SUPPLEMENTAL SITE INVESTIGATION

OLD CHOCOLATE BAYOU/PROPOSED PEARLAND ASSAULT BASEBALL CLUB
11.5 ACRES
4805 OLD CHOCOLATE BAYOU ROAD
PEARLAND, BRAZORIA COUNTY, TEXAS

July 31, 2017
Project No. 92177127

Prepared for:
Railroad Commission of Texas
1701 North Congress Ave.
Austin, Texas, 78701

Prepared by:
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9877264

Terracon

July 31, 2017

Mr. Peter Pope
Railroad Commission of Texas
1701 North Congress Ave.
Austin, Texas 78701

Telephone: 512-463-8202
E-mail: Peter.Pope@rrc.texas.gov

Re: Supplemental Site Investigation
Old Chocolate Bayou/Proposed Pearland Assault Baseball Club
4805 Old Chocolate Bayou Road
Pearland, Brazoria County, Texas
Terracon Project No. 92177127

Dear Mr. Pope:

Terracon Consultants, Inc. (Terracon) is pleased to submit this Supplemental Site Investigation (SSI) report for the above referenced site. This investigation was performed in accordance with the approved Work Order Scope Number P92177127 dated May 15, 2017.

We appreciate the opportunity to perform these services for the Railroad Commission of Texas (RRC). Please contact either of the undersigned at (713) 690-8989 if you have questions regarding the information provided in the report.

Sincerely,
Terrracon Consultants, Inc.
(TBPE Firm Registration No. F-3272)
(TBPG Firm Registration No. 50058)

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STATE OF TEXAS
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LIMITED SITE INVESTIGATION

Old Chocolate Bayou/Proposed Pearland Assault Baseball Club
4805 Old Chocolate Bayou Road
Pearland, Brazoria County, Texas
Terracon Project No. 92177127
July 31, 2017

1.0 INTRODUCTION

The site is located at 4805 Old Chocolate Bayou Road in Pearland, Brazoria County, Texas. The site consists of approximately 11.5 acres of land that is being developed as a baseball field named Pearland Assault Baseball Club. The site was historically used for oil and gas primary production.

A Phase I Environmental Site Assessment (ESA) and a Phase II ESA have been performed at the site by others. Based on the data reported, soil and groundwater at the site appear to be impacted by oil and gas production activities. Based on a review of aerial photographs, former pits, presumably for the storage of produced water, were located on the site from 1938 to 2012.

As result of the previous Phase I ESA and Phase II ESA, Terracon conducted additional investigation at the site using the Railroad Commission of Texas (RRC) Targeted Brownfield Assessment (TBA) Fund.

Results of the additional investigation indicated that benzene, arsenic and selenium were detected at concentrations that exceeded the Texas Risk Reduction Program (TRRP) Tier 1 protective concentration levels (PCLs) for soil-protective-of-groundwater; however, the detected concentrations were below health-based TRRP PCLs. At certain areas on the site, chloride exceeded the RRC recommended levels for produced water spills. Fill material was placed by the landowner in these areas to raise the ground level and provide additional cover for rain water infiltration.

Groundwater samples indicated that arsenic, barium, and chloride were detected at concentrations above the TRRP Tier 1 PCLs or EPA maximum contaminant levels (MCLs) for chloride. Total dissolved solids (TDS) measured in monitor well MW-2 indicated a concentration of 54,200 mg/L, which indicates that the first GWBU could be classified as class 3 groundwater.

During the previous investigation, monitor wells were installed to depths varying from 20 feet to 32.5 feet below ground surface (bgs). Monitor well MW- 4 was installed to a depth of 20 feet bgs and may be influenced by a surface water pond that was present at the site. The remainder of the wells were installed to depths of 27 to 32.5 feet bgs into an underlying clay layer. Groundwater was encountered at depths of 24 to 28 feet bgs and the first groundwater-bearing unit (GWBU)

consisted of a clayey sand layer with a saturated thickness of 2 to 6 feet bgs. Therefore, the first GWBU has been defined. During the previous investigation activities, five monitor wells (MW-1 through MW-5) were installed. During the construction of the baseball field, monitor wells MW-1 and MW-3 were plugged and abandoned.

Based on conversations with the RRC, Site Remediation staff has indicated that a restrictive covenant prohibiting the use of shallow groundwater at the site will be necessary to move the site towards regulatory closure through the TBA Program. RRC staff recommended that a monitor well be installed in the deeper GWBU and sampled to provide information necessary for an effective groundwater use restriction.

1.1 Scope of Work

Terracon Consultants, Inc. (Terracon) conducted a Supplemental Site Investigation (SSI) at the site in May 2017. A Site Vicinity Map is included as Exhibit 1 to show the site in relation to the surrounding area. The SSI was conducted in accordance with approved Work Order P92177127 dated March 15, 2017. The scope of work for this SSI was based on the results of Terracon's Limited Site Investigation (LSI - Report No. 92137046, dated April 2, 2013).

The scope of work for this work order included:

- Install one double-cased monitor well downgradient of previous monitor well MW-3; and,
- Analyze groundwater samples from the three existing monitor wells and new deep monitor well for benzene, toluene, ethylbenzene, xylenes (BTEX), total petroleum hydrocarbons (TPH), arsenic, barium, bromide, and major anions and cations.

The objective of the scope of work described herein is to assess the second GWBU (deeper GWBU) for chemicals-of-concern (COCs) identified in the first GWBU to vertically delineate the groundwater plume.

1.2 Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time period. Terracon makes no warranties, either express or implied, regarding the findings, conclusions or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies or other third parties supplying information used in the preparation of the report. These TBA services were performed in accordance with the scope of work agreed with you, our client, as reflected in approved work order.

1.3 Additional Scope Limitations

Findings, conclusions and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, nondetectable or not present during these services, and we cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this TBA. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations or exploratory services; the data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

1.4 Reliance

This report has been prepared for the exclusive use of the RRC, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the express written authorization of RRC and Terracon.

2.0 MONITOR WELL INSTALLATION

The new monitor well was installed on May 9, 2017 and May 11, 2017. Terracon field staff were present during the field activities to direct the work and log the borings. One deep soil boring (MW-6) was advanced on-site and completed as a permanent monitor well (MW-6) to facilitate the collection of groundwater samples. Exhibit 2 is a Site Plan that shows the location of the monitor well in relation to the pertinent structures and site boundaries

The soil boring was drilled by a Monitor Well Driller licensed in the State of Texas to a depth of 65 feet bgs using a hollow stem auger (HSA) rig. Sampling equipment was decontaminated by an Alconox wash, potable water rinse and final distilled water rinse prior to commencement of the project. The soil boring/monitor well (MW-6) was located downgradient of previous monitor well MW-3.

Soil cores were collected continuously from the surface to the maximum terminal depth of 65 feet bgs using five-foot-long split-spoon sampler barrels. The soil cores were examined in the field to document lithology, color, moisture content, and visual or olfactory evidence of impact. In addition, the samples were scanned with an organic vapor monitor (OVM) equipped with a photoionization detector (PID) to detect the presence of volatile organic vapors. The lithology encountered consisted of a layer of silty clay which extends from the surface to a depth of 8 feet bgs. The silty clay layer was underlain by interbedded layers of sandy clay and clay which extend to a depth of 22 feet bgs. The sandy clay/clay layers are underlain by a layer of saturated sand, which extends

to a depth of 29 feet bgs. The sand layer is underlain by interbedded layers of sandy clay and clay which extend to 55 feet bgs. The sandy clay/clay layers are underlain by a layer of saturated sand which extends to 57 feet bgs. The saturated sand layer is underlain by a layer of clay which extends to the terminal depth of the boring (65 feet bgs). Detailed lithologic descriptions are presented on the soil boring log. A copy of the boring log is included in Appendix A.

The double-cased monitor well was installed in two steps. For the first step, an 10-inch diameter PVC surface casing was advanced through the first GWBU that terminated 3 feet into the bottom confining clay layer at a depth of 32 feet bgs. The casing was cemented in using a mixture of cement/bentonite/fly-ash grout installed via a tremie pipe around the annulus from the bottom of the casing to the surface. The cement was allowed to set for a minimum of 48 hours prior to advancing a deeper boring into the second GWBU.

The deep monitor well construction consisted of 2-inch diameter PVC casing and 0.01-inch slotted screen. A filter pack was installed around the screen consisting of 10/20-sieve silica sand. A hydrated bentonite seal was placed above the filter sand. The well was completed using a “stick-up” completion set in a concrete pad.

The deep groundwater monitor well was developed by removing groundwater until groundwater appeared relatively clear and free of sediment. The newly-installed monitor well was allowed to stabilize for a period of at least 48-hours after development of the well prior to purging and sampling.

3.0 GROUNDWATER SAMPLING ACTIVITIES

The groundwater monitoring event completed May 12, 2017, included the sampling of 4 monitor wells (MW-2, MW-4, MW-5, and MW-6). The wells were gauged, purged, and sampled using low-flow purging and sampling techniques.

3.2 Groundwater Level Measurements

Prior to purging the on-site monitor wells, the depth to groundwater was measured in each monitor well. Water levels were used in combination with the top of casing elevations to evaluate the direction of groundwater flow and gradient. The well caps were removed and the water levels were allowed to stabilize. Terracon’s field representative measured static groundwater levels in the monitor wells using a water level indicator. The water level indicator was decontaminated prior to each use using an Alconox™ and distilled water wash followed by a distilled water rinse. During the measurement of the water level, the probe was slowly lowered into the monitor well to limit agitation of the water within the monitor well and to submerge a minimal length of the probe. Water level measurements were recorded relative to the top of casing to the nearest hundredth of a foot. Depth-to-groundwater measurements for the monitor wells are summarized in Table 1 and include relative top-of-casing (TOC) elevations and groundwater elevations.

A groundwater gradient map for the gauging event is shown on Exhibit 3. The direction of groundwater flow during the quarterly groundwater sampling events conducted in May 2017 was generally to the southeast, which is consistent with previously determined groundwater flow directions.

3.3 Monitor Well Purging and Sample Collection

The groundwater monitor wells were purged and sampled using low-flow sampling techniques. The monitor wells were purged until groundwater quality parameters pH, oxidation/reduction potential, dissolved oxygen (DO), temperature, and conductivity stabilized. Groundwater samples were collected from each of the monitor wells using the low-flow-rate pump.

Monitor wells were micro-purged utilizing a peristaltic pump and dedicated polyethylene tubing during the groundwater sampling event. The purpose of micro-purging water from the monitor well prior to sampling is to introduce formation water into the dedicated polyethylene tubing and ultimately the laboratory sample collection vials without significantly disturbing or aerating the water column within the monitor well. The pump was set at the approximate center of the screened interval for each monitor well. Groundwater was micro-purged until the groundwater parameters DO, oxidation reduction potential (ORP), temperature, pH, and conductivity stabilized. Groundwater parameters were measured utilizing a YSI multi-parameter sampling meter, equipped with a flow-through cell. Following stabilization of the parameters, groundwater samples were immediately collected from the dedicated tubing.

Groundwater samples were collected in laboratory prepared glassware and placed on ice in a cooler. The samples, along with the completed chain-of-custody forms, were relinquished to Xenco Laboratories in Houston, Texas for analysis.

3.0 LABORATORY ANALYTICAL PROGRAM

The analytical program developed by Terracon was based on the potential environmental concerns identified during the SSI. Soil and groundwater samples were analyzed for total Resource Conservation Recovery Act (RCRA) metals using Environmental Protection Agency (EPA) method 6020A, inorganic anions by EPA method 300, and alkalinity using EPA 2320B, TPH using Texas Commission on Environmental Quality (TCEQ) test method TX1005, and BTEX using EPA 8260B.

4.0 INVESTIGATION RESULTS AND EVALUATION

The groundwater sample analytical results have been summarized in Table 2. A copy of the analytical report and chain-of-custody form is included in Appendix B.
Terracon compared the concentrations of the COCs detected in the groundwater to their respective TCEQ TRRP Tier 1 critical PCLs for a residential site with a 30-acre source area or

the Texas-specific background concentration (TSBC) for metals, as applicable. Surface water is compared to Table 5 Tier 1 Human Health and Ecological Surface Water Assessment and Cleanup Values in the document Constituents of Concern Guideline for Substance Released provided by the RRC (Version 9, 12/13/11).

Action levels for chloride in groundwater have not been established under TRRP. According to the RRC draft guidance document "Field Guide for the Assessment and Cleanup of Produced Water Releases" dated December 9, 2011, chloride concentrations in groundwater should be delineated to naturally occurring background levels or to 300 mg/L, the Texas secondary MCL.

4.1 Groundwater Samples

First Groundwater-Bearing Unit

Monitor wells MW-2, MW-4, and MW-5 were utilized to sample the first GWBU. The groundwater sampling analytical results are listed below.

TPH
TPH concentrations were below sample detection limits (SDLs).

BTEX
BTEX concentrations were below SDLs.

RCRA Metals
Arsenic was detected in the groundwater sample collected from MW-5 at a concentration of 0.0146 mg/L, which exceeded the Tier 1 PCL of 0.01 mg/L. Arsenic concentrations were below SDLs in the remaining groundwater samples.

Barium concentrations ranged from 1.05 mg/L to 32.9 mg/L and exceeded the Tier 1 PCL of 2.0 mg/Lin MW-2 (32.9 mg/L) and MW-5 (5.67).

Calcium concentrations ranged from 2,980 mg/L to 4,290 mg/L.

Magnesium concentrations ranged from 72.2 mg/L to 1,490 mg/L.

Potassium concentrations ranged from 1.33 mg/L to 7.24 mg/L

Sodium concentrations ranged from 2,140 mg/L to 6,250 mg/L.

Inorganic Anions

Chloride concentrations in all three monitor wells exceeded the Texas Secondary MCL of 300 mg/L at concentrations of 20,700 mg/L, 1,060 mg/L, and 14,700 mg/L in MW_2, MW-4, and MW-5, respectively.

Bromide concentrations ranged from 1.90 mg/L to 34.2 mg/L.

Nitrate concentrations ranged from below SDLs to 0.217 mg/L.

Sulfate concentrations ranged from 4.75 mg/L to 9.31 mg/L.

Alkalinity

Bicarbonate concentrations ranged from 168 mg/L to 317 mg/L.

Carbonate concentrations were below SDLs.

Second Groundwater-Bearing Unit

Groundwater sampling for the second GWBU was performed using monitor well MW-6. A summary of the analytical results for the second GWBU is below.

TPH
TPH concentrations were below SDLs.

BTEX
BTEX concentrations were below SDLs, with the exception of toluene. Toluene was detected in MW-6 at a concentration of 0.00113 mg/L, which is below the Tier 1 PCL of 1 mg/L.

RCRA Metals
Arsenic was detected at a concentration of 0.00152 mg/L, which is below the Tier 1 PCL of 0.01 mg/L.

Barium was detected at a concentration of 5.09 mg/L, which exceeded the Tier 1 PCL of 2 mg/L.

Calcium was detected at a concentration of 3,070 mg/L.

Magnesium was detected at a concentration of 56.6 mg/L.

Potassium was detected at a concentration of 17.0 mg/L.

Sodium was detected at a concentration of 3,040 mg/L.

Inorganic Anions

Chloride was detected at a concentration of 9,900 mg/L, which exceeded the Texas Secondary MCL of 300 mg/L.

Bromide was detected at a concentration of 14.2 mg/L.

Nitrate concentrations were below SDLs.

Sulfate was detected at a concentration of 145 mg/L.

Alkalinity

Bicarbonate was detected at a concentration of 22.5 mg/L.

Carbonate concentrations were below SDLs.

5.0 FINDINGS AND RECOMMENDATIONS

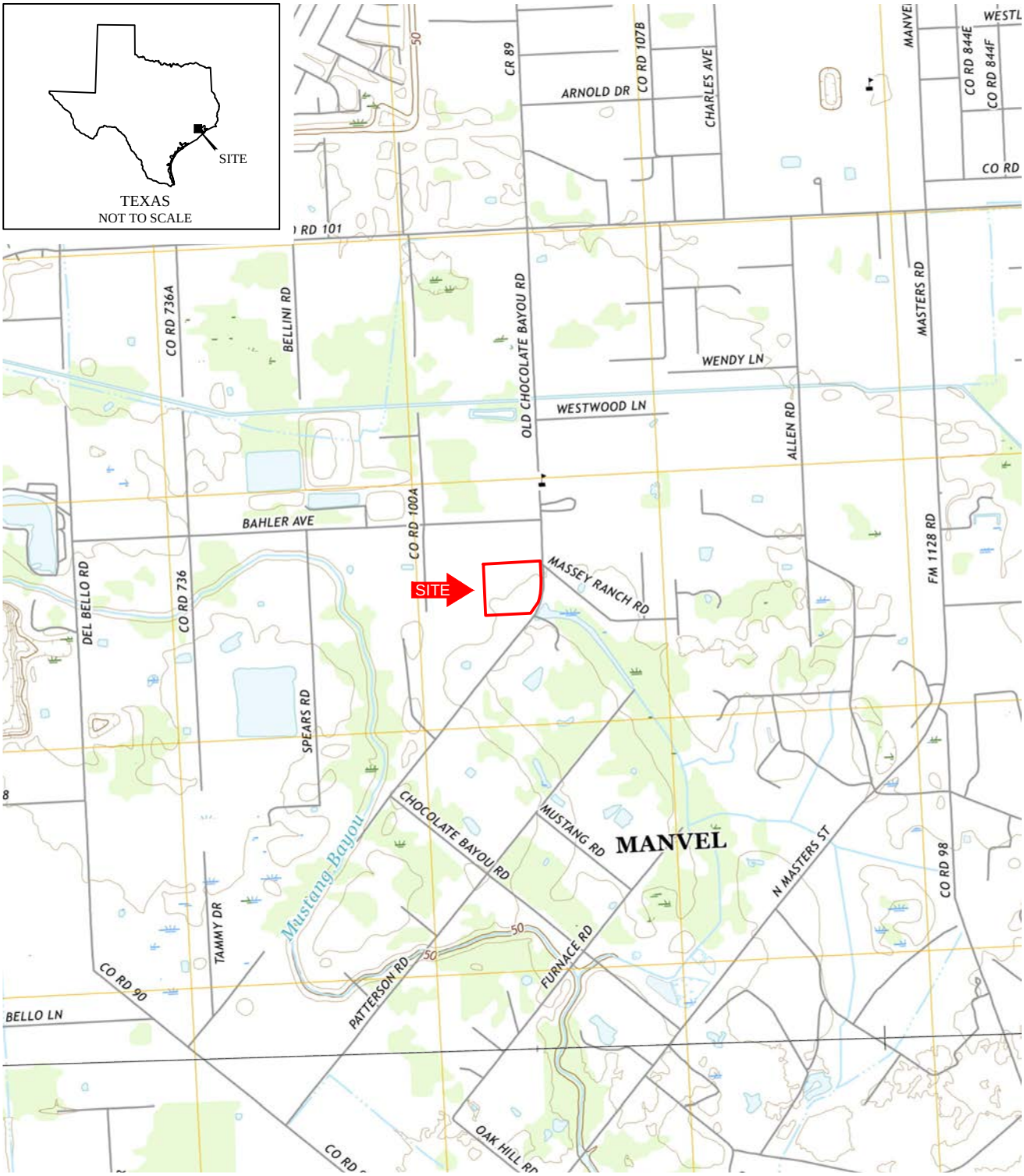
Based on the results of the investigation, Terracon provides the following findings and recommendations:

- Arsenic was detected in one groundwater sample (MW-5) in the first GWBU at a concentration which exceeded the Tier 1 PCL.
- Barium was detected in two groundwater samples (MW-2 and MW-5) in the first GWBU and in the groundwater sample (MW-6) from the second GWBU at concentrations which exceeded the Tier 1 PCL.
- Chloride was detected in all three groundwater samples (MW-2, MW-4, and MW-5) in the first GWBU and in the groundwater sample (MW-6) from the second GWBU at concentrations which exceeded the Tier 1 PCL.
- Based on the detection of barium and chloride in the groundwater sample collected from the second GWBU, additional delineation may be necessary to delineate the extent of barium and chloride in the second GWBU.

- Use of impacted groundwater from the first and second GWBUs at the site could be restricted using institutional controls. Future on-site water wells should be properly cemented/cased off to prevent the vertical migration of impacted water to deeper GWBUs.

EXHIBITS

EXHIBIT 1 – SITE VICINITY MAP
EXHIBIT 2 – SITE PLAN
EXHIBIT 3 – GROUNDWATER GRADIENT MAP



USGS TOPOGRAPHIC QUADRANGLE MAP

Pearland, Texas

Terracon
Consulting Engineers & Scientists

Revised: 2016

APPROXIMATE SCALE 1"= 2000'

0 1000' 2000'

N

Proposed Pearland Assault Baseball Club
4805 Old Chocolate Bayou Road
Pearland, Texas

TERRACON PROJECT NO. 92177127

Prepared By: REW

Approved By: SJP

EXHIBIT 1:
SITE VICINITY MAP

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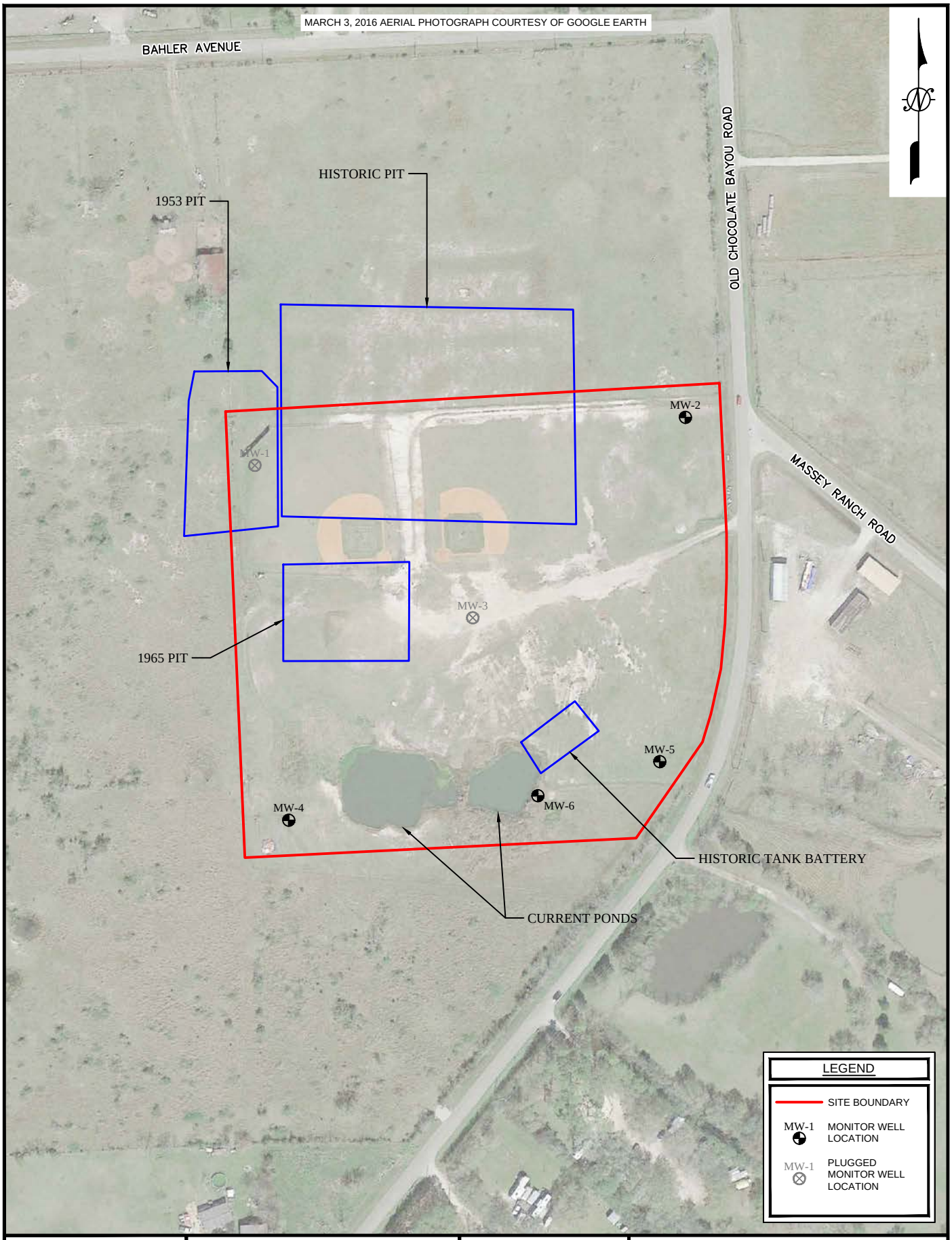


N:\ENV\2017\Drafting\92177127\92177127 Site Plan.dwg : Overview

0 100' 200'

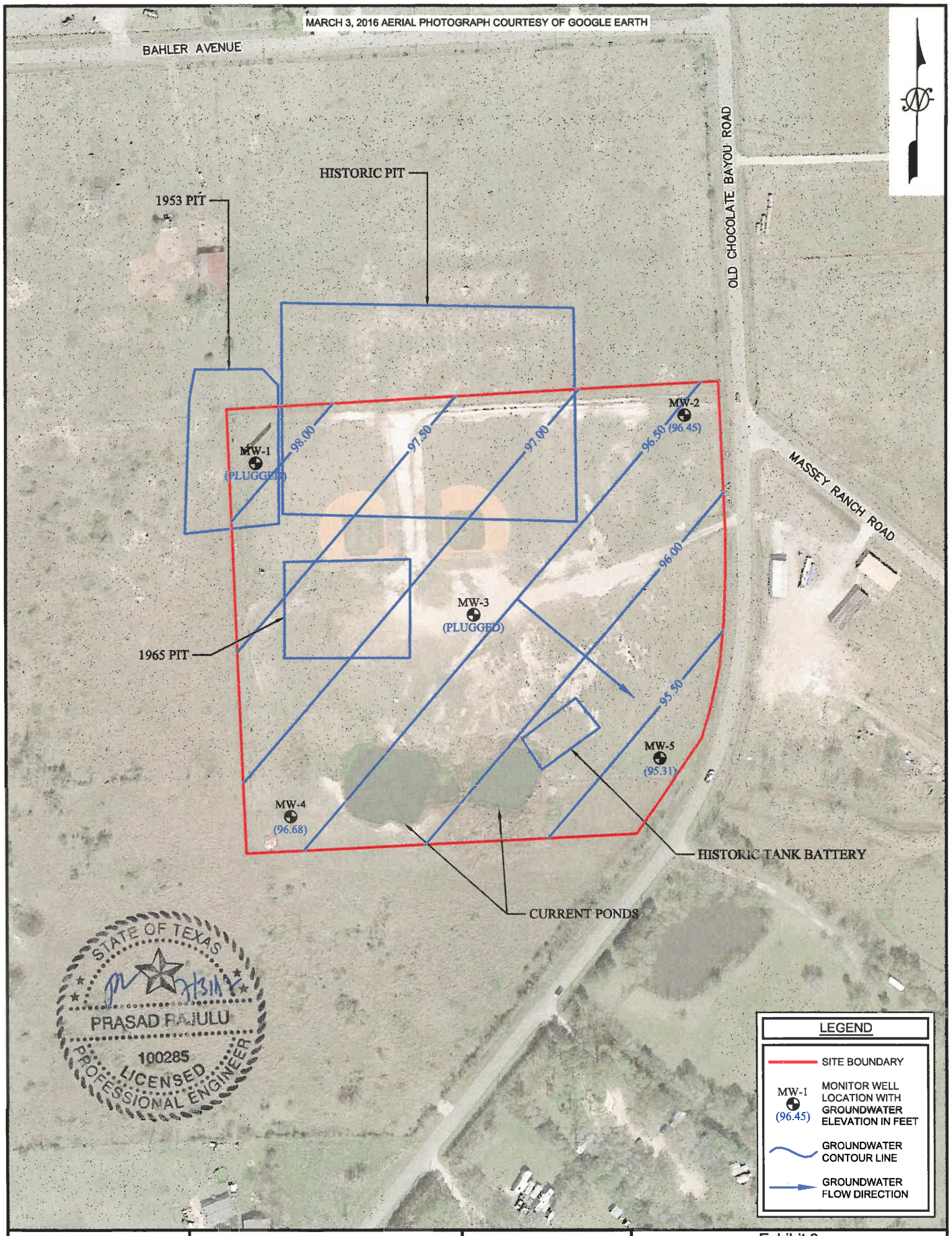
APPROXIMATE SCALE 1" = 200'

Terracon
Consulting Engineers & Scientists

TERRACON NO: 92177127

DRAWN BY:	REW
CHECKED BY:	SJP
SCALE:	AS SHOWN
DATE:	06/12/2017

Exhibit 2
Site Plan
Proposed Pearland Assault Baseball Club
4805 Old Chocolate Bayou Road
Pearland, Texas



STATE OF TEXAS
PRASAD RAJULU
100285
LICENSED PROFESSIONAL ENGINEER
7/31/17

0 100' 200'
APPROXIMATE SCALE 1" = 200'

Terracon
Consulting Engineers & Scientists

TERRACON NO:	92177127
DRAWN BY:	REW
CHECKED BY:	SJP
SCALE:	AS SHOWN
DATE:	05/25/2017

Exhibit 3
Groundwater Gradient Map
May 16, 2017
Proposed Pearland Assault Baseball Club
4805 Old Chocolate Bayou Road
Pearland, Texas

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TABLES

TABLE 1 - SUMMARY OF GROUNDWATER ELEVATION MEASUREMENTS
TABLE 2 - SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

TABLE 1

MONITOR WELL DESIGN
Proposed Pearland Assault Baseball Club
4805 Old Chocloate Bayou Road
Pearland, Brazoria County, Texas

Well ID	Date	Casing Elevation (ft.)	Depth to Water (ft.)	Corrected GW Elev. (ft.)	Screening Depth (ft.)	Total Depth (ft.)
MW-1	02/05/13	54.48	8.17	46.31	22.5-32.5	32.50
MW-2	02/05/13	53.20	7.44	45.76	22-32	32.00
	05/16/17		6.75	46.45		
MW-3	02/05/13	52.73	7.27	45.46	17-27	27.00
MW-4	02/05/13	52.93	5.85	47.08	20-30	30.00
	05/16/17		6.25	46.68		
MW-5	02/05/13	50.77	6.77	44.00	10-20	20.00
	05/16/17		5.46	45.31		
MW-6	05/16/17	-	5.65	-	50-65	65.00

Notes:
Top of Casing elevations were measured by Baseline Corporation, Inc. on February 12, 2013.
No phase-separated hydrocarbons were detected in the monitor wells.

GW - groundwater

TABLE 2

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
Proposed Pearland Assault Baseball Club
4805 Old Chocolate Bayou Rd.
Pearland, Brazoria County, Texas
(all concentrations are in milligrams per Liter)

Sample Number	Sample Date	TPH (TCEQ TX 1005)			BTEX (EPA 8260B)				RCRA Metals, total (EPA 6010B/7471A/6020A)														Inorganic Anions (EPA 300)				Alkalinity (SM2320B)	
		C_6 - C_{12} Carbon Range	C_{12} - C_{28} Carbon Range	C_{28} - C_{35} Carbon Range	Benzene	Ethylbenzene	Toluene	Xylenes (total)	Arsenic	Arsenic (filtered)	Barium	Barium (filtered)	Cadmium	Calcium	Chromium	Lead	Magnesium	Mercury	Potassium	Selenium	Silver	Sodium	Bromide	Chloride	Nitrate -N	Sulfate	Bicarbonate	Carbonate
TMW-1	11/30/12	<0.19	<0.19	<0.19	<	<	<	<	**0.00273 J**	-	41.3	-	<0.00080	-	<0.0012	0.00329 J	-	<0.000042	-	<0.0010	<0.00080	-	-	**30,300**	-	-	-	-
TMW-2	11/30/12	<0.19	<0.19	<0.19	<	<	<	<	0.00266 J	-	20.3	-	<0.00080	-	<0.0012	0.00114 J	-	<0.000042	-	0.00158 J	<0.00080	-	-	**16,500**	-	-	-	-
TMW-3	11/30/12	<0.20	<0.20	<0.20	<	<	<	<	<0.0013	-	0.672	-	<0.00080	-	<0.0012	<0.00070	-	<0.000042	-	<0.0010	<0.00080	-	-	**415**	-	-	-	-
TMW-4	11/30/12	<0.18	<0.118	<0.18	<	<	<	<	0.00516	-	60.8	-	<0.00080	-	<0.0012	0.00351 J	-	<0.000042	-	0.00374 J	<0.00080	-	-	**41,700**	-	-	-	-
MW-1	02/05/13	<0.820	<0.821	<0.822	<0.00100	<0.00100	<0.00100	<0.00100	0.000890 J	-	**6.26**	-	<0.0100	-	<0.0200	<0.0100	-	<0.000200	-	0.00480 J	0.000200 BJ	-	-	**4,900**	-	-	-	-
Duplicate (MW-1)	02/05/13	<0.828	<0.828	<0.828	<0.00100	<0.00100	<0.00100	<0.00100	**0.0102**	-	**5.12**	-	0.000473 J	-	<0.0100	<0.0100	-	<0.000200	-	<0.0300	<0.0200	-	-	**5,110**	-	-	-	-
MW-2	02/05/13	<0.805	<0.805	<0.805	<0.00100	<0.00100	<0.00100	<0.00100	**0.0583**	**0.0695**	**31.5**	**30**	0.000842 J	-	<0.0100	0.0119	-	<0.000200	-	<0.0300	0.00980 J	-	-	**25,900**	-	-	-	-
	5/16/17	<0.149	<0.154	<0.0947	<0.000500	<0.000750	<0.000500	<0.000500	<0.00123	-	**32.9**	-	-	2,980	-	-	1,490	-	7.24	-	-	6,250	34.2	**20,700**	<0.0400	4.75	200	<0.954
MW-3	02/05/13	<0.800	<0.800	<0.800	<0.00100	<0.00100	<0.00100	<0.00100	**0.0371**	**0.063**	**36.7**	**34.1**	0.000479 J	-	0.00457 J	0.00975 J	-	<0.000200	-	<0.0300	0.00896 J	-	-	**35,100**	-	-	-	-
MW-4	02/05/13	<0.826	<0.826	<0.826	<0.00100	<0.00100	<0.00100	<0.00100	<0.0200	-	0.714	-	<0.0500	-	<0.0200	<0.0100	-	<0.000200	-	0.00215 BJ	<0.0100	-	-	**979**	-	-	-	-
	5/16/17	<0.152	<0.157	<0.0965	<0.000500	<0.000750	<0.000500	<0.000500	<0.00123	-	1.05	-	-	3,820	-	-	72.2	-	1.33	-	-	2,970	1.90	**1,060**	0.217	9.31	317	<0.954
MW-5	02/05/13	<0.799	<0.799	<0.799	<0.00100	<0.00100	<0.00100	<0.00100	**0.0614**	**0.063**	**3.64**	**3.56**	0.00190 J	-	<0.0100	<0.00100	-	<0.000200	-	<0.0300	0.00808 J	-	-	**12,200**	-	-	-	-
	5/16/17	<0.151	<0.155	<0.0957	<0.000500	<0.000750	<0.000500	<0.000500	**0.0146**	-	**5.67**	-	-	4,290	-	-	1,490	-	5.22	-	-	2,140	24.3	**14,700**	0.193	7.53	168	<0.954
MW-6	5/16/17	<0.151	<0.156	<0.0957	<0.000500	<0.00100	0.00113	<0.000500	0.00152 J	-	**5.09**	-	-	3,070	-	-	56.6	-	17.0	-	-	3,040	14.2	**9,900**	<0.0400	145	22.5	<0.954
$^{GW}GW_{ING}$ PCL		***0.98***	***0.98***	***0.98***	***0.005***	***0.07***	***1***	***10***	***0.01***	***0.01***	***2***	***2***	***0.005***	***NE***	***0.1***	***0.015***	***NE***	***0.002***	***NE***	***0.05***	***0.12***	***NE***	***NE***	***300 (1)***	***NE***	***NE***	***NE***	***NE***
$^{Air}GW_{INH-V}$ PCL 0.5 acre		***1,800***	***7,500***	***7,500***	***180***	***30,000***	***64,000***	***760,000***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***7.3***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***
$^{Air}GW_{INH-V}$ PCL >0.5 acre		***230***	***970***	***970***	***23***	***3800***	***8200***	***98000***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***0.9***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***

Note: concentrations depicted in bold print exceed the TCEQ $^{GW}GW_{ING}$ PCL (Residential 30-Acre)

TDS in MW-2 was 54, 300

TPH	- total petroleum hydrocarbons
BTEX	- benzene, toluene, ethylbenzene, xylenes
TCEQ	- Texas Commission on Environmental Quality
EPA	- Environmental Protection Agency
NE	- Action Level not established
(1)	- $^{GW}GW_{Ing}$ Tier 1 PCL represents Texas secondary drinking water standard.

APPENDIX A

BORING LOGS AND STATE WELL REPORT

SOIL BORING / MONITOR WELL LOG

PROJECT: Pearland Assault Baseball Club
PROJECT NUMBER: 92177127
CLIENT: Railroad Commission of Texas
BORING / WELL NUMBER: MW-6
TOTAL DEPTH: 65.0'
SURFACE ELEVATION: Not Determined
SUPERVISOR: Sheraden Porter

DRILLING COMPANY: Best Drilling
DRILLER: Sonny Tobola
DRILLING METHOD: HSA
BORE HOLE DIAMETER: 8.25"
SCREEN: Diam. 2" Length 15' Slot Size 0.01"
CASING: Diam. 2" Length 50 Type PVC
DATE DRILLED: 5-11-17

DEPTH (FT)	SOIL SYMBOL	WELL CONSTRUCTION	PID (PPM)	SAMPLE TYPE	LABORATORY SAMPLE DEPTH	PERCENT RECOVERY, %	DESCRIPTION OF STRATUM Name (Sym.), Color, Water Content, Plasticity, Density, Gradation, Grain Size, Observations	DEPTH (FT)
0			<1				SILTY CLAY: Dark gray, moist, plastic	0
			<1					
5			<1					5
			5.6				-grades to light gray, ferrous staining, calcareous deposits, manganese deposits 8	
			9.2					
10			<1				SANDY CLAY: light gray, moist, plastic, ferrous staining, calcareous deposits, manganese deposits 10	10
			<1				CLAY: red and gray mottled, moist, plastic, ferrous staining, calcareous deposits, manganese deposits	
15			<1					15
			<1				-red, manganese staining	
			<1					
20			15.4				20	20
			-				SANDY CLAY: red, moist, plastic, soft 22	
25			-				SAND: red, saturated, fine-grained	25
			-					
			-				29	
30			-				SANDY CLAY: red, moist 31	30
			<1				CLAY: red and gray mottled, moist, hard	
35			<1				-ferrous deposits 35	35
			<1				SANDY CLAY: red and gray mottled, moist, hard	
			<1					
40			<1					40
			<1				-ferrous deposits, manganese staining	
45			<1				45	45
			<1				CLAY: red and gray mottled, moist, hard, calcareous deposits	
			<1					
50			<1					50
			<1					
55			<1				55	55
			-				SAND: reddish brown, saturated 57	
			-				CLAY: red and gray mottled, moist, hard, calcareous deposits	
60			-					60
			-					
65			-				65	65
							Boring terminated at 65 feet bgs.	
70								70

STATE OF TEXAS
PRASAD RAJULU
100285
LICENSED
PROFESSIONAL ENGINEER
7/31/17

REMARKS:
First conductor casing set at 32 feet bgs.
Second conductor casing set at 65 feet bgs.
* This log should not be used separately from the original report.

Terracon

ENVLOG1 - DEC 07 92177127.GPJ 5/24/17

STATE OF TEXAS WELL REPORT for Tracking #450928

Owner:	**Railroad Commission of Texas**	Owner Well #:	**MW-6**
Address:	**4805 Old Chocolate Bayou Road Pearland, TX 77584**	Grid #:	**65-30-4**
Well Location:	**4805 Old Chocolate Bayou Road Pearland, TX 77584**	Latitude:	**29° 33' 14.96" N**
		Longitude:	**095° 20' 54.35" W**
Well County:	**Brazoria**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **5/11/2017** Drilling End Date: **5/11/2017**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
12	**0**	**32**
8.25	**0**	**65**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
48	**65**	**Sand**	**20/40**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**0.5**	**Concrete 1 Bags/Sacks**
0.5	**48**	**Bentonite 2 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **BEST DRILLING SERVICES, INC.**

P.O. BOX 845
FRIENDSWOOD, TX 77549

Driller Name: **Lawrence Tobola** License Number: **3026**

Comments: **Project Number: 92177127**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**8**	**SILTY CLAY, drk. gray**
8	**10**	**SANDY CLAY, lt. gray**
10	**20**	**CLAY, red**
20	**22**	**SANDY CLAY, red**
22	**29**	**SAND, red**
29	**31**	**SANDY CLAY, red**
31	**35**	**CLAY, red & gray**
35	**45**	**SANDY CLAY, red & gray**
45	**55**	**CLAY, red**
55	**57**	**SAND, reddish brown**
57	**65**	**CLAY, red**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
10	**SURFACE CASING**	**New Plastic (PVC)**	**40**	**0**	**32**
2	**Riser**	**New Plastic (PVC)**	**40**	**0**	**50**
2	**Screen**	**New Plastic (PVC)**	**40**	**50**	**65**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

APPENDIX B

ANALYTICAL LABORATORY REPORTS

Data Usability Review	
Client Name: **Railroad Commission of Texas**	Project Number: **92177127**
Affected Property Location: **Pearland, Texas**	Project Manager: **Sheraden Porter**
Laboratory: **Xenco Laboratories**	Laboratory Job No: **553284**
Reviewer: **Prasad Rajulu, P.E.**	Date Reviewed: **June 9, 2017**

One data package from ALS Environmental, was reviewed for the analysis of 4 samples collected at the Pearland Assault Baseball Club site, by Terracon in May 2017. Data were reviewed for conformance to the requirements of the guidance document, *Review and Reporting of COC Concentration Data* (RG-366/TRRP-13). The results of the review/validation are discussed in this Data Usability Summary (DUS).

The following laboratory submittals were examined:

- the reportable data,
- the laboratory review checklists and associated exception reports, and

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater samples at the affected property.

Analyses requested included:

- EPA method 8260B - benzene, toluene, ethylbenzene, xylenes (BTEX)
- TCEQ method Texas 1005 – Total Petroleum Hydrocarbons (TPH)
- EPA method 6020A – Metals (arsenic and barium)
- EPA method 6020A – Cations (calcium, magnesium, potassium, sodium)
- EPA method 300 – Inorganic Anions (bromide, chloride, nitrate, sulfate)
- SM2320B – Alkalinity (bicarbonate, carbonate)

Introduction

Four groundwater samples were collected by Terracon. Groundwater samples were analyzed for BTEX, TPH, arsenic, barium, cations, inorganic anions, and alkalinity. See the Laboratory Report Certificate of Analysis for a list of samples collected that includes the corresponding field identification and the laboratory identification.

Sample Results

Sample Condition Upon Receipt

The samples were received at 1.4°C in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Holding Times

No data were qualified or rejected for holding time exceedances and all data are usable.

Method Blanks

No data were qualified or rejected for method blank contamination and all data are usable.

Laboratory Control Samples (LCS)

In the quality control review of the data a QC deficiency was observed and flagged as noted in the groundwater sample collected from MW-4. MS/MSD recoveries were found to be outside of the laboratory control limits due to a possible matrix/chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD. It should be noted that the flagged constituents (calcium, magnesium, and sodium) are not target analytes.

Matrix spike (MS) and matrix spike duplicate (MSD) Samples

No data were qualified or rejected for MS/MSD data evaluation.

Laboratory Analytical Duplicates

No data were qualified or rejected for analytical duplicate QC data evaluation.

Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)

According to the LRCs, initial calibration and continuing calibration data met QC objectives for the analyses performed.

Serial dilutions, post digestion spikes, and method of standard additions

No data were qualified for serial dilution or post digestion spike outliers. No method of standard addition was evaluated.

Summary

Based on the data review, the groundwater analytical data are usable for the purpose of determining current COC concentrations at the site.

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Matrix	Collection	Method
MW-4	553284-001	Water	5/16/2017 15:36	EPA8260B, TX100, EPA6020A, EPA300, SM2320B
MW-5	553284-002	Water	5/16/2017 13:00	EPA8260B, TX100, EPA6020A, EPA300, SM2320B
MW-6	553284-003	Water	5/16/2017 11:36	EPA8260B, TX100, EPA6020A, EPA300, SM2320B
MW-2	553284-004	Water	5/16/2017 14:32	EPA8260B, TX100, EPA6020A, EPA300, SM2320B

Analytical Report 553284

for

Terracon Houston

Project Manager: Sheraden Porter

Planned Pearland Assault Baseball Club

92177127

23-MAY-17

Collected By: Client

4147 Greenbriar Dr.
Stafford, TX 77477

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400)
Xenco-San Antonio: Texas (T104704534)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

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23-MAY-17

Project Manager: **Sheraden Porter**
Terracon Houston
11555 Clay Road Suite 100
Houston, TX 77043

Reference: XENCO Report No(s): **553284**
Planned Pearland Assault Baseball Club
Project Address: 4805 Old Chocolate Bayou, Pearland, TX

Sheraden Porter:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 553284. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 553284 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Mike Kimmel
Operations Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.
Certified and approved by numerous States and Agencies.
A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America

Sample Cross Reference 553284

Terracon Houston, Houston, TX

Planned Pearland Assault Baseball Club

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-4	W	05-16-17 15:36		553284-001
MW-5	W	05-16-17 13:00		553284-002
MW-6	W	05-16-17 11:36		553284-003
MW-2	W	05-16-17 14:32		553284-004
Trip Blank	W	05-16-17 00:00		Not Analyzed

CASE NARRATIVE SUMMARY

Client Name: ***Terracon Houston***

Project Name: ***Planned Pearland Assault Baseball Club***

Project ID: *92177127*
Work Order Number: *553284*

Report Date: *23-MAY-17*
Date Received: *16-MAY-17*

Mike Kimmel
Operations Manager

Certificate of Analytical Results
553284

Terracon Houston, Houston, TX
Planned Pearland Assault Baseball Club

Sample Id: **MW-4** Matrix: Ground Water Sample Depth:

Lab Sample Id: 553284-001 Date Collected: 05.16.17 15.36 Date Received: 05.16.17 17.00

Analytical Method: Inorganic Anions by EPA 300 Prep Method: E300P

Analyst: DHE % Moist: Tech: DHE

Seq Number: 3017567 Date Prep: 05.17.17 16.20

Prep seq: 724787

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Bromide	24959-67-9	**1.90**	0.500	0.00600	mg/L	05.17.17 17:54		1
Chloride	16887-00-6	**1060**	5.00	0.280	mg/L	05.17.17 17:26		10
Nitrate as N	14797-55-8	**0.217**	0.100	0.00400	mg/L	05.17.17 17:54		1
Sulfate	14808-79-8	**9.31**	0.500	0.0460	mg/L	05.17.17 17:54		1

Analytical Method: Total RCRA Metals by SW6020A Prep Method: 3010A

Analyst: DEP % Moist: Tech: DEP

Seq Number: 3017773 Date Prep: 05.19.17 09.40

Prep seq: 724878

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Arsenic	7440-38-2	U	0.0100	0.00123	mg/L	05.19.17 15:37	U	5
Barium	7440-39-3	**1.05**	0.0200	0.00242	mg/L	05.19.17 15:37		5
Calcium	7440-70-2	**3820**	250	43.1	mg/L	05.19.17 22:05	X	2500
Magnesium	7439-95-4	**72.2**	25.0	1.30	mg/L	05.19.17 15:51	X	250
Potassium	7440-09-7	**1.33**	0.500	0.0891	mg/L	05.19.17 15:37		5
Sodium	7440-23-5	**2970**	250	46.1	mg/L	05.19.17 22:05	X	2500

Analytical Method: Alkalinity by SM2320B Prep Method:

Analyst: MJP % Moist: Tech: MJP

Seq Number: 3017946 Date Prep:

Prep seq:

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	**317**	4.00	0.954	mg/L	05.22.17 12:57		1
Alkalinity, Carbonate (as CaCO3)	3812-32-6	U	4.00	0.954	mg/L	05.22.17 12:57	U	1

Certificate of Analytical Results

553284

Terracon Houston, Houston, TX

Planned Pearland Assault Baseball Club

Sample Id: **MW-4** | Matrix: Ground Water | Sample Depth:

Lab Sample Id: 553284-001 | Date Collected: 05.16.17 15.36 | Date Received: 05.16.17 17.00

Analytical Method: TPH by Texas1005 | Prep Method: 1005

Analyst: ARL | % Moist: | Tech: ARL

Seq Number: 3017583 | Date Prep: 05.17.17 14.18

Prep seq: 724727

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C12 Range Hydrocarbons	PHC612	U	4.77	0.152	mg/L	05.19.17 01:07	U	1
C12-C28 Range Hydrocarbons	PHCG1228	U	4.77	0.157	mg/L	05.19.17 01:07	U	1
C28-C35 Range Hydrocarbons	PHCG2835	U	4.77	0.0965	mg/L	05.19.17 01:07	U	1
Total TPH	PHC635	U		0.0965	mg/L	05.19.17 01:07	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
o-Terphenyl	95	70 - 130	%		
1-Chlorooctane	84	70 - 130	%		

Analytical Method: BTEX by SW 8260B | Prep Method: 5030B

Analyst: EKL | % Moist: | Tech: EKL

Seq Number: 3017570 | Date Prep: 05.17.17 17.12

Prep seq: 724784

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	U	0.00100	0.000500	mg/L	05.17.17 18:31	U	1
Toluene	108-88-3	U	0.00100	0.000500	mg/L	05.17.17 18:31	U	1
Ethylbenzene	100-41-4	U	0.00100	0.000750	mg/L	05.17.17 18:31	U	1
m,p-Xylenes	179601-23-1	U	0.00200	0.00100	mg/L	05.17.17 18:31	U	1
o-Xylene	95-47-6	U	0.00100	0.000500	mg/L	05.17.17 18:31	U	1
Total Xylenes	1330-20-7	U		0.000500	mg/L	05.17.17 18:31	U	
Total BTEX		U		0.000500	mg/L	05.17.17 18:31	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	97	75 - 131	%		
1,2-Dichloroethane-D4	115	63 - 144	%		
Toluene-D8	94	80 - 117	%		

Certificate of Analytical Results
553284

Terracon Houston, Houston, TX
Planned Pearland Assault Baseball Club

Sample Id: **MW-5** Matrix: Ground Water Sample Depth:

Lab Sample Id: 553284-002 Date Collected: 05.16.17 13.00 Date Received: 05.16.17 17.00

Analytical Method: Inorganic Anions by EPA 300 Prep Method: E300P

Analyst: DHE % Moist: Tech: DHE

Seq Number: 3017567 Date Prep: 05.17.17 16.20

Prep seq: 724787

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Bromide	24959-67-9	**24.3**	0.500	0.00600	mg/L	05.17.17 18:22		1
Chloride	16887-00-6	**14700**	50.0	2.80	mg/L	05.22.17 15:25	D	100
Nitrate as N	14797-55-8	**0.193**	0.100	0.00400	mg/L	05.17.17 18:22		1
Sulfate	14808-79-8	**7.53**	0.500	0.0460	mg/L	05.17.17 18:22		1

Analytical Method: Total RCRA Metals by SW6020A Prep Method: 3010A

Analyst: DEP % Moist: Tech: DEP

Seq Number: 3017773 Date Prep: 05.19.17 09.40

Prep seq: 724878

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Arsenic	7440-38-2	**0.0146**	0.0100	0.00123	mg/L	05.19.17 16:02		5
Barium	7440-39-3	**5.67**	0.200	0.0242	mg/L	05.19.17 22:00		50
Calcium	7440-70-2	**4290**	250	43.1	mg/L	05.19.17 22:08		2500
Magnesium	7439-95-4	**1490**	250	13.0	mg/L	05.19.17 22:08		2500
Potassium	7440-09-7	**5.22**	0.500	0.0891	mg/L	05.19.17 16:02		5
Sodium	7440-23-5	**2140**	250	46.1	mg/L	05.19.17 22:08		2500

Analytical Method: Alkalinity by SM2320B Prep Method:

Analyst: MJP % Moist: Tech: MJP

Seq Number: 3017946 Date Prep:

Prep seq:

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	**168**	4.00	0.954	mg/L	05.22.17 01:04		1
Alkalinity, Carbonate (as CaCO3)	3812-32-6	U	4.00	0.954	mg/L	05.22.17 01:04	U	1

Certificate of Analytical Results

553284

Terracon Houston, Houston, TX

Planned Pearland Assault Baseball Club

Sample Id: **MW-5** | Matrix: Ground Water | Sample Depth:

Lab Sample Id: 553284-002 | Date Collected: 05.16.17 13.00 | Date Received: 05.16.17 17.00

Analytical Method: TPH by Texas1005 | Prep Method: 1005

Analyst: ARL | % Moist: | Tech: ARL

Seq Number: 3017583 | Date Prep: 05.17.17 14.21

Prep seq: 724727

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C12 Range Hydrocarbons	PHC612	U	4.73	0.151	mg/L	05.19.17 01:28	U	1
C12-C28 Range Hydrocarbons	PHCG1228	U	4.73	0.155	mg/L	05.19.17 01:28	U	1
C28-C35 Range Hydrocarbons	PHCG2835	U	4.73	0.0957	mg/L	05.19.17 01:28	U	1
Total TPH	PHC635	U		0.0957	mg/L	05.19.17 01:28	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
o-Terphenyl	98	70 - 130	%		
1-Chlorooctane	85	70 - 130	%		

Analytical Method: BTEX by SW 8260B | Prep Method: 5030B

Analyst: EKL | % Moist: | Tech: EKL

Seq Number: 3017570 | Date Prep: 05.17.17 17.12

Prep seq: 724784

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	U	0.00100	0.000500	mg/L	05.17.17 18:50	U	1
Toluene	108-88-3	U	0.00100	0.000500	mg/L	05.17.17 18:50	U	1
Ethylbenzene	100-41-4	U	0.00100	0.000750	mg/L	05.17.17 18:50	U	1
m,p-Xylenes	179601-23-1	U	0.00200	0.00100	mg/L	05.17.17 18:50	U	1
o-Xylene	95-47-6	U	0.00100	0.000500	mg/L	05.17.17 18:50	U	1
Total Xylenes	1330-20-7	U		0.000500	mg/L	05.17.17 18:50	U	
Total BTEX		U		0.000500	mg/L	05.17.17 18:50	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	98	75 - 131	%		
1,2-Dichloroethane-D4	118	63 - 144	%		
Toluene-D8	94	80 - 117	%		

Certificate of Analytical Results
553284

Terracon Houston, Houston, TX
Planned Pearland Assault Baseball Club

Sample Id: **MW-6** Matrix: Ground Water Sample Depth:

Lab Sample Id: 553284-003 Date Collected: 05.16.17 11.36 Date Received: 05.16.17 17.00

Analytical Method: Inorganic Anions by EPA 300 Prep Method: E300P

Analyst: DHE % Moist: Tech: DHE

Seq Number: 3017567 Date Prep: 05.17.17 16.20

Prep seq: 724787

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Bromide	24959-67-9	**14.2**	5.00	0.0600	mg/L	05.17.17 18:32		10
Chloride	16887-00-6	**9900**	50.0	2.80	mg/L	05.17.17 19:00	D	100
Nitrate as N	14797-55-8	U	1.00	0.0400	mg/L	05.17.17 18:32	U	10
Sulfate	14808-79-8	**145**	5.00	0.460	mg/L	05.17.17 18:32		10

Analytical Method: Total RCRA Metals by SW6020A Prep Method: 3010A

Analyst: DEP % Moist: Tech: DEP

Seq Number: 3017773 Date Prep: 05.19.17 09.40

Prep seq: 724878

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Arsenic	7440-38-2	**0.00152**	0.0100	0.00123	mg/L	05.19.17 16:05	J	5
Barium	7440-39-3	**5.09**	0.200	0.0242	mg/L	05.19.17 22:03		50
Calcium	7440-70-2	**3070**	250	43.1	mg/L	05.19.17 22:11		2500
Magnesium	7439-95-4	**56.6**	25.0	1.30	mg/L	05.19.17 16:21		250
Potassium	7440-09-7	**17.0**	0.500	0.0891	mg/L	05.19.17 16:05		5
Sodium	7440-23-5	**3040**	250	46.1	mg/L	05.19.17 22:11		2500

Analytical Method: Alkalinity by SM2320B Prep Method:

Analyst: MJP % Moist: Tech: MJP

Seq Number: 3017946 Date Prep:

Prep seq:

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	**22.5**	4.00	0.954	mg/L	05.22.17 01:10		1
Alkalinity, Carbonate (as CaCO3)	3812-32-6	U	4.00	0.954	mg/L	05.22.17 01:10	U	1

Certificate of Analytical Results
553284

Terracon Houston, Houston, TX
Planned Pearland Assault Baseball Club

Sample Id: **MW-6** | Matrix: Ground Water | Sample Depth:

Lab Sample Id: 553284-003 | Date Collected: 05.16.17 11.36 | Date Received: 05.16.17 17.00

Analytical Method: TPH by Texas1005 | Prep Method: 1005

Analyst: ARL | % Moist: | Tech: ARL

Seq Number: 3017583 | Date Prep: 05.17.17 14.24

Prep seq: 724727

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C12 Range Hydrocarbons	PHC612	U	4.73	0.151	mg/L	05.19.17 01:47	U	1
C12-C28 Range Hydrocarbons	PHCG1228	U	4.73	0.156	mg/L	05.19.17 01:47	U	1
C28-C35 Range Hydrocarbons	PHCG2835	U	4.73	0.0957	mg/L	05.19.17 01:47	U	1
Total TPH	PHC635	U		0.0957	mg/L	05.19.17 01:47	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
o-Terphenyl	98	70 - 130	%		
1-Chlorooctane	85	70 - 130	%		

Analytical Method: BTEX by SW 8260B | Prep Method: 5030B

Analyst: EKL | % Moist: | Tech: EKL

Seq Number: 3017570 | Date Prep: 05.17.17 17.13

Prep seq: 724784

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	U	0.00100	0.000500	mg/L	05.17.17 19:09	U	1
Toluene	108-88-3	**0.00113**	0.00100	0.000500	mg/L	05.17.17 19:09		1
Ethylbenzene	100-41-4	U	0.00100	0.000750	mg/L	05.17.17 19:09	U	1
m,p-Xylenes	179601-23-1	U	0.00200	0.00100	mg/L	05.17.17 19:09	U	1
o-Xylene	95-47-6	U	0.00100	0.000500	mg/L	05.17.17 19:09	U	1
Total Xylenes	1330-20-7	U		0.000500	mg/L	05.17.17 19:09	U	
Total BTEX		**0.00113**		0.000500	mg/L	05.17.17 19:09		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	96	75 - 131	%		
1,2-Dichloroethane-D4	115	63 - 144	%		
Toluene-D8	94	80 - 117	%		

Certificate of Analytical Results
553284

Terracon Houston, Houston, TX
Planned Pearland Assault Baseball Club

Sample Id: **MW-2** Matrix: Ground Water Sample Depth:

Lab Sample Id: 553284-004 Date Collected: 05.16.17 14.32 Date Received: 05.16.17 17.00

Analytical Method: Inorganic Anions by EPA 300 Prep Method: E300P

Analyst: DHE % Moist: Tech: DHE

Seq Number: 3017567 Date Prep: 05.17.17 16.20

Prep seq: 724787

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Bromide	24959-67-9	**34.2**	5.00	0.0600	mg/L	05.17.17 18:41		10
Chloride	16887-00-6	**20700**	100	5.60	mg/L	05.22.17 15:34	D	200
Nitrate as N	14797-55-8	U	1.00	0.0400	mg/L	05.17.17 18:41	U	10
Sulfate	14808-79-8	**4.75**	5.00	0.460	mg/L	05.17.17 18:41	J	10

Analytical Method: Total RCRA Metals by SW6020A Prep Method: 3010A

Analyst: DEP % Moist: Tech: DEP

Seq Number: 3017773 Date Prep: 05.19.17 09.40

Prep seq: 724878

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Arsenic	7440-38-2	U	0.0100	0.00123	mg/L	05.19.17 16:08	U	5
Barium	7440-39-3	**32.9**	0.0200	0.00242	mg/L	05.19.17 16:08		5
Calcium	7440-70-2	**2980**	250	43.1	mg/L	05.19.17 22:14		2500
Magnesium	7439-95-4	**1490**	250	13.0	mg/L	05.19.17 22:14		2500
Potassium	7440-09-7	**7.24**	0.500	0.0891	mg/L	05.19.17 16:08		5
Sodium	7440-23-5	**6250**	250	46.1	mg/L	05.19.17 22:14		2500

Analytical Method: Alkalinity by SM2320B Prep Method:

Analyst: MJP % Moist: Tech: MJP

Seq Number: 3017946 Date Prep:

Prep seq:

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	**200**	4.00	0.954	mg/L	05.22.17 01:28		1
Alkalinity, Carbonate (as CaCO3)	3812-32-6	U	4.00	0.954	mg/L	05.22.17 01:28	U	1

Certificate of Analytical Results
553284

Terracon Houston, Houston, TX
Planned Pearland Assault Baseball Club

Sample Id: **MW-2** | Matrix: Ground Water | Sample Depth:

Lab Sample Id: 553284-004 | Date Collected: 05.16.17 14.32 | Date Received: 05.16.17 17.00

Analytical Method: TPH by Texas1005 | Prep Method: 1005

Analyst: ARL | % Moist: | Tech: ARL

Seq Number: 3017583 | Date Prep: 05.17.17 14.27

Prep seq: 724727

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C12 Range Hydrocarbons	PHC612	U	4.68	0.149	mg/L	05.19.17 02:07	U	1
C12-C28 Range Hydrocarbons	PHCG1228	U	4.68	0.154	mg/L	05.19.17 02:07	U	1
C28-C35 Range Hydrocarbons	PHCG2835	U	4.68	0.0947	mg/L	05.19.17 02:07	U	1
Total TPH	PHC635	U		0.0947	mg/L	05.19.17 02:07	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
o-Terphenyl	100	70 - 130	%		
1-Chlorooctane	86	70 - 130	%		

Analytical Method: BTEX by SW 8260B | Prep Method: 5030B

Analyst: EKL | % Moist: | Tech: EKL

Seq Number: 3017570 | Date Prep: 05.17.17 17.14

Prep seq: 724784

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	U	0.00100	0.000500	mg/L	05.17.17 19:28	U	1
Toluene	108-88-3	U	0.00100	0.000500	mg/L	05.17.17 19:28	U	1
Ethylbenzene	100-41-4	U	0.00100	0.000750	mg/L	05.17.17 19:28	U	1
m,p-Xylenes	179601-23-1	U	0.00200	0.00100	mg/L	05.17.17 19:28	U	1
o-Xylene	95-47-6	U	0.00100	0.000500	mg/L	05.17.17 19:28	U	1
Total Xylenes	1330-20-7	U		0.000500	mg/L	05.17.17 19:28	U	
Total BTEX		U		0.000500	mg/L	05.17.17 19:28	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	100	75 - 131	%		
1,2-Dichloroethane-D4	121	63 - 144	%		
Toluene-D8	93	80 - 117	%		

Certificate of Analytical Results

553284

Terracon Houston, Houston, TX

Planned Pearland Assault Baseball Club

Sample Id: **3017946-1-BLK** Matrix: Water Sample Depth:

Lab Sample Id: 3017946-1-BLK Date Collected: Date Received:

Analytical Method: Alkalinity by SM2320B Prep Method:

Analyst: MJP % Moist: Tech: MJP

Seq Number: 3017946 Date Prep:

Prep seq:

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	U	4.00	0.954	mg/L	05.22.17 12:14	U	1
Alkalinity, Carbonate (as CaCO3)	3812-32-6	U	4.00	0.954	mg/L	05.22.17 12:14	U	1

Sample Id: **724727-1-BLK** Matrix: Water Sample Depth:

Lab Sample Id: 724727-1-BLK Date Collected: Date Received:

Analytical Method: TPH by Texas1005 Prep Method: 1005

Analyst: ARL % Moist: Tech: ARL

Seq Number: 3017583 Date Prep: 05.17.17 13.27

Prep seq: 724727

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C12 Range Hydrocarbons	PHC612	U	5.00	0.160	mg/L	05.18.17 12:10	U	1
C12-C28 Range Hydrocarbons	PHCG1228	U	5.00	0.164	mg/L	05.18.17 12:10	U	1
C28-C35 Range Hydrocarbons	PHCG2835	U	5.00	0.101	mg/L	05.18.17 12:10	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
o-Terphenyl	117	70 - 130	%		
1-Chlorooctane	98	70 - 130	%		

Certificate of Analytical Results
553284

Terracon Houston, Houston, TX
Planned Pearland Assault Baseball Club

Sample Id: **724784-1-BLK** Matrix: Water Sample Depth:

Lab Sample Id: 724784-1-BLK Date Collected: Date Received:

Analytical Method: BTEX by SW 8260B Prep Method: 5030B

Analyst: EKL % Moist: Tech: EKL

Seq Number: 3017570 Date Prep: 05.17.17 11.52

Prep seq: 724784

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	U	0.00100	0.000500	mg/L	05.17.17 12:43	U	1
Toluene	108-88-3	U	0.00100	0.000500	mg/L	05.17.17 12:43	U	1
Ethylbenzene	100-41-4	U	0.00100	0.000750	mg/L	05.17.17 12:43	U	1
m,p-Xylenes	179601-23-1	U	0.00200	0.00100	mg/L	05.17.17 12:43	U	1
o-Xylene	95-47-6	U	0.00100	0.000500	mg/L	05.17.17 12:43	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	95	75 - 131	%		
1,2-Dichloroethane-D4	111	63 - 144	%		
Toluene-D8	93	80 - 117	%		

Sample Id: **724787-1-BLK** Matrix: Water Sample Depth:

Lab Sample Id: 724787-1-BLK Date Collected: Date Received:

Analytical Method: Inorganic Anions by EPA 300 Prep Method: E300P

Analyst: DHE % Moist: Tech: DHE

Seq Number: 3017567 Date Prep: 05.17.17 16.20

Prep seq: 724787

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Bromide	24959-67-9	U	0.500	0.00600	mg/L	05.17.17 16:20	U	1
Chloride	16887-00-6	U	0.500	0.0280	mg/L	05.17.17 16:20	U	1
Nitrate as N	14797-55-8	U	0.100	0.00400	mg/L	05.17.17 16:20	U	1
Sulfate	14808-79-8	U	0.500	0.0460	mg/L	05.17.17 16:20	U	1

Certificate of Analytical Results
553284

Terracon Houston, Houston, TX
Planned Pearland Assault Baseball Club

Sample Id: **724878-1-BLK** Matrix: Water Sample Depth:

Lab Sample Id: 724878-1-BLK Date Collected: Date Received:

Analytical Method: Total RCRA Metals by SW6020A Prep Method: 3010A

Analyst: DEP % Moist: Tech: DEP

Seq Number: 3017773 Date Prep: 05.19.17 09.40

Prep seq: 724878

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Arsenic	7440-38-2	U	0.00200	0.000246	mg/L	05.19.17 15:29	U	1
Barium	7440-39-3	U	0.00400	0.000484	mg/L	05.19.17 15:29	U	1
Calcium	7440-70-2	U	0.100	0.0172	mg/L	05.19.17 15:29	U	1
Magnesium	7439-95-4	U	0.100	0.00521	mg/L	05.19.17 15:29	U	1
Potassium	7440-09-7	U	0.100	0.0178	mg/L	05.19.17 15:29	U	1
Sodium	7440-23-5	U	0.100	0.0184	mg/L	05.19.17 15:29	U	1

CHRONOLOGY OF HOLDING TIMES

Analytical Method : Inorganic Anions by EPA 300

Client : Terracon Houston

Work Order #: **553284**

Project ID: 92177127

Date Received: 05/16/17

Field Sample ID	Lab Sample ID	Date Collected	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracted (Days)	Date Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
MW-4	553284-001	05/16/17				05/17/17	28	1	P
MW-5	553284-002	05/16/17				05/17/17	28	1	P
MW-6	553284-003	05/16/17				05/17/17	28	1	P
MW-2	553284-004	05/16/17				05/17/17	28	1	P

CHRONOLOGY OF HOLDING TIMES

Analytical Method : Alkalinity by SM2320B

Client : Terracon Houston

Work Order #: **553284**

Project ID: 92177127

Date Received: 05/16/17

Field Sample ID	Lab Sample ID	Date Collected	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracted (Days)	Date Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
MW-4	553284-001	05/16/17				05/22/17	14	6	P
MW-5	553284-002	05/16/17				05/22/17	14	6	P
MW-6	553284-003	05/16/17				05/22/17	14	6	P
MW-2	553284-004	05/16/17				05/22/17	14	6	P

CHRONOLOGY OF HOLDING TIMES

Analytical Method : Total RCRA Metals by SW6020A

Client : Terracon Houston

Work Order #: **553284**

Project ID: 92177127

Date Received: 05/16/17

Field Sample ID	Lab Sample ID	Date Collected	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracted (Days)	Date Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
MW-4	553284-001	05/16/17	05/19/17	180	3	05/19/17	180	0	P
MW-5	553284-002	05/16/17	05/19/17	180	3	05/19/17	180	0	P
MW-6	553284-003	05/16/17	05/19/17	180	3	05/19/17	180	0	P
MW-2	553284-004	05/16/17	05/19/17	180	3	05/19/17	180	0	P

CHRONOLOGY OF HOLDING TIMES

Analytical Method : BTEX by SW 8260B

Work Order #: **553284**

Date Received: 05/16/17

Client : Terracon Houston

Project ID: 92177127

Field Sample ID	Lab Sample ID	Date Collected	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracted (Days)	Date Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
MW-4	553284-001	05/16/17				05/17/17	14	1	P
MW-5	553284-002	05/16/17				05/17/17	14	1	P
MW-6	553284-003	05/16/17				05/17/17	14	1	P
MW-2	553284-004	05/16/17				05/17/17	14	1	P

CHRONOLOGY OF HOLDING TIMES

Analytical Method : TPH by Texas1005

Work Order #: **553284**

Date Received: 05/16/17

Client : Terracon Houston

Project ID: 92177127

Field Sample ID	Lab Sample ID	Date Collected	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracted (Days)	Date Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
MW-4	553284-001	05/16/17	05/17/17	14	1	05/19/17	14	2	P
MW-5	553284-002	05/16/17	05/17/17	14	1	05/19/17	14	2	P
MW-6	553284-003	05/16/17	05/17/17	14	1	05/19/17	14	2	P
MW-2	553284-004	05/16/17	05/17/17	14	1	05/19/17	14	2	P

F = These samples were analyzed outside the recommended holding time.
P = Samples analyzed within the recommended holding time.

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

***** (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

Analytical Log

Analytical Method:	Inorganic Anions by EPA 300	Batch #:	3017567
Project Name:	Planned Pearland Assault Baseball Clu	Project ID:	92177127
Client Name:	Terracon Houston	WO Number:	553284

Client Sample Id	Lab Sample Id	QC Types
MW-2	553284-004	SMP
MW-2 DL	553284-004	DL
MW-4	553284-001	SMP
MW-5	553284-002	SMP
MW-5 DL	553284-002	DL
MW-6	553284-003	SMP
MW-6 DL	553284-003	DL
	553191-001 S	MS
	553191-001 SD	MSD
	553284-001 S	MS
	553284-001 SD	MSD
	724787-1-BKS	BKS
	724787-1-BLK	BLK
	724787-1-BSD	BSD

Version: 1.012

Analytical Log

Analytical Method:	BTEX by SW 8260B	Batch #:	3017570
Project Name:	Planned Pearland Assault Baseball Clu	Project ID:	92177127
Client Name:	Terracon Houston	WO Number:	553284

Client Sample Id	Lab Sample Id	QC Types
MW-2	553284-004	SMP
MW-4	553284-001	SMP
MW-5	553284-002	SMP
MW-6	553284-003	SMP
	553260-001 S	MS
	553260-001 SD	MSD
	724784-1-BKS	BKS
	724784-1-BLK	BLK
	724784-1-BSD	BSD

Version: 1.012

Analytical Log

Analytical Method:	TPH by Texas1005	Batch #:	3017583
Project Name:	Planned Pearland Assault Baseball Clu	Project ID:	92177127
Client Name:	Terracon Houston	WO Number:	553284

Client Sample Id	Lab Sample Id	QC Types
MW-2	553284-004	SMP
MW-4	553284-001	SMP
MW-5	553284-002	SMP
MW-6	553284-003	SMP
	553210-001 S	MS
	724727-1-BKS	BKS
	724727-1-BLK	BLK
	724727-1-BSD	BSD

Version: 1.012

Analytical Log

Analytical Method:	Total RCRA Metals by SW6020A	Batch #:	3017773
Project Name:	Planned Pearland Assault Baseball Clu	Project ID:	92177127
Client Name:	Terracon Houston	WO Number:	553284

Client Sample Id	Lab Sample Id	QC Types
MW-2	553284-004	SMP
MW-4	553284-001	SMP
MW-5	553284-002	SMP
MW-6	553284-003	SMP
	553284-001 S	MS
	553284-001 SD	MSD
	724878-1-BKS	BKS
	724878-1-BLK	BLK
	724878-1-BSD	BSD

Version: 1.012

Analytical Log

Analytical Method:	Inorganic Anions by EPA 300	Batch #:	3017920
Project Name:	Planned Pearland Assault Baseball Clu	Project ID:	92177127
Client Name:	Terracon Houston	WO Number:	553284

Client Sample Id	Lab Sample Id	QC Types
MW-2 DL	553284-004	DL
MW-5 DL	553284-002	DL
	552898-002 S	MS
	552898-002 SD	MSD
	553567-005 S	MS
	553567-005 SD	MSD
	725008-1-BKS	BKS
	725008-1-BLK	BLK
	725008-1-BSD	BSD

Version: 1.012

Analytical Log

Analytical Method:	Alkalinity by SM2320B	Batch #:	3017946
Project Name:	Planned Pearland Assault Baseball Clu	Project ID:	92177127
Client Name:	Terracon Houston	WO Number:	553284

Client Sample Id	Lab Sample Id	QC Types
MW-2	553284-004	SMP
MW-4	553284-001	SMP
MW-5	553284-002	SMP
MW-6	553284-003	SMP
	3017946-1-BKS	BKS
	3017946-1-BLK	BLK
	3017946-1-BSD	BSD
	553438-001 D	MD
	553490-003 D	MD

Version: 1.012

Form 2 - Surrogate Recoveries

Project Name: Planned Pearland Assault Baseball Club

Work Orders : 553284, **Project ID:** 92177127

Lab Batch #: 3017570 **Sample:** 724784-1-BKS / BKS **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 05/17/17 11:22

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0468	0.0500	94	75-131	
1,2-Dichloroethane-D4	0.0573	0.0500	115	63-144	
Toluene-D8	0.0489	0.0500	98	80-117	

Lab Batch #: 3017570 **Sample:** 724784-1-BSD / BSD **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 05/17/17 11:44

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0479	0.0500	96	75-131	
1,2-Dichloroethane-D4	0.0466	0.0500	93	63-144	
Toluene-D8	0.0490	0.0500	98	80-117	

Lab Batch #: 3017570 **Sample:** 724784-1-BLK / BLK **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 05/17/17 12:43

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0473	0.0500	95	75-131	
1,2-Dichloroethane-D4	0.0557	0.0500	111	63-144	
Toluene-D8	0.0467	0.0500	93	80-117	

Lab Batch #: 3017570 **Sample:** 553260-001 S / MS **Batch:** 1 **Matrix:** Waste Water

Units: mg/L **Date Analyzed:** 05/17/17 15:38

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0466	0.0500	93	75-131	
1,2-Dichloroethane-D4	0.0464	0.0500	93	63-144	
Toluene-D8	0.0488	0.0500	98	80-117	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Version: 1.%

Form 2 - Surrogate Recoveries

Project Name: Planned Pearland Assault Baseball Club

Work Orders : 553284, **Project ID:** 92177127

Lab Batch #: 3017570 **Sample:** 553260-001 SD / MSD **Batch:** 1 **Matrix:** Waste Water

Units: mg/L **Date Analyzed:** 05/17/17 15:58

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0478	0.0500	96	75-131	
1,2-Dichloroethane-D4	0.0463	0.0500	93	63-144	
Toluene-D8	0.0485	0.0500	97	80-117	

Lab Batch #: 3017583 **Sample:** 724727-1-BKS / BKS **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 05/17/17 22:09

SURROGATE RECOVERY STUDY

TPH by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	4.40	5.00	88	70-130	
1-Chlorooctane	9.81	10.0	98	70-130	

Lab Batch #: 3017583 **Sample:** 724727-1-BSD / BSD **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 05/17/17 22:29

SURROGATE RECOVERY STUDY

TPH by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	4.52	5.00	90	70-130	
1-Chlorooctane	10.2	10.0	102	70-130	

Lab Batch #: 3017583 **Sample:** 553210-001 S / MS **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 05/17/17 23:49

SURROGATE RECOVERY STUDY

TPH by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	4.48	4.75	94	70-130	
1-Chlorooctane	10.1	9.50	106	70-130	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Planned Pearland Assault Baseball Club

Work Orders : 553284,

Project ID: 92177127

Lab Batch #: 3017583 **Sample:** 724727-1-BLK / BLK **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 05/18/17 12:10

SURROGATE RECOVERY STUDY

TPH by Texas1005 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	5.85	5.00	117	70-130	
1-Chlorooctane	9.80	10.0	98	70-130	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Version: 1.%

BS / BSD Recoveries

Project Name: Planned Pearland Assault Baseball Club

Work Order #: 553284 **Project ID:** 92177127

Analyst: EKL **Date Prepared:** 05/17/2017 **Date Analyzed:** 05/17/2017

Lab Batch ID: 3017570 **Sample:** 724784-1-BKS **Batch #:** 1 **Matrix:** Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.000500	0.100	0.0895	90	0.100	0.0867	87	3	66-142	20	
Toluene	<0.000500	0.100	0.0954	95	0.100	0.0936	94	2	59-139	20	
Ethylbenzene	<0.000750	0.100	0.0998	100	0.100	0.0952	95	5	75-125	20	
m,p-Xylenes	<0.00100	0.200	0.197	99	0.200	0.189	95	4	75-125	20	
o-Xylene	<0.000500	0.100	0.0992	99	0.100	0.0949	95	4	75-125	20	

Analyst: DHE **Date Prepared:** 05/17/2017 **Date Analyzed:** 05/17/2017

Lab Batch ID: 3017567 **Sample:** 724787-1-BKS **Batch #:** 1 **Matrix:** Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Bromide	<0.00600	10.0	9.62	96	10.0	9.65	97	0	90-110	10	
Chloride	<0.0280	10.0	9.68	97	10.0	9.68	97	0	90-110	20	
Nitrate as N	<0.00400	10.0	9.92	99	10.0	9.92	99	0	90-110	20	
Sulfate	<0.0460	10.0	9.82	98	10.0	9.86	99	0	90-110	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Version: 1.%

BS / BSD Recoveries

Project Name: Planned Pearland Assault Baseball Club

Work Order #: 553284 **Project ID:** 92177127

Analyst: ARL **Date Prepared:** 05/17/2017 **Date Analyzed:** 05/17/2017

Lab Batch ID: 3017583 **Sample:** 724727-1-BKS **Batch #:** 1 **Matrix:** Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by Texas1005 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C12 Range Hydrocarbons	<0.160	100	104	104	100	101	101	3	70-130	25	
C12-C28 Range Hydrocarbons	<0.164	100	111	111	100	110	110	1	70-130	25	

Analyst: DEP **Date Prepared:** 05/19/2017 **Date Analyzed:** 05/19/2017

Lab Batch ID: 3017773 **Sample:** 724878-1-BKS **Batch #:** 1 **Matrix:** Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Total RCRA Metals by SW6020A Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Arsenic	<0.000246	0.100	0.0991	99	0.100	0.0969	97	2	80-120	20	
Barium	<0.000484	0.100	0.102	102	0.100	0.102	102	0	80-120	20	
Calcium	<0.0172	2.50	2.79	112	2.50	2.69	108	4	80-120	20	
Magnesium	<0.00521	2.50	2.56	102	2.50	2.54	102	1	80-120	20	
Potassium	<0.0178	1.00	1.00	100	1.00	0.996	100	0	80-120	20	
Sodium	<0.0184	2.50	2.60	104	2.50	2.57	103	1	80-120	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Version: 1.%

Form 3 - MS Recoveries

Project Name: Planned Pearland Assault Baseball Club

Work Order #: 553284

Lab Batch #: 3017583 **Project ID:** 92177127

Date Analyzed: 05/17/2017 **Date Prepared:** 05/17/2017 **Analyst:** ARL

QC- Sample ID: 553210-001 S **Batch #:** 1 **Matrix:** Water

Reporting Units: mg/L

TPH by Texas1005 Analytes	MATRIX / MATRIX SPIKE RECOVERY STUDY					
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
C6-C12 Range Hydrocarbons	38.8	95.0	126	92	70-130	
C12-C28 Range Hydrocarbons	1.89	95.0	101	104	70-130	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference [E] = 200*(C-A)/(C+B)
All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit

Version: 1.%

Form 3 - MS / MSD Recoveries

Project Name: Planned Pearland Assault Baseball Club

Work Order # : 553284 **Project ID:** 92177127

Lab Batch ID: 3017570 **QC- Sample ID:** 553260-001 S **Batch #:** 1 **Matrix:** Waste Water

Date Analyzed: 05/17/2017 **Date Prepared:** 05/17/2017 **Analyst:** EKL

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.000500	0.100	0.0868	87	0.100	0.0847	85	2	66-142	20	
Toluene	<0.000500	0.100	0.0920	92	0.100	0.0880	88	4	59-139	20	
Ethylbenzene	<0.000750	0.100	0.0929	93	0.100	0.0893	89	4	75-125	20	
m,p-Xylenes	<0.00100	0.200	0.147	74	0.200	0.101	51	37	75-125	20	XF
o-Xylene	<0.000500	0.100	0.0907	91	0.100	0.0847	85	7	75-125	20	

Lab Batch ID: 3017567 **QC- Sample ID:** 553191-001 S **Batch #:** 1 **Matrix:** Ground Water

Date Analyzed: 05/17/2017 **Date Prepared:** 05/17/2017 **Analyst:** DHE

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Bromide	<0.0600	100	94.4	94	100	94.0	94	0	90-110	20	
Chloride	580	100	673	93	100	674	94	0	90-110	20	
Nitrate as N	7.68	100	107	99	100	107	99	0	90-110	20	
Sulfate	1010	100	1090	80	100	1090	80	0	90-110	20	X

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Form 3 - MS / MSD Recoveries

Project Name: Planned Pearland Assault Baseball Club

Work Order # : 553284 **Project ID:** 92177127

Lab Batch ID: 3017567 **QC- Sample ID:** 553284-001 S **Batch #:** 1 **Matrix:** Ground Water

Date Analyzed: 05/17/2017 **Date Prepared:** 05/17/2017 **Analyst:** DHE

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Bromide	2.74	100	98.0	95	100	98.3	96	0	90-110	20	
Chloride	1060	100	1150	90	100	1150	90	0	90-110	20	
Nitrate as N	1.18	100	99.7	99	100	100	99	0	90-110	20	
Sulfate	8.25	100	107	99	100	107	99	0	90-110	20	

Lab Batch ID: 3017773 **QC- Sample ID:** 553284-001 S **Batch #:** 1 **Matrix:** Ground Water

Date Analyzed: 05/19/2017 **Date Prepared:** 05/19/2017 **Analyst:** DEP

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Total RCRA Metals by SW6020A Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Arsenic	<0.00123	0.100	0.105	105	0.100	0.105	105	0	75-125	20	
Barium	1.05	0.100	1.17	120	0.100	1.13	80	3	75-125	20	
Calcium	354	0.0500	356	NC	0.0500	351	0	1	75-125	20	X
Magnesium	69.7	2.50	73.7	160	2.50	73.1	136	1	75-125	20	X
Potassium	1.33	1.00	2.33	100	1.00	2.33	100	0	75-125	20	
Sodium	311	2.50	311	0	2.50	309	0	1	75-125	20	X

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Sample Duplicate Recovery

Project Name: Planned Pearland Assault Baseball Club

Work Order #: 553284

Lab Batch #: 3017946 **Project ID:** 92177127
Date Analyzed: 05/22/2017 12:41 **Date Prepared:** 05/22/2017 **Analyst:** MJP
QC- Sample ID: 553438-001 D **Batch #:** 1 **Matrix:** Ground Water
Reporting Units: mg/L

Alkalinity by SM2320B Analyte	SAMPLE / SAMPLE DUPLICATE RECOVERY Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Alkalinity, Bicarbonate (as CaCO3)	178	178	0	20	
Alkalinity, Carbonate (as CaCO3)	<0.954	<0.954	0	20	U

Lab Batch #: 3017946
Date Analyzed: 05/22/2017 02:06 **Date Prepared:** 05/22/2017 **Analyst:** MJP
QC- Sample ID: 553490-003 D **Batch #:** 1 **Matrix:** Water
Reporting Units: mg/L

Alkalinity by SM2320B Analyte	SAMPLE / SAMPLE DUPLICATE RECOVERY Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Alkalinity, Bicarbonate (as CaCO3)	366	366	0	20	
Alkalinity, Carbonate (as CaCO3)	<0.954	<0.954	0	20	U

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |
All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit

Version: 1.%

Attachment A Laboratory Data Package Cover Page

Project Name: **Planned Pearland Assault Base** Laboratory Number: **553284**

This Data package consists of : Laboratory Batch No(s) **725008, 3017946, 724878, 724787, 724727,**

This signature page, the laboratory review checklist, and the following reportable data:

[X] R1 Field chain-of-custody documentation;

[X] R2 Sample identification cross-reference;

[X] R3 Test reports (analytical data sheets) for each environmental sample that includes:
- a) Items consistent with NELAC 5
- b) dilution factors,
- c) preparation methods,
- d) cleanup methods, and
- e) if required for the project, tentatively identified compounds (TICs).

[X] R4 Surrogate Recovery data including:
- a) Calculated recovery (%R), and
- b) The laboratory's surrogate QC limits.

[X] R5 Test reports/summary forms for blank samples;

[X] R6 Test reports/summary forms for laboratory control samples (LCSs) including:
- a) LCS spiking amounts,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

[X] R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %Rs and relative percent differences (RPDs) and
- e) The laboratory's MS/MSD QC limits

[X] R8 Laboratory anaytical duplicate (if applicable) recovery and precision:
- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

[X] R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;

[X] R10 Other problems or anomalies.

[X] Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies, observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [ ] This laboratory meets an exception under 30 TAC 25.6 and was last inspection by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The offical signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Mike Kimmel	Mike Kimmel	**Operations Manager**	**23-MAY-17**
Name (Printed)	Signature	Official Title (printed)	Date

A1

Attachment A (cont'd) : Laboratory Review Checklist: Reportable Data

Laboratory Name:	XENCO LABORATORIES	LRC Date :	23-MAY-17
Project Name:	Planned Pearland Assault Baseball Club	Laboratory Job Number :	553284
Reviewer Name:	MKI	Batch Number(s) :	725008, 3017946, 724878, 724787, 724727, 724784

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-Custody (COC)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results <MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soil/solid samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, were TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency ?	X				
		Were method blanks taken through the entire analytical procedure, including preparation and, if applicable, cleanup procedures ?	X				
		Were Blank Concentrations <MQL?	X				
R6	OI	**Laboratory Control Samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within the QC limits?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			1
		Were MS/MSD RPDs within the laboratory QC limits?	X				
R8	OI	**Analytical Duplicate Data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method Quantitation Limits (MQLs)**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				

Attachment A (cont'd) : Laboratory Review Checklist: Reportable Data

Laboratory Name:	XENCO LABORATORIES	LRC Date :	23-MAY-17
Project Name:	Planned Pearland Assault Baseball Club	Laboratory Job Number :	553284
Reviewer Name:	MKI	Batch Number(s) :	725008, 3017946, 724878, 724787, 724727, 724784

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and the highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing Calibration Verification (ICCV and CCV) and continuing calibration blank (**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB <MDL?	X				
S3	O	**Mass Spectral Tuning**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standard (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestions Spikes, and Method of Standard Additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method Detection Limit (MDL) Studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods (NELAC Chapter 5)**					
		Are all methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted to the TCEQ-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report Identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Attachment A (cont'd): Laboratory Review Checklist: Exception Reports

Laboratory Name:	XENCO LABORATORIES	LRC Date:	23-MAY-17
Project Name:	Planned Pearland Assault Baseball Club	Laboratory Job Number:	553284
Reviewer Name:	MKI	Batch Number(s) :	725008, 3017946, 724878, 724787, 724727, 724784

ER# [1]	DESCRIPTION
1	SW6020 Batch 3017773, Lab Sample ID 553284-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Sodium recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Calcium recovered below QC limits in the Matrix Spike Duplicate. Magnesium recovered above QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to high concentrations of target analytes. Samples in the analytical batch are: 553284-001, -002, -003, -004. The Laboratory Control Sample for Magnesium, Calcium, Sodium is within laboratory Control Limits, therefore the data was accepted.

1 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No is checked on the LRC).

Terracon Houston, Houston, TX

Planned Pearland Assault Baseball Club

Analytical Method: BTEX by SW 8260B Matrix: Water

Parameter	Spike Amount	Actual Amount	Units
Benzene	0.000500	0.000490	mg/L
Toluene	0.000500	0.000400	mg/L
Ethylbenzene	0.000750	0.000680	mg/L
m,p-Xylenes	0.00100	0.000770	mg/L
o-Xylene	0.000500	0.000290	mg/L

Analytical Method: Inorganic Anions by EPA 300 Matrix: Water

Parameter	Spike Amount	Actual Amount	Units
Bromide	0.0500	0.0972	mg/L
Chloride	0.250	0.177	mg/L
Nitrate as N	0.0113	0.0203	mg/L
Sulfate	0.250	0.234	mg/L

Analytical Method: TPH by Texas1005 Matrix: Water

Parameter	Spike Amount	Actual Amount	Units
C6-C12 Range Hydrocarbons	0.250	0.220	mg/L
C12-C28 Range Hydrocarbons	0.250	0.210	mg/L

Analytical Method: Total RCRA Metals by SW6020A Matrix: Water

Parameter	Spike Amount	Actual Amount	Units
Arsenic	0.00200	0.00294	mg/L
Barium	0.00400	0.00401	mg/L
Potassium	0.0200	0.0169	mg/L
Sodium	0.0200	0.00716	mg/L

CHAIN OF CUSTODY

Revision 2016.1

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XENCO LABORATORIES
Setting the Standard since 1990

Stafford,Texas (281-240-4200) | San Antonio, Texas (210-509-3334) | Phoenix, Arizona (480-355-0900)
Dallas Texas (214-902-0300) | Midland, Texas (432-704-5251)
www.xenco.com

Xenco Quote #: | Xenco Job #: 553284

Client / Reporting Information

Company Name / Branch: Terracon
Company Address: 11555 Clay Road, Houston, TX 77043
Email: | Phone No: 713-939-6479
Project Contact: Sheraden Porter
Samplers's Name

Project Information

Project Name/Number: Pearland Assault Baseball Club / 92177127
Project Location: 4805 Old Chocolate Bayou Pearland, TX
Invoice To: Terracon
PO Number: 17E7190

Matrix Codes

W = Water
S = Soil/Sed/Solid
GW =Ground Water
DW = Drinking Water
P = Product
SW = Surface water
SL = Sludge
OW =Ocean/Sea Water
WI = Wipe
O = Oil
WW= Waste Water
A = Air

No.	Field ID / Point of Collection	Collection: Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	BTEX by 8260BTX	TPH by TX1005	Metals by 6020 (As, Ba)	Anions by E300 (Br, Cl, NO3, SO2)	Alkalinity by SM2320B (Bicarbonate, Carbonate)	Cations by 6010					Field Comments
1	MW-4		5/16/17	1536	GW	8	5		2					1	X	X	X	X	X	X					
2	MW-5		↓	1300	↓	↓	↓		↓					↓	X	X	X	X	X	X					
3	MW-6			1136											X	X	X	X	X	X					
4	MW-2			1432											X	X	X	X	X	X					
5																									
6																									
7																									
8																									
9																									
10																									

Turnaround Time (Business days)

- [ ] Same Day TAT
- [ ] 5 Day TAT
- [ ] Next Day EMERGENCY
- [x] 7 Day TAT
- [ ] 2 Day EMERGENCY
- [ ] Contract TAT
- [ ] 3 Day EMERGENCY

TAT Starts Day received by Lab, if received by 5:00 pm

Data Deliverable Information

- [ ] Level II Std QC
- [ ] Level IV (Full Data Pkg /raw data)
- [ ] Level III Std QC+ Forms
- [ ] TRRP Level IV
- [ ] Level 3 (CLP Forms)
- [ ] UST / RG -411
- [ ] Level II Report with TRRP checklist

Notes:

FED-EX / UPS: Tracking #

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Sheraden Porter	5/16/17 1700	1	2		2
Relinquished by: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	Preserved where applicable	On Ice: X Cooler Temp. Thermo. Corr. Factor

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the Client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of $75 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any samples received by Xenco but not analyzed will be invoiced at $5 per sample. These terms will be enforced unless previously negotiated under a fully executed client contract.

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: Terracon Houston

Date/ Time Received: 05/16/2017 05:00:00 PM

Work Order #: 553284

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : hou068

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	1.4	
#2 *Shipping container in good condition?	**Yes**	
#3 *Samples received on ice?	**Yes**	
#4 *Custody Seal present on shipping container/ cooler?	**No**	
#5 *Custody Seals intact on shipping container/ cooler?	**N/A**	
#6 Custody Seals intact on sample bottles?	**No**	
#7 *Custody Seals Signed and dated?	**N/A**	
#8 *Chain of Custody present?	**Yes**	
#9 Sample instructions complete on Chain of Custody?	**Yes**	
#10 Any missing/extra samples?	**Yes**	Trip Blank not listed on COC, placed on hold
#11 Chain of Custody signed when relinquished/ received?	**Yes**	
#12 Chain of Custody agrees with sample label(s)?	**Yes**	
#13 Container label(s) legible and intact?	**Yes**	
#14 Sample matrix/ properties agree with Chain of Custody?	**Yes**	
#15 Samples in proper container/ bottle?	**Yes**	
#16 Samples properly preserved?	**Yes**	
#17 Sample container(s) intact?	**Yes**	
#18 Sufficient sample amount for indicated test(s)?	**Yes**	
#19 All samples received within hold time?	**Yes**	
#20 Subcontract of sample(s)?	**No**	
#21 VOC samples have zero headspace?	**Yes**	
#22 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts.	**Yes**	
#23 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	**N/A**	

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: sao

PH Device/Lot#: 10bdh2461

Checklist completed by: Santiago Ortega — Date: 05/17/2017

Checklist reviewed by: Debbie Simmons — Date: 05/17/2017