB						SM	2540 C
<u>Parameter</u> Total Dissolved Solids	<i>PrepSet</i> 829081	<i>Reading</i> 0.0004	MDL	MQL	Units grams			<b>File</b> 119737785			
<u>Parameter</u> Total Dissolved Solids	Sample 1767530		<b>Result</b> 4500	Duplicat Unknown 4290 LCS	c		<i>Unit</i> mg/L		<i>RPD</i> 4.78		<i>Limit%</i> 20.0
Parameter	PrepSet	Reading		Known	Units	Recover%	Limits	File			



#### Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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port Page 11 of 23	Ang_I	ah Cor	n D	O. Box	0000	Vilgon	. TV 7	Batch # 824		t Page	10 of 25
HAB I	Phone 903/98	84-0551 F		984-5914	-	p@ana-lab			AP-accre		_
PLETE SERVICE LAB	Q		C . C	ontro				)2/2019	ement	Pa	ige 2 of 13
				Standar	rd						
<u>Parameter</u> Total Dissolved Solid	<i>Sample</i> ds	Reading 96.0	<b>Known</b> 100	<i>Units</i> mg/L	<i>Recover%</i> 96.0	<i>Limits%</i> 90.0 - 110		<i>File</i> 119737786			
Analytical Set	829187									SM 2	2540 D-201
				Blank							
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Total Suspended Soli	ds 829187	ND	2	2	mg/L			119739629			
				ControlE	Blk						
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Total Suspended Soli-	ds 829187	0.0004			grams			119739628			
				Duplicat	te						
Parameter	Sample		Result	Unknown			Unit		RPD		Limit%
Total Suspended Solie	ds 1768357		4900	4900			mg/L		0		20.0
	1768361		7450	8350			mg/L		11.4		20.0
				LCS							
Parameter	PrepSet	Reading		Known	Units	Recover%	Limits	File			
Total Suspended Solid	ds 829187	55.0		50.0	mg/L	110	90.0 - 110	119739647			
				Standar	d						
Parameter	Sample	Reading	Known	Units	Recover%	Limits%		File			
Total Suspended Solid		108	100	mg/L	108	90.0 - 110		119739646			
Analytical Set	830363										
	000000		А	WRL/MR	LC					E	CPA 300.1 1
Parameter						General Sector					
Bromate		Reading 3.84	Known 5.00	Units ug/L	Recover%	Limits%		File			
		5.64	5.00	Blank	76.8	75.0 - 125		119765068			
	3150										
Parameter Bromate	PrepSet	Reading	MDL	MQL	Units			File			
bromate	830363	ND	2.06	5.00	ug/L			119765067			
				CCV							
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Bromate		525	500	ug/L	105	85.0 - 115		119765062			
		534	500	ug/L	107	85.0 - 115		119765081			
				LCS Dup	0						
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromate	830363	89.2	93.6		100	85.0 - 115	89.2	93.6	ug/L	4.81	25.0
				MSD							
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromate	1768074	160	124	ND	200	80.0 - 120	80.0	62.0 *	ug/L	25.4 *	20.0
Analytical Set	828988									EPA	A 200.8 5.4
<b>B</b>	21.24			Blank							
Parameter Aluminum, Total	PrepSet	Reading	MDL	MQL	Units			File			
Automatic, Lotal	828929	0.00565	0.0025	0.005	mg/L		*	119735054			
				CCV							
Parameter		Danding	Variation	TL.te.		100 Barris					

Parameter Reading Known Units Recover% Limits% File

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662



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ALAB	Phone 903/984		X 903/9 ployee C						P-accred	ited #02	008
	0				Integrity			Continual Improve	ment		
ETE SERVICE LAB	Q	uality	y Co	ontro	1	Pr	inted	04/02/2019		Pag	e 3 of 13
				CCV							
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Aluminum, Total		0.052	0.05	mg/L	104	90.0 - 110		119735035			
		0.0519 0.0525	0.05	mg/L	104	90.0 - 110		119735043			
		0.0525	0.05 0.05	mg/L mg/L	105 104	90.0 - 110 90.0 - 110		119735053			
		0.0010	0.05	ICV	104	50.0 - 110		119735062			
ameter		Reading	Known	Units	Recover%	Limits%		File			
uminum, Total		0.0467	0.05	mg/L	93.4	90.0 - 110		119735030			
				LCS Du	р						
rameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
iminum, Total	828929	0.565	0.490		0.500	85.0 - 115	113	98.0	mg/L	14.2	20.0
				MSD							2010
ameter	Sample	MS	MSD	UNK	Known	Limits	MC0/	14500/	Thuết	000	1 :- :-0/
ninum, Total	1767563	0.484	0.488	0.00312	0.500	70.0 - 130	MS% 96.2	MSD% 97.0	Units mg/L	<b>RPD</b> 0.828	20.0
lytical Set	829055				0.000	10.0 - 150	50.2	57.0	mg/L		10000
alytical Set	827033			Blank						EPA	A 200.8 5.
rameter	PrepSet	Reading	MDL	MQL	Units			File			
senic, Total	828929	0.000595	0.00025	0.0005	mg/L		aja	119736904			
nganese, Total	828929	ND	0.00033	0.001	mg/L			119736904			
				CCV							
ameter		Reading	Known	Units	Recover%	Limits%		File			
senic, Total		0.0482	0.05	mg/L	96.4	90.0 - 110		119736858			
		0.0476	0.05	mg/L	95.2	90.0 - 110		119736869			
		0.047 0.0469	0.05	mg/L	94.0	90.0 - 110		119736879			
		0.0489	0.05	mg/L mg/L	93.8 98.8	90.0 - 110 90.0 - 110		119736889			
		0.0456	0.05	mg/L mg/L	91.2	90.0 - 110		119736902 119736912			
		0.0459	0.05	mg/L	91.8	90.0 - 110		119736923			
		0.048	0.05	mg/L	96.0	90.0 - 110		119736933			
		0.0475	0.05	mg/L	95.0	90.0 - 110		119736944			
		0.0474	0.05	mg/L	94.8	90.0 - 110		119736954			
		0.0469	0.05	mg/L	93.8	90.0 - 110		119736964			
anese, Total		0.0509	0.05	mg/L	102	90.0 - 110		119736858			
		0.0506	0.05	mg/L	101	90.0 - 110		119736869			
		0.0501	0.05	mg/L	100	90.0 - 110		119736879			
		0.0505	0.05	mg/L	101	90.0 - 110		119736889			
		0.051	0.05	mg/L	102	90.0 - 110		119736902			
		0.0505	0.05	mg/L	101	90.0 - 110		119736912			
		0.0503	0.05	mg/L	101	90.0 - 110		119736923			
		0.0506 0.0504	0.05	mg/L	101	90.0 - 110		119736933			
		0.0504	0.05	mg/L	101 101	90.0 - 110		119736944			
		0.0504	0.05	mg/L mg/L	101	90.0 - 110 90.0 - 110		119736954			
				ICV	101	20.0 - 110		119736964			
imeter		Reading	Known	Units	Recover%	Limits%		File			
nic, Total		0.0514	0.05	mg/L	103	90.0 - 110		119736812			



#### Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

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INA.	AB	Phone 903/98		AX 903/						P-accred	lited #02	008
COKP."		0				Integrit		ring	Continual Improve	ement		
COMPLET	E SERVICE LAB	Q	ualit	yc	Sinte	)I	P	rinted	04/02/2019		Pag	ge 4 of 13
					LCS D	up						
	Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
	Arsenic, Total	828929	0.459	0.458		0.500	85.0 - 115	91.8	91.6	mg/L	0.218	20.0
	Manganese, Total	828929	0.525	0.523	MOD	0.500	85.0 - 115	105	105	mg/L	0.382	20.0
	Paramatan	<b>.</b> .			MSD							
	Parameter Arsenic, Total	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
	Manganese, Total	1767525	0.447	0.460	0.00501	0.500	70.0 - 130		91.0	mg/L	2.90	20.0
	Arsenic, Total	1767525 1767563	0.524	0.532	0.0102	0.500	70.0 - 130	103	104	mg/L	1.54	20.0
	Manganese, Total	1767563	0.460	0.467	0.00492 0.00814	0.500	70.0 - 130 70.0 - 130	91.0 103	92.4 102	mg/L	1.53	20.0
	Analytical Set	829138					10.0 - 150	105	102	mg/L	0.195	20,0
	r mary treat Set	029130		А	WRL/M	RLC					SM 53	10 C-200
	Parameter		Reading	Known		Recover%	Limits%					
	Total Organic Carbon		1.54	2.00	mg/L	77.0	75.0 - 125		File			
					Blank		75.0 - 125		119738780			
	Parameter	PrepSet	Reading	MDL	MOL	Units			File			
	Total Organic Carbon	829138	0.0749	0.0168	0.500	mg/L			119738779			
		829138	0.0603	0.0168	0.500	mg/L			119738795			
		829138	0.077	0.0168	0.500	mg/L			119738801			
					CCB							
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
	Total Organic Carbon	829138	0.132	0.0168	0.500	mg/L			119738773			
		829138 829138	0.119 0.0937	0.0168	0.500	mg/L			119738787			
		829138	0.100	0.0168 0.0168	0.500	mg/L			119738793			
		829138	0.105	0.0168	0.500	mg/L			119738797			
		829138	0.126	0.0168	0.500	mg/L mg/L			119738799			
				2,2012	CCV	nig/L			119738810			
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Total Organic Carbon		10.2	10.0	mg/L	102	90.0 - 110		119738776			
			10.3	10.0	mg/L	103	90.0 - 110		119738788			
			9.98	10.0	mg/L	99.8	90.0 - 110		119738794			
			10.2	10.0	mg/L	102	90.0 - 110		119738798			
			9.86	10.0	mg/L	98.6	90.0 - 110		119738800			
			10.1	10.0	mg/L	101	90.0 - 110		119738811			
	0				ICL							
	Parameter Total Organic Carbon		Reading	Known	Units	Recover%	Limits%		File			
	Total Organic Carbon		19.5	20.0	mg/L ICV	97.5	90.0 - 110		119738775			
	Parameter		Der	P		1	Annalista					
	Total Organic Carbon		Reading	Known	Units	Recover%	Limits%		File			
	Four organic carbon		10.2	10.0	mg/L LCS	102	90.0 - 110		119738777			
	Parameter	PrepSet	Reading			Their	December					
	Total Organic Carbon	829138	4.98		Known 5.00	Units	Recover%	Limits	File			
		829138	5.02		5.00	mg/L mg/L	99.6 100	93.1 - 112				
		1000 C. 200	No. Cot			Lug/L	100	93.1 - 112	2 119738796			

LDSClient v1.14.14.1769



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ANA.	AB	Phone 903/98		AX 903/9						P-accred	lited #02	008
CORP.		0				Integrity		-	Continual Improv	ement		
THE COMPLET	E SERVICE LAB 🖤	Q	ualit	y Co	ontro	DI	Pr	inted 04	/02/2019		Pag	ge 5 of 1
					MSD	Ġ						
	Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit?
	Total Organic Carbon	1767616	10.4	10.4	0.377	10.0	89.5 - 116	100	100	mg/L	0	20.0
		1767954 1768191	15.1 11.0	15.2 11.1	4.73	10.0	89.5 - 116	104	105	mg/L	0.960	20.0
		1708191	11.0	11.1	0.801 Standa	10.0 rd	89.5 - 116	102	103	mg/L	0.976	20.0
	Parameter	Sample	Reading	Known	Units	Recover%	Limits%		File			
	Total Organic Carbon		52.0	50.0	mg/L	104	90.0 - 110		119738774			
	Analytical Set	829300									EP.	A 200.7
					Blank							
	<u>Parameter</u>	PrepSet	Reading	MDL	MQL	Units			File			
	Phosphorus	828929	ND	0.0388	0.100	mg/L			119741982			
	Silicon Recoverable	828929	0.082	0.0148	0.100	mg/L			119741982			
					CCV							
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Phosphorus		9.59	10.0	mg/L	95.9	90.0 - 110		119741981			
			9.50	10.0	mg/L	95.0	90.0 - 110		119741992			
	011 D 11		9.51	10.0	mg/L	95.1	90.0 - 110		119741994			
	Silicon Recoverable		4.91	5.00	mg/L	98.2	90.0 - 110		119741981			
			4.67	5.00	mg/L	93.4	90.0 - 110		119741992			
			4.68	5.00	mg/L	93.6	90.0 - 110		119741994			
	£14,757.0				ICL							
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Phosphorus Silicon Recoverable		24.9	25.0	mg/L	99.6	95.0 - 105		119741979			
	Sincon Recoverable		10.0	10.0	mg/L ICV	100	95.0 - 105		119741979			
	Parameter		Reading	Known	Units	Recover%	Limits%					
	Phosphorus		10.0	10.0	mg/L	100	90.0 - 110		File			
	Silicon Recoverable		5.00	5.00	mg/L	100	90.0 - 110		119741980 119741980			
					LCS Du		30.0 - 110		119741960			
	Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	F
	Phosphorus	828929	3.90	3.80		4.00	85.0 - 115	97.5	95.0	mg/L	2.60	Limit% 25.0
	Silicon Recoverable	828929	3.64	3.62		4.00	85.0 - 115	91.0	90.5	mg/L	0.551	25.0
					MSD					5		anie.
	Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Timite0/
	Phosphorus	1767563	3.99	3.97	0.143	4.00	75.0 - 125	96.2	95.7	mg/L	0.521	Limit% 25.0
	Silicon Recoverable	1767563	9.81	9.69	6.31	4.00	75.0 - 125	87.5	84.5	mg/L	3.49	25.0
	Analytical Set	829311									EPA	200.8
					Blank							
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
	Arsenic, Total	828929	0.000561	0.00025		mg/L		*	119742795			
	Lead, Total	828929	ND	0.00025	0.0005	mg/L			119742795			
	Manganese, Total	828929	ND	0.00033	0.001 CCV	mg/L			119742795			
	Parameter		Ronding	Kerner		D	81					
	- ar terreter		Reading	Known	Units	Recover%	Limits%		File			

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<b>THO</b>	LABT	Phone 903/98		X 903/9		e-Mail corp Integrity	@ana-lab. Cari		LELA Continual Improve	P-accrec	lited #02	1008
COKP.		0	uality						04/02/2019		Po	ge 6 of 13
JOMPLE	TE SERVICE LAB 🐨	Q	ualli	yci	JIIIC	)1	11	inted	04/02/2019		Гa	ge 0 01 15
					CCV							
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Lead, Total		0.0518	0.05	mg/L	104	90.0 - 110		119742691			
			0.0506	0.05	mg/L	101	90.0 - 110		119742697			
			0.0502	0.05	mg/L	100	90.0 - 110		119742708			
			0.0504	0.05	mg/L	101	90.0 - 110		119742728			
			0.0506	0.05	mg/L	101	90.0 - 110		119742738			
			0.0496	0.05	mg/L	99.2	90.0 - 110		119742758			
			0.0489	0.05	mg/L	97.8	90.0 - 110		119742769			
			0.0498	0.05	mg/L	99.6	90.0 - 110		119742778			
			0.0497	0.05	mg/L	99.4	90.0 - 110		119742798			
			0.0494	0.05	mg/L	98.8	90.0 - 110		119742809			
			0.0484	0.05	mg/L	96.8	90.0 - 110		119742820			
			0.049	0.05	mg/L	98.0	90.0 - 110		119742830			
			0.0485	0.05	mg/L	97.0	90.0 - 110		119742841			
			0.0494	0.05	mg/L	98.8	90.0 - 110		119742852			
			0.0482	0.05	mg/L	96.4	90.0 - 110		119742855			
					ICV		00.00		117/12000			
	Danamatan											
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Lead, Total		0.0517	0.05	mg/L	103	90.0 - 110		119742686			
					LCS Du	ıp						
	Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
	Arsenic, Total	828929	0.501	0.499		0.500	85.0 - 115	100	99.8	mg/L	0.400	20.0
	Lead, Total	828929	0.532	0.530		0.500	85.0 - 115	106	106	mg/L	0.377	20.0
	Manganese, Total	828929	0.508	0.502		0.500	85.0 - 115	102	100	mg/L	1.19	20.0
				1	MRL Ch	eck						
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Lead, Total		0.00101	0.001	mg/L	101	50.0 - 150		119742687			
	1999 C			0.001	MSD	101	50.0 - 150		119742087			
			0.22	1.000								
	Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
	Arsenic, Total	1767525	0.510	0.504	0.00409	0.500	70.0 - 130	101	100	mg/L	1.19	20.0
	Lead, Total	1767525	0.487	0.491	ND	0.500	70.0 - 130	97.4	98.2	mg/L	0.818	20.0
	Manganese, Total	1767525	0.495	0.504	0.0104	0.500	70.0 - 130	96.9	98.7	mg/L	1.84	20.0
	Arsenic, Total	1767563	0.508	0.504	0.00329	0.500	70.0 - 130	101	100	mg/L	0.796	20.0
	Lead, Total	1767563	0.506	0.510	0.000294	0.500	70.0 - 130	101	102	mg/L	0.788	20.0
	Manganese, Total	1767563	0.498	0.498	0.00841	0.500	70.0 - 130	97.9	97.9	mg/L	0	20.0
	Analytical Set	829593									EP.	A 200.7 4
					Blank							
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
	Calcium	828929	0.0965	0.0419	0.500	mg/L			119747957			
	Iron, Total	828929	0.0111	0.00504	0.025	mg/L			119747957			
	Magnesium, Total	828929	ND	0.0102	0.020	mg/L			119747957			
	Potassium	828929	ND	0.0765	0.500	mg/L			119747957			
	Sodium	828929	0.0487	0.0315	0.500	mg/L			119747957			
					CCV				112/4/93/			
	Danamata						2.77					
	Parameter Coloium		Reading	Known	Units	Recover%	Limits%		File			
	Calcium		25.2 26.1	25.0 25.0	mg/L mg/L	101 104	90.0 - 110 90.0 - 110		119747925 119747936			



BTI	Phone 903/984		X 903/9 ployee O		e-Mail corp Integrity	@ana-lab. Cari		LELA Continual Improve	P-accred	lited #02	2008
	OI	Jality						04/02/2019		Pa	ge 7 of
	×.	AUTIC	,								
				CCV							
eter		Reading	Known	Units	Recover%	Limits%		File			
ım		25.4	25.0	mg/L	102	90.0 - 110		119747945			
		25.9	25.0	mg/L	104	90.0 - 110		119747956			
		25.5	25.0	mg/L	102	90.0 - 110		119747966			
		25.8	25.0	mg/L	103	90.0 - 110		119747976			
		26.2	25.0	mg/L	105	90.0 - 110		119747986			
		25.5	25.0	mg/L	102	90.0 - 110		119747987			
otal		2.46	2.50	mg/L	98.4	90.0 - 110		119747915			
		2.55	2.50	mg/L	102	90.0 - 110		119747925			
		2.49	2.50	mg/L	99.6	90.0 - 110		119747936			
		2.49	2.50	mg/L	99.6	90.0 - 110		119747945			
		2.50	2.50	mg/L	100	90.0 - 110		119747956			
		2.44	2.50	mg/L	97.6	90.0 - 110		119747966			
		2.48	2.50	mg/L	99.2	90.0 - 110		119747976			
		2.52	2.50	mg/L	101	90.0 - 110		119747986			
		2.43	2.50	mg/L	97.2	90.0 - 110		119747987			
ium, Total		26.2	25.0	mg/L	105	90.0 - 110		119747925			
		26.3	25.0	mg/L	105	90.0 - 110		119747936			
		25.8	25.0	mg/L	103	90.0 - 110		119747945			
		26.2	25.0	mg/L	105	90.0 - 110		119747945			
		25.5	25.0	mg/L mg/L	102	90.0 - 110					
		26.2	25.0	mg/L				119747966			
		26.6	25.0		105 106	90.0 - 110 90.0 - 110		119747976			
		25.9	25.0	mg/L				119747986			
m		24.6	25.0	mg/L	104	90.0 - 110		119747987			
				mg/L	98.4	90.0 - 110		119747925			
		24.5	25.0	mg/L	98.0	90.0 - 110		119747936			
		24.6	25.0	mg/L	98.4	90.0 - 110		119747956			
		24.4	25.0	mg/L	97.6	90.0 - 110		119747966			
		25.8	25.0	mg/L	103	90.0 - 110		119747976			
		25.0	25.0	mg/L	100	90.0 - 110		119747986			
		24.2	25.0	mg/L	96.8	90.0 - 110		119747987			
		24.8	25.0	mg/L	99.2	90.0 - 110		119747925			
		25.9	25.0	mg/L	104	90.0 - 110		119747936			
		25.2	25.0	mg/L	101	90.0 - 110		119747945			
		25.1	25.0	mg/L	100	90.0 - 110		119747956			
		25.8	25.0	mg/L	103	90.0 - 110		119747966			
		26.1	25.0	mg/L	104	90.0 - 110		119747976			
		25.8	25.0	mg/L	103	90.0 - 110		119747986			
		25.4	25.0	mg/L	102	90.0 - 110		119747987			
				Dir. SPI	KD						
ter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK	% DSPKD%	Units	RPD	Limi
1	1767563	90.8	89.9	37.4	50.0	75.0 - 125	107	105	mg/L	0.996	25.0
tal	1767563	4.58	4.70	0.0308	5.00	75.0 - 125	91.0	93.4	mg/L	2.59	25.0
um, Total	1767563	60.3	59.6	9.94	50.0	75.0 - 125	101	99.3	mg/L	1.17	25.0
m	1767563	61.4	60.2	12.3	50.0	75.0 - 125	98.2	95.8	mg/L	1.17	25.0
	1767563	118	117	71.4	50.0	75.0 - 125	93.2	91.2	mg/L	0.851	25.0
				Direct SI		123	20.00	21.2	mg/L	0.001	25.0
eter	Sample	DSPK		UNK	Known	Limits%	DSPK	26	Units		
-	1767563	90.8		37.4	50.0	75.0 - 125	107				25.0
		2.515		· · · · ·		12.9 - 140	197		mg/L		25.0



Gulf Const Region: 4141 Directors Row Ste C Houston TX 77092

NELAP-accredited #T104704201-19-15

AB	Phone 903/984		X 903/98 ployee O		e-Mail corpo Integrity	ana-lab. Cari		LELA Continual Improve	P-accredi ment	ited #020	800
SERVICE LAB	Q	uality	y Co	ontro		Pr	inted (	04/02/2019		Pag	e 8 of 13
				Direct SI							
Parameter	Sample	DSPK		UNK	Known	Limits%	DSPK	0/	Units		
Magnesium, Total	1767563	60.3		9.94	50.0	75.0 - 125	101	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	mg/L		25.0
otassium	1767563	61.4		12.3	50.0	75.0 - 125	98.2		mg/L		25.0
dium	1767563	118		71.4	50.0	75.0 - 125	93.2		mg/L		25.0
				ICL							
rameter		Reading	Known	Units	Recover%	Limits%		File			
cium		50.0	50.0	mg/L	100	95.0 - 105		119747909			
n, Total		4.94	5.00	mg/L	98.8	95.0 - 105		119747909			
ignesium, Total		49.7	50.0	mg/L	99.4	95.0 - 105		119747909			
tassium		49.6	50.0	mg/L	99.2	95.0 - 105		119747909			
dium		49.8	50.0	mg/L	99.6	95.0 - 105		119747909			
				ICV		rearing the back					
			700-00-0		Sec. and	to-oration		200			
rameter		Reading	Known	Units	Recover%	Limits%		File			
lcium		26.0	25.0	mg/L	104	90.0 - 110		119747913			
n, Total		2.50	2.50	mg/L	100	90.0 - 110		119747913			
gnesium, Total		26.0	25.0	mg/L	104	90.0 - 110		119747913			
assium		24.1	25.0	mg/L	96.4	90.0 - 110		119747913			
m		25.1	25.0	mg/L LCS Du	100	90.0 - 110		119747913			
				Decide	.p						
arameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Calcium	828929	4.95	4.84		5.00	85.0 - 115	99.0	96.8	mg/L	2.25	25.0
on, Total	828929	0.512	0.501		0.500	85.0 - 115	102	100	mg/L	2.17	25.0
agnesium, Total	828929	5.23	5.24		5.00	85.0 - 115	105	105	mg/L	0.191	25.0
tassium	828929	5.20	5.12		5.00	85.0 - 115	104	102	mg/L	1.55	25.0
lium	828929	5.06	4.96		5.00	85.0 - 115	101	99.2	mg/L	2.00	25.0
				MSD							
rameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
lcium	1767525	146	151	147	5.00	75.0 - 125	-20.0 *	80.0	mg/L	333 *	25.0
, Total	1767525	0.451	0.461	0.0399	0.500	75.0 - 125	82.2	84.2	mg/L	2.40	25.0
gnesium, Total	1767525	58.1	59.2	55.6	5.00	75.0 - 125	50.0 *	72.0 *	mg/L	36.1 *	25.0
ssium	1767525	23.3	24.1	16.7	5.00	75.0 - 125	132 *	148 *	mg/L	11.4	25.0
ium	1767525	1350	1390	1390	5.00	75.0 - 125	-800 *	0 *	mg/L	2.92	25.0
ium	1767563	43.4	44.1	39.5	5,00	75.0 - 125	78.0	92.0	mg/L	16.5	25.0
Total	1767563	0.525	0.527	0.0527	0.500	75.0 - 125	94.5	94.9	mg/L	0.423	25.0
nesium, Total	1767563	14.6	14.8	9.43	5.00	75.0 - 125	103	107	mg/L	3.80	25.0
sium	1767563	9.82	9.92	4.87	5.00	75.0 - 125	99.0	101	mg/L	2.00	25.0
un	1767563	70.3	71.8	66.4	5.00	75.0 - 125	78.0	108	mg/L	32.3 *	25.0
alytical Set	829871									EPA	A 200.8 5.
				CCV							
ameter		Reading	Known	Units	Recover%	Limits%		File			
Dissolved Arsenic		0.0502	0.05	mg/L	100	90.0 - 110		119754769			
		0.0501	0.05	mg/L	100	90.0 - 110		119754778			
ssolved Manganese		0.0498	0.05	mg/L	99.6	90.0 - 110		119754769			
		0.0498	0.05	mg/L	99.6	90.0 - 110		119754778			
				Dir. SPF	KD						
	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK	% DSPKD%	Units	RPD	Limit%
Parameter				A DOWN OF THE A	and the second sec						



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MPLET	E SERVICE LAB	Q	uality	/ Co	ntro	1	Pri	inted 04/02	2/2019		Pag	ge 9 of 13
					Dir. SPk							
	Parameter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK%	DSPKD%	Units	RPD	Limit%
	Dissolved Manganese	1767576	0.512	0.498	0.00112 Direct SI	0.500	70.0 - 130	102	99,4	mg/L	2.77	30.0
	Parameter	Sample	DSPK		UNK	Known	Limits%	DSPK%		Units		
	Dissolved Arsenic	1767576	0.498		0.00338	0.500	70.0 - 130	98.9		mg/L		30.0
	Dissolved Manganese	1767576	0.512		0.00112 ICV	0.500	70.0 - 130	102		mg/L		30.0
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Dissolved Arsenic		0.0494	0.05	mg/L	98.8	90.0 - 110		119754764			
	Dissolved Manganese	_	0.0502	0.05	mg/L	100	90.0 - 110	_	119754764			
	Analytical Set	829883			CCV						EP	A 200.7 4
	<b>D</b>					<b>D</b> 07	1		F777 -			
	<u>Parameter</u> Dissolved Iron		Reading 2.53	Known	Units	Recover% 101	Limits% 90.0 - 110		File 119755117			
	Dissolved from		2.55	2.50 2.50	mg/L mg/L	101	90.0 - 110 90.0 - 110		119755127			
			2.50	2.50	mg/L	100	90.0 - 110		119755133			
			2.41	2.50	mg/L	96.4	90.0 - 110		119755140			
					Dir. SPH		0000000					
	Parameter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK%	DSPKD%	Units	RPD	Limit%
	Dissolved Iron	1767618	4.99	5.18	ND	5.00	75.0 - 125	99.8	104	mg/L	3.74	20,0
					Direct SI	PK						
	Parameter	Sample	DSPK		UNK	Known	Limits%	DSPK%		Units		
	Dissolved Iron	1767618	4.99		ND	5.00	75.0 - 125	99.8		mg/L		20.0
					ICL							
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Dissolved Iron		5.21	5.00	mg/L	104	95.0 - 105		119755111			
					ICV							
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
_	Dissolved Iron		2.61	2.50	mg/L	104	90.0 - 110		119755115			
	Analytical Set	828856			BFB						EP	A 524.2 4
	Deservation	Country	DeGlass	Danding		I instead			File			
	Parameter BFB Mass 173	Sample 828856	RefMass 174	Reading 0	0.0	Limits% 0 - 2.00			File 119730739			
	BFB Mass 175 BFB Mass 174	828856	95.0	37773	78.3	50.0 - 100			119730739			
	BFB Mass 175	828856	174	2612	6.9	5.00 - 9.00			119730739			
	BFB Mass 176	828856	174	36219	95.9	95.0 - 101			119730739			
	BFB Mass 177	828856	176	2522	7.0	5.00 - 9.00			119730739			
	BFB Mass 50	828856	95.0	9726	20.2	15.0 - 40.0			119730739			
	BFB Mass 75	828856	95.0	24176	50.1	30.0 - 80.0			119730739			
	BFB Mass 95	828856	95.0	48229	100.0	100 - 100			119730739			
	BFB Mass 96	828856	95.0	3331	6.9	5.00 - 9.00			119730739			
					Blank							
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			



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SERVICE LAB	Q	uality					inted	04/02/2019		Page	10 of 13
				Blank							
			1.00		1.5.1						
Parameter	PrepSet	Reading	MDL	MQL	Units			File			
Bromoform	828856	ND	0.418	1.00	ug/L			119730743			
Chloroform	828856	ND	0.213	1.00	ug/L			119730743			
Dibromochloromethane	828856	ND	0.327	1.00 CCV	ug/L			119730743			
Parameter		Reading	Known	Units	Recover%	Limits%		File			
Bromodichloromethane		19.7	20.0	ug/L	98.3	70.0 - 130		119730740			
Bromoform		19.1	20.0	ug/L	95.5	70.0 - 130		119730740			
Chloroform		17.7	20.0	ug/L	88.6	70.0 - 130		119730740			
Dibromochloromethane		20.0	20.0	ug/L	99.8	70.0 - 130		119730740			
				IS Areas							
Parameter	Sample	Туре	Reading	CCVISM	Low	High		File	PrepSet		
1,4-DichlorobenzeneD4 (ISTD)	828856	CCV	241800	241800	120900	362800		119730740	828856		
	828856	LCS	239400	241800	120900	362800		119730741	828856		
	828856	LCS Dup	219400	241800	120900	362800		119730742	828856		
	828856	Blank	171700	241800	120900	362800		119730743	828856		
ChlorobenzeneD5 (ISTD)	828856	CCV	405000	405000	202500	607500		119730740	828856		
	828856	LCS	410900	405000	202500	607500		119730741	828856		
	828856	LCS Dup	385700	405000	202500	607500		119730742	828856		
	828856	Blank	351000	405000	202500	607500		119730743	828856		
1,4-DichlorobenzeneD4 (ISTD)	1765712	MS	289800	241800	120900	362800		119730749	828856		
	1765712	MSD	282900	241800	120900	362800		119730750	828856		
ChlorobenzeneD5 (ISTD)	1765712	MS	528400	405000	202500	607500		119730749	828856		
	1765712	MSD	511500	405000	202500	607500		119730750	828856		
1,4-DichlorobenzeneD4 (ISTD)	1767563	UNKNOW		241800	120900	362800		119730758	828856		
ChlorobenzeneD5 (ISTD)	1767563	UNKNOW		405000 IS RetTin	202500 ne	607500	*	119730758	828856		
Parameter 1,4-DichlorobenzeneD4	Sample 828856	Type CCV	Reading 11.18	CCVISM 11.18	<i>Low</i> 11.12	High 11.24		File 119730740	PrepSet 828856		
(ISTD)	828856	LCS	11.18	11.18	11.12	11.24		119730741	828856		
	828856	LCS Dup	11.18	11.18	11.12	11.24		119730742	828856		
	828856	Blank	11.18	11.18	11.12	11.24		119730743	828856		
ChlorobenzeneD5 (ISTD)	828856	CCV	8.818	8.818	8.758	8.878		119730740	828856		
Action desired to to t	828856	LCS	8.818	8.818	8.758	8.878		119730741	828856		
	828856	LCS Dup	8.818	8.818	8.758	8.878		119730742	828856		
	828856	Blank	8.818	8.818	8.758	8.878		119730743	828856		
1,4-DichlorobenzeneD4 (ISTD)	1765712	MS	11.18	11.18	11.12	11.24		119730749	828856		
and the second second	1765712	MSD	11.18	11.18	11.12	11.24		119730750	828856		
ChlorobenzeneD5 (ISTD)	1765712	MS	8.818	8.818	8.758	8.878		119730749	828856		
	1765712	MSD	8.818	8.818	8.758	8.878		119730750	828856		
1,4-DichlorobenzeneD4 (ISTD)	1767563	UNKNOW	/NI1.18	11.18	11.12	11.24		119730758	828856		
ChlorobenzeneD5 (ISTD)	1767563	UNKNOW	N8.818	8.818	8.758	8.878		119730758	828856		
				LCS Duj	р						
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS	% LCSD%	Units	RPD	Limit%

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



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Batch	#	82436
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	Q	uality	V Co	ntro	1	Pri	nted 04/02	2/2019		Page	11 of
				LCS Du	р						
Parameter	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Lim
Bromodichloromethane	828856	20.0	21.0		20.0	70.0 - 130	100	105	ug/L	4.88	30.0
Bromoform	828856	19.4	21.3		20.0	70.0 - 130	97.0	106	ug/L	8.87	30.0
Chloroform	828856	17.6	18.1		20.0	70.0 - 130	88.0	90.5	ug/L	2.80	30.0
Dibromochloromethane	828856	19.3	20.3		20.0	70.0 - 130	96.5	102	ug/L	5,54	30.0
	020000	17.0		MSD			2.00		- 6-		
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limi
Bromodichloromethane	-		8020		Known	67.1 - 133		80.2		4.85	30.0
	1765712	7640		ND	10000		76.4		ug/L		
Bromoform	1765712	8040	8560	ND	10000	58.4 - 125	80.4	85.6	ug/L	6.27	30.0
Chloroform	1765712	6520	6720	ND	10000	62.8 - 138	65.2	67.2	ug/L	3.02	30.0
Dibromochloromethane	1765712	7850	8160	ND	10000	60.7 - 129	78.5	81.6	ug/L	3.87	30.0
				Surroga	te						
Parameter	Sample	Туре	Reading	Known	Units	Recover%	Limits%	File			
1,2-DCA-d4 (SURR)	828856	CCV	19.8	20.0	ug/L	99.0	70.0 - 130	119730740			
	828856	LCS	20.0	20.0	ug/L	100	70.0 - 130	119730741			
	828856	LCS Dup	20.4	20.0	ug/L	102	70.0 - 130	119730742			
	828856	Blank	20.8	20.0	ug/L	104	70.0 - 130	119730743			
Bromofluorobenzene (SURR)	828856	CCV	19.7	20.0	ug/L	98.5	70.0 - 130	119730740			
	828856	LCS	19.8	20.0	ug/L	99.0	70.0 - 130	119730741			
	828856	LCS Dup	20.0	20,0	ug/L	100	70.0 - 130	119730742			
	828856	Blank	18.5	20.0	ug/L	92.5	70.0 - 130	119730743			
Dibromofluoromethane (SURR)	828856	CCV	20.4	20.0	ug/L	102	70.0 - 130	119730740			
	828856	LCS	20.2	20.0	ug/L	101	70.0 - 130	119730741			
	828856	LCS Dup	20.5	20.0	ug/L	102	70.0 - 130	119730742			
	828856	Blank	21.5	20.0	ug/L	108	70.0 - 130	119730743			
TolueneD8 (SURR)	828856	CCV	19.7	20.0	ug/L	98.5	70.0 - 130	119730740			
	828856	LCS	19.8	20.0	ug/L	99.0	70.0 - 130	119730741			
	828856	LCS Dup	19.8	20.0	ug/L	99.0	70.0 - 130	119730742			
	828856	Blank	18.6	20.0	ug/L	93.0	70.0 - 130	119730743			
1,2-DCA-d4 (SURR)	1765712	MS	18.4	20.0	ug/L	92.0	70.0 - 130	119730749			
	1765712	MSD	19.3	20.0	ug/L	96.5	70.0 - 130	119730750			
Bromofluorobenzene (SURR)	1765712	MS	20.8	20.0	ug/L ug/L	104	70.0 - 130	119730749			
	1765712	MSD	20.4	20.0	ug/L	102	70.0 - 130	119730750			
Dibromofluoromethane (SURR)	1765712	MS	19.1	20.0	ug/L	95.5	70.0 - 130	119730749			
	1765712	MSD	19.1	20.0	ug/L	95.5	70.0 - 130	119730750			
TolueneD8 (SURR)	1765712	MS	20,2	20,0	ug/L	101	70,0 - 130	119730749			
	1765712	MSD	20.4	20.0	ug/L	102	70.0 - 130	119730750			
1,2-DCA-d4 (SURR)	1767563	UNKNOW		20.0	ug/L	91.5	70.0 - 130	119730758			
Bromofluorobenzene (SURR)	1767563	UNKNOW		20.0	ug/L	107	70.0 - 130	119730758			
Dibromofluoromethane (SURR)	1767563	UNKNOW	VN18.6	20.0	ug/L	93.0	70.0 - 130	119730758			
TolueneD8 (SURR)	1767563	UNKNOW	VN19.3	20.0	ug/L	96.5	70.0 - 130	119730758			_
Analytical Set	831027			DI I						E	PA 55
				Blank							
Parameter	PrepSet	Reading	MDL	MQL	Units			File			

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Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

NELAP-accredited #T104704201-19-15

Final Report Page 21 of 23	Ana-La	b Corp	. P.C	). Box	9000	Kilgore	, TX 7	Batch # 8243 5663		Page	20 of 25
ANA-LAB	Phone 903/98-		X 903/98 ployee O		e-Mail corp Integrity	ana-lab. Carii		LELA ontinual Improve	<b>P-accredi</b> ement	ited #02	:008
THE COMPLETE SERVICE LAB	Q	uality	y Co	ontro	1	Pri	nted 04/0	02/2019		Page	e 12 of 13
				Blank							
<u>Parameter</u> Bromoacetic acid Chloroacetic acid	<i>PrepSet</i> 829599 829599	<i>Reading</i> ND 0.928	<i>MDL</i> 0.275 0.559	MQL 5.00 5.00	<i>Units</i> ug/L ug/L			File 119778517 119778517			
Dibromoacetic acid Dichloroacetic acid Trichloroacetic acid	829599 829599 829599	ND ND ND	0.198 0.244 0.191	5.00 5.00 5.00	ug/L ug/L ug/L			119778517 119778517 119778517			
				IS Area	s						
Parameter 1,2,3-Trichloropropane	Sample           (IS)         829599           829599         1767563	<i>Type</i> Blank LCS UNKNOW	452000 458800 /N582200	CCVISM 531300 531300 531300	371900 371900 371900	High 690700 690700 690700		File 119778517 119778518 119778520	PrepSet 829599 829599 829599		
				IS RetTir							
Parameter 1,2,3-Trichloropropane	829599	<i>Type</i> Blank LCS	8.400 8.400	<i>CCVISM</i> 8.400 8.400	8.340 8.340	High 8.460 8.460		File 119778517 119778518	PrepSet 829599 829599	t.	
	1767563	UNKNOW	/N8.400	8.400	8.340	8.460		119778520	829599		
				LCS Du	þ						
<u>Parameter</u> Bromoacetic acid Chloroacetic acid Dibromoacetic acid Dichloroacetic acid Trichloroacetic acid	PrepSet 829599 829599 829599 829599 829599	LCS 25.7 25.1 24.1 25.3 22.8	LCSD 25.3 24.6 23.5 25.9 21.6		Known 20.0 20.0 20.0 20.0 20.0	Limits% 70.0 - 130 70.0 - 130 70.0 - 130 70.0 - 130 70.0 - 130	LCS% 128 126 120 126 114	LCSD% 126 123 118 130 108	Units ug/L ug/L ug/L ug/L ug/L	<b>RPD</b> 1.57 2.41 1.68 3.12 5.41	Limit% 30.0 30.0 30.0 30.0 30.0
				Surrogat		10.0 150		100	ug/L	5.41	50.0
<u>Parameter</u> 2,3-Dibromopropionie (	Sample Surr) 829599 829599 829599 1767563	<i>Type</i> Blank LCS LCS Dup UNKNOW	<i>Reading</i> 9.47 23.4 20.6		<i>Units</i> ug/L ug/L ug/L ug/L	<i>Recover%</i> 47.4 * 117 103 87.5	<i>Limits%</i> 70.0 - 130 70.0 - 130 70.0 - 130 70.0 - 130	File 119778517 119778518 119778519 119778520			
Analytical Set	828919		A	WRL/MR	LC					SM 2	130 B-2001
<u>Parameter</u> Turbidity		<i>Reading</i> 0.300	<i>Known</i> 0.30	<i>Units</i> NTU <b>Blank</b>	<i>Recover%</i> 100	<i>Limits%</i> 70.0 - 130		<i>File</i> 119733400			

				Blank	£					
Parameter	PrepSet	Reading	MDL	MQL	Units			File		
Turbidity	828919	ND	0.30	0.30	NTU			119733398		
				Duplica	ite					
Parameter	Sample		Result	Unknow	7		Unit		RPD	Limit%
Turbidity	1767563		ND	ND			NTU			20.0
				Mat. Spi	ike					
Parameter	Sample	Spike	Unknow	n Known	Units	Recovery %	Limits %	File		
Turbidity	1767563	39.6	ND	40.0	NTU	99.0	70.0 - 130	119733404		
		141		Standa	rd					
Parameter	Sample	Reading	Known	Units	Recover%	Limits%		File		
Turbidity	828919	9.32	10.0	NTU	93.2	90.0 - 110		119733399		

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



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4		Ana-La	b Corp	. P.C	D. Box	9000	Kilgore	, TX '	75663	nepon	Page 21 of 25
ANA	AB Pho	one 903/98-		<b>X 903/9</b> ployee O		-Mail corp Integrity	@ana-lab.c Carin		LELA Continual Improve		ted #02008
THE COMPLET		Q	uality	y Co	ontro	1	Pri	nted 04	/02/2019		Page 13 of 13
					Standar	d					
	<u>Parameter</u> Turbidity	<i>Sample</i> 828919 828919	<i>Reading</i> 99.9 9.35	<b>Known</b> 100 10.0	<i>Units</i> NTU NTU	<b>Recover%</b> 99.9 93.5	<i>Limits%</i> 90.0 - 110 90.0 - 110		<i>File</i> 119733401 119733405		
		828919	10.1	10.0	NTU	101	90.0 - 110		119733409		
	Analytical Set 829	9222									SM 2320 B-201
					Blank						
	Parameter	PrepSet	Reading	MDL	MQL	Units			File		
	Total Alkalinity (as CaCO3)	829222	ND	1.00	1.00	mg/L			119740176		
					CCV						
	Parameter		Reading	Known	Units	Recover%	Limits%		File		
	Total Alkalinity (as CaCO3)		26.1	25.0	mg/L	104	90.0 - 110		119740175		
			26.1	25.0	mg/L	104	90.0 - 110		119740189		
			25.6	25.0	mg/L	102	90.0 - 110		119740202		
			26.1	25.0	mg/L	104	90.0 - 110		119740215		
					Duplicat	e					
	Parameter	Sample		Result	Unknown			Unit		RPD	Limit%
	Total Alkalinity (as CaCO3)	1766953		48.6	50.6			mg/L		4.03	20.0
		1767051		20.5	20.5			mg/L		0	20.0
		1767526		66.1	68.1			mg/L		2.98	20.0
					ICV						
	Parameter		Reading	Known	Units	Recover%	Limits%		File		
	Total Alkalinity (as CaCO3)		26.6	25.0	mg/L	106	90.0 - 110		119740174		
					Mat. Spil	ke -					
	Parameter_	Sample	Spike	Unknow	n Known	Units	Recovery %	Limits %	File		
	Total Alkalinity (as CaCO3)	1766953	71.1	50.6	25.0	mg/L	82.0	70.0 - 130			
		1767051	45.6	20.5	25.0	mg/L	100	70.0 - 130			
		1767526	93.7	68.1	25.0	mg/L	102	70.0 - 130			

\* Out RPD is Relative Percent Difference: abs(r1-r2) / mean(r1,r2) \* 100%

Recover% is Recovery Percent: result / known \* 100%

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Blank - Method Blank; CCV - Continuing Calibration Verification; BFB - GC/MS Tuning Compound; AWRL/MRL C - Ambient Water Reporting Limit/Minimum Reporting Limit Check Std; ICV - Initial Calibration Verification; LCS - Laboratory Control Sample; CCB - Continuing Calibration Blank; MRL Check - Minimum Reporting Limit Check Std

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662



LDSClient v1.14.14.1769

Na2SO3 siness days <sup>II</sup> Other P=Plastic, G=Glass, V=Voa, O=Other Carrier PHOMMEN Date: 3-18-,	Received By:	Time:		Date:	Relinquished By:
Na2SO3         siness days         F=Plastic, G=Glass, V=Voa, O=Other	Received By:	Time: 330	3-18-15	Date:	Relinquished By:
siness days I 5 Business days □ Other	Container Type		BY:	Authorized BY:	Surcharge will apply to RUSH TAT
	□2 Business Days □3 B	□ 1 Business Day	Expedite / Rush:	Business days)	Required Turnaround: 🛛 Routine (6-10 Business days)
	П H2SO4 П H3PO4 П ICE П				
I HNO3 NaOH HCL Na2SO3					
I HNO3 NaOH HCL Na2SO3					
□ HNO3 □ NaOH □ HCL □ Na2SO3	1				
□ HN03 □ NaOH □ HCL □ Na2503		67	2:30 pm G	3/18/19	Well # 19 ASR Table 1, List B
HN03     NaOH     K190771537     Na2503	L H2SO4 L H3PO4 LCE	9	2:30 Pm G	3/18/19	Well #19 Ase Table 1, ListA
Yes I No I LAB Sample Number	əzis	SL - Sludge 300 L - Liquid 31380 W - Water 31380	e aŭ	Collected Date T	Client / Field Sample ID
tive ves □ Intact	Preserv		00 = 0 0 = 0		Collected By:
Custody Seals Present	iner	Matrix Container			Sample Information
s+ A/B Requested Analysis Comple	Table 1, Lis	Well #19 ASR	Project: Well		2902 B
EMAIL: kpost@victoriatx.org	PO #		Attention:		Attention: Kevin Post
Phone: FAX:			Address:	SWTP	5
Report Information THERM ID# 4 TEMP Corr: d0.9	Check box if Billing is the same as F	1.	<b>Billing Information</b>		Customer / Report Information Billing Infor

#### Final Report Page 1 of 23

BatchNo: 82604

# SAMPLE REPORT

Batch # 82604



T104704328-19-16

### Business

Victoria, City of - Stephen Robinson P O Box 1758 Victoria Tx 77902 Att: Stephen Robinson



# Laboratory

B Environmental, LLC. 1606 E Brazos, Suite D Victoria TX 77901 ph. 361-572-8224

#### **Reference Information**

Project: Well #21 ASR Table 1 List A&B Printed: Wednesday, April 03, 2019

Re: Victoria, City of - Stephen Robinson

Dear: Stephen Robinson

Attached are the results for sample(s) received on 3/21/2019

The analytical results relate only to the samples tested. All supporting quality data meets the requirements of NELAC unless noted in the case narrative section of the report.

This report contains 23 pages (including the cover page)

If you have any questions concerning this report, please do not hesitate to call (361) 572-8224 or Fax us at (361) 572-4115

Respectfully Submitted,

Kevin Baros Laboratory Director

B

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Victoria TX 77901

06 E Brazos, Suite D etoria TX 7	7901				
Batch No: 82	2604	manla Dag	aint Char	list	
	Su	mpie Aec	eipt Chec	1	2010
			Date Received		2019
Project	Well #21 ASR Table 1 I	LIST A&B	Received By:	Honnen	
ogin completed by:	Honnen	3/21/2019			
	Signature	LoginDate:			
		Carrier Name	Walk In		
Shipping container	/cooler in good co	ondition?	✓ YES		Not Present
Custody seals inta	ct on shipping cor	ntainer/cooler?		NO	Not Present
Custody seals inta	ct on sample bott	les?			Not Present
Chain of Custody	present?		VES		
Chain of Custody s	signed when relind	quished and rece	the second se		
Chain of Custody a	agrees with samp	le labels?	YES	NO	
Samples in proper	container/bottles	?	✓ YES		
Sample containers	intact?		VES		
Sufficient sample v	volume for indicate	ed tests?	✓ YES	NO	
All samples receive	ed within holding	times?	VES	NO	
Container/Temp B	lank - temperatur	e in compliance?	VES		>0 <6 °C On Ice
Water - VOA vials	have zero heads	bace? Bubble < 6	òmm? 🗹 YES		No VOA Vials submitted
Water - pH accept	able upon receipt	?	YES		Vot Applicable
*TEMP 23.6/23.	6 pH Adjuste	d? NA	Checked	By L. Val	nrenkamp
Any No and/or N/A (not ap	oplicable) response m	ust be detailed in the	comments section b	elow.	
lient contacted			PersonConta	acted	
ontacted by:			Date Contac	ted:	
Regarding					
Comments				_	
Therm #4. The sampl	es were recieved the	same day they were	collected and were in	the process of	of cooling.
Corrective Action					



Victoria TX 77901

an xteport i age o or ao							Daten #	02004		
	Ana-Lab Corp. I	P.O. Bo	ox 90	00	Kilgore	, TX 7:	5663	Repo	ort Page 2	! of 31
ANALAB		<b>3/984-59</b> 1 imployee O		ail corp( Integrity	-		al Improve	nent		
THE COMPLETE SERVICE LAB	Results <sub>Pr</sub>	rinted:	04/03/2	2019	13:51				Page	elof(
Report To	ASR-TAble 1, Lis	st A&B		<u> </u>		count			roject	
B-Environmental Kevin C. Baros 1606 E Brazos St., Suite D Victoria, TX 77901					DEL.	NV-G		Ŏ	67455	
			esults							
1769090 S190801421/S	190801422							Received:	03/22/201	9
Drinking Water	Collected by: Client Taken: 03/21/2019 13:24:0		nvironme	ntal			PC		00, <u>Da</u> , <u>D</u> 01,	-
Calculation	Prepared;	;	03/28	3/2019	11:11:53	Calculated	i	03/28/2019	11:11:53	CAL
Parameter z Phosphorus (as Phosphate)	Results 0.129		Units mg/L	<i>RL</i> 0,306		Flay	2	CAS	Во	ottle
EPA 200.7 4.4	Prepared:	: 8 <i>29849</i>	03/20	/2019	12:00:00	Analyzed	829989	03/26/2019	17:35:00	LPS
Parameter	Results	i	Units	RL		Flag	7	CAS	Ba	ottle
N Calcium	36.3	1	mg/L	0.500				7440-70-2	21	
N Iron, Total N Magnesium, Total	3.12		mg/L	0.025				7439-89-6	21	
N Potassium	9.82 2.62		mg/L	0.020				7439-95-4	21	
EPA 200.7 4.4	Prepared:		ng/L 03/26	0,500 /2019	12:00:00	Analyzed	830144	7440-09-7 03/27/2019	21 12:03:00	LPS
Parameter	Results	7	Inits	RL	······································	Flag		CAS	Pa	
z Silicon Recoverable	13.4	r	ng/L	0.500				7740-21-3	Boi 21	ine
EPA 200.7 4.4	Prepared;	829849	03/26	/2019	12:00:00	Analyzed	830219	03/27/2019	15:25:00	LPS
Parameter M. Dheen han	Results		Inits	RL		Flag		CAS	Bot	ttle
N Phosphorus	0.042	n	ng/L	0.100		J		7723-14-0	21	
EPA 200,7 4.4	Prepared;	829849	03/26	2019	12:00:00	Analyzed	830214	03/27/2019	17:41:00	LPS
Parameter	Results	τ	Inits	RL		Flag		CAS	Bot	ttle
N Sodium	115	n	ng/L	5,00				7440-23-5	21	
EPA 200.7 4.4 - Calc	Prepared:		03/28/	2019	11:22:30	Calculated		03/28/2019	11:22:30	CAL
Parameter	Results		/nits ng/L,	<i>RL</i> 1.07		Flag		CAS	Boti	ile
N Silica (SiO2)	28.7									
N Silica (SiO2) EPA 200.7, Rev. 4.4	28,7 Prepared:		03/22/	2019	15:00:00	Analyzed	830215	03/27/2019	17:00:00	LPS

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

Batch # 82604

Sec.



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E SERVICE LAB

Report Page 3 of 31 Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

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Results

Printed: 04/03/2019 13:51 Page 2 of 6

1769090 S190801421/	3170001422								Received:	03/22/201	9
Drinking Water	Collected by: Client Taken: 03/21/2019	3:24:00	B-E	invironn	nental			PC	);		
EPA 200.8 5.4	Prej	pared:	829497	03/	/22/2019	15:00:00	Analyzed	829776	03/25/2019	22:17:00	JB
Parameter	Result	15		Units	RL.		Flag	3	CAS	Во	ttle
N Dissolved Arsenic	0.0164	4		mg/L	0.0005				7440-38-2	15	
N Dissolved Manganese	0,104			mg/L	0,001				7439-96-5	15	
EPA 200.8 5,4	Prep	pared:	829849	03/	26/2019	12:00:00	Analyzed	830001	03/26/2019	21:39:00	JB.
Parameter	Result	ts		Units	RL		Flag		CAS	Bo	ttle
N Lead, Total	0.0041	14		mg/L	0.0005		-		7439-92-1	21	
N Manganese, Total	0.138			mg/L	0.001				7439-96-5	21	
EPA 200.8 5.4	Prep	pared;	829849	03/.	26/2019	1 <b>2</b> :00:00	Analyzed	830226	03/27/2019	18:26:00	JBI
Parameter	Result	is		Units	RL		Flag	r	CAS	Bo	ttla
N Arsenic, Total	0.0285	5		mg/L	0.0005				7440-38-2	21	
EPA 200.8 5.4	Prep	pared: 8	829849	03/.	26/2019	12:00:00	Analyzed	830339	03/28/2019	12:40:00	JBI
Parameter	Result	ls		Units	RL		Flag		CAS	Boi	ntle
N Aluminum, Total	3,26			mg/L	0.250		0		7429-90-5	21	
EPA 300.0 2,1	Prep	pared: E	830057	03/2	23/2019	18:16:00	Analyzed	830057	03/23/2019	18:16:00	AM
Parameter	Results	5		Units	RL		Flag		CAS	Boi	ttle
N Chloride	111		1	mg/Ľ	1.50					01	
N Fluoride	0.380		1	mg/L	0.500		J			01	
N Sulfate	0.635		1	mg/L	1.50		j			01	
EPA 300.1 1	Prep	pared: 8	330505	03/2	28/2019	14:06:00	Analyzed	830505	03/28/2019	14:06:00	AM
Parameter	Results	5		Units	RL.		Flag		CAS	Bot	110
N Bromate	<5.00		I.	ug/L	5.00					05	
EPA 350.1 2	Prep	ared; 8	29874	03/2	26/2019	15:00:00	Analyzed	8303 <b>22</b>	03/28/2019	10:00:00	RSV
Parameter	Resulis	5	1	Units	RL		Flag		CAS	Boti	tla.
N Ammonia (as N)	0.090			ng/L	0.020		* ···*		0/10	22	., ¢
EPA 524.2 4.1	Prep	ared: 8	29837	03/2	25/2019	17:33:00	Analyzed	829837	03/25/2019	17:33:00	KLE
Parameter	Results	1	τ	Inits	RL		Flag		CAS	Bali	tl <i>a</i>
N Bromodichloromethane	<1.00		ŭ	ıg∕L	1.00				75-27-4	09	***
N Bromoform	<1,00		U	ıg/L	1.00				75-25-2	09	
N Chloroform	<1.00		U	ig/L	1.00				67-66-3	09	
N Dibromochloromethane	<1.00			ıg/L	1,00				124-48- 1	09	

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	Ana-Lab Cor	·p. F	2.0.1	Box S	9000	Kilgore	, TX 75	5663	Rep	ort Page 4	4 of 3
ANALAD	Phone 903/984-0551		3/984-5 mployee		-Mail corp Integrit	@ana-lab.o	com	al Improve	ment		
THE COMPLETE SERVICE LAB	Results	Pr	inted:	04/0	)3/2019	13:51				Page	e3of
1769090 S190801421/S1	90801422	<u> </u>					<u> </u>		Received:	03/22/201	19
Drinking Water	Collected by: Clien Taken: 03/21/2019	t 13:24:0		-Enviro	nmental			P	0:		
EPA 524.2 4.1		Prepared:	82983	7 0	3/26/2019	16:41:55	Calculated	I 829837	03/26/2019	16:41:55	CA.
Parameter	R	esults		Units	RL	·	Flag		CAS		
N Trihalomethanes	<	0.001		mg/L			1.42	i	CAS	<i>ва</i> 09	ottle 9
EPA 552.2 1		Prepared:	82959	9 O.	3/25/2019	09:05:41	Analyzed	831027	04/02/2019	00:35:00	EM
Parameter	Re	esults		Units	RL		Flag		CAS	····	
N Bromoacetic acid	<	5.00		ug/L	5.00		Prag		79-08-3		ottle
N Chloroacetic acid	<	5.00		ug/L	5.00				79-11-8	18 18	
N Dibromoacetic acid	<	5.00		ug/L	5,00				631-64-1	18	
N Dichloroacetic acid N Trichloroacetic acid		5.00		ug/L	5.00				79-43-6	18	
A Inchioroacetic acid	<5	5.00		ug/L	5.00				76-03-9	18	
EPA 552.2 1		Prepared:	829599	D 03	3/23/2019	09:05:41	Calculated	831027	04/03/2019	13:25:37	CAL
Parameter	Re	sults		Units	RL		Flag		CAS	Ro	ottle
N HAA5	<0	.005		mg/L	0.005				CAD	18	
SM 2130 B-2001	Ĺ	Prepared:	829492	. 03	/22/2019	14:30:00	Analyzed	829492	03/22/2019	14:30:00	ELS
Parameter	Re	sults		Units	RL		<b>F</b> 1				
N Turbidity	19.	.5		NTU	0.30		Flag		CAS	Boi 01	
SM 2320 B-2011	1	Prepared:	829672	03.	/25/2019	08:48:00	Analyzed	829672	03/25/2019	08:48:00	ELS
Parameter	Res	sults		Units	D7			<u> </u>			2,20
N Total Alkalinity (as CaCO3)	285			mg/L	RL 1.00		Flag		CAS	Bot 01	ttle
SM 2340 B-2011		repared:		03/	(27/2019	10:47:15	Calculated		03/27/2019	10:47:15	CAL
Parameter	Res	ults		Units	RL	· · · · · · · · · · · · · · · · · · ·	Flag				
N Total Hardness as CaCO3 -Ca/Mgl	Eq 131			mg/L	0.500		Filleg		CAS	Bott	tle
SM 2540 C-97	р	repared:	829907	03/	25/2019	10:20:00	Analyzed	829907	03/25/2019	10:20:00	ALW
Parameter	Res	ults		Units	RL.						
N Total Dissolved Solids	488			mg/L	20.0		Flag		CAS	<i>Bott</i> 02	tle
SM 2540 D-2011	Pi	repared:	830023	03/	26/2019	14:50:00	Analyzed	830023	03/26/2019	14:50:00	
Parameter	Resi	ulis		Units	70					27.20.00	<i>TH</i> 2
N Total Suspended Solids	41.7			Units mg/L	RL 5.71		Flag		CAS	Botti 01	le
SM 5310 C-2000		repared:									
	F /	eparea:	829005	03/2	2/2019	21:32:00	Analyzed 8	329605	03/22/2019	21:32:00	ALH

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		Ana-Lab Corp. I	?.O. Bo	x 9000	Kilgore,	TX 75663	Rep	ort Page 5	of 31
A	INA-LAB		3/984-591 imployee Ov			>m Continual Improve			
тн		Results <sub>Pr</sub>	inted:	04/03/2019	13:51			Page	4 01 6
025 5 23	1769090 S190801421/S1	90801422					Received;	03/22/2019	)
	Drinking Water	<i>Collected by:</i> Client <i>Taken:</i> 03/21/2019 13:24:0		nvironmental		Po			
	SM 5310 C-2000	Prepared	: 829605	03/22/2019	21:32:00	Analyzed 829605	03/22/2019	21:32:00	ALH
N	Parameter Total Organic Carbon	Results 0.654	1	<i>Units RL</i> mg/L 0.500	)	Flag	CAS	<i>Bot</i> 03	ile
		S	ample I	Preparation	1				
	1769090 S190801421/S1	90801422					Received:	03/22/2019	
		Prepared:	829290	03/22/2019	00:00:00	Analyzed 829290	03/22/2019	00:00:00	KAT
	·						· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	
z	Bottle pH	<2	s	SU .				06	
z z	Bottle pH Bottle pH	<2		U .				04	
-	Cooler Temperature	<2 1.0		iU Icgrees				03 02	
	Cooler Temperature	1.0	( d	egrees				07	
	Cooler Temperature	1.0	. C						
	Cooler Temperature	1.0	C	2				05	
	-		a (	egrees C				06	
	Cooler Temperature	1.0	d	egrees				04	
	Cooler Temperature	1.0	d (	egrees				03	
	Cooler Temperature	1.0	d	egrees				01	
	Cooler Temperature	1.0		egrees				10	
	Cooler Temperature	1.0	C đ	egrees				09	
	Cooler Temperature	1.0	C d	egrees				08	
	Cooler Temperature	1.0	C						
	Cooler Temperature	1.0	C		•			14	
	Cooler Temperature		C					13	
		1.0	d C	egrees				12	
	Cooler Temperature	1,0	đ C	egrees				11	

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



al Report Page 7 of 23						Batch # 3	82604		
		P.O. Bo	0000 x	Kilgore,	TX 7:	5663	Repo	ort Page 6	of 31
ANALAB COKP. THE COMPLETE SERVICE LAB	Phone 903/984-0551 FAX 9 Results	Employee Ov				ual Improves		Page	5 of 6
1769090 S190801421/S1	90801422	<u></u>					Received:	03/22/201	9
EPA 200.2 2.8	Prepar	ed: 829849	03/26/2019	12:00:00	Analyzed	829849	03/26/2019	12:00:00	TE
N Liquid Metals Digestion	50/50	ı	nl					04	
EPA 350.2, Rev. 2.0	Prepare	ed: 829874	03/26/2019	15:00:00	Analyzed	829874	03/26/2019	15:00:00	CR
N Ammonia Distillation	50/50	1	ทไ			<u> </u>		06	
EPA 524.2 4.1	Prepare	ed: 829837	03/25/2019	17:33:00	Analyzed	<b>82</b> 9837	03/25/2019	17:33:00	KL
N Trihalomethane Expansion Code	e Entered					<u></u>		09	
EPA 552.2 1	Prepare	ed: 829599	03/25/2019	09:05:41	Analyzed	829599	03/25/2019	09:05:41	LSI
N Haloacetic Acids Extraction EPA 552.2 1	3/40 Prepare	n d: 829599	nž 03/25/2019	09:05:41	Analyzed	831027	04/02/2019	07 00:35:00	EM
N Haloacetic Acids (HAA5)	Entered			····				18	
SM 2540 C-97	Prepare	d: 829577	03/25/2019	10:20:00	Analyzed	829577	03/25/2019	10:20:00	ALV
N Total Dissolved Solids Started	Started			<u> </u>					
SM 2540 D-1997	Prepare	d: 829833	03/26/2019	14:50:00	Analyzed	829833	03/26/2019	14:50:00	TH
N TSS Set Started	Started								
SM 3030 B-2004	Prepare	d: 829497	03/22/2019	15:00:00	Analyzed	829497	03/22/2019	15:00:00	ALB
N Dissolved Metals Filtering	50/50	'n				-		01	





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Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663 Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-iab.com Employee Owned Integrity Caring Continual Improvement Page 6 of 6 Results SERVICE LAB Printed: 04/03/2019 13:51

Qualifiers:

J - Analyte detected below quantitation limit

We report results on an As Received or wet basis unless marked Dry Weight. Unless otherwise noted, testing was performed at Ana-labs corporate laboratory that holds the following Federal and State certificates: EPA Lab Number TX00063, US Department of Agriculture Soil Import Permit P330-17-00117, Texas Commission on Environmental Quality Commercial Drinking Water Lab Approval (Lab ID: TX219), Texas Commission on Environmental Quality NELAP T104704201-19-15, Louisiana Department of Environmental Quality Laboratory Certification (NELAP, LELAP) #02008, Louisiana Department of Health and Hospitals Drinking Water (NELAP) Certificate No LA026, Oklahoma Department of Environmental Quality TNI Laboratory Accreditation Program Certificate No. 2018-126, Arkansas Department of Environmental Quality Certification #18-068-0. The Accredited column designates accreditation by N -- NELAC, or z -- not covered under NELAC scope of accreditation.

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp. Unless otherwise specified, these test results meet the requirements of NELAC.

RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

1

Trey Peery, MA, Project Manager



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		Ana-La	ab Corr	». P.	O. Box	9000	Kilgore	, TX	75663	Repo	ort Pag	e 8 of 31
ANAL	AB	Phone 903/98	En	aployee (	Dwned	Integrity	-			P-accree		2008
THE COMPLETE	SERVICE LAB	Q	ualit	y Co	ontro	ol	Pri	inted 04	/03/2019		Pa	ge 1 of 14
								Account			nject	
Victoria.	Baros Brazos St., Suite D TX 77901						L	SENV	I		7455	
1228.07.07.00000000	Analytical Set	830322			Blank		1803 (Jan & Star (1983))					EPA 350.1 2
	Parameter	<b>D</b> (1-4	n .e	Mor								
	Ammonia (as N)	<b>PrepSet</b> 829874	<i>Reading</i> ND	<b>MDL</b> 0.00356	MQL 0.020 CCV	<i>Units</i> mg/L			<i>File</i> 119764162			
	<i>Parameter</i> Ammonia (as N)		<b>Reading</b> 2.17	<b>Known</b> 2,00	Units	Recover%	Limits%		File			
	(		2.17	2.00	mg/L mg/L	108 106	90.0 - 110 90.0 - 110		119764161 119764171			
			2.01	2.00	mg/L	100	90.0 - 110		119764180			
			2.07	2.00	mg/L	104	90.0 - 110		119764189			
			2.16	2.00	mg/L	108	90.0 - 110		119764200			
			2.09 1.94	2.00 2.00	mg/L	104	90.0 - 110		119764208			
			2.07	2.00	mg/L mg/L	97.0 104	90.0 - 110 90.0 - 110		119764217 119764226			
					Duplica		2010 210		117704220			
	Parameter	Sample		Result	Unknown	!		Unit		RPD		Limit%
	Ammonia (as N)	1769090		0,084	0.090			mg/L		6.90		20.0
		1769520		0.060	0.068			mg/L		12.5		20.0
	Demonst				ICV							
	<u>Parameter</u> Ammonia (as N)		Reading 2.12	<b>Known</b> 2.00	Units	Recaver%	Limits%		File			
			2.12	2.00	mg/L LCS Du	106 n	90.0 - 110		119764160			
	Parameter	PrepSet	LCS	LCSD	200.00	e Known	¥ 1 14-07					
	Ammonia (as N)	829874	1,82	1.90		2.00	<i>Limits%</i> 90.0 - 110	<i>LCS%</i> 91.0	<i>LCSD%</i> 95.0	<i>Units</i> mg/L	<b>RPD</b> 4.30	<i>Limit%</i> 20,0
					Mat. Spil				25.0	μiβ/L	4.50	20,0
	Parameter	Sample	Spike	Unknow	n Known	Units	Recovery %	Limits %	File			
	Ammonia (as N)	1769090	2.14	0.090	2.00	mg/L	102	80.0 - 120	119764170			
	Analytical Cot	1769520	2.15	0.068	2,00	mg/L	104	80.0 - 120	119764167			
	Analytical Set	829907										2540 C-97
			x		ControlB	lk						
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
	Total Dissolved Solids	829907	0		-	grams			119755570			
	<b>D</b>				Duplicat	e	4					
	<u>Parameter</u> Total Dissolved Solids	Sample		Result	Unknown			Unit		RPD		Limit%
	- ordi Esissoryoù Bonds	1769006		3980	3850			mg/L		3.32		20,0
	Parameter	p	D		LCS							
	Total Dissolved Solids		-			Units	Recover%	Limits	File			
					200	ing/L	77.0	85.0 - 115	119755584			
;	Parameter Total Dissolved Solids	PrepSet 829907	<b>Reading</b> 198		<b>Known</b> 200	<i>Units</i> mg/L	<b>Recover%</b> 99.0	<i>Limits</i> 85.0 - 115	<b>File</b> 119755584			

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Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



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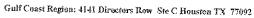
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Batch # 82604

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·		Ana-L:	ab Corj	). P.	O. Box	x 9000	Kilgor	e, TX 7	5663	Rep	ort Pag	e 9 of 31
ANAI	AB	Phone 903/98	4-0551 F.	(************************************	984-5914		·p@ana-lab	.com	li den halfen er sin die bester bester voor	P-accre		)2008
THE COMPLET	E SERVICE LAB	Q	ualit	y Co	ontro	-	-		)3/2019		P	age 2 of 14
					Standa	ırd						
Thatanan an Internetia	<u>Parameter</u> Total Dissolved Solids	Sample	<b>Reading</b> 100	<b>Known</b> 100	ma/ī	<b>Recover%</b> 100	00.0 110		<b>File</b> 119755571			
11111111111111111111111111111111111111	Analytical Set	830023						na an a		of instances the		2540 D-2011
					Blan	k					5141	2340 D-2011
	<u>Parameter</u>	PrepSet	Reading	MDL	MQL	Units			File			
	Total Suspended Solids	830023	ND	2	2	mg/L			119758457			
					Control	Blk						
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
	Total Suspended Solids	830023	-0.0003		-	grams			119758456			
					Duplic	ate						
	Parameter	Sample		Result	Unknow	n		Unit		RPD		Limit%
	Total Suspended Solids	1769096		118	118			mg/L		0		20.0
		1769289		50.0	50.0			mg/L		õ		20.0
		1769391		272	264			mg/L		2.99		20.0
					LCS							
	Parameter	PrepSet	Reading		Known	Units	Recover%	Limits	File			
	Total Suspended Solids	830023	52.0		50.0	mg/L	104	90.0 - 110	119758490			
					Standa	rd						
	Parameter	Sample	Reading	Known	Units	Recover%	Limits%		File			
NI NUX TRIGHUMBLAN	Total Suspended Solids		106	100	mg/L	106	90.0 - 110		119758489			
	Analytical Set	830057	ana oronomine decombilină.	21135143494444EC43				410100-52305975213				
				A	WRL/M	RL C					EI	PA 300.0 2.1
	Parameter		Reading	Known	Units	Recover%	X3					
	Fluoride		0.095	0.100	mg/L	95.0	<i>Limits%</i> 50.0 - 150		<i>File</i> 119758980			
					Blank				1177,56760			
	Parameter	PrepSet	Reading	MDL	MQL	Units			1074 F			
	Chloride	830057	0.062	0.0053	0.300	mg/L			File 119758981			
	Fluoride	830057	ND	0.00863		mg/L			119758981			
	Sulfate	830057	ND	0,00775	0.300	mg/L			119758981			
					CCV							
	Parameter		Reading	Клоwп	Units	Recover%	Limits%		File			
	Chloride		10.2	10.0	mg/L	102	90.0 - 110		119758977			
			10.4	10.0	mg/L	104	90.0 - 110		119758994			
	<b>T</b> 1 ( )		10.5	10.0	mg/L	105	90.0 - 110		119759001			
	Fluoride		10.7	10.0	mg/L	107	90.0 - 110		119758977			
			10.7	10.0	mg/L	107	90.0 - 110		119758994			
	Sulfate		10,7 9.99	10,0	mg/L m «/l	107	90.0 - 110		119759001			
			9.99 10.1	10.0 10.0	mg/L mg/L	99.9 101	90.0 - 110		119758977			
			10.2	10.0	mg/L mg/L	101 102	90.0 - 110 90.0 - 110		119758994			
					LCS Du		30.0 <b>-</b> 110		119759001			
	Parameter	PrepSet	LCS			-	<b>WA</b>					
	Chloride	830057	5.31	LCSD 5.13		<b>Known</b> 5.00	Limits%	LCS%	LCSD%	Units	RPD	Limit%
	Fluoride	830057	5.41	5.33		5,00	85.0 - 110 88.0 - 110	106 108	103 107	mg/L	3.45	20.0
						-	110	1.40	107	mg/L	1.49	20.0

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Batch # 82604

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â		Ana-L	ab Cor	p. P	.O. Bo	x 9000	Kilgor	e, TX	75663		-	10 of 3 <sup>-</sup>
ANA.	LAB	Phone 903/91		AX 903 ADDOyee		4 e-Mail cor Integrit			LEL Continual Improv	AP-accred	lited #0	
THE COMPLE	TE SERVICE LAB	Q	ualit	ty C	ontr	ol	Рі	rinted 04	/03/2019		Pa	ge 3 of 14
				-	LCS I							
	<u>Parameter</u>	PrepSet	LCS	LCSD		Known	Limits%	LCS%	I CEDA/	*** **		
	Sulfate	830057	5.24	5,02		5.00	88.0 - 110	105	<i>LCSD%</i> 100	<i>Units</i> mg/L	<b>RPD</b> 4,29	Limit%
					MS		110	100	100	шgль	4,29	20,0
	Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%				
	Chloride	1768776		22,2	12.2	10.0	80.0 - 120	100	MSD% 100	Units	RPD 0	Limit%
	Fluoride	1768776	9.84	9.90	0,190	10.0	80.0 - 120	96.5	97.1	mg/L mg/L	0.620	20.0 20.0
	Sulfate	1768776	70,6	71.6	61,3	10,0	80.0 - 120	93.0	103	mg/L	10.2	20.0
	Chloride	1768779	25.1	24.9	15.2	10.0	80.0 - 120	99,0	97,0	mg/L	2.04	20.0
	Fluoride	1768779	9.64	9.63	0.220	10.0	80.0 - 120	94.2	94.1	mg/L	0,106	20.0
BENERAL STATEMENT SPACE	Sulfate	1768779	43.2	42.4	32.4	10.0	80.0 - 120	108	100		<b>E</b> (0	
	Analytical Set	830505				, a 1477 (2003) (2003) (2003)						
				ł	AWRL/M	IRL C					Ľ	PA 300.1
	<u>Parameter</u>		Reading	Known	u Units	Recover%	Limits%		File			
	Bromate		3.84	5.00	ug/L	76,8	75.0 - 125		119768472			
					Blan	k			119900112			
	Parameter	PrepSet	Reading	MDL	MQL	Units						
	Bromate	830505	ND	2.06	5,00	ug/L			File			
					CCV	-			119768471			
	Parameter		Reading	Known			K1					
	Bromate		523	500	ug/L	Recover% 105	Limits%		File			
			516	500	ug/L	103	85.0 - 115 85.0 - 115		119768466			
					LCS D		00.0 - 110		119768481			
	Parameter	PrepSet	LCS	LCSD		-	<b>F</b> 1. A.	at attends a				
	Bromate	830505	89.2	88.2		<b>Known</b> 100	<i>Limits%</i> 85.0 - 115	<i>LCS%</i> 89.2	LCSD%	Units	RPD	Limit%
					MSD		55,0 - 115	09.2	88.2	ug/L	1.13	25.0
	<u>Parameter</u>	Sample	MS	MSD	UNK	Known	Limits	MC 0/				
974*11111111111111	Bromate	1760112	227	200				MS% 114	MSD%	Units	RPD	Limit%
***************************************	Analytical Set	829605			Rithininen				104 1940 - 1941 - 1941 - 1941 - 1941 - 1941 - 1941 - 1941 - 1941 - 1941 - 1941 - 1941 - 1941 - 1941 - 1941 - 1941	ug/L	8.74 alan septi	20.0
	· Andy from Set	022003			WRL/M						036.03	10 C-200
	Parameter		Reading	Known	Units							
	Total Organic Carbon		1,94	2.00	ng/L	<b>Recover%</b> 97.0	Limits%		File			
				2.00	Blank		75.0 - 125		119748653			
	Parameter	D C-4	<b>N</b> <i>V</i>									
	Total Organic Carbon	<i>PrepSet</i> 829605	Reading	MDL	MQL	Units			File			
	- the organic curbon	829605	ND 0.0826	0.0618	0.500	mg/L			119748652			
		02/005	0,0820	0.0618	0.500	mg/L			119748656			
	<u>Parameter</u>	Burger	<b>.</b>		ССВ							
	Total Organic Carbon	<b>PrepSet</b> 829605	Reading	MDL	MQL	Units			File			
		829605	0.102 0.0828	0.0618	0.500	mg/L			119748646			
		829605	0.110	0.0618 0.0618	0.500	mg/L			119748666			
				0.0010	0.500 CCV	mg/L			119748677			
	<b>w</b>		Reading									
	Parometer		REAAINO	Known	Units	Recover%	Limits%		10-11			
	Parameter Total Organic Carbon		•						File			
	Parometer Total Organic Carbon		11.0 10.5	10.0 10.0	mg/L mg/L	110 105	90.0 - 110 90.0 - 110		File 119748649			



Batch # 82604

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			ab Cor			x 9000			75663		-	) 11 of 3
ANAI	AB	Phone 903/93		AX 903/9 aployee (		e-Mail cor Integrit			LEL: Continual Improv	4P-accre		
HE COMPLET	E SERVICE LAB	Q	ualit	y Co	ontro	ol	Р	rinted 0	4/03/2019		Pa	age 4 of
				•	CCV	7						
	<u>Parameter</u>		Reading	Known	Units	Recover%	Limits%		File			
	Total Organic Carbon		9.90 10.6	10.0 10.0	mg/L mg/L ICL	99.0 106	90.0 - 110 90.0 - 110		119748667 119748678			
	<u>Parameter</u> Total Organic Carbon		<b>Reading</b> 21.7 19.9	<b>Known</b> 20.0 20.0	<i>Units</i> mg/L mg/L	<b>Recover%</b> 108 99.5	<i>Limits%</i> 90.0 - 110 90.0 - 110		<i>File</i> 119748648 119748654			
					ICV							
	<u>Parameter</u> Total Organic Carbon		<i>Reading</i> 10,4 9,94	<b>Known</b> 10.0 10.0	<i>Units</i> mg/L mg/L LCS	<b>Recover%</b> 104 99.4	<i>Limits%</i> 90.0 - 110 90.0 - 110		<b>File</b> 119748650 119748655			
	<u>Parameter</u>	PrepSet	Reading		Кпоwп	Units	Recover%	Limi <u>t</u> s	70°1 -			
	Total Organic Carbon	829605 829605	4.82 5.04		5,00 5.00 <b>MSD</b>	mg/L mg/L	96,4 101	89.8 - 11 89.8 - 11				
	Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	¥1		×
	Total Organic Carbon	1768490 1768996	10.6 14.1	10.6 13.7	0,316 3.28	10.0 10.0	92.5 - 112 92.5 - 112	103 108	103 104	<i>Units</i> mg/L mg/L	<b>RPD</b> 0 3.77	<i>Limit9</i> 20.0 20.0
					Standa	rd				5		
	<u>Parameter</u> Total Organic Carbon	Sample	<b>Reading</b> 50.2	<b>Кпоwn</b> 50.0	<i>Units</i> mg/L	<b>Recover%</b> 100	<i>Limits%</i> 90.0 - 110		<i>File</i> 119748647			
	Analytical Set	829776		**********					ine 11 p (1963) (P) (1963) (P)	an a		A 200.8
					Blank	i.					121	A 200.0
	<u>Parameter</u> Dissolved Arsenic	PrepSet	Reading	MDL	MQL	Units			File			
	Dissolved Manganese	829497 829497	ND ND	0.000359 0.000105		mg/L mg/L			119752671 119752671			
					CCV	0			119752071			
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Dissolved Arsenic		0.0468	0.05	mg/L	93.6	90.0 - 110		119752670			
	Dissolved Manganese		0.0479 0.0514	0.05 0.05	mg/L mg/L	95.8 103	90.0 - 110		119752675			
			0.0518	0.05	mg/L ICV	105	90.0 - 110 90.0 - 110		119752670 119752675			
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Dissolved Arsenic Dissolved Manganese		0.0502 0.0494	0.05 0.05	mg/L mg/L	100 98.8	90.0 - 110 90.0 - 110		119752652 119752652			
	Paramata-	<u>.</u>			MSD							
	<u>Parameter</u> Dissolved Arsenic Dissolved Manganese	<i>Sample</i> 1769090 1769090	MS 0.474 0.613	0.481	<i>UNK</i> 0.0164 0.104	<b>Кпоwn</b> 0.500 0.500	<i>Limits</i> 70,0 - 130 70,0 - 130	MS% 91.5	<b>MSD%</b> 92.9	<i>Units</i> mg/L	<b>RPD</b> 1.52	<i>Limit%</i> 20.0
					NUMBER OF		70.0 - 150	TUZ	103	mg/L	0.978	20.0
	Analytical Set	829989									FP/	A 200.7 4
	Analytical Set	829989		AW	/RL/MR	LC					101 r	1 200.7 9
	Analytical Set <u>Parameter</u>	829989	Reading		'RL/MR Units	L C Recover%	Limits%		File			1 200.7 9

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Batch # 82604

	Ana-La	b Corp	. P.(	O. Box	: 9000	Kilgore, T		Report Page 12 of 31
ANALAB		Em	ployee C	wned	Integrity	p@ana-lab.com		AP-accredited #02008
	Q	ualit	y Co	ontro	51	Printed	04/03/2019	Page 5 of 14
			А	WRL/M	RL C			
Parameter		Reading	Known	Units	Recover%	Limits%	File	
Calcium		0.565	0.500	mg/L	113	25.0 - 175	119757505	
Iron, Total		0.0229	0.050	mg/L	45,8	25.0 - 175	119757505	
Magnesium, Total		0,507	0.500	mg/L	101	25.0 - 175	119757505	
Potassium		0.544	0.500	mg/L Blanl	109 K	25.0 - 175	119757505	
Parameter	PrepSet	Reading	MDL					
Calcium	829849	0.113	0.0419	<i>MQL</i> 0.500	Units		File	
Iron, Total	829849	0.115 ND	0.00504	0.025	mg/L		119757552	
Magnesium, Total	829849	ND	0.00304	0.023	mg/L		119757552	
Potassium	829849	0.124	0.0765		mg/L		119757552	
	025045	0.124	0.0705	0.500 CCV	mg/L		119757552	
<b>-</b> .								
Parameter		Reading	Кпожп	Units	Recover%	Limits%	File	
Calcium		25.7	25.0	mg/L	103	90.0 - 110	119757506	
		24.6	25.0	mg/L	98.4	90.0 - 110	119757512	
		25.2	25.0	mg/L	101	90.0 ~ 110	119757514	
		24.5	25.0	mg/L	98.0	90.0 - 110	119757518	
		25.1	25.0	mg/L	100	90.0 - 110	119757519	
		24,7	25,0	mg/L	98,8	90.0 - 110	119757530	
		24.1	25.0	mg/L	96.4	90.0 - 110	119757540	
		24. I	25.0	mg/L	96.4	90.0 - 110	119757551	
		23,4	25.0	mg/L	93,6	90.0 - 110	119757562	
		23.0	25.0	mg/L	92.0	90.0 - 110	119757573	
_		23.2	25.0	mg/L	92.8	90.0 - 110	119757574	
Iron, Total		2,50	2.50	mg/L	100	90.0 - 110	119757506	
		2.41	2.50	mg/L	96.4	90.0 - 110	119757512	
		2.43	2.50	mg/L	97.2	90.0 - 110	119757514	
		2.51	2.50	mg/L	100	90.0 - 110	119757518	
		2.54	2.50	mg/L	102	90.0 - 110	119757519	
		2.43	2.50	mg/L	97.2	90.0 - 110	119757530	
		2.45	2.50	mg/L	98.0	90.0 - 110	119757540	
		2.38	2.50	mg/L	95.2	90,0 - 110	119757551	
		2,40	2,50	mg/L	96.0	90.0 - 110	119757562	
		2.48	2.50	mg/L	99.2	90.0 - 110	119757573	
		2.52	2.50	mg/L	101	90.0 - 110	119757574	
Magnesium, Total		25.0	25.0	mg/L	100	90.0 - 110	119757540	
		24,7	25.0	mg/L	98.8	90.0 - 110	119757551	
		24.7	25.0	mg/L	98.8	90.0 - 110	119757562	
		24,7	25,0	mg/L	98.8	90.0 - 110	119757573	
Determine		25.1	25.0	mg/L	100	90.0 - 110	119757574	
Potassium		23.6	25.0	mg/L	94.4 ·	90.0 - 110	119757540	
		23.1	25.0	mg/L	92.4	90.0 - 110	119757551	
		22.9	25.0	mg/L	91.6	90.0 - 110	119757562	
		23,5	25.0	mg/L	94.0	90.0 - 110	119757573	
		23.6	25.0	mg/L	94.4	90.0 - 110	119757574	
				ICL				
<u>Parameter</u>		Reading	Known	Units	Recover%	Limits%	File	
Calcium		50,1	50.0	ıng/L	100	95.0 - 105	119757500	
Iron, Total		5.21	5,00	mg/L	104	95.0 - 105	119757500	

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Batch # 82604

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Á		Ana-La	120202002009			ANT ALCOHOLD HAVE A	Kilgore	encinations:			-	
ANA.	AB	Phone 903/984		1X, 903/9 ployee O		e-Mail corp Integrity				P-accred	ited #02	008
CORP		~	-			~ .	Cari	ug	Continual Improve	ment		
THE COMPLETI	SERVICE LAB	Q	uality	y Co	ontro		Pr	inted (	04/03/2019		Pag	e 6 of 14
					ICL							
	<u>Parameter</u>		Reading	Known	Units	Recover%	Limits%		File			
	Magnesium, Total		51.4	50.0	mg/L	103	95.0 - 105		119757500			
	Potassium		52.2	50.0	mg/L	104	95.0 - 105		119757500			
					ICV							
	<u>Parameter</u>		Reading	Кпоwп	Units	Recover%	Limits%		File			
	Calcium		25.5	25.0	mg/L	102	90.0 - 110		119757504			
	Iron, Total		2.61	2,50	mg/L	104	90.0 - 110		119757504			
	Magnesium, Total		26.4	25.0	mg/L	106	90,0 - 110		119757504			
	Potassium		24,2	25.0	mg/L	96.8	90.0 - 110		119757504			
					LCS Da	ıp						
	<u>Parameter</u>	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
	Calcium	829849	4,43	4.39		5.00	85.0 - 115	88.6	87.8	mg/L	0,907	25.0
	Iron, Total	829849	0.455	0,455		0.500	85.0 - 115	91.0	91.0	mg/L	0	25.0
	Magnesium, Total	829849	4.81	4.90		5,00	85.0 - 115	96,2	98,0	mg/L	1.85	25.0
	Potassium	829849	4.74	4.69		5,00	85.0 - 115	94.8	93,8	mg/L	1.06	25.0
					MSD				5515	ing D	1.00	25.0
	Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	T invested /
	Calcium	1768990	121	118	115	5.00	75.0 - 125	120	60.0 *	mg/L	66,7 *	<i>Limit%</i> 25.0
	Iron, Total	1768990	1.12	1.14	0.654	0.500	75.0 - 125	93.2	97.2	mg/L	4.20	25.0
	Magnesium, Total	1768990	51.9	51.6	47.5	5,00	75.0 - 125	88.0	82.0	mg/L	7.06	25.0
	Potassium	1768990	20.8	20.8	14.1	5.00	75.0 - 125	134 *	134 *	mg/L	0	25.0
	Calcium	1769336	7.32	7.37	2.32	5.00	75.0 - 125	100	101	mg/L	0.995	25.0
	Iron, Total	1769336	0.484	0.492	ND	0,500	75.0 - 125	96.8	98.4	mg/L	1.64	25.0
	Magnesium, Total	1769336	4.77	4.87	0.372	5.00	75.0 - 125	88.0	90.0	mg/L	2.25	25.0
Manage of the second	Potassium	1769336	6.93	6.95	1,14	5.00	75.0 - 125	116	116	mg/L	0.345	25.0
10111111111111111111111111111111111111	Analytical Set	830001		AMERICAN AND AND AND AND AND AND AND AND AND A	22119999999999999999999999999999999999	an a						200.8 5.4
					Blank						EI,	x 200.0 J.4
	Parameter	PrepSet	Reading	MDL	MQL	Units			File			
	Lead, Total	829849	ND	0.00025	0.0005	mg/L			119758011			
	Manganese, Total	829849	ND	0.000105	0.001	mg/L			119758011			
					CCV							
	<u>Parameter</u>		Reading	Known	Units	Recover%	Limits%		File			
	Lead, Total		0.0523	0.05	mg/L	105	90.0 - 110		119757962			
			0.0522	0.05	mg/L	104	90.0 - 110		119757973			
			0.0516	0.05	mg/L	103	90.0 - 110		119757983			
			0.0521	0.05	<b>—</b> ~//	104	00.0 110					

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Manganese, Total



Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092

119757992

119758007

119758015

119758026

119758037

119758041

119758007

119758015

119758026

119758037

119758041

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0.0521

0.0535

0.0534

0.0541

0.0526

0.0521

0.0535

0.052

0.0523

0.0519

0.0518

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0,05

mg/L

104

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107

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		Ana-La	ıb Corj	p. P.	O. Box	9000	Kilgor	e, TX 7	5663	Repor	t Page	14 of 31
ANAI	AB	Phone 903/98		AX 903/		e-Mail cor Integrit			LEL: ontinual Improv	AP-accrea ement	lited #0:	2008
THE COMPLET	E SERVICE LAB	Q	ualit	y Co	ontro	ol	P	rinted 04/	03/2019		Pa	ge 7 of 14
					ICV							
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Lead, Total Manganese, Total		0.0513 0.0502	0.05 0.05	mg/L mg/L	103 100	90.0 - 110		119757941			
			0.0002	0.05	LCS D		90.0 - 110		119757941			
	<u>Parameter</u>	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
	Lead, Total	829849	0.531	0.531		0,500	85.0 - 115	106	106	mg/L	0	20,0
	Manganese, Total	829849	0.531	0.515		0.500	85.0 - 115	106	103	mg/L	3.06	20.0
	_				MRL Ch	leck						
	<u>Parameter</u> Lead, Total		Reading	Known		Recover%	Limits%		File			
	Load, Total		0.000988	0.001	mg/L MSD	98.8	50,0 - 150		119757942			
	Barran	~ .										
	<u>Parameter</u> Lead, Total	Sample 1768990	<b>MS</b> 0.518	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
	Manganese, Total	1768990	0.518	0.519 0.627	ND 0.0864	0.500 0.500	70.0 - 130	104	104	mg/L	0.193	20.0
	Lead, Total	1769336	0,537	0.531	0.000345	0.500	70.0 - 130 70.0 - 130	107 107	108 106	mg/L	1.12	20.0
	Manganese, Total	1769336	0.519	0.512	0.00548	0.500	70.0 100	100		mg/L mg/L	1.12 1.37	20.0 20.0
anar ann an thi <del>s a</del> fra san an tha	Analytical Set	830144	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -		4533388 <u>9</u> 1088773		34.756.968.240H					Concernance of the second
		050144			Blank						EP.	A 200.7 4.4
	Parameter	PrepSet	Paudina									
	Silicon Recoverable	829849	<i>Reading</i> 0.0823	<i>MDL</i> 0.0148	<i>MQL</i> 0.100	Units			File			
			0,0025	0.0140	CCV	mg/L			119760566			
	Parameter		Reading	Known	Units	<b>B</b>	K. 1. 1. 1.					
	Silicon Recoverable		4,95	5.00	ing/L	Recover% 99.0	<b>Limits%</b> 90.0 - 110		File			
			4.75	5.00	mg/L	95.0	90.0 - 110 90.0 - 110		119760565 119760576			
			4.74	5,00	mg/L	94.8	90.0 - 110		119760586			
					Dir. SPF	Œ						
	Parameter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK%	DSPKD%	Units	RPD	Limit%
	Silicon Recoverable	1768990	34.4	33.5	15.9	20.0	75.0 - 125	92.5	88.0	mg/L	2.65	25,0
					Direct SF	РК						
	Parameter	Sample	DSPK		UNK	Known	Limits%	DSPK%		Units		
	Silicon Recoverable	1768990	34.4		15.9	20,0	75.0 - 125	92.5		mg/L		25.0
					ICL		•					
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Silicon Recoverable		9.59	10.0	mg/L	95,9	95.0 - 105		119760563			
	_				ICV							
	Parameter Silicon Recoverable		Reading	Known	Units	Recover%	Limits%		File			
	Sincol Recoverable		4.91	5.00	mg/L	98.2	90.0 - 110		119760564			
	Den er et e	_			LCS Du	p						
	Parameter Silicon Recoverable	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
	STOON RECORDING	829849	3.85	3.73	Man	4.00	85.0 - 115	96.2	93,2	mg/L	3.17	25.0
	Baramaia				MSD							
	Parameter Silicon Recoverable	Sample	MS 10.2	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
		1768990	19.2	19.4	15,3	4.00	75.0 - 125	97.5	102	mg/L	5.00	25,0

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iai Keport Page	10 01 25								Batch # 82(	604		
	And	Ana-L	ab Cor	p. P.	O. Bo	x 9000	Kilgor	e, TX	75663		-	15 of 31
ANALA	<b>B</b>	Phone 903/98		AX 903/ aployee		e-Mail con Integrit				AP-accre		02008
THE COMPLETE SE			ualit	-					04/03/2019			age 8 of 14
A	nalytical Set	830214						101000-0000-000				PA 200.7 4
n					WRL/M							
	<u>arameter</u> odium		<b>Reading</b> 0.610	<b>Кпочн</b> 0,500	Units mg/L Blan	Recover% 122 k	Limits% 25.0 - 175		<b>File</b> 119762239			
	a <i>rameter</i> odium	<b>PrepSet</b> 829849	<i>Reading</i> 0.155	<b>MDL</b> 0.0315	MQL 0.500 CCV	<i>Units</i> mg/L			<b>File</b> 119762267			
	<i>irameler</i> Mjum		<i>Reading</i> 23.9 24.5 24.1	<b>Knawn</b> 25.0 25.0 25.0	Units mg/L mg/L mg/L Dir. SP	<b>Recover%</b> 95.6 98.0 96.4 <b>KD</b>	<i>Limits%</i> 90.0 - 110 90.0 - 110 90.0 - 110		File 119762263 119762274 119762281			
Pa	rameter	Sample	DSPK	DSP <u>KI</u>		Known	Limits%	DSPK%	DCBKD4/	11.14		-
So	dium	1769336	109	105	84,6	25.0	75.0 - 125	97.6	5 <b>DSPKD%</b> 81.6	<i>Units</i> mg/L	<b>RPD</b> 3,74	<i>Limit%</i> 25.0
					Direct S	PK				- 0		
	<i>rameter</i> dium	<i>Sample</i> 1769336	<b>DSPK</b> 109		<b>UNK</b> 84.6	<b>Кпоwn</b> 25.0	<b>Limits%</b> 75.0 - 125	<b>DSPK%</b> 97.6		<i>Units</i> mg/L		25.0
P.					ICL							
	r <i>ameter</i> dium		Reading 50.2	<b>Кпоwn</b> 50.0	Units mg/L ICV	Recover% 100	<i>Limits%</i> 95.0 - 105		<b>File</b> 119762234			
Par	ameter		Reading	Known	Units	Recover%	Limits%					
Soc	lium		24.3	25.0	mg/L LCS Di	97.2	90.0 - 110		File 119762238			
Par	ometer	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	X I ite-	800	<b>T</b> . 1.4.
	lium 	829849	4.87	4.92					98.4	<i>Units</i> mg/L	<b>RPD</b> 1.02	<i>Limit%</i> 25.0
An	alytical Set	830215										A 200.7 4,
n					Blank							
	<i>ameter</i> solved Iron	<b>PrepSet</b> 829497	<i>Reading</i> ND	<b>MDL</b> 0,00504	MQL 0.025 CCV	<i>Units</i> mg/L			<i>File</i> 119762301			
	<u>ameter</u> solved Iron		<b>Reading</b> 2.62 2.54	<b>Known</b> 2,50 2,50	Units mg/L mg/L	<b>Recover%</b> 105 102	<i>Limits%</i> 90.0 - 110 90.0 - 110		File 119762300 119762303			
Par	imeter				ICL							
	olved Iron		<b>Reading</b> 5.11	<b>Known</b> 5.00	Units mg/L ICV	<b>Recover%</b> 102	Limits% 95.0 - 105		File 1 19762282			
	<i>meter</i> olved Iron		<b>Reading</b> 2,62	<b>Known</b> 2.50	Units mg/L MSD	<b>Recover%</b> 105	<i>Limits%</i> 90.0 - 110		<b>File</b> 119762286			
	i <u>meter</u> blved Iron	<i>Sample</i> 1769090	<b>MS</b> 0.571	<b>MSD</b> 0.572	<b>UNK</b> 0.0628	<b>Known</b> 0.500	<i>Limits</i> 75.0 - 125	<b>MS%</b> 102	<b>MSD%</b> 102	Units mg/L	<b>RPD</b> 0.197	<i>Limit%</i> 20.0

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ANA	AB	Phone 903/98	4-0551 F		/984-5914		rp@ana-lal	).com		AP-accre /ement	dited #(	12008
		-	ualit	•				rinted 04	/03/2019			age 9 of 14
11419-11219-11212-127913-113094-112	Analytical Set	830219	1				and the state of the			Tro History (2011)		PA 200.7 4.4
	<b>D</b>				Blan	k						
	<u>Parameter</u> Phosphorus	<b>Prep.Set</b> 829849	<i>Reading</i> ND	<i>MDL</i> 0,0388	MQL 0.100 CCN	<b>Units</b> mg/L 7	·		<i>File</i> 119762379			
	<u>Parameter</u> Phosphorus		<b>Reading</b> 9.72 9.39 9.51 9.55	<b>Клоwл</b> 10.0 10.0 10.0 10.0	<i>Units</i> mg/L mg/L mg/L mg/L Dir. SP	<i>Recover%</i> 97.2 93.9 95.1 95.5 <b>KD</b>	<i>Limits%</i> 90.0 - 110 90.0 - 110 90.0 - 110 90.0 - 110		<b>File</b> 119762377 119762378 119762388 119762396			
	<u>Parameter</u>	Sample	DSPK	DSPKL		Known	T include	DODKA				
	Phosphorus	1768990	18.3	18.4	ND	20.0	<b>Limits%</b> 75.0 - 125	DSPK% 91.5	<b>DSPKD%</b> 92.0	Units mg/L	<b>RPD</b> 0.545	<i>Limit%</i> 25.0
					Direct S	РК			2.0	mg/L	0,545	25,0
	<u>Parameter</u> Phosphorus	<i>Sample</i> 1768990	<b>DSPK</b> 18.3		UNK ND ICL	<b>Кпоwп</b> 20.0	<i>Limits%</i> 75.0 - 125	<b>DSPK%</b> 91,5		<i>Units</i> mg/L		25,0
	Parameter		Reading	Known	Units	Recover%	Limits%		File			
	Phosphorus		24,5	25.0	mg/L ICV	98.0	95.0 - 105		119762375			
	<u>Parameter</u>		Reading	Known	Units	Recover%	Limits%		File			
	Phosphorus		9.52	10.0	mg/L	95.2	90.0 - 110		119762376			
	Davas sta				LCS Di	ıp						
	<u>Parameter</u> Phosphorus	<i>PrepSet</i> 829849	LCS 3,68	<i>LCSD</i> 3.73		<b>Known</b> 4.00	<i>Limits%</i> 85.0 - 115	<i>LCS%</i> 92.0	<i>LCSD%</i> 93.2	<i>Units</i> mg/L	<b>RPD</b> 1.35	<i>Limit%</i> 25.0
	Analytical Set	830226						a man da yang da kata				A 200.8 5.4
	_				Blank							* #0010 0.4
	<u>Parameter</u> Aluminum, Total	PrepSet	Reading	MDL	MQL	Units			File			
	Arsenic, Total	829849 829849	ND 0.00105	0.0025 0.00025	0.005 0.0005 CCV	mg/L mg/L		*	119762916 119762916			
	<u>Parameter</u> Arsenic, Total		<b>Reading</b> 0.0491 0.0469 0.0481 0.0484	<b>Known</b> 0.05 0.05 0.05 0.05	Units mg/L mg/L mg/L mg/L	<i>Recover%</i> 98.2 93.8 96.2 96.8	<i>Limits</i> % 90.0 - 110 90.0 - 110 90.0 - 110 90.0 - 110		File 119762907 119762917 119762928 119762934			
	Parameter				ICV							
	Arsenic, Total		<i>Reading</i> 0,050	<b>Кпоwn</b> 0.05	Units mg/L	<b>Recover%</b> 100	<i>Limits%</i> 90.0 - 110		<i>File</i> 119762878			
	Parameter	B-an Cod	1.00		LCS Duj							
	Alumínum, Total		<i>LCS</i> 0.482	<i>LCSD</i> 0,528		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
	Arsenic, Total		0,466	0.473		0,500 0.500	85.0 - 115 85.0 - 115	96.4 93.2	106 94.6	mg/L ing/L	9.11 1.49	20.0 20.0

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Form rptPROJQCGrpt Created 01/27/2005 v1.0

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	5								Batch # 826	504		
		Ana-L	ab Cor	р. Р.	O. Bo		Kilgor	re, TX	75663	Repor	t Page	17 of 31
ANA	AB 1	Phone 903/9	84-0551 I Ei	AX 903/	984-5914 Owned	e-Mail co Integri	rp@ana-lab		LEL Continual Improv	AP-accree	dited #02	:008
THE COMPLET	TE SERVICE LAB	Ç	Juali	ty C	ontro	ol		rinted	04/03/2019	- DAILS OLITE	Page	e 10 of 14
				-	MSI	D .						
	Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
	Aluminum, Total Arsenic, Total	1768990		0.480	ND	0.500	70.0 - 130	95.6	96,0	mg/L	0.418	20.0
THE OWNER AND A DESCRIPTION OF THE OWNER OWNER		1768990	0.501	0.502	0.0361	0.500	70.0 - 130	93.0	93.2	mg/L	0.215	20.0
	Analytical Set	830339			Blan							A 200.8 5.4
	<u>Parameter</u>	PrepSet	Reading	MDL								
	Aluminum, Total	829849	0.00326	0.00204	MQL 0.0025	Units			File			
					CCV	mg/L		e	119764586			
	Parameter		Reading	Vanaria								
	Aluminum, Total		0.0514	Known 0.05	Units	Recover%	Limits%		File			
-			0,0512	0.05	mg/L ing/L	103 102	90.0 - 110		119764578			
			0.0515	0.05	mg/L	102	90.0 - 110 90.0 - 110		119764588			
					ICV		50.04 110		119764598			
	Parameter		Reading	Known	Units	D 04	<b>.</b>					
	Aluminum, Total		0.0523	0.05	mg/L	<b>Recover%</b> 105	Limits%		File			
					LCS Di		90.0 - 110		119764573			
	Parameter	PrepSet	LCS	LCER	-00 51	-						
	Aluminum, Total	829849	0.503	<i>LCSD</i> 0.509		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
		0202,0	0.000	0.509	MSD	0,500	85.0 - 115	101	102	mg/L	1.19	20,0
	Parameter	Same		1.00								
	Aluminum Total	<i>Sample</i> 1768990	MS 0.497	<b>MSD</b> 0.496	UNK 0.00353	Known	Limits	MS%	MSD%	Units	RPD	Limit%
						0.500	70.0 - 130	98.7 Marinana	98.5 ####################################	mg/L	0.203	20,0
	Analytical Set	829837								1.0000000000000000000000000000000000000		524.2 4.1
	_				BFB							
	Parameter	Sample	<b>RefMass</b>	Reading	%	Limits%			File			
	BFB Mass 173	829837	174	<i>Reading</i> 0	% 0.0	<i>Limits%</i> 0 - 2.00			<i>File</i> 119754209			
	BFB Mass 173 BFB Mass 174	829837 829837	174 95.0	0 37659	0.0 75.9				<i>File</i> 119754209 119754209			
	BFB Mass 173 BFB Mass 174 BFB Mass 175	829837 829837 829837	174 95.0 174	0 37659 3103	0.0 75.9 8.2	0 - 2.00 50.0 - 100 5.00 - 9.00			119754209			
	BFB Mass 173 BFB Mass 174 BFB Mass 175 BFB Mass 176	829837 829837 829837 829837	174 95.0 174 174	0 37659 3103 36333	0.0 75.9 8.2 96.5	0 - 2.00 50.0 - 100 5.00 - 9.00 95.0 - 101			119754209 119754209			
	BFB Mass 173 BFB Mass 174 BFB Mass 175 BFB Mass 176 BFB Mass 177	829837 829837 829837 829837 829837 829837	174 95,0 174 174 176	0 37659 3103 36333 2382	0.0 75.9 8.2 96.5 6.6	0 - 2.00 50.0 - 100 5.00 - 9.00 95.0 - 101 5.00 - 9.00			119754209 119754209 119754209			
	BFB Mass 173 BFB Mass 174 BFB Mass 175 BFB Mass 176	829837 829837 829837 829837 829837 829837 829837	174 95,0 174 174 176 95,0	0 37659 3103 36333 2382 10699	0.0 75.9 8.2 96.5 6.6 21.6	0 - 2.00 50.0 - 100 5.00 - 9.00 95.0 - 101 5.00 - 9.00 15.0 - 40.0			119754209 119754209 119754209 119754209			
	BFB Mass 173 BFB Mass 174 BFB Mass 175 BFB Mass 176 BFB Mass 177 BFB Mass 50	829837 829837 829837 829837 829837 829837 829837 829837	174 95.0 174 174 176 95.0 95.0	0 37659 3103 36333 2382 10699 25368	0.0 75.9 8.2 96.5 6.6 21.6 51.1	0 - 2.00 50.0 - 100 5.00 - 9.00 95.0 - 101 5.00 - 9.00 15.0 - 40.0 30.0 - 80.0			119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209			
	BFB Mass 173 BFB Mass 174 BFB Mass 175 BFB Mass 176 BFB Mass 177 BFB Mass 50 BFB Mass 75	829837 829837 829837 829837 829837 829837 829837	174 95,0 174 174 176 95,0	0 37659 3103 36333 2382 10699 25368 49635	0.0 75.9 8.2 96.5 6.6 21.6 51.1 100.0	0 - 2.00 50.0 - 100 5.00 - 9.00 95.0 - 101 5.00 - 9.00 15.0 - 40.0 30.0 - 80.0 100 - 100			119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209			
	BFB Mass 173 BFB Mass 174 BFB Mass 175 BFB Mass 176 BFB Mass 177 BFB Mass 50 BFB Mass 75 BFB Mass 95	829837 829837 829837 829837 829837 829837 829837 829837 829837	174 95.0 174 174 176 95.0 95.0 95.0	0 37659 3103 36333 2382 10699 25368	0.0 75.9 8.2 96.5 6.6 21.6 51.1 100.0 6.6	0 - 2.00 50.0 - 100 5.00 - 9.00 95.0 - 101 5.00 - 9.00 15.0 - 40.0 30.0 - 80.0			119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209			
	BFB Mass 173 BFB Mass 174 BFB Mass 175 BFB Mass 176 BFB Mass 177 BFB Mass 50 BFB Mass 75 BFB Mass 95	829837 829837 829837 829837 829837 829837 829837 829837 829837	174 95.0 174 174 176 95.0 95.0 95.0 95.0	0 37659 3103 36333 2382 10699 25368 49635 3299	0.0 75.9 8.2 96.5 6.6 21.6 51.1 100.0 6.6 <b>Blank</b>	0 - 2.00 50.0 - 100 5.00 - 9.00 95.0 - 101 5.00 - 9.00 15.0 - 40.0 30.0 - 80.0 100 - 100 5.00 - 9.00			119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209			
	BFB Mass 173 BFB Mass 174 BFB Mass 175 BFB Mass 176 BFB Mass 177 BFB Mass 50 BFB Mass 75 BFB Mass 95 BFB Mass 96	829837 829837 829837 829837 829837 829837 829837 829837 829837	174 95.0 174 174 176 95.0 95.0 95.0 95.0 95.0	0 37659 3103 36333 2382 10699 25368 49635 3299 MDL	0.0 75.9 8.2 96.5 6.6 21.6 51.1 100.0 6.6 <b>Blank</b> <i>MQL</i>	0 - 2.00 50.0 - 100 5.00 - 9.00 95.0 - 101 5.00 - 9.00 15.0 - 40.0 30.0 - 80.0 100 - 100 5.00 - 9.00 Units			119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209			
	BFB Mass 173 BFB Mass 174 BFB Mass 175 BFB Mass 176 BFB Mass 177 BFB Mass 50 BFB Mass 75 BFB Mass 95 BFB Mass 96 Parameter	829837 829837 829837 829837 829837 829837 829837 829837 829837 829837 829837	174 95.0 174 174 176 95.0 95.0 95.0 95.0	0 37659 3103 36333 2382 10699 25368 49635 3299 <b>MDL</b> 0.308	0.0 75.9 8.2 96.5 21.6 51.1 100.0 6.6 <b>Blank</b> <i>MQL</i> 1.00	0 - 2.00 50.0 - 100 5.00 - 9.00 95.0 - 101 5.00 - 9.00 15.0 - 40.0 30.0 - 80.0 100 - 100 5.00 - 9.00 Units ug/L			119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754213			
:	BFB Mass 173 BFB Mass 174 BFB Mass 175 BFB Mass 176 BFB Mass 176 BFB Mass 177 BFB Mass 50 BFB Mass 75 BFB Mass 95 BFB Mass 96 Parameter Bromodichloromethane Bromoform Chloroform	829837 829837 829837 829837 829837 829837 829837 829837 829837 829837 829837	174 95.0 174 174 176 95.0 95.0 95.0 95.0 95.0 95.0 ND	0 37659 3103 36333 2382 10699 25368 49635 3299 <b>MDL</b> 0.308 0.418	0.0 75.9 8.2 96.5 6.6 21.6 51.1 100.0 6.6 <b>Blank</b> <i>MQL</i> 1.00 1.00	0 - 2.00 5.00 - 100 5.00 - 9.00 95.0 - 101 5.00 - 9.00 15.0 - 40.0 30.0 - 80.0 100 - 100 5.00 - 9.00 Units ug/L ug/L			119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754213 119754213			
:	BFB Mass 173 BFB Mass 174 BFB Mass 175 BFB Mass 176 BFB Mass 176 BFB Mass 50 BFB Mass 50 BFB Mass 95 BFB Mass 96 Parameter Bromodichloromethane Bromoform	829837 829837 829837 829837 829837 829837 829837 829837 829837 829837 829837 829837	174 95.0 174 174 176 95.0 95.0 95.0 95.0 95.0 95.0 ND ND	0 37659 3103 36333 2382 10699 25368 49635 3299 <b>MDL</b> 0.308 0.418 0.213	0.0 75.9 8.2 96.5 21.6 51.1 100.0 6.6 <b>Blank</b> <i>MQL</i> 1.00	0 - 2.00 50.0 - 100 5.00 - 9.00 95.0 - 101 5.00 - 9.00 15.0 - 40.0 30.0 - 80.0 100 - 100 5.00 - 9.00 Units ug/L			119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754213 119754213 119754213			
:	BFB Mass 173 BFB Mass 174 BFB Mass 175 BFB Mass 176 BFB Mass 176 BFB Mass 177 BFB Mass 50 BFB Mass 75 BFB Mass 95 BFB Mass 96 Parameter Bromodichloromethane Bromoform Chloroform	829837 829837 829837 829837 829837 829837 829837 829837 829837 829837 829837 829837 829837	174 95.0 174 174 176 95.0 95.0 95.0 95.0 95.0 95.0 95.0 ND ND ND	0 37659 3103 36333 2382 10699 25368 49635 3299 <b>MDL</b> 0.308 0.418 0.213	0.0 75.9 8.2 96.5 6.6 21.6 51.1 100.0 6.6 <b>Blank</b> <b>MQL</b> 1.00 1.00	0 - 2.00 5.00 - 100 5.00 - 9.00 95.0 - 101 5.00 - 9.00 15.0 - 40.0 30.0 - 80.0 100 - 100 5.00 - 9.00 Units ug/L ug/L ug/L			119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754213 119754213			
	BFB Mass 173 BFB Mass 174 BFB Mass 175 BFB Mass 176 BFB Mass 176 BFB Mass 177 BFB Mass 50 BFB Mass 95 BFB Mass 95 BFB Mass 96 Parameter Dibromochloromethane Parameter	829837 829837 829837 829837 829837 829837 829837 829837 829837 829837 829837 829837 829837	174 95.0 174 174 176 95.0 95.0 95.0 95.0 95.0 95.0 95.0 ND ND ND	0 37659 3103 36333 2382 10699 25368 49635 3299 <b>MDL</b> 0.308 0.418 0.213 0.327	0.0 75.9 8.2 96.5 6.6 21.6 51.1 100.0 6.6 <b>Blank</b> <b>MQL</b> 1.00 1.00 1.00 1.00 1.00	0 - 2.00 5.00 - 100 5.00 - 9.00 95.0 - 101 5.00 - 9.00 15.0 - 40.0 30.0 - 80.0 100 - 100 5.00 - 9.00 Units ug/L ug/L ug/L			119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754213 119754213 119754213 119754213			
	BFB Mass 173 BFB Mass 174 BFB Mass 175 BFB Mass 176 BFB Mass 176 BFB Mass 177 BFB Mass 50 BFB Mass 95 BFB Mass 95 BFB Mass 96 Parameter Bromodichloromethane Dibromochloromethane Bromodichloromethane	829837 829837 829837 829837 829837 829837 829837 829837 829837 829837 829837 829837 829837	174 95.0 174 174 176 95.0 95.0 95.0 95.0 95.0 95.0 ND ND ND ND	0 37659 3103 36333 2382 10699 25368 49635 3299 MDL 0.308 0.418 0.213 0.327 Known	0.0 75.9 8.2 96.5 6.6 21.6 51.1 100.0 6.6 <b>Blank</b> <b>MQL</b> 1.00 1.00 1.00	0 - 2.00 5.00 - 100 5.00 - 9.00 95.0 - 101 5.00 - 9.00 15.0 - 40.0 30.0 - 80.0 100 - 100 5.00 - 9.00 Units ug/L ug/L ug/L Recover%	<i>Limits%</i>		119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 <b>File</b> 119754213 119754213 119754213 119754213 119754213			
i I X	BFB Mass 173 BFB Mass 174 BFB Mass 175 BFB Mass 176 BFB Mass 176 BFB Mass 177 BFB Mass 50 BFB Mass 95 BFB Mass 95 BFB Mass 96 Parameter Bromodichloromethane Dibromochloromethane Bromodichloromethane Bromodichloromethane Bromodichloromethane Bromodichloromethane Bromodichloromethane	829837 829837 829837 829837 829837 829837 829837 829837 829837 829837 829837 829837 829837	174 95.0 174 174 176 95.0 95.0 95.0 95.0 95.0 95.0 95.0 ND ND ND ND ND ND	0 37659 3103 36333 2382 10699 25368 49635 3299 MDL 0.308 0.418 0.213 0.327 Known 20.0	0.0 75.9 8.2 96.5 6.6 21.6 51.1 100.0 6.6 <b>Blank</b> <b>MQL</b> 1.00 1.00 1.00 1.00 1.00 2.00 <b>CCV</b>	0 - 2.00 5.00 - 100 5.00 - 9.00 95.0 - 101 5.00 - 9.00 15.0 - 40.0 30.0 - 80.0 100 - 100 5.00 - 9.00 Units ug/L ug/L ug/L ug/L 96.8	70.0 - 130		119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 <b>File</b> 119754213 119754213 119754213 <b>File</b> 119754213			
	BFB Mass 173 BFB Mass 174 BFB Mass 175 BFB Mass 176 BFB Mass 176 BFB Mass 177 BFB Mass 50 BFB Mass 95 BFB Mass 95 BFB Mass 96 Parameter Bromodichloromethane Dibromochloromethane Bromodichloromethane	829837 829837 829837 829837 829837 829837 829837 829837 829837 829837 829837 829837 829837	174 95.0 174 174 176 95.0 95.0 95.0 95.0 95.0 95.0 95.0 ND ND ND ND ND ND ND	0 37659 3103 36333 2382 10699 25368 49635 3299 MDL 0.308 0.418 0.213 0.327 Known 20.0 20.0	0.0 75.9 8.2 96.5 6.6 21.6 51.1 100.0 6.6 <b>Blank</b> <b>MQL</b> 1.00 1.00 1.00 1.00 1.00 1.00 <b>CCV</b> Units ug/L	0 - 2.00 5.00 - 100 5.00 - 9.00 95.0 - 101 5.00 - 9.00 15.0 - 40.0 30.0 - 80.0 100 - 100 5.00 - 9.00 Units ug/L ug/L ug/L Recover%			119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 119754209 <b>File</b> 119754213 119754213 119754213 119754213 119754213			

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Guif Coast Region: 4141 Directors Row Ste C Houston TX 77092

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#### Batch # 82604

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AB 1 PI	10ne 903/9		AX 903/! aployee (			urp@ana-lal	b <b>.com</b> ring		AP-accred		02008
E SERVICE LAB	Q	ualit	y Co	ontro	1	ŀ	rinted	04/03/2019		Pa	nge 11 of 14
				IS Area	IS						
Parameter	Sample	Туре	Readin	e CCVISM	Low	High		X**7_			
1,4-DichlorobenzeneD4 (ISTD)	829837	CCV	255600	-	127800	383400		<i>File</i> 119754210	PrepSt 829831		
	829837	LCS	266000	255600	127800	383400		119754211	829831	,	
	829837	LCS Dup	245000	255600	127800	383400		119754212	829833		
	829837	Blank	182700	255600	127800	383400		119754213	82983		
ChlorobenzeneD5 (ISTD)	829837	CCV	435700	435700	217900	653600		119754210	829837		
	829837	LCS	462900	435700	217900	653600		119754211	829837		
	829837	LCS Dup	444000	435700	217900	653600		119754212	829837		
	829837	Blank	376800	435700	217900	653600		119754213	829837		
1,4-DichlorobenzeneD4 (ISTD)	1765378	MS	234500	255600	127800	383400		119754223	829837		
	1765378	MSD	240800	255600	127800	383400		119754224	829837		
ChlorobenzeneD5 (ISTD)	1765378	MS	41 <b>9</b> 400	435700	217900	653600		119754223	829837		
	1765378	MSD	437700	435700	217900	653600		119754224	829837		
1,4-DichlorobenzeneD4 (ISTD)	1769090	UNKNOV	WN263000	255600	127800	383400		119754219	829837		
ChlorobenzeneD5 (ISTD)	1769090	ŰNKNOV	VN524500	435700	217900	653600		119754219	829837		
				IS RetTin	ne						
<u>Parameter</u>	Sample	Туре	Reading	CCVISM	Low	High		<b>F</b> 11.			
1,4-DichlorobenzeneD4 (ISTD)	829837	CCV	11.18	11.18	11,12	11.24		<i>File</i> 119754210	PrepSe 829837	ť	
	829837	LCS	11.18	11.18	11.12	11,24		119754211	829837		
	829837	LCS Dup	11.18	11.18	11.12	11.24		119754212			
	829837	Blank	11,18	11.18	11.12	11.24		119754212	829837		
ChlorobenzeneD5 (ISTD)	829837	CCV	8,818	8.818	8.758	8.878			829837		
	829837	LCS	8.818	8.818	8.758	8.878		119754210	829837		
	829837	LCS Dup	8.818	8.818	8.758	8.878		119754211	829837		
	829837	Blank	8,818	8.818	8.758			119754212	829837		
1,4-DichlorobenzeneD4 (ISTD)	1765378	MS	11.18	11.18	11,12	8.878 11.24		119754213 119754223	829837 829837		
	1765378	MSD	11.18	11.18	11.12	11.24		119754224	829837		
ChlorobenzeneD5 (ISTD)	1765378	MS	8.818	8.818	8.758	8.878		119754223	829837		
	1765378	MSD	8.818	8.818	8.758	8.878		119754224	829837		
1,4-DichlorobenzeneD4 (ISTD)	1769090	UNKNOW	/NI1.18	11.18	11,12	11.24		119754219	829837 829837		
ChlorobenzeneD5 (ISTD)	1769090	UNKNOW	7N8.818	8.818 LCS Dup	8.758	8.878		119754219	829837		
<u>P</u> arameter	<b>D C</b> ·	1.05	v								
Bromodichloromethane	PrepSet	LCS	LCSD		Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromoform	829837	19.5	19.9		20.0	70.0 - 130	97.5	99.5	ug/L	2.03	30.0
Chloroform	829837	19,6	21,4		20.0	70.0 - 130	98.0	107	ug/L	8.78	30.0
	829837	17.0	17.0		20.0	70.0 - 130	85.0	85.0	ug/L	0	30.0
Dibromochloromethane	829837	18,9	19.3		20.0	70.0 - 130	94.5	96.5	ug/L	2.09	30.0
_				MSD							
Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromodichloromethane	1765378	7320	7120	ND	10000	67,1 - 133	73,2	71.2	ug/L	2.77	30,0
Bromoform	1765378	8100	7830	ND	10000	58.4 - 125	81.0	78.3	ug/L ug/L	3,39	
Chloroform	1765378	5310	5100	ND	10000	62.8 - 138	53.1*	51.0 *	ug/L		30.0
Dibromochloromethane	1765378	7770	7150	ND	10000	60.7 - 129	77.7	71.5	ug/L ug/L	4.03 8.31	30.0 30.0

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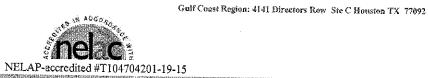


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		Ana-La	b Corp	. P.(	). Box	: 9000	Kilgore	, TX 75		Report Page 19 of 31
ANAL	AD I	Phone 903/984		<b>X 903/9</b> ployce O		e-Mail cor Integrity				AP-accredited #02008
THE COMPLETE	SERVICE LAB	Qı	uality	y Co	ontro	ol	Pri	nted 04/0	3/2019	Page 12 of 14
			•		Surrog	ate				
	Parameter	Sample	Туре	Rendino	Known	Units	Recover%	Limits%	File	
	1,2-DCA-d4 (SURR)	829837	CCV	21.2	20.0	ug/L	106	70.0 - 130	119754210	
	,	829837	LCS	21.1	20.0	ug/L	106	70.0 - 130	119754210	
		829837	LCS Dup	20.3	20.0	ug/L	102	70.0 - 130	119754212	
		829837	Blank	21.3	20.0	- <i>g</i> ∠ ug/L	106	70,0 - 130	119754212	
	Bromofluorobenzene	829837	CCV	19.8	20.0	ug/L	99.0	70.0 - 130	119754210	
	(SURR)					- <u>-</u>	,,,,,	10.0 - 200	117754210	
		829837	LCS	20.4	20.0	ug/L	102	70.0 - 130	119754211	
		829837	LCS Dup	21.0	20.0	ug/L	105	70.0 - 130	119754212	
		829837	Blank	18.7	20.0	ug/L	93.5	70.0 - 130	119754213	
	Dibromofluoromethane (SURR)	829837	CCV	20,5	20.0	ug/L,	102	70.0 - 130	119754210	
		829837	LCS	20.7	20,0	ug/L	104	70.0 - 130	119754211	
		829837	LCS Dup	19.8	20.0	ug/L	99,0	70.0 - 130	119754212	
		829837	Blank	22.0	20.0	ug/L	110	70,0 - 130	119754213	
	TolueneD8 (SURR)	829837	CCV	20.0	20.0	ug/L	100	70,0 - 130	119754210	
		829837	LCS	19.8	20.0	ug/L	99.0	70.0 - 130	119754211	
		829837	LCS Dup	19.6	20.0	ug/L	98,0	70.0 - 130	119754212	
		829837	Blank	18,8	20.0	ug/L	94.0	70.0 - 130	119754213	
	1,2-DCA-d4 (SURR)	1765378	MS	20.0	20.0	ug/L	100	70.0 - 130	119754223	
		1765378	MSD	20.3	20,0	ug/L	102	70.0 - 130	119754224	
	Bromofluorobenzene (SURR)	1765378	MS	19.9	20.0	ug/L	99.5	70.0 - 130	119754223	
	<b>D</b> 1 <b>d</b> 1	1765378	MSD	20,0	20.0	ug/L	100	70.0 - 130	119754224	
	Dibromofluoromethane (SURR)	1765378	MS	19.9	20.0	ug/L	99.5	70.0 - 130	119754223	
	T-1	1765378	MSD	20.4	20,0	ug/L	102	70.0 ~ 130	119754224	
	TolueneD8 (SURR)	1765378	MS	20.2	20.0	ug/L	101	70.0 - 130	119754223	
		1765378	MSD	19.8	20.0	ug/L	99.0	70.0 - 130	119754224	
	1,2-DCA-d4 (SURR)	1769090	UNKNOW		20.0	ug/L	95.5	70.0 - 130	119754219	
	Bromofluorobenzene (SURR)	1769090	UNKNOW		20.0	ug/L	96.0	70.0 - 130	119754219	
	Dibromofluoromethane (SURR)	1769090	UNKNOW		20.0	ug/L	102	70.0 - 130	119754219	
-	TolueneD8 (SURR)	1769090	UNKNOW	NI 8,9	20.0	ug/L	94.5	70.0 - 130	119754219	
	Analytical Set	831027								EPA 552,2 1
	_				Blank					
	Parameter	PrepSet	Reading	MDL	MQL	Units			File	
	Bromoacetic acid	829599	ND	0.275	5,00	ug/L			119778517	
	Chloroacetic acid	829599	0.928	0.559	5.00	ug/L			119778517	
	Dibromoacetic acid	829599	ND	0,198	5.00	ug/L			119778517	
	Dichloroacetic acid	829599	ND	0.244	5.00	ug/L			119778517	
	Trichloroacetic acid	829599	ND	0.191	5,00 CCV	ug/L			119778517	
	<u>Parameter</u>		Boadtoo	¥7		- ·				
	Bromoacetic acid		Reading	Known	Units	Recover%	Limits%		File	
	Chloroacetic acid		11.1	10.0	ug/L	111	70.0 - 130		119783395	
	Dibromoacetic acid		12.5	10.0	ug/L	125	70.0 - 130		119783395	
	Dichloroacetic acid		9,97	10.0	ug/L	99.7	70.0 - 130		119783395	
	Trichloroacetic acid		10.5	10.0	ug/L	105	70.0 - 130		119783395	
	Science and		10.7	10.0	ug/L	107	70.0 - 130		119783395	

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<i>A</i>		Ana-La	ıb Corp	). P.(	). Box			e, TX 7:	5663	Report	•	
4NA-1	AB 1 Ph	ione 903/98		X 903/9	84-5914	e-Mail corr Integrity	gana-lab.		LEL ntinual Impro	AP-accred		2008
COKP.	E SERVICE LAB	0	ualit					-	3/2019		Pag	e 13 of 1
		<b>x</b>		,	IS Area							
	Parameter	Sample	Type	Reading	CCVISM	•	High		File	PrepSet		
	1,2,3-Trichloropropane (IS)	Bangie	CCV	455900	531300	371900	690700		119783395	831027		
	-,-,	829599	Blank	452000	531300	371900	690700		119785355	829599		
		829599	LCS	458800	531300	371900	690700		119778518	829599		
		1769090		WN475400	531300	371900	690700		1197783371	829599		
		1769090	MS	452800	531300	371900	690700					
		1769090	MSD	478700					119783372	829599		
		1709090	WISD		531300 IS RefTir	371900 ne	690700		119783373	829599		
	<u>Parameter</u>	Sample	Type		CCVISM		High		File	PrepSet		
	1,2,3-Trichloropropane (IS)	<i>p</i>	CCV	8.410	8.400	8.340	8.460		119783395	831027		
	, ,	829599	Blank	8,400	8.400	8.340	8.460		119778517	829599		
		829599	LCS	8.400	8.400	8.340	8.460 8.460					
		1769090	UNKNOV		8,400	8.340	8,460		119778518	829599		
		1769090	MS	8.400	8,400	8.340	8.460		119783371	829599		
		1769090	MSD	8,400	8,400	8.340	8.460		119783372	829599		
		1/0/0/0	101010	0,400	LCS Du		8.400		119783373	829599		
	Parameter	PrepSet	LCS	LCSD		г Кпоwn	Limits%	LCS%	LCSD%	Units	RPD	Limi
	Bromoacetic acid	829599	25.7	25,3		20.0	70.0 - 130	128	126		1.57	30.0
	Chloroacetic acid	829599	25,1	24.6		20.0	70.0 - 130 70.0 - 130	126	123	ug/L		
	Dibromoacetic acid	829599	24.1	23,5		20.0	70.0 - 130	120	123	ug/L	2.41	30,0
	Dichloroacetic acid	829599	25,3	25,9		20.0	70.0 - 130			ug/L	1.68	30.0
	Trichloroacetic acid	829599	22.8	21.6		20.0	70.0 - 130	126 114	130	ug/L	3.12	30.0
			22.0		MSD	20,0	70.0 = 150	114	108	ug/L	5.41	30.0
	Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit
	Bromoacetic acid	1769090	23.8	21.0	ND	20.0	30.0 - 150	119	105	ug/L	12.5	30,0
	Chloroacetic acid	1769090	25.3	22.5	0.727	20.0	15.0 - 150	123	105	-	12.5	
	Dibromoacetic acid	1769090	21.7	19.7	ND	20.0	30.0 - 150	108	98,5	ug/L		30.0
	Dichloroacetic acid	1769090	25,2	22.3	ND	20.0	30.0 - 150	126		ug/L	9.66	30.0
	Trichloroacetic acid	1769090	21.5	19.9	ND	20.0	30.0 - 150	120	112	ug/L	12.2	30.0
					Surrogat		50.0 - 150	100	99.5	ug/L	7.73	30,0
	Parameter	Sample	Туре	Reading	Known	Units	Recover%	Limits%	File			
	2,3-Dibromopropionic (Surr)		CCV	19.3	20.0	ug/L	96.5	70.0 - 130	119783395			
		829599	Blank	9.47	20.0	-ց- ug/Ն	47.4 *	70.0 - 130	119778517			
		829599	LCS	23.4	20.0	ug/L	117	70.0 - 130	119778518			
		829599	LCS Dup	20.6	20,0	ug/L	103	70.0 - 130	119778519			
		1769090	UNKNOW	/N19.8	20.0	ug/L	99.0	70.0 - 130	119783371			
		1769090	MS	22.1	20.0	ug/L	110	70.0 - 130	119783372			
	第二百百百百百百百百百百百百百百百百百百百百百百百百百百百百百百百百百百百百	1769090	MSD	21.8	2010	wa/I	100	70.0 120	110503050			
	Analytical Set 82	9492	***********	erkenetetetetetetetetetetetetetetetetetete	orner and a second second	) ALL DE LE CONTRACTOR DE	****		uluansen sen standariga			1 <b>3</b> 0 B-2
				A	WRL/MR	LC						
	<u>Parameter</u>		Reading	Known	Units	Recover%	Limits%		File			
	Turbidity		0.29	0.30	NTU	96.7	70.0 - 130		119746105			
	Parameter .	D	D	1457	Blank	** •	•					
	<u>rarameter</u> Turbidity	PrepSet 820402	Reading	MDL	MQL	Units			File			
	* ~ 0101LY	829492	ND	0.30	0.30	NTU			119746103			

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Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



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2

Batch # 82604

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ANA-L	AD I Pho	ne 903/984		<b>X 903/9</b> ployee O		e-Mail corp Integrity	@ana-lab.c Carin		LELA tinual Improv		ited #02008
COKP.		Q	ualit	y Co	ontro	ol	Prin		3/2019		Page 14 of 1
					Duplica	te					
	Parameter	Sample		Result	Unknown	,		Unit		RPD	Limit?
	Turbidity	1768478		ND	ND			NTU			20.0
					Mat. Spi	ike					
	<u>Parameter</u>	Sample	Spike	Unknow	n Known	Units	Recovery %	Limits %	File		
	Turbidity	1768478	38.6	ND	40.0	NTU	96.5	70.0 - 130	119746109		
					Standar	-d					
	Parameter	Sample	Reading	Known	Units	Recover%	Limits%		File		
	Turbidity	829492	10.1	10.0	NTU	101	90.0 - 110		119746104		
		829492	96.9	100	NTU	96.9	90.0 - 110		119746106		
		829492	9.52	10.0	NTU	95.2	90.0 - 110		119746110		
		829492	9,32	10.0	NTU	93.2	90.0 - 110	The state of the s	119746112		enniker of the state of the sta
		672						19 19 19 19 19 19 19 19 19 19 19 19 19 1			
	-				Blank						SM 2320 B-2
	Parameter	PrepSet	Reading	MDL					File		
	<u>Parameter</u> Total Alkalinity (as CaCO3)	<b>PrepSet</b> 829672	<i>Reading</i> ND	<b>MDL</b> 1.00	<i>MQL</i> 1.00	Units	•		<i>File</i> 119750206		
		-			MQL		•		<b>File</b> 119750206		
		-			<i>MQL</i> 1.00	Units	Limits%		119750206		
	Total Alkalinity (as CaCO3)	-	ND	1.00	<i>мQL</i> 1.00 ССV	<i>Units</i> mg/L	<i>Limits%</i> 90.0 - 110				
	Total Alkalinity (as CaCO3) Parameter	-	ND Reading	1.00 <b>Known</b>	MQL 1.00 CCV Units	Units mg/L Recover%			119750206 <b>File</b>		
	Total Alkalinity (as CaCO3) Parameter	-	ND Reading 25.6	1.00 <i>Known</i> 25.0	MQL 1.00 CCV Units mg/L	Units mg/L Recover% 102	90.0 - 110		119750206 <i>File</i> 119750205		
	Total Alkalinity (as CaCO3) Parameter	-	ND <i>Reading</i> 25.6 26.1	1.00 <i>Known</i> 25.0 25.0 25.0	MQL 1.00 CCV Units mg/L mg/L	<b>Units</b> mg/L <b>Recover%</b> 102 104 108	90.0 - 110 90.0 - 110		119750206 <i>File</i> 119750205 119750219		
	Total Alkalinity (as CaCO3) <u>Parameter</u> Total Alkalinity (as CaCO3) <u>Parameter</u>	-	ND <i>Reading</i> 25.6 26.1	1.00 <i>Known</i> 25.0 25.0 25.0	MQL 1.00 CCV Units mg/L mg/L mg/L	Units mg/L Recover% 102 104 108	90.0 - 110 90.0 - 110	Unit	119750206 <i>File</i> 119750205 119750219	RPD	Limit?
	Total Alkalinity (as CaCO3) <u>Parameter</u> Total Alkalinity (as CaCO3)	829672 Sample 1768607	ND <i>Reading</i> 25.6 26.1	1.00 <i>Known</i> 25.0 25.0 25.0	MQL 1.00 CCV Units mg/L mg/L Duplicat	Units mg/L Recover% 102 104 108	90.0 - 110 90.0 - 110	Unit mg/L	119750206 <i>File</i> 119750205 119750219	<b><i>RPD</i></b> 0	<i>Limit</i> 9 20.0
	Total Alkalinity (as CaCO3) <u>Parameter</u> Total Alkalinity (as CaCO3) <u>Parameter</u>	Sample	ND <i>Reading</i> 25.6 26.1	1.00 <i>Known</i> 25.0 25.0 25.0 <i>Result</i>	MQL 1.00 CCV Units mg/L mg/L Duplicat Unknown	Units mg/L Recover% 102 104 108	90.0 - 110 90.0 - 110		119750206 <i>File</i> 119750205 119750219		
	Total Alkalinity (as CaCO3) <u>Parameter</u> Total Alkalinity (as CaCO3) <u>Parameter</u>	829672 Sample 1768607	ND <i>Reading</i> 25.6 26.1	1.00 <i>Known</i> 25.0 25.0 25.0 <i>Result</i> 170	MQL 1.00 CCV Units mg/L mg/L Duplicat Unknown 170	Units mg/L Recover% 102 104 108	90.0 - 110 90.0 - 110	mg/L	119750206 <i>File</i> 119750205 119750219	0	20.0
	Total Alkalinity (as CaCO3) <u>Parameter</u> Total Alkalinity (as CaCO3) <u>Parameter</u>	829672 Sample 1768607	ND <i>Reading</i> 25.6 26.1	1.00 <i>Known</i> 25.0 25.0 25.0 <i>Result</i> 170	MQL 1.00 CCV Units mg/L mg/L mg/L Duplicat Unknown 170 306	Units mg/L Recover% 102 104 108	90.0 - 110 90.0 - 110	mg/L	119750206 <i>File</i> 119750205 119750219	0	20.0
	Total Alkalinity (as CaCO3) <u>Parameter</u> Total Alkalinity (as CaCO3) <u>Parameter</u> Total Alkalinity (as CaCO3)	829672 Sample 1768607	ND <i>Reading</i> 25.6 26.1 27.1	1.00 <i>Known</i> 25.0 25.0 25.0 <i>Result</i> 170 308	MQL 1.00 CCV Units mg/L mg/L Duplicat Unknown 170 306 ICV	Units mg/L 102 104 108 te	90.0 - 110 90.0 - 110 90.0 - 110	mg/L	119750206 File 119750205 119750219 119750232	0	20.0
	Total Alkalinity (as CaCO3) <u>Parameter</u> Total Alkalinity (as CaCO3) <u>Parameter</u> Total Alkalinity (as CaCO3) <u>Parameter</u>	829672 Sample 1768607	ND <i>Reading</i> 25.6 26.1 27.1 <i>Reading</i>	1.00 Known 25.0 25.0 25.0 Result 170 308 Known 25.0	MQL 1.00 CCV Units mg/L mg/L Duplicat Unknown 170 306 ICV Units	Units mg/L 102 104 108 te <i>Recover%</i> 101	90.0 - 110 90.0 - 110 90.0 - 110	mg/L	119750206 File 119750205 119750232 119750232	0	20.0
	Total Alkalinity (as CaCO3) <u>Parameter</u> Total Alkalinity (as CaCO3) <u>Parameter</u> Total Alkalinity (as CaCO3) <u>Parameter</u>	829672 Sample 1768607	ND <i>Reading</i> 25.6 26.1 27.1 <i>Reading</i>	1.00 Known 25.0 25.0 25.0 Result 170 308 Known 25.0	MQL 1.00 CCV Units mg/L mg/L Duplicat Unknown 170 306 ICV Units mg/L Mat. Spill	Units mg/L 102 104 108 te <i>Recover%</i> 101	90.0 - 110 90.0 - 110 90.0 - 110 90.0 - 110 <i>Limits%</i> 90.0 - 110	mg/L mg/L	119750206 File 119750205 119750219 119750232 File 119750204	0	
	Total Alkalinity (as CaCO3) <u>Parameter</u> Total Alkalinity (as CaCO3) <u>Parameter</u> Total Alkalinity (as CaCO3) <u>Parameter</u> Total Alkalinity (as CaCO3)	829672 Sample 1768607 1768778	ND <i>Reading</i> 25.6 26.1 27.1 <i>Reading</i> 25.2	1.00 Known 25.0 25.0 25.0 Result 170 308 Known 25.0 I Unknown	MQL 1.00 CCV Units mg/L mg/L Duplicat Unknown 170 306 ICV Units mg/L Mat. Spill	Units mg/L Recover% 102 104 108 te Recover% 101 Ke	90.0 - 110 90.0 - 110 90.0 - 110 90.0 - 110 <i>Limits%</i> 90.0 - 110 <i>Recovery %</i>	mg/L mg/L	119750206 File 119750205 119750232 119750232	0	20.0

\* Out RPD is Relative Percent Difference: abs(r1-r2) / mean(r1,r2) \* 100% Recover% is Recovery Percent: result / known \* 100%

Blank - Method Blank; AWRL/MRL C - Ambient Water Reporting Limit/Minimum Reporting Limit Check Std; LCS - Laboratory Control Sample; CCB - Continuing Calibration Blank; CCV - Continuing Calibration Verification; ICV - Initial Calibration Verification; BFB - GC/MS Tuning Compound; MRL Check - Minimum Reporting Limit Check Std

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1606 E Brazos Suite D Victoria, Texas 77901 ph. (361) 572-8224	oratory, s77901 ph. (3	LLC 61) 572-822		IIN OT	Chain Of Custody Record	Record	Batch # 82604	TEMP UN-C: 23.6	C: 23.6 Page of
Customer / Report Information		Billing Information	mation <sup>[]</sup>	Check box if Bi	illing is the same as	Check box if Billing is the same as Report Information	THERM ID# 4	TEMP Corr:	1: 23.6
1	SWTP	Address:				Phone	Phone: \$361-485-3415	1.1	
Attention: Kevin Post		Attention:		PC	PO #	EMAIL:	: Kpost@victoriatk.org	riatic.org	
2902 Blu Victoria, T		Project: سوال Comments:	# 21	ASR Table	i, List A/B			nalysis	Completed By laboratory
Sample Information			Matrix	Container	-				<b>Custody Seals Present</b>
Collected By:					7				Yes D No D
Client / Field Sample ID	Collected		שם WW - Waste H20 SL - Sludge	azic Iamu IqYT	Preservative	ative			
	Date	ime		ЯЗ					LAB Sample Number
Well # 19 ASR Table 1, List A	3/21/19	listhem	e v	-9	□ H2SO4 □ H3PO4 □ ICE	II HNO3 II NaOH II HCL INa2SO3			S190801421
Well # 19 ASR Table 1, List B	3/21/19	1:24pm	G E	2	□ H2SO4 □ H3PO4 □ ICE	and the second second			S190801422
					□ H2SO4 □ H3PO4 □ ICE	II HNO3 II NaOH II HCL Na2SO3			
					П H2SO4 П H3PO4 П ICE	II HNO3 II NaOH II HCL Na2SO3			
					П H2SO4 П H3PO4 П ICE	II HNO3 II NaOH II HCL Na2SO3			
					П H2SO4 П H3PO4 П ICE	LL HNO3 LL NaOH HCL Na2SO3			
					П H2SO4 П H3PO4 П ICE	D HNO3 NaOH HCL Na2SO3			
Required Turnaround: D Routine (6-10 Business days)	) Business days)	Expedite / Rush:	Rush: 🗆 1 Business Day		□ <sub>2</sub> Business Days □ <sub>3</sub>	Business days X 5 Business days	usiness days 🔲 Other	REN	REMIARKS:
Surcharge will apply to RUSH TAT	Authorized BY:	BY:			Container Type:		P=Plastic, G=Glass, V=Voa, O=Other	Carrier	
Relinquished By: PC/L	-41	3/21/19		1:55 Pm	Received By:		Date:	3-21-19	Time: 1355
Relinguished By	Date:		Time:		Received By:		Date:		Time:



22 February 2017

Victoria, City of Lynn Short 700 Main Center Victoria, TX 77901

# Victoria, City of - Surface and Raw Water Testing

Enclosed are the results of analyses for samples received by the laboratory on 02-Feb-17 09:30. The analytical data provided relates only to the samples as received in this laboratory report.

ELI certifies that all results are NELAP compliant and performed in accordance with the referenced method except as noted in the Case Narrative or as noted with a qualifier. Any reproductions of this laboratory report should be in full and only with the written authorization from the client.

The total number of pages in this report is 20

Thank you for selecting ELI for your analytical needs. If you have any questions regarding this report, please contact us.

Sincerely,

onica Smith

Monica Smith Project Manager



Certificate No: TX104704265

		Envirodyne Laboratories, Inc 11011 Brooklet Dr., # 230 Houston, TX 77099 281.568.7880 Phone www.envirodyne.com
Client:	Victoria, City of	
Project:	Victoria, City of - Surface and Raw Water Testing	Reported:
Work Order:	17B0398	22-Feb-17 09:25

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Well #21	17B0398-01	Water	01-Feb-17 10:35	02-Feb-17 09:30
Finished Water	17B0398-02	Water	01-Feb-17 12:25	02-Feb-17 09:30

L - Sample analyzed by NELAC certified lab: T104704527-14-1

L - Sample analyzed by NELAP certified lab: T104704218

L - Analyzed by NELAP certified lab: T104704215-15-19

L - Sample analyzed by NELAP accredited lab: T104704466-11-5

Envirodyne Laboratories, Inc.

onica Smith

Monica Smith, Project Manager



Client:Victoria, City ofProject:Victoria, City of - Surface and Raw Water TestingWork Order:17B0398

**Reported:** 22-Feb-17 09:25

# Well #21 17B0398-01 (Water) Sampled: 01-Feb-17 10:35

Analyte	Result	Reporting Limit	y Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
			Envirody	ne Labo	ratories, I	nc.				
Mercury by EPA 245.1										
Mercury	< 0.20	0.20	ug/L	1	B7B1684	06-Feb-17	06-Feb-17 13:34	EPA 245.1	IZW	
Wet Chemistry										
Acidity	<20	20	mg/L	1	B7B1962	15-Feb-17	15-Feb-17 13:00	SM 2310B	AT	
Alkalinity (m) as CaCO3	294	20	mg/L	1	B7B1600	13-Feb-17	14-Feb-17 15:13	SM 2320 B	ACB	
Alkalinity (p) as CaCO3	<20	20	mg/L	1	B7B1600	13-Feb-17	14-Feb-17 15:13	SM 2320 B	ACB	
Total Alkalinity as CaCO3	294	20	mg/L	1	[CALC]	13-Feb-17	14-Feb-17 15:13	[CALC]	ACB	
Ammonia-N (NH3-N)	< 0.10	0.10	mg/L	1	B7B0438	03-Feb-17	03-Feb-17 14:01	SM 4500-NH3 D	JAS	
Bicarbonate Alkalinity as HCO3-	359	1.0	mg/L	1	B7B2330	13-Feb-17	13-Feb-17 15:03	Calc	CLO	
Bromide	< 0.20	0.20	mg/L	1	B7B2642	01-Feb-17	01-Feb-17 10:35	EPA 300.0	CLT	
Carbonate Alkalinity as CO3 2-	<20.0	20.0	mg/L	1	B7B2329	14-Feb-17	14-Feb-17 15:13	SM 2320 B	IZW	
Chloride	92.0	3.0	mg/L	1	B7B1011	10-Feb-17	10-Feb-17 09:00	SM4500-Cl B	AT	
Color	<1.0	1.0	Color Units	1	B7B0378	03-Feb-17	03-Feb-17 08:00	SM2120C	XQH	
Cyanide, Total	< 0.005	0.005	mg/L	1	B7B1784	08-Feb-17	08-Feb-17 16:48	EPA 335.4	IZW	
Dissolved Oxygen (DO)	1.40		mg/L	1	B7B2642	01-Feb-17	01-Feb-17 10:35	SM4500-O C	CLT	
рН	7.36		SU	1	B7B2642	01-Feb-17	01-Feb-17 10:35	SM4500H+ B	CLT	
Temperature	24.8	10.0	°C	1	B7B2642	01-Feb-17	01-Feb-17 10:35	SM2250 B	CLT	
Fluoride	0.54	0.10	mg/L	1	B7B0403	03-Feb-17	09-Feb-17 19:26	SM 4500-F C	JAS	
Hydrogen Sulfide	< 0.0100	0.0100	mg/L	1	B7B2310	07-Feb-17	07-Feb-17 16:00	Calc	CLO	
Nitrate-N	0.43	0.10	mg/L	1	B7B0320	02-Feb-17	02-Feb-17 18:00	SM 4500-NO3 D	JAS	
Nitrite-N	< 0.05	0.05	mg/L	1	B7B0379	03-Feb-17	03-Feb-17 09:45	SM 4500-NO2 B	XQH	
ORP	201	1.0	mV	1	B7B1433	10-Feb-17	10-Feb-17 14:50	SM2580 B	ACB	
OrthoPhoshate as P	< 0.10	0.10	mg/L	1	B7B0377	03-Feb-17	03-Feb-17 08:00	SM4500-P E	XQH	
Silica	19.7	0.20	mg/L	1	B7B1632	13-Feb-17	13-Feb-17 17:00	EPA 200.5	JMM	
Sulfate	<2.00	2.00	mg/L	1	B7B0529	02-Feb-17	02-Feb-17 16:00	ASTM D516-07	AT	
Sulfide	< 0.01	0.01	mg/L	1	B7B0832	07-Feb-17	07-Feb-17 16:00	SM4500-S2 D	AT	
TDS	256	10.0	mg/L	1	B7B0344	06-Feb-17	06-Feb-17 15:50	SM2540 C	RH	
Total Organic Carbon (TOC)	<1.00	1.00	mg/L	1	B7B1793	06-Feb-17	06-Feb-17 17:43	SM 5310 C	IZW	
Total Phosphorus	0.24	0.10	mg/L	1	B7B0601	06-Feb-17	06-Feb-17 13:00	SM4500-P E	AT	

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Client:Victoria, City ofProject:Victoria, City of - Surface and Raw Water TestingWork Order:17B0398

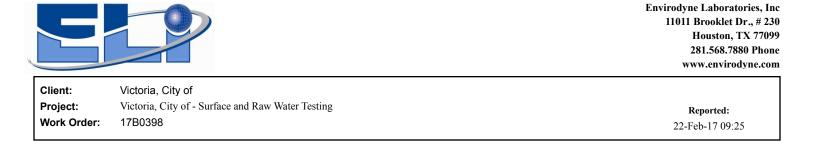
**Reported:** 22-Feb-17 09:25

## Well #21 17B0398-01 (Water) Sampled: 01-Feb-17 10:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
			Envirody	yne Labo	ratories, I	nc.				
Wet Chemistry										
TSS	2.6	2.0	mg/L	1	B7B1477	10-Feb-17	10-Feb-17 00:00	SM2540 D	JR	
Turbidity	5.07	0.10	NTU	1	B7B0443	02-Feb-17	02-Feb-17 08:13	SM 2130 B	XQH	
Total Metals by ICP										
Aluminum	0.0266	0.0018	mg/L	1	B7B1493	10-Feb-17	13-Feb-17 16:29	EPA 200.7	JMM	
Antimony	< 0.0018	0.0018	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Arsenic	0.0156	0.0029	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Arsenic, Dissolved	0.00720	0.00500	mg/L	1	B7B2312	17-Feb-17	17-Feb-17 13:00	EPA 200.7	JMM	
Barium	1.59	0.0005	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Beryllium	< 0.0005	0.0005	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Cadmium	< 0.00050	0.00050	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Calcium	35.2	2.00	mg/L	1	B7B1271	07-Feb-17	08-Feb-17 15:25	EPA 200.7	JMM	
Calcium as CaCO3	87.8		mg/L	1	[CALC]	07-Feb-17	08-Feb-17 15:25	Calc	JMM	
Chromium	0.0009	0.0005	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Copper	0.0892	0.0006	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Fotal Hardness as CaCO3	127	13.2	mg/L	1	[CALC]	07-Feb-17	08-Feb-17 15:25	Calc.	JMM	
Iron	0.697	0.0018	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Iron, Dissolved	0.0143	0.0050	mg/L	1	B7B2312	17-Feb-17	17-Feb-17 13:00	EPA 200.7	JMM	
Lead	0.0068	0.0009	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Magnesium	9.54	2.00	mg/L	1	B7B1271	07-Feb-17	08-Feb-17 15:25	EPA 200.7	JMM	
Magnesium as CaCO3	39.3	8.23	mg/L	1	[CALC]	07-Feb-17	08-Feb-17 15:25	EPA 200.7	JMM	
Manganese	0.0961	0.0004	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Manganese, Dissolved	0.0888	0.0050	mg/L	1	B7B2312	17-Feb-17	17-Feb-17 13:00	EPA 200.7	JMM	
Nickel	< 0.0005	0.0005	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Potassium	2.1	2.0	mg/L	1	B7B1271	07-Feb-17	08-Feb-17 15:25	EPA 200.7	JMM	
Selenium	< 0.0038	0.0038	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Silver	< 0.0005	0.0005	mg/L	1	B7B1270	07-Feb-17	08-Feb-17 18:20	EPA 200.7	JMM	
Sodium	130	2.0	mg/L	1	B7B1271	07-Feb-17	08-Feb-17 15:25	EPA 200.7	JMM	
Thallium	< 0.0020	0.0020	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Zinc	0.0345	0.0032	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	

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# Well #21 17B0398-01 (Water) Sampled: 01-Feb-17 10:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
			Envirod	yne Labo	ratories, I	nc.				
Miscellaneous Subcontracted A	Analyses									
Dibromoacetic acid	<1.00	1.00	ug/L	1	B7B1797	09-Feb-17	09-Feb-17 21:54	EPA 552.3	IZW	L
Dichloroacetic acid	<1.00	1.00	ug/L	1	B7B1797	09-Feb-17	09-Feb-17 21:54	EPA 552.3	IZW	L
HAA-5	<1.00	1.00	ug/L	1	[CALC]	09-Feb-17	09-Feb-17 21:54	EPA 524.2	IZW	
Monobromoacetic acid	<1.00	1.00	ug/L	1	B7B1797	09-Feb-17	09-Feb-17 21:54	EPA 552.3	IZW	L
Monochloroacetic acid	<1.00	1.00	ug/L	1	B7B1797	09-Feb-17	09-Feb-17 21:54	EPA 552.3	IZW	L
Trichloroacetic acid	<1.00	1.00	ug/L	1	B7B1797	09-Feb-17	09-Feb-17 21:54	EPA 552.3	IZW	L

Envirodyne Laboratories, Inc.

onica Smith

Monica Smith, Project Manager



DOH Certification #E84025 Cert.# T104704527-14-1

Report Date: February 14, 2017

Client

17B0398 Well 21

Envirodyne

Envirodyne Laboratories, Inc. Field Custody: 11011 Brooklet, Ste 230 Client/Field ID: Houston, TX 77099-3543 Sample Collection:2-1-17/1037

Lab ID No: 17.1325 Lab Custody Date: 2-7-17/1020 Sample description:Water

# CERTIFICATE OF ANALYSIS

Parameter	Units	Results	Analysis Date	Method	Detection Limit
Gross Alpha	pCi/l	1.9 ± 0.9	2-8-17/0712	EPA 900.0	3.1
Gross Beta	pCi/l	3.5 ± 1.7	2-8-17/0712	EPA 900.0	3.6
Radium-226	pCi/l	1.1 ± 0.4	2-13-17/1046	EPA 903.0	0.3
Radium-228	pCi/l	0.6 ± 0.5.	2-13-17/1005	EPA Ra-05	0.7
Uranium	pCi/l	0.0 ± 0.2	2-13-17/1554	EPA 908.0	0.5
Uranium	ug/l	0.0 ± 0.3	calc	EPA 908.0	0.7
Alpha Standard: Th-230 Beta Standard: Cs-137			$\hat{\mathbf{A}}$ .		

W Nades James W. Hayes

Laboratory Manager

Test results meet all requirements of the NELAC standards. Statement of estimated uncertainty available upon request. Test results refer only to sample(s) listed. Contact person: Jim Hayes (813) 229-2879. Page 1 of 1

KNL ENVIROMENTAL TESTING, INC. | 3202 NORTH FLORIDA AVENUE | TAMPA, FLORIDA 33603 813.229.2879 | KNLENVIRONMENTAL.COM

Env	virodyne Laboratories, Inc.
	11011 Brooklet, Ste. 230
	ouston, Texas 77099-3543
	81)568-7880 - Fax (281)568-8004

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Of

Page \_\_\_\_\_

Name Addre City:	ess: 11011 Brooklet Houston, TX 77	oratories Dr. Ste 2 7099				Phone:	281-56	Analysis Request and Chain of 0 8-7880 Fax: 281-568-8004	Custo	dy Re	ecor	d
Conta Proje	act: Laura Bonjonia ct No.				Clier	nt/Project					· ·	sis o
i ioje	or NO.						17	130398	-		Temp.	Analysis Time
Lab ID No.	Field Sample No./ Indentification	Date & Time	Grab	Comp	Sample Container (Size/Mat')	Sample Type (Liquid Sludge, etc.)	* Preservative	ANALYSIS REQUESTED	Hd	D.0.	Ť	AL
	Firstled WATER	2-1-17 12:36	1	-	1 GAL cubie	Ligurd	FUE HNO3	GROST ALMA, GNUT BETA, T.W RA 226-228				
	WELL #21	2-1-17 10137	1		IGAL CURie	Liquid	ICE HNO3	GNUSTALAHA, GNUST BEAR, T.U. RA226-228				
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					a		F.C. MORTON	# STANDARD TAT				
			/	1								
								Q1+ 2-15-17				
	Samplers: (Signature)	Relinquist (Signatu		by:	Fridge	X D.	me:14:45	Received by: (Signature)	2-6-17	-		
	Affiliation	Relinquist (Signatu		by:	Fridge	1 des Ti			14:20-			
		Relinquist (Signatu				D	ate: ime:	Received by Lab: KAL Date: (Signature) D.V-Ly Time	1020			
1.1.10000	arks:	FLOW: Meter Read	ding:		_	A	rrival Temp.	Data Results To: 1.		Labora	tory No	
Je	is to KNL	Cl₂ Residu Mn Correct Cl₂ Correct	tion:		_			Site Representative: Date Time				



#### CERTIFICATE OF ANALYSIS

	Victoria- WELL # 2/1/2017 @ 122				COLLECTED BY: COV					
ANALYSIS	RESULT	UNITS	RL	QUAL	METHOD	DATE ANALYZED	ANALYST			
WETCHEM										
Non- Carbonate Hardness as CaCO3	79.2	mg/l			(calc)	2/21/2017	JMM			

QUALIFIERS:

ND - Not detected at the Reporting Limit

L- Analyzed by third party laboratory

Q- QC did not meet ELI acceptance criteria J- Analyte detected below quantitation limits

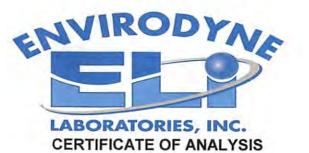
A-Analyte not available for NELAC accreditation

N- Not accredited for this analyte

E- Result above quantitation range

H- Hold time exceeded

\* - Refer to sample comments



CLIENT: **City of Victoria** LAB NUMBER: 17B0398 DATE COLLECTED: 01-Feb-17 DATE RECEIVED: 02-Feb-17 DATE COMPLETED: 10-Feb-17 SAMPLED BY: COV LOCATION: **WELL 21** MDL @ 1035 LIMITS PARAMETERS: (ug/l)VINYL CHLORIDE (ug/l) 0.5 U 0.5 trans-1,2-DICHLOROETHYLENE (ug/I) 0.5 U 0.5 1,1,1-TRICHLOROETHANE (ug/l) 0.5 U 0.5 CARBON TETRACHLORIDE (ug/l) 0.5 U 0.5 1,2-DICHLOROETHANE (ug/l) 0.5 U 0.5 BENZENE (ug/l) 0.5 U 0.5 1,2-DICHLOROPROPANE (ug/l) 0.5 U 0.5 TOLUENE (ug/l) 0.5 U 0.5 1,1,2-TRICHLOROETHANE (ug/l) 0.5 U 0.5 CHLOROBENZENE (ug/l) 0.5 U 0.5 ETHYLBENZENE (ug/l) 0.5 U 0.5 XYLENE (ug/l) 1.5 U 1.5 1,2,4-TRICHLOROBENZENE (ug/l) 0.5 U 0.5 DICHLOROMETHANE (ug/l) 0.5 U 0.5 o-DICHLOROBENZENE (ug/l) 0.5 U 0.5 p-DICHLOROBENZENE (ug/l) 0.5 U 0.5 1,1- DICHLOROETHYLENE (ug/l) 0.5 U 0.5 TRICHLOROETHYLENE (ug/l) 0.5 U 0.5 TETRACHLOROETHYLENE (ug/l) 0.5 U 0.5 STYRENE (ug/l) 0.5 U 0.5 cis- 1,2-DICHLORETHYLENE (ug/) 0.5 U 0.5 ETHYLENE DIBROMIDE (ug/) 0.5 U 0.5 DIBROMOCHLOROPROPANE (ug/) 0.5 U 0.5 CHLOROFORM (ug/l) 0.5 U 0.5 DICHLOROBROMOMETHANE (ug/l) 0.5 U 0.5 DIBROMOCHLOROMETHANE (ug/) 0.5 U 0.5 BROMOFORM (ug/l) 0.5 U 0.5 TOTAL TRIHALOMETHANES (ug/) 2.0 U 2.0

Ref. EPA-8260C (VOLATILES)

Monica Smith LAB REPRESENTATIVE

U - Analyte Not Detected at the Listed Detection Limit

J - Analyte Present but Below Detection Limit



#### CERTIFICATE OF ANALYSIS

		OLIVINI	ALL OF ANALIOIO		
CLIENT:	City of Victoria		LAB NUMBER:	17B0398C	
DATE COLLECTED:	01-Feb-17		DATE RECEIVED:	02-Feb-17	
DATE COMPLETED:	09-Feb-17		SAMPLED BY:	cov	
PARAMETERS: BNA/Pest.		Maximum Contaminant (MCLs) in ug			Maximum Contaminant Levels (MCLs) in ug/l
LOCATION:	WELL #21			WELL #21	
Atrazine (ug/l)	< 3.0	3.0	Alachlor (ug/l)	< 2.0	2
Hexachlorobenzene (ug/l)	< 1.0	1.0	Heptachlor (ug/l)	< 0.4	0.4
Hexachlorocyclopentadiene (ug/l)	< 50.0	50.0	Heptaclor Epoxide (ug/I)	< 0.2	0.2
Benzo (a) PYRENE (ug/l)	< 0.2	0.2	Gamma-BHC (Lindane) (ug/l)	< 0.2	0.2
PENTACHLOROPHENOL (ug/l)	< 0.04	0.04	Chlordane (ug/l)	< 2.0	2
Di (2-ETHYLHEXYL) PHTHALATE (ug/l)	< 6.0	6.0	Toxaphene (ug/l)	< 3.0	3
Di (2-ETHYLHEXYL) ADIPATE (ug/l)	< 400.0	400.0	Methoxychlor (ug/l)	< 40.0	40
Simazine (ug/l)	< 4.0	4.0	Oxamyl (ug/l)	< 2.0	2.0
Endrin (ug/l)	<2.0	2.0	Picloram (ug/l)	<0.1	0.1
Carbofuran (ug/l)	< 40.0	40.0	*2,4,5-TP (SILVEX) (ug/l)	< 0.2	0.2
Dalapon (ug/l)	< 1.0	1.0	*2,4-D (ug/l)	< 0.1	0,1
Dínoseb (ug/l)	< .2	0.2	Total PCBs (mg/l)	< 0.5	0.5

Monica Smith

LAB REPRESENTATIVE

Analyzed by NELAP accredited lab T104704218

Ref. EPA-525.2 , EPA 508.1, EPA 8260C

U - Analyte Not Detected at the listed Detection Limit

J - Analyte Present but below Detection Limit

(281) 568-7880

11011 Brooklet Dr. #230, Houston, TX 77099



Client:Victoria, City ofProject:Victoria, City of - Surface and Raw Water TestingWork Order:17B0398

**Reported:** 22-Feb-17 09:25

## Finished Water 17B0398-02 (Water) Sampled: 01-Feb-17 12:25

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
		-	Envirody	yne Labo	ratories, I	nc.				
Wet Chemistry										
Acidity	<20	20	mg/L	1	B7B1962	15-Feb-17	15-Feb-17 13:00	SM 2310B	AT	
Bromide	< 0.20	0.20	mg/L	1	B7B2642	01-Feb-17	01-Feb-17 12:25	EPA 300.0	CLT	
Cyanide, Total	< 0.005	0.005	mg/L	1	B7B1784	08-Feb-17	08-Feb-17 16:46	EPA 335.4	IZW	Ι
Hydrogen Sulfide	< 0.0100	0.0100	mg/L	1	B7B2310	07-Feb-17	07-Feb-17 16:00	Calc	CLO	
OrthoPhoshate as P	< 0.10	0.10	mg/L	1	B7B0377	03-Feb-17	03-Feb-17 08:00	SM4500-P E	XQH	
Sulfide	< 0.01	0.01	mg/L	1	B7B0832	07-Feb-17	07-Feb-17 16:00	SM4500-S2 D	AT	
Total Phosphorus	0.38	0.20	mg/L	2	B7B0601	06-Feb-17	06-Feb-17 13:00	SM4500-P E	AT	
Total Metals by ICP										
Arsenic, Dissolved	< 0.00500	0.00500	mg/L	1	B7B2312	17-Feb-17	17-Feb-17 13:00	EPA 200.7	JMM	
Calcium	51.9	2.00	mg/L	1	B7B0742	03-Feb-17	06-Feb-17 13:32	EPA 200.7	JMM	
Calcium as CaCO3	130		mg/L	1	[CALC]	03-Feb-17	06-Feb-17 13:32	Calc	JMM	
Iron, Dissolved	< 0.0050	0.0050	mg/L	1	B7B2312	17-Feb-17	17-Feb-17 13:00	EPA 200.7	JMM	
Magnesium	13.9	2.00	mg/L	1	B7B0742	03-Feb-17	06-Feb-17 13:32	EPA 200.7	JMM	
Magnesium as CaCO3	57.4	8.23	mg/L	1	[CALC]	03-Feb-17	06-Feb-17 13:32	EPA 200.7	JMM	
Manganese, Dissolved	< 0.0050	0.0050	mg/L	1	B7B2312	17-Feb-17	17-Feb-17 13:00	EPA 200.7	JMM	

Envirodyne Laboratories, Inc.

onica Smith

Monica Smith, Project Manager



DOH Certification #E84025 Cert.# T104704527-14-1

Report Date: February 14, 2017

Envirodyne Laboratories, Inc. I 11011 Brooklet, Ste 230 ( Houston, TX 77099-3543

Field Custody: Client Client/Field ID: Envirodyne 17B0398 Finished Water Sample Collection:2-1-17/1236 Lab ID No: 17.1324 Lab Custody Date: 2-7-17/1020 Sample description:Water

#### CERTIFICATE OF ANALYSIS

Parameter	Units	Analysis Results Date	Method	Detection Limit
Gross Alpha	pCi/l	0.0 ± 0.8 2-8-17/0712	EPA 900.0	2.0
Gross Beta	pCi/l	1.4 ± 1.6 2-8-17/0712	EPA 900.0	3.6
Radium-226	pCi/l	0.5 ± 0.3 2-13-17/1046	EPA 903.0	0.3
Radium-228	pCi/l	0.6 ± 0.5 2-13-174/1005	EPA Ra-05	0.7
Uranium	pCi/l	0.0 ± 0.3 2-13-17/1554	EPA 908.0	0.6
Uranium	ug/l	0.0 ± 0.5 calc	EPA 908.0	0.9

Alpha Standard: Th-230 Beta Standard: Cs-137

James W. Hayes Laboratory Manager

Test results meet all requirements of the NELAC standards. Statement of estimated uncertainty available upon request. Test results refer only to sample(s) listed. Contact person: Jim Hayes (813) 229-2879.

#### Page 1 of 1

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Envirodyne Laboratories, Inc. 11011 Brooklet, Ste. 230 Houston, Texas 77099-3543 (281)568-7880 - Fax (281)568-8004

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CEQ C	Certification # T10470			Phone	281)566-766	U - Fax (2		of Cueto	dy D	0000	d
Name Addre City:	ess: 11011 Brooklet Houston, TX 7	Dr. Ste 7099			Phone:	281-568	Analysis Request and Chain o 8-7880 Fax: 281-568-800			5000	u
Cont	act: Laura Bonjonia ect No.			Clier	nt/Project					ò.	Analysis Time
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Lab ID No.	Field Sample No./ Indentification	Date & Time	Grab Comp	Sample Container (Size/Mat')	Sample Type (Liquic Sludge, etc.)	<sup>1.</sup> Preservative	ANALYSIS REQUESTED	Hd	D.O.	Ĥ	A_
	FILISHED WATER	2-1-17 12:36	1	1 GAL cubia	Ligurd	FCE ANO3	GROST Alpha, Grust Beta, T.U RA 226-228				
	WELL #21	2-1-17 10137	1	IGAL CURie	Liquid	ICE HNO3	GNUSTALAHA, GNUST BEAA, T.U. RA226-228				
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	Affiliation	Relinquis (Signatu	hed by: (re)	Fridge	ullo T	ate: 2 -6-17	Received by: Fedex Ti	ate: 7			
	Annauon	Relinquis (Signatu	hed by:			)ate: 'ime:	Received by Lab: KAL	ate:2/7/17 ime:1020			
	arks:	FLOW: Meter Rea	20		ŕ	Arrival Temp.	Data Results To: 1.		Laborat	ory No.	
Se	ns to KNL	Cl₂ Residu Mn Correc	tion:	_			ond rioprocontanter	ate: ime:			
		Cl <sub>2</sub> Correct	ted								



## CERTIFICATE OF ANALYSIS

	Victoria- Finishe 2/1/2017 @ 122	D. 0.000000				AB SAMPLE ID: 17B COLLECTED BY: CO	
ANALYSIS	RESULT	UNITS	RL	QUAL	METHOD	DATE ANALYZED	ANALYST
WETCHEM							
Non- Carbonate Hardness as CaCO3	107.4	mg/l			(calc)	2/14/2017	JMM

QUALIFIERS:

ND - Not detected at the Reporting Limit L- Analyzed by third party laboratory Q- QC did not meet ELI acceptance criteria

J- Analyte detected below quantitation limits A- Analyte not available for NELAC accreditation N- Not accredited for this analyte

E- Result above quantitation range

H- Hold time exceeded

\* - Refer to sample comments



#### CERTIFICATE OF ANALYSIS

CLIENT: City of Victoria

LAB NUMBER: 17B0398

DATE COLLECTED: 01-Feb-17

DATE RECEIVED: 02-Feb-17

DATE COLLECTED. 01-Feb-1/

DATE COMPLETED: 09-Feb-17

SAMPLED BY: COV

PARAMETERS: BNA/Pest. Maximum Contaminant Levels (MCLs) in ug/I

LOCATION:

Gamma-BHC (Lindane) (ug/l)

< 0.11 0.2

**Finished Water** 

Monica Smith

LAB REPRESENTATIVE

Analyzed by NELAP accredited lab T104704218 Ref. EPA-525.2 , EPA 508.1, EPA 8260C U - Analyte Not Detected at the listed Detection Limit J - Analyte Present but below Detection Limit

(281) 568-7880

11011 Brooklet Dr. #230, Houston, TX 77099



City of Victoria		LAB NUMBER:	17B0398
01-Feb-17		DATE RECEIVED:	02-Feb-17
09-Jan-17		SAMPLED BY:	cov
	Finished Water	MDL	
	@ 1225	(ug/l)	
(110/)	0.511	0.5	
	01-Feb-17	01-Feb-17 09-Jan-17 Finished Water @ 1225	01-Feb-17 DATE RECEIVED: 09-Jan-17 SAMPLED BY: Finished Water MDL @ 1225 LIMITS (ug/l)

Ref. EPA-8260C (VOLATILES) U - Analyte Not Detected at the Listed Detection Limit J - Analyte Present but Below Detection Limit Monica Smith LAB REPRESENTATIVE

(281) 568-7880

11011 Brooklet Dr. #230, Houston, TX 77099

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;;	Name:	City	of Victoria - I			hor	t			-					L	Tes	No	Received By:	UTB	Date / Time Received:	21:	+117	1310
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					Include Lab ID of	μ	mg/L		el el f	Tota	LOU I Colliform	LeA.		Laboratory Sample ID Number									
Raw	Wells Use	e Source I	D for Well Sampled Ex:	Month	Day	Year	Please AM or	circle PM	Distribution	Construction	Raw Well	Special	Repeat	Originating Postive on all Repeat and Triggered Samples		Total mg/L	Reje	ction Criteria #	Present	Absent	Present	Absent	
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		ation/Location dress/Location		Date	CONTRACTOR DO	ected Time		6			ple T	ype	: (1)		Free mg/L	- Pie	ase Resi	TOUWG-	Test Me	thod: 12	tert.	-18	Laboratory Sample ID Number
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TCEQ Form:	*Unsuit	table Sample Analysis-		Sample		old. Analysis	-		d with		_	-	3) Excess	ive C	hlorine Res	idual	(>10 mg/l	L)	5)	Form Incomplet	te / Date Discr	epancy (E	rrors Circled)
10525 6/2009	Rejectio	on Criteria # Definitions	-			fficient for an	alysis	(100	mL re	quire	d)	-	4) Heavy	SILVT	urbidity Pre	sent	6) Oth	er:					

STA CONSTRUCTION	1780393
TCEQ Certification	# T104704265

1780393

# Envirodyne Laboratories, Inc. 11011 Brooklet, Ste. 230 Houston, Texas 77099-3543 Phone (281)568-7880 - Fax (281)568-8004

Page

Of \_2

Analysis

Time

Name Addre City: Conta	SS: 700 Main Cente Victoria,TX 779					Phone:	361-485	Analysis Request and Chain of C 5-3381 Fax: 361-485-3385	usto	dy Ro	ecor	d
Projec					Clier	nt/Project	w	ELL #21			Temp.	
Lab ID No.	Field Sample No./ Indentification	Date & Time	Grab	Comp	Sample Container ( Size/Mat'l)	Sample Type (Liqu Sludge, etc)	id, Preservative	ANALYSIS REQUESTED	Hd	D.O.	Ter	
	Well #21	2/1/11	5/		-11-17 NA	Liquid	NA	pH, Temperature,H2S,DO (Field)	7.36	1.4	24.8	
	1	2/1/17	V	1	500 ml/P	Liquid	Ice,HNO3	Sb,Fe,Al,As,Mn,Be,Cd,Cr,Ca,Cu,Pb,Mg	,			
and a second		10.00						Ni,Se,Ag,TI,Zn,Ba,K,Na,Hg,Si,Hardness				
				11.5				Non-Carbonate Hardness				
		2/1/17	V		500 ml/P	Liquid	Ice,NaoH	Cyanide /				
adas 1		2/11/7		-	1 gal/cubie	Liquid	Ice,HNO3	G.alpha,G.beta,T.U,Ra226-228 /				T
		2/1/17	Ini		-40ml/vial		Ice,HCI	VOC, Inc TTHM, Ethylene dibromide (EDB)				T
		2/1/1	7		3-1 lt/amb	Liquid	Ice	SOCs (BNA,Pest,PCBs), Inc Lindane	7	1	7.2	
		100 0					-					
1	Samplers: (Signature)	Relinquis (Signatu		by:	for A		Date: 2/1/17	Received by: Date: (Signature) Time:		Seal In	tact?	
Wany	Affiliation	Relinquis	hed I	by:			Date: Time:	Received by: Date: (Signature) Time:		Seal In	tact?	
		Relinquis (Signatu		by:	150		Date: 22.17		0.2.17		tact?	
	04 1701029	FLOW: Meter Rea	ading:	-		P		Data Results To:			ntory No	•
1+25	04 1608337	Cl <sub>2</sub> Residu Mn Correc Cl <sub>2</sub> Correc	tion: _				18#3	Site Representative: Date: Time:			Page	2

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Client:	Victoria, City of
Project:	Victoria, City of - Surface and Raw Water Testing
Work Order:	17B0398

**Reported:** 22-Feb-17 09:25

#### Wet Chemistry - Quality Control

## **Envirodyne Laboratories, Inc.**

		Reporting		Spike Source			%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B7B0320 - Inorganics										
Blank (B7B0320-BLK1)				Prepared &	Analyzed:	02-Feb-17				
Nitrate-N	<0.10	0.10	mg/L							
LCS (B7B0320-BS1)				Prepared &	Analyzed:	02-Feb-17				
Nitrate-N	25.5		mg/L	25.0		102	90-110			
Matrix Spike (B7B0320-MS1)	Sourc	e: 17B0063-	03	Prepared &	Analyzed:	02-Feb-17				
Nitrate-N	27.0	0.10	mg/L	25.0	0.82	105	80-120			
Matrix Spike Dup (B7B0320-MSD1)	Sourc	ce: 17B0063-	03	Prepared &	Analyzed:	02-Feb-17				
Nitrate-N	26.9	0.10	mg/L	25.0	0.82	104	80-120	0.371	20	
Batch B7B0344 - Inorganics										
Blank (B7B0344-BLK1)				Prepared &	Analyzed:	06-Feb-17				
TDS	<10.0	10.0	mg/L							
Duplicate (B7B0344-DUP1)	Sour	e: 17A3254-	01	Prepared &	Analyzed:	06-Feb-17				
TDS	452	10.0	mg/L		468			3.48	20	
Batch B7B0377 - Inorganics										
Blank (B7B0377-BLK1)				Prepared &	Analyzed:	03-Feb-17				
OrthoPhoshate as P	< 0.10	0.10	mg/L							
LCS (B7B0377-BS1)				Prepared &	Analyzed:	03-Feb-17				
OrthoPhoshate as P	0.310		mg/L	0.333		93.1	80-120			

Envirodyne Laboratories, Inc.

onica Smith

Monica Smith, Project Manager



Client:	Victoria, City of
Project:	Victoria, City of - Surface and Raw Water Testing
Work Order:	17B0398

**Reported:** 22-Feb-17 09:25

#### Wet Chemistry - Quality Control

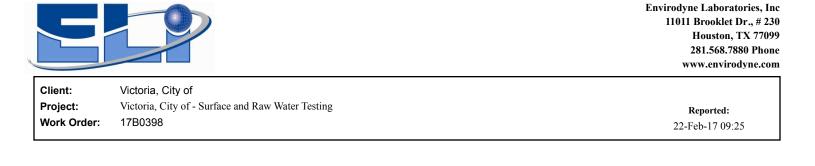
## **Envirodyne Laboratories, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7B0377 - Inorganics										
Matrix Spike (B7B0377-MS1)	Sour	ce: 17B0305	-01	Prepared &	Analyzed:	03-Feb-17				
OrthoPhoshate as P	22.5	0.10	mg/L	3.33	19.1	102	80-120			
Matrix Spike Dup (B7B0377-MSD1)	Sour	ce: 17B0305	-01	Prepared &	Analyzed:	03-Feb-17				
OrthoPhoshate as P	22.0	0.10	mg/L	3.33	19.1	87.0	80-120	2.25	20	
Batch B7B0378 - Inorganics										
Blank (B7B0378-BLK1)				Prepared &	Analyzed:	03-Feb-17				
Color	<1.0	1.0	Color Units							
LCS (B7B0378-BS1)				Prepared &	Analyzed:	03-Feb-17				
Color	40.9		Color Units	40.0		102	80-120			
Duplicate (B7B0378-DUP1)	Sour	ce: 17B0398-	-01	Prepared &	Analyzed:	03-Feb-17				
Color	<1.0	1.0	Color Units		<1.0			0	20	
Batch B7B0379 - Inorganics										
Blank (B7B0379-BLK1)				Prepared 8	Analyzed:	03-Feb-17				
Nitrite-N	< 0.05	0.05	mg/L							
LCS (B7B0379-BS1)				Prepared &	Analyzed:	03-Feb-17				
Nitrite-N	0.09		mg/L	0.0997		93.3	90-110			
Matrix Spike (B7B0379-MS1)	Sour	ce: 17B0397-	-01	Prepared &	Analyzed:	03-Feb-17				
Nitrite-N	0.12	0.05	mg/L	0.0997	ND	120	80-120			

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## Wet Chemistry - Quality Control

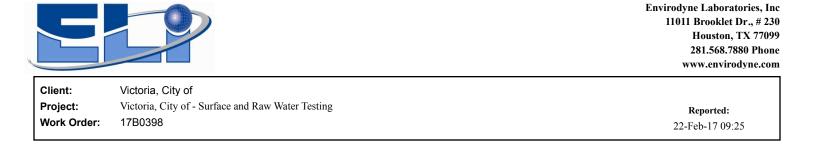
# Envirodyne Laboratories, Inc.

D k	Reporting		Caller	C		ACREA			
D 1/	· · · · · · · · · · · · · · · · · · ·		Spike	Source		%REC		RPD	
Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Sour	ce: 17B0397-	01	Prepared &	Analyzed:	03-Feb-17				
0.11	0.05	mg/L	0.0997	ND	110	80-120	8.70	20	
			Prepared: (	)3-Feb-17 A	Analyzed: 0	9-Feb-17			
< 0.10	0.10	mg/L							
			Prepared: (	)3-Feb-17 A	Analyzed: 0	9-Feb-17			
0.54		mg/L	0.500		108	90-110			
Sour	ce: 17B0494-	01	Prepared: (	)3-Feb-17 A	Analyzed: 0	9-Feb-17			
0.97	0.10	mg/L	0.500	0.47	100	80-120			
Sour	ce: 17B0494-	01	Prepared: (	)3-Feb-17 A	Analyzed: 0				
0.94	0.10	mg/L	0.500	0.47	94.0	80-120	3.14	20	
			Prepared &	Analyzed:	03-Feb-17				
< 0.10	0.10	mg/L							
			Prepared &	Analyzed:	03-Feb-17				
4.55		mg/L	5.00		91.0	90-110			
Sour	ce: 17B0398-	01	Prepared &	Analyzed:	03-Feb-17				
3.81	0.10	mg/L	4.10	ND	92.9	80-120			
	0.11 <0.10 0.54 Sour 0.97 Sour 0.94 <0.10 4.55 Sour	0.11 0.05 <0.10 0.10       0.54       Source: 17B0494-       0.97     0.10       Source: 17B0494-       0.97     0.10       Source: 17B0494-       0.94     0.10       <0.10	<0.10 0.10 mg/L       0.54 mg/L       0.54 mg/L       Source: 17B0494-01       0.97 0.10 mg/L       Source: 17B0494-01       0.94 0.10 mg/L       <0.10 0.10 mg/L	0.11         0.05         mg/L         0.0997             Prepared: 0            <0.10	0.11         0.05         mg/L         0.0997         ND           Prepared: 03-Feb-17 A            Prepared: 03-Feb-17 A           <0.10	0.11         0.05         mg/L         0.0997         ND         110           Prepared: 03-Feb-17 Analyzed: 0           <0.10	0.11       0.05       mg/L       0.0997       ND       110       80-120         Prepared: 03-Feb-17 Analyzed: 09-Feb-17         <0.10	0.11       0.05       mg/L       0.0997       ND       110       80-120       8.70         Prepared: 03-Feb-17 Analyzed: 09-Feb-17         <0.10	0.11       0.05       mg/L       0.0997       ND       110       80-120       8.70       20         Prepared: 03-Feb-17 Analyzed: 09-Feb-17         <0.10

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Monica Smith, Project Manager



## Wet Chemistry - Quality Control

# Envirodyne Laboratories, Inc.

RPD 17.3	RPD Limit 20	Notes
17.3	20	
17.3	20	
17.3	20	
17.3	20	
4.15	20	
	4.15	4.15 20

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Monica Smith, Project Manager



Client:	Victoria, City of
Project:	Victoria, City of - Surface and Raw Water Testing
Work Order:	17B0398

**Reported:** 22-Feb-17 09:25

#### Wet Chemistry - Quality Control

## **Envirodyne Laboratories, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Analyte	Kesuit	Liiiit	Units	Level	Kesuit	70KEU	Linnts	RPD	Liiiiit	INOLES
Batch B7B0601 - Inorganics										
Blank (B7B0601-BLK2)		Prepared & Analyzed: 06-Feb-17								
Total Phosphorus	<0.10	0.10	mg/L							
LCS (B7B0601-BS2)				Prepared &	Analyzed:	06-Feb-17				
Total Phosphorus	3.19		mg/L	3.00		106	80-120			
Matrix Spike (B7B0601-MS1)	Source: 17A3244-01			Prepared & Analyzed: 06-Feb-17						
Total Phosphorus	2.08	0.20	mg/L	1.50	0.600	98.7	80-120			
Matrix Spike Dup (B7B0601-MSD1)	Source: 17A3244-01			Prepared & Analyzed: 06-Feb-17						
Total Phosphorus	2.10	0.20	mg/L	1.50	0.600	100	80-120	0.957	20	
Batch B7B0832 - Inorganics										
Blank (B7B0832-BLK1)				Prepared &	Analyzed:	07-Feb-17				
Sulfide	<0.01	0.01	mg/L							
LCS (B7B0832-BS1)				Prepared & Analyzed: 07-Feb-17						
Sulfide	0.393		mg/L	0.400		98.2	90-110			
Duplicate (B7B0832-DUP1)	Source: 17B0398-01			Prepared & Analyzed: 07-Feb-17						
Sulfide	<0.01	0.01	mg/L	<0.01			0	20		
Batch B7B1011 - Inorganics										
Blank (B7B1011-BLK1)				Prepared &	Analyzed:	10-Feb-17				
Chloride	<3.0	3.0	mg/L	•	2					

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Monica Smith, Project Manager



Client:	Victoria, City of
Project:	Victoria, City of - Surface and Raw Water Testing
Work Order:	17B0398

**Reported:** 22-Feb-17 09:25

#### Wet Chemistry - Quality Control

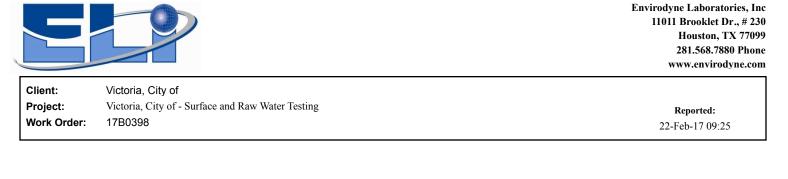
## **Envirodyne Laboratories, Inc.**

	Reporting			Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B7B1011 - Inorganics										
LCS (B7B1011-BS1)				Prepared &	Analyzed:	10-Feb-17				
Chloride	98.0		mg/L	100		98.0	80-120			
Matrix Spike (B7B1011-MS1)	Source: 17B0997-01			Prepared & Analyzed: 10-Feb-17						
Chloride	74.0	3.0	mg/L	20.0	56.0	90.0	80-120			
Matrix Spike Dup (B7B1011-MSD1)	Source: 17B0997-01			Prepared 8	Analyzed:	10-Feb-17				
Chloride	78.0	3.0	mg/L	20.0	56.0	110	80-120	5.27	20	
Batch B7B1433 - Inorganics										
Blank (B7B1433-BLK1)				Prepared &	Analyzed:	10-Feb-17				
ORP	<1.0	1.0	mV							
Duplicate (B7B1433-DUP1)	Source: 17B0398-01			Prepared &	Analyzed:	10-Feb-17				
ORP	197	1.0	mV	201				2.01	20	
Batch B7B1477 - Inorganics										
Blank (B7B1477-BLK1)				Prepared 8	Analyzed:	10-Feb-17				
TSS	<2.0	2.0	mg/L							
Duplicate (B7B1477-DUP1)	Source: 17B0398-01			Prepared 8	Analyzed:	10-Feb-17				
TSS	2.8	2.0	mg/L	*	2.6			7.41	20	
Batch B7B1600 - Inorganics										
Blank (B7B1600-BLK1)				Prepared: 13-Feb-17 Analyzed: 14-Feb-1						
Alkalinity (m) as CaCO3	<20	20	mg/L							
Alkalinity (p) as CaCO3	<20	20	"							

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#### Wet Chemistry - Quality Control

# Envirodyne Laboratories, Inc.

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B7B1600 - Inorganics										
LCS (B7B1600-BS1)				Prepared: 13-Feb-17 Analyzed: 14-Feb-17						
Alkalinity (m) as CaCO3	51		mg/L	50.0		102	80-120			
Alkalinity (p) as CaCO3	52		"	50.0		104	80-120			
Duplicate (B7B1600-DUP1)	Source: 17B0031-01			Prepared:	13-Feb-17 A					
Alkalinity (m) as CaCO3	57	20	mg/L		60			5.13	20	
Alkalinity (p) as CaCO3	<20	20	"		<20			0	20	
Batch B7B1632 - Metals - EPA 200.2										
Blank (B7B1632-BLK1)				Prepared &	k Analyzed:					
Silica	<0.20	0.20	mg/L							
LCS (B7B1632-BS1)				Prepared & Analyzed: 13-Feb-17						
Silica	10.4		mg/L	10.7		96.9	90-110			
Matrix Spike (B7B1632-MS1)	Source: 17B1125-01			Prepared & Analyzed: 13-Feb-17						
Silica	35.7	0.20	mg/L	10.7	24.4	106	85-115			
Matrix Spike Dup (B7B1632-MSD1)	Source: 17B1125-01			Prepared & Analyzed: 13-Feb-17						
Silica	33.8	0.20	mg/L	10.7	24.4	88.2	85-115	5.52	20	
Batch B7B1962 - Inorganics										
Blank (B7B1962-BLK1)				Prepared & Analyzed: 15-Feb-17						
Acidity	<20	20	mg/L							

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Monica Smith, Project Manager

		Envirodyne Laboratories, Inc 11011 Brooklet Dr., # 230 Houston, TX 77099 281.568.7880 Phone www.envirodyne.com
Client:	Victoria, City of	
Project:	Victoria, City of - Surface and Raw Water Testing	Reported:
Work Order:	17B0398	22-Feb-17 09:25

## Wet Chemistry - Quality Control

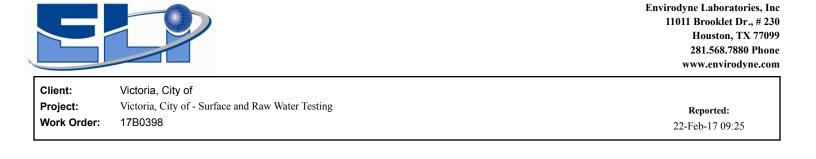
## **Envirodyne Laboratories, Inc.**

		Reporting	Spike	Source	A/DEC	%REC	DDD	RPD	NT (
Analyte	Result	Limit Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B7B1962 - Inorganics									
LCS (B7B1962-BS1)			Prepared &	k Analyzed:	15-Feb-17				
Acidity	1024.8	mg/L	1000		102	80-120			
Duplicate (B7B1962-DUP1)	Sour	ce: 17B0398-01	Prepared &	2 Analyzed:	15-Feb-17				
Acidity	<20	20 mg/L		<20			0	20	

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Monica Smith, Project Manager



#### **Envirodyne Laboratories, Inc.**

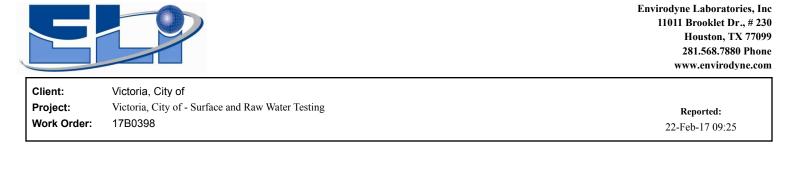
		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B7B0742 - Metals - EPA 200.2										
Blank (B7B0742-BLK1)				Prepared:	03-Feb-17 A	nalyzed: 0	6-Feb-17			
Calcium	<2.00	2.00	mg/L							
Magnesium	<2.00	2.00	"							
LCS (B7B0742-BS1)				Prepared:	03-Feb-17 A	nalyzed: 0	6-Feb-17			
Magnesium	20.0		mg/L	20.0		99.8	85-115			
Calcium	20.2		"	20.0		101	85-115			
Matrix Spike (B7B0742-MS1)	Sour	rce: 17B0397-	01	Prepared:	03-Feb-17 A	analyzed: 0	6-Feb-17			
Calcium	39.6	2.00	mg/L	20.0	19.5	100	70-130			
Magnesium	25.9	2.00	"	20.0	5.78	100	70-130			
Matrix Spike Dup (B7B0742-MSD1)	Source: 17B0397-01 Prepare				03-Feb-17 A	analyzed: 0	6-Feb-17			
Calcium	41.0	2.00	mg/L	20.0	19.5	108	70-130	3.65	20	
Magnesium	26.3	2.00	"	20.0	5.78	103	70-130	1.85	20	

#### Batch B7B1263 - Metals - EPA 200.2

Blank (B7B1263-BLK1)				Prepared: 07-Feb-17 Analyzed: 09-Feb-17
Copper	<0.0006	0.0006	mg/L	
Thallium	<0.0020	0.0020	"	
Barium	< 0.0005	0.0005	"	
Nickel	< 0.0005	0.0005	"	
Chromium	< 0.0005	0.0005	"	
Iron	< 0.0018	0.0018	"	
Lead	< 0.0009	0.0009	"	
Zinc	< 0.0032	0.0032	"	
Manganese	< 0.0004	0.0004	"	
Cadmium	< 0.00050	0.00050	"	
Beryllium	< 0.0005	0.0005	"	
Selenium	< 0.0038	0.0038	"	
Arsenic	< 0.0029	0.0029	"	
Antimony	< 0.0018	0.0018	"	

Envirodyne Laboratories, Inc.

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#### Envirodyne Laboratories, Inc.

Analyte Result Limit Units Level Result %REC Limits RPD Limit Notes			Reporting		Spike	Source		%REC		RPD	
	Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

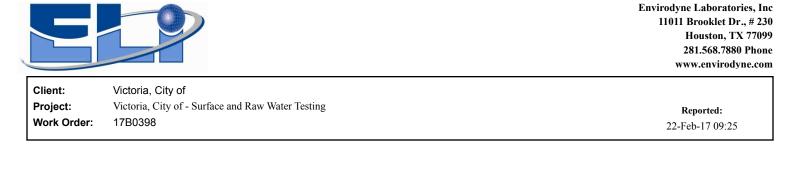
#### Batch B7B1263 - Metals - EPA 200.2

LCS (B7B1263-BS1)				Prepared: (	07-Feb-17 A	nalyzed: 0	9-Feb-17
Zinc	274		ug/L	250		110	85-115
Arsenic	249		"	250		99.4	85-115
Beryllium	247		"	250		98.6	85-115
Barium	254		"	250		102	85-115
Copper	268		"	250		107	85-115
Cadmium	250		"	250		99.4	85-115
Nickel	256		"	250		102	85-115
Thallium	244		"	250		97.6	85-115
Iron	259		"	250		104	85-115
Selenium	238		"	250		95.0	85-115
Manganese	255		"	250		102	85-115
Chromium	258		"	250		103	85-115
Lead	250		"	250		101	85-115
Antimony	258		"	250		103	85-115
Matrix Spike (B7B1263-MS1)	Sou	rce: 17B0984-	02	Prepared: (	07-Feb-17 A	nalyzed: 0	9-Feb-17
Nickel	0.484	0.0005	mg/L	0.500	0.00463	95.9	70-130
Cadmium	0.48	0.00050	"	0.500	ND	95.0	70-130
Copper	0.541	0.0006	"	0.500	0.0180	105	70-130
Beryllium	0.492	0.0005	"	0.500	ND	98.4	70-130
Iron	0.536	0.0018	"	0.500	0.0488	97.4	70-130
Chromium	0.494	0.0005	"	0.500	0.00100	98.6	70-130
Thallium	0.487	0.0020	"	0.500	ND	97.4	70-130
Selenium	0.466	0.0038	"	0.500	ND	93.2	70-130
Barium	0.640	0.0005	"	0.500	0.151	97.9	70-130
Lead	0.48	0.0009	"	0.500	ND	95.6	70-130
Arsenic	0.502	0.0029	"	0.500	ND	100	70-130
Zinc	0.550	0.0032	"	0.500	0.0425	101	70-130
Manganese	0.503	0.0004	"	0.500	0.00505	99.6	70-130

Envirodyne Laboratories, Inc.

onica Smith

Monica Smith, Project Manager



#### Envirodyne Laboratories, Inc.

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

#### Batch B7B1263 - Metals - EPA 200.2

Matrix Spike Dup (B7B1263-MSD1)	2 Prepared: 07-Feb-17 Analyzed: 09-Feb-17									
Arsenic	0.498	0.0029	mg/L	0.500	ND	99.6	70-130	0.809	20	
Lead	0.48	0.0009	"	0.500	ND	95.2	70-130	0.386	20	
Beryllium	0.492	0.0005	"	0.500	ND	98.4	70-130	0.0395	20	
Cadmium	0.47	0.00050	"	0.500	ND	94.5	70-130	0.562	20	
Manganese	0.499	0.0004	"	0.500	0.00505	98.7	70-130	0.867	20	
Barium	0.636	0.0005	"	0.500	0.151	97.1	70-130	0.590	20	
Iron	0.542	0.0018	"	0.500	0.0488	98.7	70-130	1.14	20	
Chromium	0.490	0.0005	"	0.500	0.00100	97.8	70-130	0.776	20	
Selenium	0.462	0.0038	"	0.500	ND	92.4	70-130	0.826	20	
Copper	0.540	0.0006	"	0.500	0.0180	104	70-130	0.157	20	
Nickel	0.478	0.0005	"	0.500	0.00463	94.7	70-130	1.24	20	
Zinc	0.527	0.0032	"	0.500	0.0425	96.9	70-130	4.23	20	
Thallium	0.488	0.0020	"	0.500	ND	97.5	70-130	0.133	20	
Antimony	0.518	0.0018	"	0.500	0.00256	103	70-130	0.344	20	

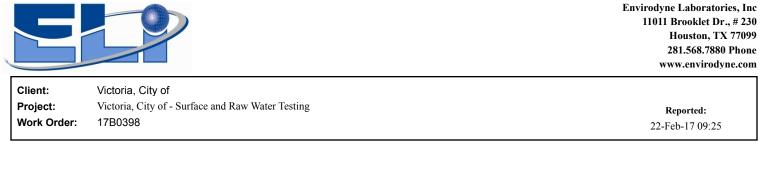
#### Batch B7B1270 - Metals - EPA 200.2

			Prepared: 0	7-Feb-17	Analyzed: 0	08-Feb-17			
<0.0005	0.0005	mg/L							
			Prepared: 0	7-Feb-17 /	Analyzed: 0	)8-Feb-17			
48.5		ug/L	50.0		97.0	85-115			
Sourc	e: 17B0984-	-02	Prepared: 07-Feb-17 Analyzed: 08-Feb-17						
0.0485	0.0005	mg/L	0.0500	ND	97.1	70-130			
Sourc	e: 17B0984-	-02	Prepared: 07-Feb-17 Analyzed: 08-Feb-17						
0.0484	0.0005	mg/L	0.0500	ND	96.8	70-130	0.309	20	
	48.5 Sourc 0.0485 Sourc	48.5 <b>Source: 17B0984</b> - 0.0485 0.0005 <b>Source: 17B0984</b> -	48.5 ug/L Source: 17B0984-02 0.0485 0.0005 mg/L Source: 17B0984-02	<0.0005         0.0005         mg/L           Prepared: 0           48.5         ug/L         50.0           Source: 17B0984-02         Prepared: 0           0.0485         0.0005         mg/L           Source: 17B0984-02         Prepared: 0           Prepared: 0         Prepared: 0	<0.0005         0.0005         mg/L           Prepared: 07-Feb-17 /         9           48.5         ug/L         50.0           Source: 17B0984-02         Prepared: 07-Feb-17 /           0.0485         0.0005         mg/L           Source: 17B0984-02         Prepared: 07-Feb-17 /           0.0485         0.0005         mg/L           Source: 17B0984-02         Prepared: 07-Feb-17 /	<0.0005         0.0005         mg/L           Prepared:         07-Feb-17 Analyzed:         0           48.5         ug/L         50.0         97.0           Source:         17B0984-02         Prepared:         07-Feb-17 Analyzed:         0           0.0485         0.0005         mg/L         0.0500         ND         97.1           Source:         17B0984-02         Prepared:         07-Feb-17 Analyzed:         0	Markin         Prepared:         07-Feb-17 Analyzed:         08-Feb-17           48.5         ug/L         50.0         97.0         85-115           Source:         17B0984-02         Prepared:         07-Feb-17 Analyzed:         08-Feb-17           0.0485         0.0005         mg/L         0.0500         ND         97.1         70-130           Source:         17B0984-02         Prepared:         07-Feb-17 Analyzed:         08-Feb-17	<0.0005         0.0005         mg/L           Prepared: 07-Feb-17 Analyzed: 08-Feb-17           48.5         ug/L         50.0         97.0         85-115           Source: 17B0984-02         Prepared: 07-Feb-17 Analyzed: 08-Feb-17           0.0485         0.0005         mg/L         0.0500         ND         97.1         70-130           Source: 17B0984-02         Prepared: 07-Feb-17 Analyzed: 08-Feb-17	<0.0005

Envirodyne Laboratories, Inc.

onica Smith

Monica Smith, Project Manager



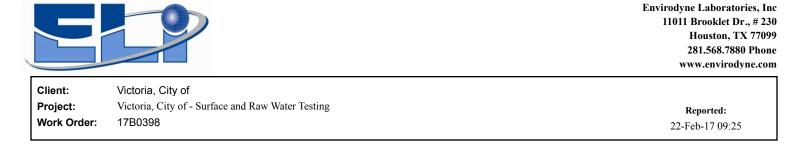
#### Envirodyne Laboratories, Inc.

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B7B1271 - Metals - EPA 200.2										
Blank (B7B1271-BLK1)				Prepared &	Analyzed:	08-Feb-17				
Magnesium	<2.00	2.00	mg/L							
Potassium	<2.0	2.0	"							
Calcium	<2.00	2.00								
Sodium	<2.0	2.0	"							
LCS (B7B1271-BS1)				Prepared &	Analyzed:	08-Feb-17				
Potassium	19.6		mg/L	20.0		98.2	85-115			
Magnesium	20.6			20.0		103	85-115			
Sodium	19.9			20.0		99.5	85-115			
Calcium	20.5		"	20.0		102	85-115			
Matrix Spike (B7B1271-MS1)	Sou	rce: 17B0984-	02	Prepared &	Analyzed:	08-Feb-17				
Potassium	49.0	2.0	mg/L	20.0	27.7	106	70-130			
Calcium	64.4	2.00	"	20.0	43.9	103	70-130			
Sodium	52.1	2.0	"	20.0	31.5	103	70-130			
Magnesium	24.9	2.00	"	20.0	4.50	102	70-130			
Matrix Spike Dup (B7B1271-MSD1)	Sou	rce: 17B0984-	02	Prepared &	Analyzed:	08-Feb-17				
Sodium	51.9	2.0	mg/L	20.0	31.5	102	70-130	0.329	20	
Potassium	48.5	2.0		20.0	27.7	104	70-130	1.02	20	
Magnesium	24.7	2.00		20.0	4.50	101	70-130	0.667	20	
Calcium	64.5	2.00	"	20.0	43.9	103	70-130	0.166	20	
Batch B7B1493 - Metals - EPA 200.2										
Blank (B7B1493-BLK1)				Prepared: 1	0-Feb-17 A	nalyzed: 13	3-Feb-17			
	< 0.0018	0.0018	mg/L	· ·		•				

Envirodyne Laboratories, Inc.

onica Smith

Monica Smith, Project Manager



#### **Envirodyne Laboratories, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7B1493 - Metals - EPA 200.2										
LCS (B7B1493-BS1)				Prepared:	10-Feb-17 A	Analyzed: 1	3-Feb-17			
Aluminum	0.266	0.0018	mg/L				85-115			
Matrix Spike (B7B1493-MS1)	Sou	rce: 17B1348-	01	Prepared:	10-Feb-17 A	Analyzed: 1	3-Feb-17			
Aluminum	0.603	0.0018	mg/L		0.00923		70-130			
Matrix Spike Dup (B7B1493-MSD1)	Sou	rce: 17B1348-	01	Prepared:	10-Feb-17 A	Analyzed: 1	3-Feb-17			
Aluminum	0.594	0.0018	mg/L		0.00923		70-130	1.54	20	
Batch B7B2312 - Metals - EPA 200.2										
Blank (B7B2312-BLK1)				Prepared:	16-Feb-17 A	Analyzed: 1	7-Feb-17			
Arsenic, Dissolved	< 0.00500	0.00500	mg/L							
Manganese, Dissolved	< 0.0050	0.0050	"							
Iron, Dissolved	< 0.0050	0.0050	"							
LCS (B7B2312-BS1)				Prepared:	16-Feb-17 A	Analyzed: 1	7-Feb-17			
Arsenic, Dissolved	0.257	0.00500	mg/L				85-115			
Manganese, Dissolved	0.257	0.0050	"				85-115			
Iron, Dissolved	0.257	0.0050	"				85-115			
Matrix Spike (B7B2312-MS1)	Sou	rce: 17B1929-	01	Prepared:	16-Feb-17 A	Analyzed: 1	7-Feb-17			
Iron, Dissolved	0.588	0.0050	mg/L		0.0820		70-130			
Manganese, Dissolved	0.503	0.0050	"		0.00244		70-130			
Arsenic, Dissolved	0.502	0.00500	"		ND		70-130			
Matrix Spike Dup (B7B2312-MSD1)	Sou	rce: 17B1929-	01	Prepared:	16-Feb-17 A	Analyzed: 1	7-Feb-17			
Manganese, Dissolved	0.503	0.0050	mg/L		0.00244		70-130	0.00	20	
Iron, Dissolved	0.588	0.0050	"		0.0820		70-130	0.00	20	
Arsenic, Dissolved	0.509	0.00500	"		ND		70-130	1.38	20	

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager



**Envirodyne Laboratories, Inc** 11011 Brooklet Dr., # 230 Houston, TX 77099 281.568.7880 Phone www.envirodyne.com

Client:	Victoria, City of	
Project:	Victoria, City of - Surface and Raw Water Testing	Reported:
Work Order:	17B0398	22-Feb-17 09:25

#### **Notes and Definitions**

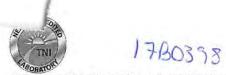
L	Analyzed by third party laboratory
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis

- RPD Relative Percent Difference
- CLT Client Representative

Envirodyne Laboratories, Inc.

onica Smith

Monica Smith, Project Manager



# Envirodyne Laboratories, Inc. 11011 Brooklet, Ste. 230 Houston, Texas 77099-3543 Phone (281)568-7880 - Fax (281)568-8004

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TCEQ Certification # T104704265

Name Addre City: Conta	SS: 700 Main Cente Victoria,TX 779	01		Phone:	361-485	Analysis Request and Chain of Constant of	Custo	ody Ro	ecor	d
	ct No.		Clier	nt/Project	Fir	nished W ater			Temp.	Analysis Time
_ab ID No.	Field Sample No./ Indentification	Date & de Do Date & Do Date & Do Date & Do Date O D	Sample Container ( Size/Mat'l)	Sample Type (Liquid Sludge, etc.)	I. Preservative	ANALYSIS REQUESTED	Hd	D.O.	Tei	Ana Ti
	Finished Water	2/1/17	NA	NA	NA	H2S				
	Finished Water	2/1/17	500 ml/P	Liquid	ice	Dissolved (As,Fe&Mn) 🥖				
	Finished Water	2/1/17	500 ml/P	Liquid	Ice,HNO3	Ca, Mg, Non-Carbonate Hardness				
	Finished Water	2/1/17	1Lt/P	Liquid	Ice	Bromate, Bromide, Acidity, OPO4, S	2			
	Finished Water	2/1/17	1 gal/cubie	Liquid	Ice,HNO3	Gross Alpha,Gross Beta,T.U,Ra 226-228				
	Finished Water	2/1/17	1Lt/Amb	Liquid	Ice	PCBs /		1		
	Finished Water	2/1/17	500 ml/P	Liquid	Ice,NaOH	Cyanide /	1	12	S.	
105	Finished Water	2/1/17	2-40ml/vial	Liquid	Ice,HCI	Ethylene dibromide (EDB) 🥢				
	Finished Water	2/1/17	2-1 lt/amb	Liquid	Ice	Lindane //			_	
	Finished Water	21117	250ml/P	Liquid	Ice,H2SO4	T.Phosphorus 🦯				
15	Samplersy (Signature)	Relinquished by: (Signature)	Dil	100	ate: 2/1/19 me:1255	Received by: Date: (Signature) Time:		Seal Int	tact?	
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H25	11 <b>ks:</b> DH 1701029 Oy 1608337 103 1609547	FLOW: Meter Reading: Cl₂ Residual: Mn Correction: Cl₂ Corrected _		A	rrival Temp.	Data Results To: 1. Site Representative: Date: Time		Labora		21 of 2

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Address:

Project No.

City: Contact:

Lab ID

No.

# Envirodyne Laboratories, Inc. 11011 Brooklet, Ste. 230 Houston, Texas 77099-3543 Phone (28

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TCEQ Certif	ication # T104704265	
Name:	City of Victoria	
Address:	700 Main Center	

Mr. Lynn Short

Field Sample No./

Indentification

Victoria, TX 77901

Comp Grab

Date &

Time

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	1 110110.	361-485-33	81 Fax: 361-485-3385				
Client/Project W ELL #21						emp.	Analysis Time
Sample Container ( Size/Mat'l)	Sample Type (Liquid, Sludge, etc.)	Preservative	ANALYSIS REQUESTED	Hq	D.O.	Te	Aná Ti
1 Lt/P	Liquid	Ice	Alk,(HCO3 & CO3)NO3N,NO2N,Color,ORP				

Well #21	2/1/17 1035 101-30-17 1035 101/cubie	Liquid Ice	Alk,(HCO3 & CO3)NO3N,NO2N,Color,OF	RP /	
1	3		CI,OPO4,SO4,Bromate,Bromide	,TSS,F	
			TDS,Turb.Acidity,S2,Diss.Fe,A	s&Mn	
	21/11/1 1 Lt/P	Liquid Ice,H2S04	NH3N,TPO4 🦯		
	2/1/17 / 1 Lt/Amb 1045 2/1/17 / 3-40ml/Am	Liquid Ice,H2S04	TOC /		
	2/1/17 3-40ml/Am 1055 VOA	Liquid Ice,NH4C	HAA5 //		
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	Relinquished by: (Signature)	Date: 2.3.17 Time: 0430		Date: Time: OSS D	Seal Intact?
Remarks: NaOH 1701029 Hasoy 1608337	FLOW: Meter Reading: Cl₂ Residual:		Data Results To:		Laboratory No.
H2504 1603557 H202 1609547	Mn Correction:	R#3	Site Representative:	Date: Time:	Page 22 of

# 12.8 Appendix H. TWDB review of draft report 06/03/2019

P.O. Box 13231, 1700 N. Congress Ave. Austin, TX 78711-3231, www.twdb.texas.gov Phone (512) 463-7847, Fax (512) 475-2053

Mr. Tim Andruss General Manager Victoria County Groundwater Conservation District 2805 N. Navarro St., Suite 210 Victoria, TX 77901

RE: Research Contract with the Victoria County Groundwater Conservation District, Contract No. 1600011958, Comments on Draft Report Entitled "Victoria Aquifer Storage and Recovery Demonstration"

Dear Mr. Andruss:

Staff members of the Texas Water Development Board (TWDB) have completed a review of the draft report prepared under the above-referenced contract. ATTACHMENT 1 provides the comments resulting from this review. As stated in the TWDB contract, Victoria County Groundwater Conservation District will consider revising the final report in response to comments from the Executive Administrator and other reviewers. In addition, Victoria County Groundwater Conservation District will include a copy of the Executive Administrator's draft report comments in the Final Report.

Please note: The TWDB logo should not be used in the Final Report.

The TWDB's Contract Administration staff looks forward to receiving one (1) electronic copy of the entire Final Report in Portable Document Format (PDF) and five (5) bound double-sided copies. **Please further note, that in compliance with Texas Administrative Code Chapters 206 and 213 (related to Accessibility and Usability of State Web Sites), the digital copy of the final report must comply with the requirements and standards specified in statute. For more information, visit** <u>http://www.sos.state.tx.us/tac/index.shtml</u>. If you have any questions on accessibility, please contact David Carter with the Contract Administration Division at (512) 936-6079 or <u>david.carter@twdb.texas.gov</u>.

Victoria County Groundwater Conservation District shall also submit one (1) electronic copy of any computer programs or models, and, if applicable, an operations manual developed under the terms of this Contract.

If you have any questions or need any further information, please feel free to contact Ms. Erika Mancha of our Conservation & Innovative Water Technologies staff at 512-463-7932 or via email at <u>erika.mancha@twdb.texas.gov</u>.

Sincerely,

John T. Dupnik, P.G. Deputy Executive Administrator Water Science and Conservation

Enclosures

c w/o att.:

Erika Mancha, Conservation & Innovative Water Technologies

#### Our Mission : Board Members

To provide leadership, information, education, and support for planning, financial assistance, and outreach for the conservation and responsible development of water for Texas Peter M. Lake, Chairman | Kathleen Jackson, Board Member | Brooke T. Paup, Board Member

Date: 6-3-19

Jeff Walker, Executive Administrator

# ATTACHMENT 1 Victoria County Groundwater Conservation District **"Victoria Aquifer Storage and Recovery Demonstration Project"** Contract No. 1600011958 TWDB Comments to Draft Report

# **General Comments**

- Professional Geologists and Engineers <u>must</u> affix their seals and sign the final report on page ii.
- Professional Engineer <u>must</u> affix their seal on the preliminary design report in Appendix **B**.
- Please add an executive summary to the final report.

# **Specific Comments**

- Page 3. Section 2.1. Replace "Rider 25" with "Demonstration Projects for Alternative Water Supplies" in the title.
- Page 3. Paragraph 3: A statement is made that the aquifer properties of the Upper Goliad formation is based on a number of datasets (15 aquifer tests, 14 geophysical well logs, and water quality data). In the past was this information provided to the TWDB? If so, please specify the document. If not, please consider providing the data or report to the TWDB.
- Page 10. Section 3. Replace "Rider 25 to HB1" with "funding groundwater conservation districts for ASR demonstration projects (House Bill 1, General Appropriations Act, 2015 Legislature, Regular Session, page VI-60, Rider 25)".
- Page 22. Section 8, first paragraph, last sentence. Please remove the double period.
- Page 31. Section 9.1.1, first paragraph, first sentence. Please remove "the Rider 25".
- Page 32. Section 9.1.2, fourth paragraph, last sentence. Replace "Rider 25 to HB1" with "funding groundwater conservation districts for ASR demonstration projects (House Bill 1, General Appropriations Act, 2015 Legislature, Regular Session, page VI-60, Rider 25)".
- Page 34. Section 9.21, first paragraph, last sentence. Please remove the double period.

- Appendix A: May need to remove or redact "FD-1 ASR Flow Diagram" and "M-1 Well head Piping Plan & Section" in the final report due to security risks.
- Appendix G: Please provide the Well 21 water quality lab report for samples taken in 2017. We could not locate them in the appendix.
- Appendix D. Please remove the equipment manuals from final report and instead provide a pdf version as a deliverable.

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